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Economics

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The Shipping Marketing Strategies within the Framework of Complexity Theory

ABSTRACT

This paper examined the shipping marketing strategies within the framework of complexity theory. Then using prevailing models in both services marketing and complexity theory, core elements like dynamic life cycle of products and industries, strategy, leadership, team-work as well as safety and security culture are presented. Shipping industry is in this paper contrasted and compared with other service industries for peculiarities that exist and make this industry unique for business-to-business marketing. Analysis is based on case studies of leading shipping companies of bulk and liner markets.

Keywords: shipping marketing; chartering; leadership; shipping marketing mix; complexity theory; shipping marketing strategy; differentiation strategies; positioning strategies.

1. INTRODUCTION

As it is well known, Marketing delayed [1] to be applied to service industries compared with that of products. Additionally, Marketing much delayed to be applied to Sea Transport Industry. This happened par excellence and especially to the Ocean going ship-owning companies - with the exception of Cruising where hotel marketing has indeed been earlier - in 1972 - applied to the ships i.e. the sea traveling

hotels. The present research [2] revealed-for the first time we believe-that the implementation of marketing into shipping industry was not as extensive as in other service-industries like e.g. air transport (appeared in 1971). Panayides tried to apply marketing to ship management companies (companies which manage third party vessels) using the approach of relationship marketing [3], concluding that the adoption of contemporary principles of marketing will assist companies in the achievement of their key objectives and that marketing is essential in professional ship management as mostly deals with clients. Frameworks, concepts and strategies indeed have been developed to address the fact that services marketing is different vis-a-vis packaged goods and manufacturing [4]. However as presented by Kasper [5] from the 25 studies appeared between 1992 and 2001, only three focused explicitly on market orientation and services. Conclusively, Services Marketing is still under the process of a continuous evolution and change. Marketing early in the decade 1980-90 followed a prominent research on service quality [5], but the emphasis has by now shifted to the process of creating value for the customer. In this paper, the current shipping industry situation is investigated and the application of the long celebrated Marketing-mix to Shipping Industry is analyzed. This will be connected with sustainable leadership as it stands in the Marketing Science, but also and especially as leadership is understood by Complexity theory. This paper is designed to deal with 3 subjects in both the sciences of Marketing and Complexity theory: (1) Strategy, (2) Leadership and (3) Marketing - Mix. For working purposes the sustainable marketing leadership is defined as the process of influencing a group/company towards the achievement of marketing goals in a permanent / sustained way.

2. ANALYSIS

2.1 Marketing Models in Services

First, Kotler [1], with bank services in his paradigm, was not able to grasp shipping industry's peculiarity. In shipping, the customer does not see either the physical environment or the contact personnel, before hiring the service, as the hiring is done via brokers from both sides who act as salesmen. Secondly, Zeithaml and Bitner [4] drew attention to experience and even credence qualities. Ships are indeed experience goods and provide credence qualities especially safety [6]. According to Kotler [1] the services marketing strategy means: (1) external marketing, (b) internal marketing needed for employees motivation and (c) interactive marketing. This is the

known 'Services triangle - a strategic framework-attributed to Gronroos [7], in effect emphasizing that (external) marketing is about making promises, (internal) marketing is about enabling promises and (interactive) marketing is about keeping promises (reliability). The above although a rather native construction is useful to see that the providers of service are firm's employees, subcontractors, outsourced entities, agents, or what stands for 'People in the marketing-mix. Good, but obvious, is also the emphasis given by internal marketing to recruiting, training, motivating, rewarding and providing equipment and technology. Real-time marketing is the time of truth. Promises are kept or not. The defect of this analysis is the absence of any safety and security concern [8] of paramount importance for shipping and ports. Third, Zeithaml and Bitner [4] argued that services should be viewed in a structured and integrated way. The four gaps are: (1) know what the customers expect, (2) select the right service designs and standards, (3) deliver to service standards and (4) match performance to promises. But, these four gaps include many key factors (Table 1).

Table 1. The integrated gaps model of service quality

Gap 1: 1. Inadequate marketing research orientation.	2. Lack of upward communication.	3. Insufficient relationship focus.	4. Inadequate service Recovery.
Gap 2: 5. Poor service design.	6. Absence of customer-defined standards.	7. Inappropriate physical evidence and servicescape.	
Gap 3: 8. Deficiencies in human resource policies.	9. Failure to match supply and demand.	10. Customer not fulfilling roles.	11. Problems with service intermediaries.
Gap 4: 12. Lack of integrated services marketing communications.	13. Ineffective management of customer expectations.	14. Overpromising.	15. Inadequate horizontal communications.

Source: Zeithaml and Bitner (2003: 531). Kotler (1994) mentioned 5 gaps, while above have been reduced to four

The authors of the above theory talk about effective services marketing and a framework for understanding and improving service delivery and a way of positioning the key concepts, strategies and decisions in services marketing. Thus starting with

the customer and closing the gap between customer's expectations and perceptions. Indeed, some of the above factors apply to shipping but only as an aide de memoir, but safety and security are nowhere mentioned. In addition, lack of team work must be accepted as a fact in Greek shipping rather than something to be eliminated. Supply and demand in shipping cannot be matched by the actions of the individual firm; education of customers is not possible. This model is indeed an aide de memoir, and it is not a model of success. The analysis provided by marketing is most of a consulting philosophy and planning and success is not in any way guaranteed, and thus is not yet persuasive for a shipping firm, a par excellence profit seeking/making enterprise. Success in business according to Berry [9] is rather attributed to 8 drivers: exceptional excellence, control of destiny, trust-based relationships, generosity, investment in employee success, acting small, brand cultivation and strategic focus. This is the way of building a lasting (sustainable success) service businesses. These may lead to customer satisfaction, innovation and growth. This is clearly a panacea model indeed.

3. STRATEGY

3.1 Marketing Strategy

As argued, a marketing strategy alone is not enough if it is not transformed into marketing programs, as this is a practical science. Therefore, basic decisions must be made on three essential pillars shown in Diagram 1.

Marketing-mix is characterized as one of the key concepts in modern marketing theory. There is also an optimality condition-not specified though-in the mix as far as the 4 etc P's are concerned [4]. Marketing mix is characterized as a powerful concept. Kotler [1] has established that the marketing strategies can be considered as the means of a company to achieve its marketing objectives related to marketing-mix. Three strategies are suggested by Kotler [1] based on Porter [10]: overall cost leadership, differentiation and focus. Tramp Shipping companies indeed pursue overall cost leadership as they are compelled to do so where price is an out of control variable. This however does not bring in more customers, but only provides survival. In differentiation, indeed safety and security leadership is pursued by tramp shipping companies, too. According however to Zeithaml and Bitner [4] based on analysis of some 60 studies on service success the most dominant and reliable predictors of success relate to strategy

characteristics i.e. dedicated human resources to support, and dedicated R and D on, the so called initiative. Moreover, [11] market orientation has been defined as a strategy used to reach a sustainable competitive advantage.

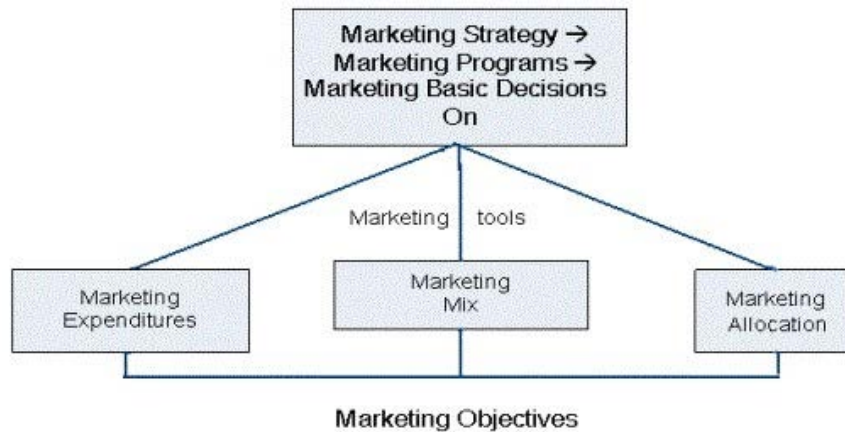


Diagram 1. The role of marketing-mix in marketing strategy

Source: Inspired by Kotler (1994:98-99)

3.2 Strategy in Complexity Theory

In marketing science, emphasis is given to planning, without strategic thinking though to precede. Marketing planning is only a practice and should be concerned with ensuring that action is consistent with the original intention; is a design methodology as well as a practice, which should create a structure for fulfilling ideas being perfectly in line with the principles of the original intention. Strategic thinking on the other hand attempts to understand the nature of things and to create the opportunity to respond to current circumstances and actions in such a way that the future created far exceeds any other future. Strategic thinking is imperative in providing first a theory capable of approaching today's world [12] and then to be seen as workable by: testing, providing the right questions and leading to a new theory through information, if it is necessary to replace the old. Theory coexists with strategy and strategic thinking, and planning can only then begin. The usual mistake in marketing is in using exhortation in place of strategic thinking. Marketers must realize that strategy is a process of profound original thinking about the company and its relationship with its environment and is only this company, which will be gaining an enormous marketplace advantage. Successful strategy is what generates the future as much as it predicts it. "Only a very small % of companies have a strategy that is

understood and respected by employees or the public". Most companies are faulted for lack of originality, lack of clarity, or lack of understanding both of business and of marketplace; lack of match between action and resource allocation with regard to what is said to be the strategy. A strategy has to get operationalized into practices and adopt processes based on: Quality (safety and security for shipping) past experience +quality (safety and security for shipping) client (charterer) experience +quality (safety and security for shipping) business practices = future. As strategy should provide information, important is to recognize the 'distributed processing philosophy. Firms must be aware that economic profitability is a function of time and of competitive advantage, but competitive advantage suffers from life cycle phenomenon, too and must be reinforced by another and so on and so forth. In all marketing sources, it has been encountered in place of strategy, a long list of plans and intentions, all producing complicated expressions resulting in chaos instead of in self-organization of complexity.

4. LEADERSHIP

4.1 Leadership in Marketing Science

Kotler, [1] argued that leadership deals with facing out change. Alternatively, Kasper [5] mentions as better the female way of leadership, i.e. social interaction, interest in employees and care about people. Leadership in organizations is defined as that it makes things happen. MacKenzie et al. [13] applied the traditional definition of leadership to sales-people and argued about the obvious which is that a leader must inspire sales forces to outperform. Complexity theory as presented below is more sustained than this simple rule. Moreover, Harris and Ogbonna [14] stepped over the traditional path of leadership by referring to participative (appeared in 1973, with changes in 1988 and 2000), supportive (appeared in 1971, based on motivation) and instrumental types. They found that only the first two types are positively associated with overall market orientation (=customer, competitor and interfunctional coordination). These authors have not applied the achievement-oriented leader which is the fourth leadership behavior [15]. Thus marketing falls behind advances in Management science. Berry [9] moreover argued in favor of values-driven leadership. It infuses its values into the fabric of the firm leading with a set of core values; what the firm represents and aspires to be. These values should tap into employees own core values and guide individual decision making and inspire personal

achievement; leaders mobilize emotional and spiritual resources; people at work often have more of themselves to give and they must have a cause not just a job. Leaders articulate company's reason for being (the dream); convey company's fundamental aspiration and why they are important, but also the meaning of the success (speaking and acting). Business effectively requires the sustaining power of values-driven leadership; keeping performers performing at a high level in a continuous fashion. Shipping indeed although is not a labour intensive industry, personnel on board and especially Captain is of paramount importance. As also argued by Kotler [1] many industries contain one firm that is the acknowledged market leader. Moreover, the firm that has the largest market share is leader also in:

1. Price changes,
2. New product introduction,
3. Distribution coverage and
4. Promotional intensity.

4.2 Leadership in Complexity Theory

In complexity theory [16] leadership is too needed but: (a) helping developing the clear identity of the company, (b) supporting people as they learn how to live by their values and (c) understanding that people is best controlled by concepts that invite participation. Leadership is the one that shows by going first and having the courage of his convictions; one that has theories that determine and guide his actions. There are two reasons for failure in any effort towards any organizational transformation that may be needed to sustain success in the market place: The lack of a theory and of leadership.

Sustained leadership in market success is conceived for companies that fit with their environment, compete within a context of cooperation and create systems that become increasingly complex as evolution requires, while remaining extremely flexible. The influence will be done in shipping via cost minimization, and new-buildings, but these are the required abilities to be acquired in a mastery way for dominance in the marketing game, and for survival or else for death. The exceptional leader must have exceptional thinking, exceptional increase in information and exceptional creativity. The organization of the company must be able to organize the indicated requirements. The way to build a future success is presented in Diagram 2.

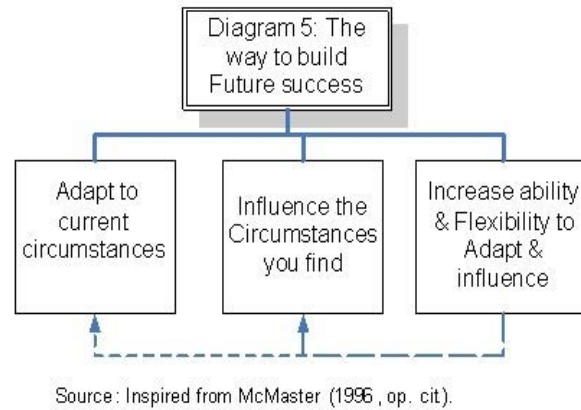


Diagram 2. The way to build a future success

5. SHIPPING MARKETING MIX

Shipping industry is here defined as the industry serving sea transportation needs for cargoes: (a) with no pre-advertised itineraries (tramp shipping), but also (b) for cargoes with predetermined and regular round the world services to shippers (liner shipping). Marketing objectives are related to marketing-mix. Marketing mix is not a static, but a dynamic tool, as it implies an optimal combination of the P's for a given market segment over time [17]. In addition Time and Place-apart from making the mix dynamic - are equally important in shipping. This means that at another point of time, a different mix has to be applied. But is it possible to make marketing tools dynamic? Yes. Diagram 3 depicts the life cycle of a product becoming dynamic. It should be mentioned that, there is nonlinearity at the strategic marketing level [18].

As shown in the above 'full Descartes quadratic diagram-using rates of change than absolute amounts of profits and sales-at the introduction of the product both sales and profit rise, and as the product is more accepted into the market, the sales and profits improve (growth area). Decreases in rate of growth in profits (but not sales) lead to shakeout. The maturity comes when the trajectory enters into the 4th quadrant on the phase plane as both sales rate of rise and growth of profits decline, while sales may continue to rise. The decline stage comes when the trajectory gets into quadrant 3 where both sales and profits decline. The factors that have caused the above clock-wise pattern are: (a) the production capacity, (b) the size of the initial promotional budget, (c) the acceptance rate of customers, (d) the reaction of the competitors, (e) the available substitutes and (f) the efficiency of the product's distribution channels. Many of the above obviously belong to Marketing mix. Marketing professionals know e.g. that prolongation of the maturity stage may

be followed by, for example, multiple products uses or making it ecologically safe or even by other methods thus extending the life of the product/service. In addition, the marketing-mix must be distinguished between short and long run. Advertising, price and sales force e.g. can be modified in the short run in all industries (assuming short run of a time length over 2-3 months for shipping). In shipping, freight rate/price cannot be modified either in the long run or the short run at the whim of the firm and in the case of liners prices were only steadily increasing in the past. Advertising in liners can be increased in the short run, but the number of agents is much more difficult to be increased in the short run. There is also a complexity element that the 4 (or 8) P's are interrelated and depend one on each other to a certain extent. Kotler [1] argued that the marketing mix is in effect a sum of marketing tools used by the enterprise in order to achieve its objectives in the target-market. For tramp shipping however the P- price-is not a controllable decision variable and this must be noted. Services however needed an extended/expanded marketing-mix including to the four, three more P's: people, physical evidence and processes. The expansion has taken place in 1981 and included: People, Physical Evidence and Process.

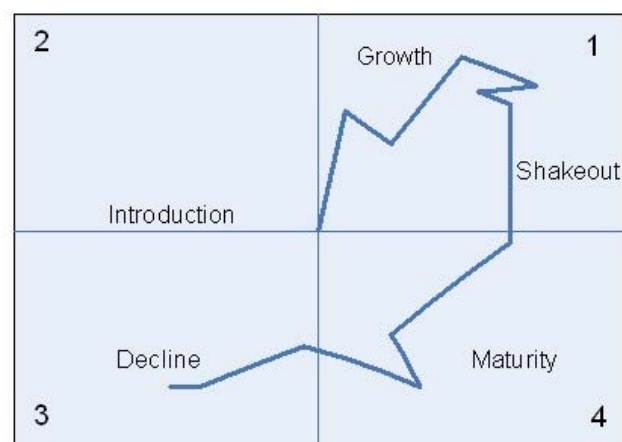


Diagram 3. History of a simulated product in a dynamic life cycle

Source: Modified from Priesmeyer (1992:92)

In shipping marketing-mix it should be taken into consideration the time as a factor making it dynamic. In shipping marketing the customer is the owner of the goods transported. A shipping company is a profit-maximizing company, especially through the effective reduction of costs, in selling services at a more or less given price (price taker). But, satisfying user's needs presupposes not only correct diagnosis of charterer's/shipper's transport needs, but also the appropriate

organization, planning and control of the means of those providing the transport means [19]. Shipping in particular is very sensitive in control, communication and co-ordination from distance as the factory/vessel is far away. The ship “is the company. A shipping company is a multi-company/multi-factory corporation in case there is more than one ship. Obviously, the shipping company has to find out charterer's needs, to adapt chartering and operations policies as well as safety/security requirements to satisfy such needs. This with a view to offer the required transport services as demanded by the user at a profit, whenever possible, given the shipping and business cycles. The transport price i.e. freight, is something negotiable, but within the framework of total supply and demand in case of tramp shipping. Eventually shipping companies realized that they must communicate effectively with their customers in their endeavor to build out a long-lasting commercial operation of its vessels. Given however that the ship is built by the first-owner with a trade in mind and a customer in focus, the second-owner has certain marketing restrictions to face, given that the ship is called to serve other trades/customers than those to which has been originally designed. Thus, all shipping enterprises seem to have fixed capabilities as far as the means, the resources and the management abilities of their ships, are concerned. This leads to the lack of perfect adaptability of a ship to the customer's needs, with the exception of ships built under contracts of affreightment. This fact introduces a case of limited ability for the ship to be able to exploit all challenges of the shipping market with equal effectiveness and here marketing may be considered helpful. Tramp Shipping services unlike liners at the end are broadly considered homogeneous.

There is no doubt however, that the matching of the capabilities of the shipping enterprises with the needs and the desires of the charterer is fundamental for the sustained provision of the required transport services. Moreover, this is essential for the satisfaction and ‘loyalty’ of the user and as a result a prerequisite for the commercial success of the shipping enterprise [20]. Thus, a shipping company must organize its resources in such a way that the stages of the marketing process can be applied and by this way, a long - lasting and profitable operation of its ships can be achieved. The application of a marketing system requires a selection of the appropriate marketing policy and an undertaking of specific activities, with continuity and periodicity. The most appropriate marketing policy for a shipping enterprise is the

target marketing, which assists shipping enterprise to concentrate its efforts to the most promising opportunities [21].

Primary information was collected through a quantitative research undertaken to the leading tanker and liner shipping companies in the world. In accordance with the above-mentioned research the shipping marketing-mix consists of the following 8 P's [22]:

(1) The Product-Service is the basic element of the mix. The firms when introduce new services in the international market they face many challenges as consumers are not very aware of the quality of new services or they have little knowledge about the firm reputation and image in the market [23]. This is offered to the market and its safety/security is in the focus of many organizations for the last seven years. The liner services have the peculiarity to be involved with too small cargoes for filling-up the entire capacity of the ship and they must be grouped out/containerized with other cargoes. The liner ship operates in regular pre-advertised services between certain known ports carrying cargo at fixed prices for each commodity, where discounts can be offered only to regular customers. The transport of a multitude of small goods on a regular service obviously faces the liner operator with a more complex and extensive administrative task than the one facing the bulk/tramp shipowner. Indeed, the bulk shipping branch of industry provides different services than the liner shipping branch using shiploads instead of small cargoes in containers. Here several and different bulk cargoes may be carried by a single ship, where a load may occupy a separate hold or a part of a hold. This is the traditional tramp practice without regular services and predetermined routes. The safety of shipping services as mentioned already is since 1998 legislated in ISM Code and is compulsory and demands conformity with this international safety standard that seeks to protect sea environment as well. Security of ports and ships is again a compulsory service feature legislated in 2004. Shipping companies will probably sell these features using marketing techniques. This first P - the service - is not a single variable but includes many other features like safety and security. In effect, in shipping services the design of the vessel is not a direct marketing feature unlike speed (which in turn may depend on design). Packaging is too irrelevant, while the brand name may be related to what we call as the identity of 'good operator' and refers to the ship-owner. The sizes of the vessels however are essential marketing tools as this feature determines along with place (ports) and time the suitability of the

vessel to attract the customer from other competitors the ships of which may be found in the same port or near-by. Time is a unique feature in shipping that may be not found in the variable 'Place as defined by marketing science. The job in shipping is secured by those ships that are found in the right place at the right time and have the right type and size.

(2) The Price-Freight: in all sectors of the tramp shipping market the agreement between the parties involved (normally represented by their brokers) - within the supply and demand framework-is carried out by negotiations given the specific requirements of the particular transportation from port to port. The characteristics of this market are the frequent and unpredictable marked fluctuations of the price of transport determined by changes that occur in supply and demand. As far as the liner market is concerned, the freight rate remains for a long time steady and is determined by the transport companies although elements of competition is introduced in later years in another times cartel (shipping conference).

(3) The Process: the process that we may identify here in shipping marketing mix is that of the stage of negotiations on the one hand and the execution of the agreement (charter party) on the other. This process can be described as follows: first a cargo is sold by the producer to the merchant/importer for further sale etc., secondly the charterer's broker seeks the appropriate vessel to transport this cargo, the owner's broker thirdly negotiates the terms and conditions of the transport contract providing the suitable ship for the situation. This whole process leads to the signature of the final charter party. So, in this situation the Marketing of the cargo holder acts first for the sale of a produce to an overseas merchant. This agreement-charter party - is then passed from the Sales department (Chartering) to Production Department (Operations) to be executed to the full satisfaction of the shipper and under the protection of the environment. This stage contains distribution and production in one.

(4) The People: people is of course one of the basic live means to provide the transport services to the charterer and the human element is very crucial for shipping especially on the ship. The manager of the ship / the Captain acts in great distances from the shipowner/shipmanager. And one may note the high capital/labour ratio (in an ecological new tanker the ratio is 2 m \$ per head) in shipping. People/operators also supervise the crew from the office and a person is now established in the shore office called 'designated person ashore accountable for the safety of the ship and the

cargo. The crew also makes the public relations with the representatives of the customer (charterer) and especially in time charters (longer in time) where the role of the charterer is more active in production. The office and the ship's crew have to be capable and effective in providing worthy work and in possessing psychological maturity for the smooth operation of the vessel and the more effective service. The ship-owning nowadays is an ever more regulated profession as it has to obey to the relevant codes and regulations, standards and instructions published by IMO (International maritime organization of UN), the state authorities of the flag/registration and the classification society and the Port state controls. Thus safety/security is imposed from outside aiming at achieving safety and security and environmental protection and is not paid by the customer/user, unlike of what happens in other industries. Imposed is also the continuous professional training of the seamen, who have to obtain the skills required, evidenced by relevant official certificates.

(5) The Place (the Ports and Geographical Area): the ship goes to the place where the cargo is provided by the shipper i.e. in the port of loading and she has to carry by sea to where is required by the shipper i.e. in some other port. This in effect is the distribution function, which coincides with production function or stage.

(6) The Promotion: here this item of the shipping marketing mix means the actions that a shipping company undertakes to inform users about the features of its fleet and other basic information concerning the main characteristics of vessels and their potential port/place/time (ETA), where can be found when needed. This is of course an effort towards the charter or hire of the vessel through information as this is the practice e.g. in the newspapers for advertised goods offered in special discounted prices-when and where. Ships are information goods. The non-determination of the sea transport services renders the immediate distribution impossible. In shipping there is nothing tangible to distribute but only to transport and as mentioned distribution and production takes place in a simultaneous way. The cargo is safely distributed/transported to the port specified by the seller. Thus, and especially in liner shipping, the promotion is considered as an effort to show the attributes of the specific offered service by the company. The possible benefits or merits of the ship are tangible to the user as far as capacity/size, speed, port, class, safety and dates are concerned. These attributes and others will convince the user/its broker to commence the negotiations with the shipping company and specify the detailed contract of carriage providing eventual a firm offer or official proposal to

the owner of the ship. To inform the shipbrokers of the merits of the ship one may resort to forms of advertising to the specialized press and participate to exhibitions, like e.g. Possidonia, as well as to use the normal communication means and circulars. Advertising is a mean of providing the charterers the required information to decide whether a chartering agreement is worthwhile pursued. Advertising can make the ship and her features (age, maintenance class, speed, equipment and people) known to the potential user. The shipping enterprises possessing service quality must have a motive to reveal their quality through advertising and place their competitors in a disadvantageous position if the latter offer an inferior service quality. A specialized mean of informing the possible user is the so called 'position list' which provides up to date information of the expected time of arrival of all company's ships by connecting ships to ports once a week. In liner market, advertising can be considered as one of the main factors dealing with non-price competition. Moreover, maritime transport services are considered as 'experience goods' [6], which in effect means that ship services are known to the user as they are used and this experience is the best to know of what is offered and whether a new hire or prolongation of hire will be further pursued or not. Although this is a costly way to find out the level of services rendered, this is the only method to know the ship services from first hand. The satisfaction of the charterer from ships' good performance will lead to repetition of charter.

(7) The Physical Evidence: this consists of the ship, where the service is provided and can be called the physical environment. This environment is mainly fixed by ship's name, year of built, flag, cargo capacity, speed, draught, width and length, cargo handling equipment, number and type of holds, and fuel consumption. When the charter party is about to be negotiated, the user has to be sure about her suitability, which means the seaworthiness of the ship to carry out the transportation work. The ship has to be also suitable to carry the specific cargo or being cargoworthy, a term that covers all parts of the vessel and the engine, the supplies and spare parts. In effect the ship owner is obliged to provide a ship built, equipped, supplied and manned so as to carry the cargo in her holds safely to its destination and to be able to face and overcome the ordinary perils of the sea.

(8) The Paperless Trade, may be considered as the eighth P in the marketing-mix, that may reduce time spent for formalities and make the travel faster and thus more productive as more cargo can be transported in the unit of time. This benefits

both the user and the provider of the service. Certain aspects are within the control of the industry like electronic mail and Internet while others like EDI is partly in the control of ports. The global information is required at 24 hours especially for shipping which is subject to economic, political, social and other worldwide developments. Shipping moreover is involved in voluminous and time consuming exchange of documents so that it became necessary for the industry to use modern electronic communication means by which time, cost and effort is reduced and perhaps quality of service offered is improved. Electronic trade [24] is a sum of business strategies that can support specific sectors of business activity and practices, which allow, through the use of new technologies, to accomplish commercial processes via electronic means. This trade is applicable to a broad field of shipping activities, apart from trade created over the seas, like the electronic negotiation for chartering a ship, the electronic production of shipping documents including the bill of lading, the follow-up of ship's movements, the communication of the ship with the office, the charterer, the flow of relevant information, advertising of services, support of charterer and payments. The advantages of the paperless trade for shipping enterprises functional and strategic. The shipping company using EDI provides improved services to its customers/users, maintains better business relations with them and gains a competitive advantage.

Diagram 4 presents the 8 P's of Shipping Marketing Mix.



Diagram 4. The tools (SP's) of shipping marketing mix

Source: Plomaritou 2008b:59-71

6. SHIPPING MARKETING STRATEGIES: DIFFERENTIATION AND POSITIONING STRATEGIES

During the planning of marketing strategies, special emphasis must be given to decisions that concern company's differentiation and positioning for gaining competitive advantage. Once the target market is selected, successful shipping firms establish a differentiation strategy, which sets them apart from competitors in charterers eyes. Success through differentiation demands skills that completely diverse from those needed for cost leadership.

The differentiator wins by offering a transportation service that is unique or superior to competitors. Shipping companies aim to achieve superior performance of a sea transport service, adding value to their offering. One way in which firms seek to gain advantage over their competitors is by providing greater quality service relative to freight than their competitors. Added value can also be achieved by offering completely new services which are not yet available from competitors, by modifying existing services or by making them more easily available to customers in order to gain a competitive advantage.

The shipping enterprise can differentiate its offer from that of its competitors through the following differentiation approaches [25]:

- **Qualitative Differentiation:** According to charterers and shippers, the quality of services offered includes mainly the reliability, frequency, flexibility and immediacy of service, as well as the safe carriage of goods by sea. A shipping enterprise can achieve a qualitative differentiation with the offer of special services to its client – charterer or shipper - in comparison to the package of benefits that its competitors offer. However this is more important in the liner market than in the bulk market. Thus, as an example, APL achieves a qualitative differentiation by applying an advanced electronic data interchange system (EDI) between the company and the shippers. The system provides the shippers with quick and sound information, while saving effort.

- **Geographical Differentiation:** The enterprise may achieve geographical differentiation with its ability to manage routes, which serve the needs of seaborne trade worldwide. This is a strategy followed by the leading companies of the liner market. An example of geographical differentiation is the case of A.P. Moller – Maersk Group, which possesses and operates the most modern fleet of container-ships, managing the largest route network and serving the needs of trade worldwide.

- **Personnel and Crew Differentiation:** In this case the enterprise sets themselves apart by employing the appropriately trained personnel and crew at company's offices and vessels. For example, Clipper Group achieves this by providing crew with continuous development at its training and simulation centres.

- **Image Differentiation:** This is achieved by maintaining the best image of the enterprise to the bankers, insurers, suppliers, agents, charterers or even investors. Tanker Pacific Management, for example, has built a very good image in the tanker market and has the reputation of a reliable and responsible company.

The more effective an enterprise is in differentiating its transportation services from competitors, the greater is its power. The quality, personnel, crew, image and geographical differentiation aim to reduce the competition on freight rates (price differentiation does not apply largely in shipping companies). A shipping company can realistically aim to be leader in one of the above mentioned areas, but not in all at the same time. It therefore develops those strengths, which will give it a differential performance advantage in one of these benefit areas. A characteristic of the differentiation strategy of a shipping company is that a sea transport service cannot be easily copied due to the high capital cost of vessels. So, a shipping company seeking to differentiate by innovation should not find its innovatory service copied quickly by competitors.

Furthermore, positioning strategy refers to the final selection and choice of target market segment, which describes the clients (charterers I shippers) the business will seek to serve, as well as the choice of differential advantage, which defines how the company will compete with rivals in the segment. In this way, the target market designates what the company is in relation to its competitors.

The appropriateness and effectiveness of the positioning strategy is the major determinant of business growth and profit performance. The positioning process of a shipping company includes the following stages [26]:

- Firstly, the shipping company must localize the possible differences in its sea transport services compared to other competitive enterprises.

- Secondly, the shipping company must apply selection criteria in order to spot the most important differences leading to a comparative advantage over its competitors. Many businesspeople prefer the promotion of only one competitive advantage – and no more - in the target market.

• Finally, the shipping company must show that within its target market it differs from its competitors.

7. CONCLUSION

This paper attempted a specification of the shipping marketing-mix introducing time. The marketing mix of a shipping enterprise activating in tramp or liner market are constituted of the: Product (Tramp or Liner Service), Price (Freight or Hire), Process (Negotiations Procedure and Execution of the Charter), People (Office Personnel and Ship's Crew), Place (Ports and Geographical Area of Ship's Employment), Promotion (advertising programs), and Physical Evidence (Ship's Characteristics and Seaworthiness of the Vessel). The paper also presents the new tool of the shipping marketing mix, which is the "paperless trade. Then using prevailing models in both services marketing and complexity theory, we present core elements like dynamic life cycle of products and industries, strategy, leadership, team - work and safety and security culture. This last element will be the one to occupy management and marketing science for the time to come as argued. This paper shows that adaptability, flexibility and complexity are the basics for market success. Strategy takes a special track in this paper as new terminology is applied like strategic intent and thinking, defining at the same time the exceptional leader we need. Shipping Marketing as shown falls behind management, and concepts of management like strategy, leadership and culture are used with considerable delay. The novel culture called safety culture and the even more novel security culture discussed in this paper are still ignored by marketing. These play the entire role in shipping as a competitive advantage along with cost minimization. Shipping industry is in this paper contrasted and compared with other service industries for peculiarities that exist and make this industry unique for business-to-business marketing.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Issues in the Management of the Supply-side Financing of Micro, Small and Medium Enterprises (MSMEs) in Nigeria

ABSTRACT

Access to financial credit facilities remains top on the list of constraints affecting the development of MSMEs in Nigeria. This state of affairs subsists despite the nation's robust financial sector. Commercial banks loans portfolio to MSMEs as percentage of total credit to the private sector has been dwindling over time, from 27.04 percent in 1992 to less than one percent in 2012. Driven by the desire to effect a positive change, government has initiated policies and programmes which have produced unsatisfactory results. International best practices identify interventions which can substantially contribute to effective and greater efficiency in financial credit system delivery. Such interventions, modified along the line of a developing economy environment are needed as integral part of efforts to initiate, develop and sustain MSMEs in Nigeria.

Keywords: supply-side financing; MSMEs; credit constrains; collateral; interventions.

1. INTRODUCTION

The working definitions of micro, small and medium enterprises (MSMEs) will be as provided by Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), which coordinates and facilitates the enabling environment in the country. A micro enterprise is one which employs a maximum of 10 persons with a turnover of not more than N10 million (circa US\$ 65,000) and an asset base excluding land and building, not exceeding N5 million (circa US\$ 32,000). A small enterprise employs between 10-49 persons with a turnover of between N10-100 million (circa 65,000-650,000) and an asset base (excluding land and building) of between N5-50 million (circa US\$ 32,000-320,000), while the medium enterprise's turnover hovers in the region between N100-500 million (circa US\$ 650,000-3.2 million) with assets excluding land and building of between N50-199 million (circa

USO 320,000-1.2 million) and having the capacity to employ 50-199 persons. In the MSMEs sector composition, the micro enterprises occupy the lion share of 98 percent and one percent each shared between the small and medium enterprises [1].

The benefits of MSMEs to the national economy are enormous hence the huge interest among practitioners, researchers, policy makers and advocates. Their relevance to the national economy includes the ease of start which has propped up an amazing population of 17.3 million enterprises in Nigeria employing about 32.5 million persons [2]. These figures may be conservative considering the large Nigerian underground economy. Evidence indicates increasing percentage points of underground economy to the official Nigerian GOP of 57.9; 58.6 and 59.4 percentage points in 2000, 2002 and 2003 respectively [3].

Other benefits of MSMEs include the assurance of a competitive business environment, mobilising local resources, creation of new industries, being a platform for industrialisation, poverty reduction, mitigation of rural-urban migration and the provision of intermediate goods for larger industry use. Indeed, MSMEs represent a nation's economic strength. Advantageously too, the Nigerian MSMEs are known to be distributed along sector lines within the regions therefore creating potential operating and cost synergies. Specifically, MSMEs accounted for 46 percent of Nigeria's GOP in 2010 [2].

However, as assuring as their relevance is, they are endemic hiccups which hinder their development. Frequently mentioned hiccups include weak infrastructures, difficulty in acquiring space, machinery and spares; corruption, low capacity utilisation and lack of capacity building [4]. But, the lack of access to financial credit remains top on the list of operational challenges affecting MSMEs [5,6]. Finance availability for industry use has been categorised by [7] into demand and supply sides. The demand side perspective explains expectation. The supply-side concept emphasises provision but its constraints in financial parlance explains misallocation outside the control of the firm. It portrays an imperfect condition which hinders access to funds in a well-defined environment. The supply-side explanation seems to typify the Nigerian situation hence our interest. Our major objective therefore is to expand the literature in examining the major interventions in the management of the supply-side financing of MSMEs in Nigeria.

According to various publications including [8], the country boasts of a vibrant financial sector with 22 commercial, 5 development, 2 merchant, 871 micro finance and one non-interest banking institutions which post huge annual profits. Added to

this list are 82 Primary Mortgage institutions, 62 finance companies and many other allied institutions. Interestingly, despite a sizeable bank loan portfolio, there is a negligible support to the MSME sector. Remarkably too, there has been a dwindling commercial banks loan portfolio to small scale enterprises as percentage of total credits from 27.04 percent in 1992 to less than one percent in 2012 [9]. For these two decades, the overall performance has not shown any appreciable improvement despite many interventions. Table 1 shows the ratio of commercial banks' loan to MSMEs as a percentage of total loans for the said period.

Table 1. Ratio of Commercial Banks' Loan to MSMEs, 1992-2012

Period	Commercial Banks Loans to small scale Enterprises (₦ million)	Commercial Banks Total Credit to private sector (₦ million)	Commercial Banks Loans to Small Scale Enterprises as percent of Total Credit (%)
1992	20,400.0	75,456.3	27.04
1993	15,462.9	88,821.0	17.41
1994	20,552.5	143,516.8	14.32
1995	32,374.5	204,090.6	15.86
1996	42,302.1	254,853.1	16.60
1997	40,844.3	311,358.4	13.12
1998	42,260.7	366,544.1	11.53
1999	46,824.0	449,054.3	10.43
2000	44,542.3	587,999.9	7.58
2001	52,428.4	844,486.2	6.21
2002	82,368.4	948,464.1	8.68
2003	90,176.5	1,203,199.0	7.49
2004	54,981.2	1,519,242.7	3.62
2005	50,672.6	1,991,146.4	2.54
2006	25,713.7	2,609,289.4	0.99
2007	41,100.4	4,820,695.7	0.85
2008	13,512.2	7,799,400.1	0.17
2009	16,366.5	9,667,876.7	0.17
2010	12,550.3	9,198,173.1	0.14
2011	153,284.6	38095845.6	0.40
2012 Q1	14,875.1	9,520,552.0	0.16
Q2	15,065.4	10,048,406.5	0.15
Q3	14,995.8	10,274,095.4	0.15
Q4	13,863.5	10,440,956.3	0.13

*Source: CBN statistical bulletin 2013

This Nigerian MSMEs situation is further compounded by the fact that the vital role of government in providing an enabling environment (finance, infrastructure, knowledge and policy) is low when compared to fellow African countries like South Africa and Egypt. The total loans as percentage of GDP for example are equally not impressive. The 2006 figure was 19.7 percent compared to Egypt's 53.3 percent and 94 percent of South Africa [10].

Apparently, financial credit constraint is a global phenomenon. This has resulted in credit rationing [11], a situation where borrowers are denied access to financial credit even where such borrowers are ready to pay higher interest rates. Government constraints, imperfect market conditions, difficulty in identifying the good borrower and rising risk with interest rates are some of the identifiable reasons for credit rationing. Certainly, these are common features in all economies. Other reasons alluded include collateral issues, in-explainable exogenous shocks; behavior, distribution and size of borrowers [12]. Have indicated that, the small size firms are the most vulnerably in issues of financial constraints. Larger firms seem to fare better.

It is worth mentioning that certain characteristics, apart from size separate the small from the large businesses in credit rationing. The differences include management and ownership unification in both economic and emotional levels, lack of professional attention to issues, short life expectancy and the fact that private equity affects the risk positioning of the owners [13]. These differences consequently impact on the finance functions and the overall organizational performance.

2. POOR FUNDING EFFECTS ON MSMEs

The business process from conception, the coming forth, growth, maturity and even failure revolve around finance [14]. Researchers have shown that capital requirement and the availability of finance resources affect entrepreneurial propensity [15,16]. Access to this important resource according to [17] is the absence of price and non-price barrier in the use of its services. This does not mean financial availability to all and sundry but that such is based on credit worthiness of the applicant. While finance comes in various forms, types and structures, the two main easily available for most businesses are debts and equity. Whether externally or internally generated, finance goes a long way in the process of accomplishing business objectives [18].

Studies including [19,20,21] have identified constrained financial credit as negatively affecting new firm entry into the market and the consequent decreased post-entry growth. Relaxing the constraints on the other hand is believed to positively affect small firms more than they do to larger ones. In their own opinion, [11,22] posit that collateral provision which is the asset pledged to borrow until payback time; long term exclusive relationships and repeat borrowing which are non-common features of MSMEs are some of the fundamentals that tilt the proportion of finance credit in favor

of the larger firms. [23,24] have successfully associated lack of finance to firm's growth and innovation impediment, even as [25] have identified its adverse contribution towards firm survival. Equally, lack of funds limit the firm's capacity to replace low quality employees [26,27] have emphasized low firm performance as fall-out of external funds dislocation.

Internally generated funds from profits of MSMEs take long time to accumulate and they have dire consequences on long term plans if they serve as the only source of financing. The inability to capitalize on business opportunities due to paucity of funds has the capacity to hinder competition and thwart growth tendencies. This is because businesses require working capital and long term funds to operationalise activities. Modernisation process will be slow, transition to larger enterprises will be affected and inter-firm and industry linkages will be frustrated. Certainly, the overall effects of MSMEs on national economy will be negatively impacted.

3. BUT, WHAT WERE THE INTERVENTIONS?

Government has played a proactive role in broad areas of regulatory and supervisory frameworks. This role involves licensing requirements, identification and classification of institutions for the promotion of competition, financial infrastructure for the introduction and development of credit reforms and bureaux, registries and business registration procedures. Others are equity investment, direct public intervention like credit guarantee schemes, apex and wholesale funding facilities as well as value-chain organization projects. There is also the informal sector whose role includes money lending between friends, money lenders, family foundations and credit associations. It is however difficult to get information from the informal sector due to weak credit skills and practice. However, some specific public interventions include:

i. National policy on MSMEs which was launched in 2007 by SMEDAN to facilitate the promotion and development of efficient supportive environment. The policy identifies seven key areas of institutional; legal and regulatory framework; human capital development; research and development; extension and support services; marketing; infrastructure and finance. Each identified framework has plans for actualising specific objectives within a time frame. The policy streamlined definitions of MSMEs from a plethora of definitions that bedevil the sector.

ii. Micro finance policy - The existence of a huge market not serviced by financial institutions; poor banking culture and low level of financial literacy; and the need to empower the poor were some of the justifications for this policy which was launched in 2005 and modified in 2011 [28]. The policy objectives include:

a) A 10 percent annual increase of access to financial services of the economically poor.

b) Increase of micro credit share as percentage of GDP from 0.2 percent in 2005 to at least 5 percent in 2020.

c) Participation of all federating States and FCT as well as two thirds (516) of all Local Government Areas in micro finance activities by 2015.

Nigeria has 871 single-branched microfinance banks (MFBs) which are not evenly distributed across the country with most of them privately owned. Of the number, 82 MFBs service the North-West and North-East geo-political zones which has the highest unbanked rate when compared to the over 500 in the South-West and South-East geo-political zones. The entire MFB network according to [29] serves 3.8 percent of the adult population (3.2 million clients) of which only 14 percent use credit products.

iii. Small and Medium Enterprises Equity Investment Scheme (SMEEIS) was an initiative of the Bankers Committee [30] which required all banks to set aside 10 percent of Profit After Tax for investment and promotion of small and medium enterprises (SME). For the purpose of the scheme, an SME was defined as one with a maximum asset base of N1.5 billion with no lower or upper staff limit. Trading and financial activities were not covered by the scheme. With a single digit interest rate, benefiting enterprises were to surrender part of their ownership structure to the financing bank with a provision of financial and technical services from the bank. Seven years after its inauguration, the scheme was discontinued in 2008.

iv. Bank of Industry (BOI) is the largest project and industrial financing establishment in Nigeria. It commenced operations from the reconstruction of Nigeria's foremost development bank, Nigerian Industrial and Development Bank. It has the mandate to provide assistance to the establishment of large, small and medium enterprises as well as rehabilitation of ailing industries. As a development fund administrator, it receives funds from official entities, developing agencies and State governments. These include N5 billion Dangote's small business development fund, UNDP's USD 4 million access to renewal energy project, N3 billion micro enterprise fund for 9 States; CBN's N500 billion intervention fund; N100 billion cotton,

textile and garment industries revival scheme, N10 billion Rice Processing Fund and State government dedicated funds for the benefit of indigenous entrepreneurs in respective States. In fulfillment of its paradigm shift of committing 85 percent of its resources in support of SMEs while 15 percent goes to large enterprises, statistics shows disbursed funds to SMEs increased by 35 percent, 85 percent and 96 percent in 2001, 2006 and 2010 respectively in proportion of 65 percent 15 percent and 4 percent to large enterprises in the same period [31].

v. National Economic Reconstruction Fund (NERFUND) was set up in 1989 to provide needed medium to long term credit facility to viable SMEs, especially those of the manufacturing, mining and agro-allied sectors. Loan facility is in two categories; the less than N5 million micro loans and the over N5 million SME loan. The agency's treasury was boosted in 2010 with a stimulation package of N200 billion. Information from the agency's website [32] showed that between March, 2010 and May 2013, of the 8215 loan applications valued at N25.7 billion, only 1497 projects valued at N5 billion were approved.

vi. Commercial Agricultural Credit Scheme (CACCS). The objectives include:

- a) To develop the agricultural sector by providing credit facilities to agro-allied entrepreneurs at a single digit interest rate.
- b) To enhance national food security.
- c) To reduce cost of credit in agricultural production.
- d) To produce input for industrial sector on a sustainable basis.

4. INTERVENTION OUTCOMES AND CONSTRAINTS

Despite the afore-mentioned interventions and many other public sector initiatives, the overall penetration level is exceedingly low. According to [33], 73 percent of Nigerians expressed concerns about getting a loan [31] identified some fundamental flaws in past and existing intervention programmes in the supply-side management. Finance lending institutions were known not to be favourably disposed to advancing financial resources to micro enterprises despite apparent clarity in the definitions of MSMEs. The definitions are often used loosely enthrone different eligibility criteria for enterprises applying for financing. Larger enterprises and the high yielding government debts are preferred for their high returns and as risk avoiding mechanism than lending to MSMEs. Supporting the above claim is the high cost of lending to MSMEs since the administrative costs are relatively constant to the small loans. Additionally, Nigeria has a weak capital market and a few development

banks. Most other banks rely on short term liabilities for lending to avoid mismatch in maturities of assets and liabilities. The global financial crises with corresponding international finance architectural redesigning caused lesser linkages in the flow of long term funds.

Negatively too, Nigeria has a weak data base resulting from the poor data collection, storage, analysis and retrieval [34]. The country lacks a reliable identification system, has no developed collateral administration system and operates a nascent credit documentation databank. It is worth adding that some of the operating enterprises are not officially registered and many also without audited and recorded financial history. These challenges inhibit the potential for lending based on financial records. Equally identified as worrisome was the mentality of micro finance institutions behaving as 'mini' commercial banks awaiting full commercial banking operating license. This mentality has therefore disenfranchised many in the target group. But, the biggest challenges of MFBs are high refinancing costs compounded by low focus on deposits, high operating expenses and low staff capacity, leading to poor asset portfolio. Certainly, the vast majority of MFBs lack the scale and operating capacity to have a strong impact on the target group.

The venture capital and private equity industry is novel and almost not in existence, perhaps the foundation for SMEEIS' failure. SMEEIS failed to meet its objectives hence its discontinuance [30]. Enterprises were not willing to accept banks as equity partners as the latter were seen as not having the skills in equity investment. Besides, the programme was against the prevailing culture of absolute ownership of business by their owners [35]. This resulted in the clash of confidence as social perceptions and administrative attitudes did not align. In all cases of banks providing credit, stringent collateral conditions were paramount. The lack of collateral would therefore naturally compound lending possibilities as it remained a major drawback preventing banks from lending. In [36], 80 percent of banks were known to have difficulties in this regard. Moreover, the operative environment of weak property rights and poor contract enforcement processes remain unattended to and legal issues take long time to incomplete resolve at the courts of law.

Consequently, [37] as represented in Fig. 1 identified specific constraints and the levels of effect on the overall finance supply side environment. Collateral conditions occupied an enviable 42 percent. Collateral is an asset pledged to borrow, redeemable when repayments are completed. It gives banks a fall-back position in times of loan default. Most MSMEs could not afford it and banks were hindered

from financing their projects. Loan applications occupied 13 percent, poor credit history 10 percent, insufficient profitability 6 percent and other objections, 29 percent. From the above, the constraints can broadly be categorised as collateral-based; financial illiteracy, information gap and insufficient profitability.

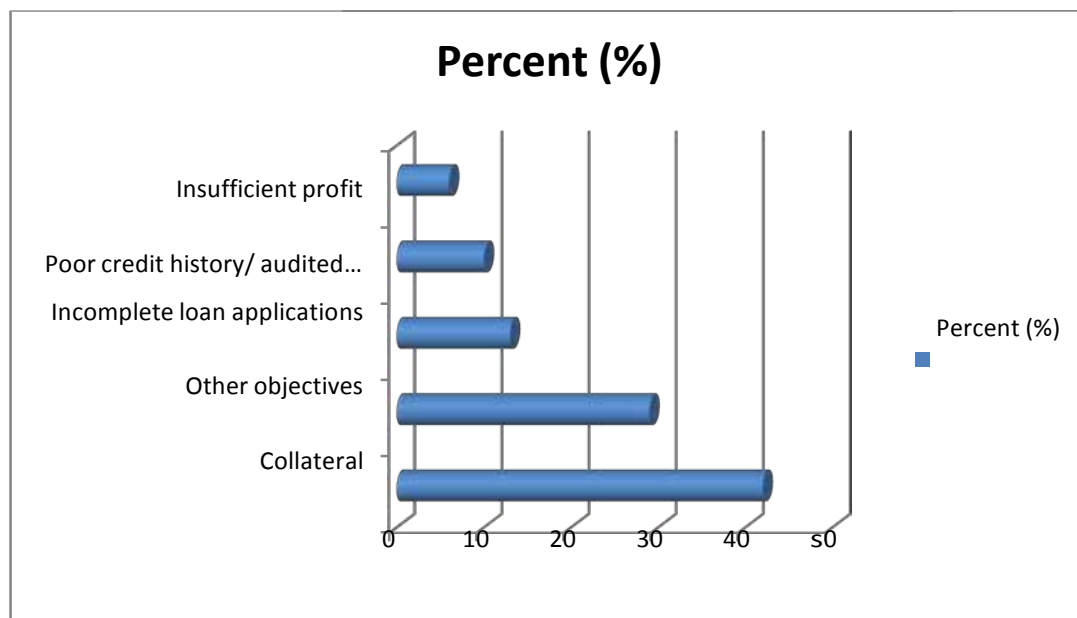


Fig. 1. Supply-side loan constraints

**Source: World Bank (2012b)*

5. THE WAY OUT

The malaise of finance to MSMEs is not peculiar to developing economies. The need for recalibration of strategies for better outcome can better be captured in the words of the European Commission Vice President Antonio Tajani, who is Commissioner for Entrepreneurship [38]. While acknowledging the finance capital insufficiency industry and European SMEs, definite plans capable of shrinking the finance gulf for remarkable and measurable results were suggested.

Access to finance of SMEs remains difficult and is one of the main reasons for the current economic downturn. Therefore we intend to enlarge our loan guarantees to SMEs under the new COSME programme as of 2014. Each euro dedicated to our guarantees has the power to stimulate - on average - 30 Euros in bank loans. This is crucial to help Europe's jobs engine, our small enterprises, to run smoothly again. It is they who create 85 percent of all new jobs.

Bridging the 'financing gap' is so important to national economies considering the vital role of MSMEs. It is even more important for the developing economies with a very high poverty profile without social safety nets with the attendant consequences. Such "redemption" plans must appraise existing programmes and

policies to identify loose links for necessary attention in line with the weak structures. Information dissemination plays a vital role and activities of financing institutions must be highlighted. Studies have shown exceeding Nigerian banks interest in the less risky government bonds at the expense of loaning to the MSMEs. Indicators of domestic credit to the private sector as a percentage of GDP have not shown tremendous improvement. There was a yearly average of about 13.4 percent between 2000 and 2006, which grew to 25.33 percent in 2007; 33.91 percent in 2008 and reached its peak of 38.59 percent in 2009 but dropped precipitously to 20.9 percent by January 2011 [39]. Based on the above, we have made the following recommendations:

i. There should be legalised and enforceable definitions of MSMEs as these will help in better planning and standardisation of funding criteria and programmes.

ii. The informal and private sectors-driven lending institutions should be encouraged and integrated into the mainstream MSMEs funding programmes.

iii. MSMEs unit should be established in banks with staffs adequately and specifically trained in the core-functional area.

iv. There should be more information on financial opportunities to MSMEs.

v. Incentives should be given to commercial banks as motivation for lending to the MSMEs sector.

vi. Banks should allocate certain percentage of their domestic credits to MSMEs. A policy encouraging banks to apportion a specified yearly allocation to MSMEs as loans should be envisaged.

vii. There should be a review of collateral requirements in favour of credit scoring [40] where the information from tax authorities could be relied upon. Credit scoring is a statistical method used in analyzing historical data on borrowers to predict possible loan default in future.

viii. An accounting standard specific to MSMEs should be developed in line with International Finance Reporting Standards. The conventional accounting methods appear to be specified to the large corporate organizations.

ix. The development of a functional and reliable data base for easy information retrieval is of great essence.

x. Efforts should be made towards simplifying loan procedures and documentations.

xi. The use of Mutual Guarantee Institution, a form of group lending in which banks lend to a group rather than a individual should be encouraged. Such lending

promises a joint responsibility of honouring the liability. This will mitigate informational asymmetries as the members can easily screen, monitor and relate with each other than as would be done by the lending institutions.

xii. Disputes resolution process should reflect the peculiar needs of the sector. This is because conventional courts take longer time to resolve issues; this does not auger well for a firm's health.

6. SUMMARY AND CONCLUSION

We have placed on record the ubiquitous nature of constrained finance credit as a global concern [11,20] and paid particular attention to its supply-side management within the Nigerian MSMEs sub sector [37,31,10,2]. Though a universal problem, the Nigerian situation is unacceptable given the available resources, opportunities and inherent potentials. The various policies and programmes having not yielded the expected beneficial results suggest a wide gap between their formulation and implementation. Government, organisations and agencies must take responsibility. Fundamental issues like collateral and loan application challenges are areas that banks can deal with. Banks have a role to play. They should re-strategise, enlarge the markets and simplify rules of engagement. But, these must be done in collaboration with others since some of the associated issues are outside the banks' control. They include weak public structures [31], poor data management [34] and issues relating to culture [35]. These known fundamentals play a big role in bringing out the negative symptoms. Addressing the abysmal performance along the line of peculiar environmental issues raised would certainly promise a future. Our suggestions which are specific can positively alter and deepen the loan penetration within the studied sub-sector. The result will be a better national economy. Certainly, it is worth mentioning that, the vividly noticeable exponential fall in credit provision to MSMEs in Nigeria suggests a robust research thrust to interested scientists.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Performance and Visitor's Satisfaction of Recreation Facilities in Akure Metropolis: A Veritable Tool for Impacts Studies in UNDP MDGs Cities in Nigeria

ABSTRACT

Performance of recreational centers and level of satisfaction derived by participants are considered as veritable tool to explore the economic and social impacts of recreational activities on the host communities in UNDP MDGs cities. This research work was undertaken in four of the randomly selected recreation centers in Akure Metropolis through multiple research techniques including site observation, personal communication, questionnaire administration and collection of secondary data. The research was undertaken during the weekends over a period of six months between January and June 2013. It was observed that greater percentage of the participants (80%, 90%, 100% and 71.4%) expressed their willingness to revisit; this is an indication that the satisfaction and purpose of their visits have been achieved. Over 50% of the respondents in all the centres also indicated that the quality of services being provided was good. None of the staff working in any of the centers received less than \$1 daily this form part of the target of UNDP MDG to eradicate poverty and hunger by year 2015. While facilities being enjoyed most by the visitors need to be maintained others need to be improved upon and additional ones need to be acquired to boost customer's patronage. Private and government operators of recreation centers as well as other policy makers in tourism industry will benefit tremendously from this research output in their quest to meet the economic and social needs of their communities.

Keywords: recreation centers; UNDP MDGs cities; host communities; social and economic impacts; tourism industry.

1. INTRODUCTION

If the proverb All works and no play makes Jack a dull boy (Randle, 1611) is anything to go by then it is highly expedient for men to take enough time to relax, refresh and recreate most especially during their leisure hours. Recreation and leisure are very synonymous with multiple meaning depending on the author. Leisure is defined as free or unobligated time that does not involve work or performing other life sustaining functions [1]. Recreation from an individual perspective involves as example watching Television, attending an Opera, base jumping, moving the lawn, taking your children to zoo, playing snookers/checkers, downloading music, writing book, an evening in the town [2].

Leisure and recreation have become important concerns in modern day societies and they became recognized as cause for concern during the Great Depression of 1930s [3]. Both anxiety and extensive stress are as a result of overwork and they have been identified as indications of depression. Depression disrupts relationship and interferes with work and daily activities and must therefore be afforded. [4] recalled that the result of increased leisure that is not properly utilised can manifest in various societal problems ranging from idleness, depression, violence, alcoholism, drug abuse and other related vices. Study revealed that more than 6 million in the U.S have depression each year with an estimated 19 million adults living with major depression [5]. This is contrary to happening in Nigeria, considered that there were lots of other avenues or facilities for releasing tension in time of stress, anxiety or overwork during leisure to become well adjusted [6]. With seven established National Park, game reserves, two UNESCO world heritage sites (the third being enlisted is in Idanre few kilometres away from Akure, Ondo-State capital), opportunities to visits and participate in traditional and cultural festivals, moonlight stories, fishing and playing various types of games, Nigeria is a rich tourists and recreational destination.

Tourism and recreation are synonymous and they are used interchangeably in this context. Both tourism and outdoor recreation activity involve travel and interaction with other people, and with environment in its widest meaning [3]. Apart from improving the state of health, the social, economic, ecological and spiritual importance of involving in recreational and tourism activities cannot be overemphasized. While tourists visit to in-situ conservation areas like park, lake, game reserves, waterfalls, hills, amusement parks, mountain tops can be regarded as outdoor recreation, visit to museum, playing snookers, watching television are

categorised as in-door recreation. If recreational centers can provide accommodation for the people that come to visit then visitors can decide to spend more than twenty four (24) hours and thereby regarded as tourists. [?] recalled that visit to outdoor recreational centres has drawn hundreds of thousand people in Australia, Canada, New Zealand, United Kingdom, United States and other industrialized nations and this has recorded rapid growth since World war II. Incidentally, with exception of New Zealand all other countries as mentioned were listed among the World's top fifteen tourism earners [8].

Tourism has grown rapidly to become a major social and economic force in the world. Tourism is a major contributor to the World's economy, accounting for greater than nine percent of global GDP and almost nine percent of jobs globally, thereby making it one of the largest categories of international trade [9]. Tourism is an industry where there is a growing positive balance of trade flowing from developed countries to developing countries [10]. Recreation industry, is relatively labour intensive, hence, tends to generate a larger and more rapid increase in employment than equal investment in other economic activities [11]. In Nigeria the Industry is one of the growing sectors of the country's economy (Nigerian Tourism Development Master Plan, [12].

Different categories of people visit recreation centers to experience one thing or the other. Changes in socio demographic characteristics, technological advances and disposable income of the visitors to recreational centres have imposed several dimensions to the way the leisure is spent, and on the extent and nature of recreational participants. [13,14] claimed that whether a tourists is satisfied or not towards a destination is related to tourists characteristics such as socioeconomic and demographic factors, motivations and future intention to travel to another similar destination. Tourists characteristics also have significant relationships with satisfaction. Differences in characters can contribute to the differences in expectation and satisfaction towards tourism destination. [15] Mentioned that different types of tourists tend to undertake different patterns of activities, which will have different types and levels of impact on a destination. Since there is no particular or clear method of measuring the value of recreation experience except by circumstantial evidence. If visitors don't complain, if they speak enthusiastically and if they come back, one assumes that they find the experience worthwhile. Recreation is a discretionary, If it doesn't seem worthwhile, the individual can choose to avoid the experience or to participate somewhere or somehow else [16].

In recent years researches have been carried out pertaining to recreation, these researches include visitor perceptions, planning for outdoor recreation and tourism, recreation environment relationships and impacts of outdoor recreation [17], the benefits of outdoor recreation [18] and outdoor recreation demand [19]. However there is dearth of information on recreational facilities and services offer, visitor's preference and perception and social economic impacts especially in Nigeria Metropolitan. This research work therefore is hinged on providing this information.

Akure Metropolis is not only the capital of Ondo-State, Nigeria but is one of the selected UNDP MDGs (Millennium Development Goal) Cities in the World this is in addition to the presence of two Millennium villages namely Ikaram and Ibaram in the state [20]. The reason for selecting Akure as a millennium city cannot be far-fetched consider the immense potentials of the State in term of natural endowed resources such as petroleum (one of the oil producing state in Nigeria); uncultivated forest area and favorable topical climate; large deposit of bitumen; and vast expanse of coastland suitable for fishing, recreation and transportation, proposed UNESCO World Heritage site (Idanre Cultural heritage site less than 10 km from Akure). The State has equally witnessed transformation in the last few years with creation and establishment of government and privately owned recreation centers and other social amenities such as Mega Primary school, Mother and Child hospitals, town beautification (planting of trees/shrubs along the roads, construction of fountain), Neighborhood modern markets and Neighborhood recreation centers. This assertion gives credence to the state as the fastest growing tourist destination in Nigeria. Development of these recreational facilities and social amenities and improvement in services offered to the visitors will go a long way in increase patronage which will eventually transform to employment creation, income generation, improve social economic wellbeing for the host community. It is in the light of this phenomenon that this research is undertaken to explore the recreational facilities and services in the state and assessed visitor's preference and perception as a developmental road map towards realizing UNDP MDGs number one objective of eradicating poverty and hunger in MDGs cities by year 2015 [21]. Research output will provide information on the state of available recreational centers and social amenities in Akure Metropolis; demographic characteristics of the visitors; work force being engaged; preference and perceptions of the participants. This will be of tremendous benefits to the visitors, government and private owners of entertainment and

recreation centers and other tourist providers in the development of Park and Recreational Plan (P and RP) for the Millennium city of Akure.

2. MATERIALS AND METHODS

2.1 Study Area

Ondo State, Nigeria was created on 3 February 1976 from the former Western State. It originally included what is now Ekiti State, which was split off in 1996. The majority of the state's citizens live in urban centers. Ondo State contains the largest number of public schools in Nigeria – over 880 primary schools and 190 secondary schools. Akure is located approximately 700 kilometers South West of Abuja, the Federal Capital of Nigeria and about 350 kilometers to Lagos the former capital of Nigeria. Akure is the state capital of Ondo State and it is surrounded by communities such as Iju-Itaogbolu, Owo, Ondo, Igbara-Oke, Idanre etc (Fig. 1). It is located within the tropical rain forest region of Nigeria where rainfall is high throughout the year. The 1991 national population census [22] put the population of Akure at 239,124 and its estimated population in 1996 will be 269,207.

2.2 Methods

Various research techniques were implemented in collecting data for this study to include Site observation, personal communications, survey questionnaire and collection of secondary data [23,24,25]. Multi-method techniques are often deemed necessary [26], especially when the re-search is exploratory [23].

2.3 Site Observation

This technique involves visiting the recreational centers in the study area to assess and make systematic observations of the phenomenon. It was used to obtain information that would not be available from other sources of information. The authors collected information at each site by positioning themselves at strategic points in the recreation sites for a period and walking around the sites in any of the visiting period of two days per week (mostly at the weekend, Friday and Saturday).

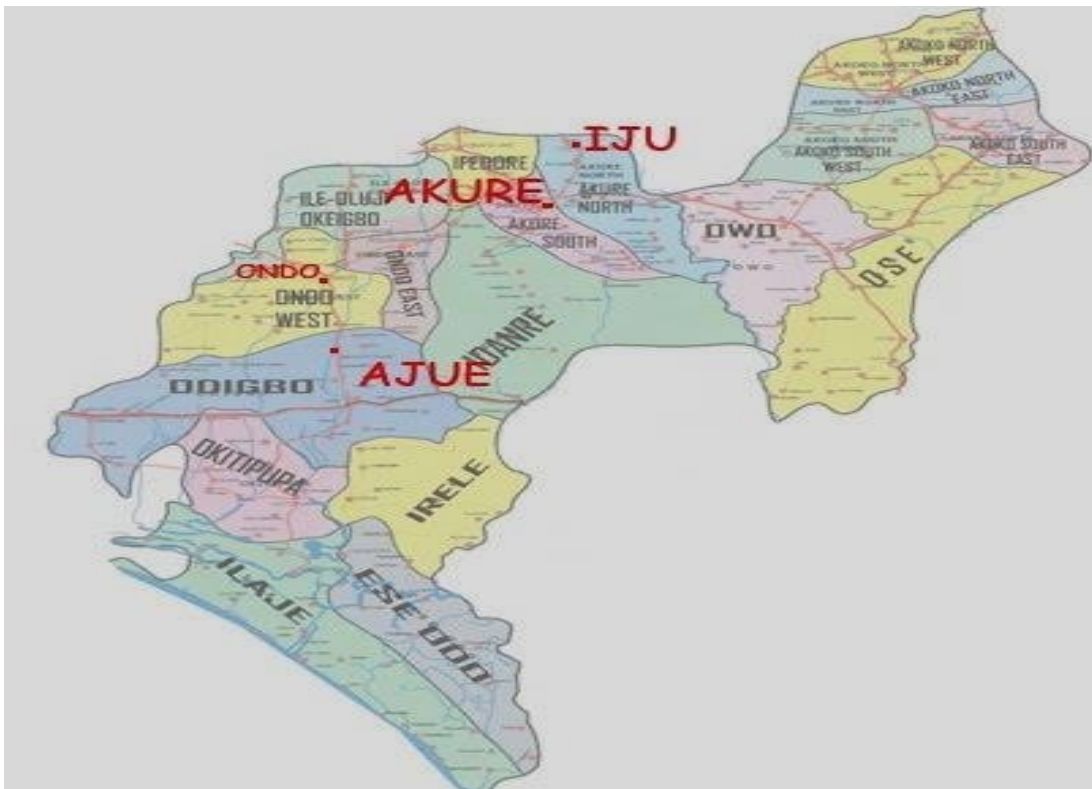


Fig. 1. Map of Ondo-State Showing Akure the State capital and other neighbouring towns

Source: Ondo State Ministry of Land and Housing, Akure, Ondo-State

2.4 Personal Communications

Personal communications were held with the visitors that were encountered at the sites. This was done basically in order to interact with the participants with a view to obtain first-hand information from them.

2.5 Survey Questionnaire

The questionnaire for the survey portion of the study was developed in English, English being the official language in Nigeria. Although the questionnaires were designed for self-administration however the researches were available to guide the respondents who are un able to complete the questionnaire on their own in order to obtain full return and quality data. The questionnaire was divided into two sections. The first section captured the socio-demographic information of the respondents. The second section contains the non-demographic information.

2.6 Secondary Data

Secondary data were obtained in term of the management of the site either it is government owned or individual, time of operation or visiting hours, staff strength and record of visits.

2.7 Sampling Technique: Assuming

A represents = Ministry of Agriculture Botanical Garden

B represents = Oyemekun Rocks Unity Village

C represents = Neighbourhood Recreation Park

D represents = Prof. Afolayan Wildlife Park

The total numbers of questionnaires administered in different recreation center were determined by taking 10% of the total number of visitors visiting in a week for recreation center A, B, and C while in recreation center D, 10% of the number of visitors that visit the recreation center in a month was taken as the sample size (Table 1). This decision to take 10% of the number of visitors in a month was as a result of low and inconsistency in the number of visitors visiting the Wildlife Park in a week.

Table 1. Number of administered questionnaire

Name of Recreation Center	Sample size	Questionnaires administered
A	10% of 200 (visitors in a week)	20
B	10% of 200 (visitors in a week)	20
C	10% of 500 (visitors in a week)	50
D	10% of 300 (visitors in a month)	30

The questionnaires were administered on weekends base on Knudson's (1984) judgment that recreational activities are mostly done on weekends.

3. RESULTS

3.1 Assessment of the Recreation Facilities and Services

This result was obtained from site observation and secondary data collected.

3.1.1 Ministry of agriculture botanical garden

Ondo State Ministry of Agriculture Botanical Garden is owned and managed by the State Ministry of Agriculture. The garden has a collection of tree species interspaced with other shrubs. Sited very close to the sitting arena was a nursery where young trees are raised for future propagation. The garden provides recreation and relaxation facilities and services for its visitors and also offers food and drinks (Table 2).

The recreation center discharges these aforementioned services to the visitors through a total number of 10 staff and the center receives between 200 to 300 visitors in a week with the highest number of visitor coming during weekend. The staff consists of workers in the junior and senior cadre with average salary of N20,000 (\$118) per month. Entry to the botanical garden is free but visitors will need to pay for foods and drinks purchased.

Table 2. Major facilities and services in the botanical garden

Facilities	Services
Swings	Waiter and busboy services
Bars	Barbecue services
Restaurant	DSTV services
Suya spot	
DSTV facilities	
Parking Space	
Sound systems	

3.1.2 Neighborhood Recreational Park (NRP)

This recreation center is one of the transformations the town has experienced in the recent time. The center is equipped with modern recreational facilities that serve the aspiration and satisfaction of the participants (Table 3).

Table 3. Major facilities and services being provided at NRP

Facilities	Services
2 snooker boards	Waiter and busboy services
1 standard table tennis board	Barbecue services
A basketball court with its equipment	DSTV services
A D.J (Disk Jockey) house and stage	Disk Jockey services
Suya and Asun spot	Cooks
8 small bars comprising 4 chairs each and a small middle table	
Small and big halls for relaxation	
Restaurant	
DSTV facilities	
Projector for projecting live football matches	
Parking space	

The recreation center receives 500 visitors in a week and has 15 staff excluding the manager of the center. The salary of the workers vary between N10,00 to N40,000 (\$59-\$236) per month. Entry to the recreation center is free but visitors pay for other services like playing of games, drinks and foods (Table 4).

Table 4. The park charges for the use of recreation facilities

Recreation facilities	Amount charged for use
Table Tennis	₦50 for a complete round
Snookers	₦100(<\$1) for a game
Basketball	Formally ₦100 per person participating in a match but now free due to complaints from players.

3.1.3 Oyemekun rocks

This is a privately owned recreational center in Akure metropolis, it is a natural outcrop (rocky formation) and it is regarded as one of the wonders of nature with inscription of geographical map of the world, human and animals. The rock has caves (grottos) with sitting arrangement for relaxation (Table 5).

Table 5. Recreational facilities and services offered at Oyemekun rock

Facilities	Services
Swings	Waiter and busboy services
Indoor games: Scrabble, Chess and WHOT Card	Barbecue services
Bars	DSTV services
Executive canopy for party	
Resting room DSTV	
facilities Asun/Pepper	
soup spot Fish pond	
Parking space	

Oyemekun rock receives over 200 visitors in a week and has a total number of 6 staffs excluding the manager of the place. Average salary of the workers excluding that of the Manager was put at N10,000 (\$59) per month. While entry to the recreation center for relaxation is free, visitors paid for other services rendered. In addition to these, excursionists and tourists that came to experience nature and viewing were charge extra fees (Table 6). The recreation center also serves as night club for night fun seekers.

Table 6. Facilities, services and charges in Oyemekun rocks

Facilities	Amount charge
Swings	₦20, ₦30, ₦50 depending on the swing
Excursionist	Student: ₦100, Adult: ₦500
Executive canopy with sound system	₦20,000
Executive canopy without sound system	₦10,000

3.1.4 Prof. Afolayan wildlife park

Prof. A. Afolayan Wildlife Park serves both in-situ and ex-situ conservation purposes. While some parts of the Park are designed as zoological garden (ex-situ) the other parts serve as undisturbed semi-wild area or sanctuary (in-situ). Species of animals on display in the zoo and the facilities provided are as listed (Table 7).

The park receives over 300 visitors in a month and over 2000 visitors in a year. Visitors to the park are charged before entering the park, student and young children pay ₦100(<1\$) while adults pay ₦200(>\$1). After the payment, visitors can use all the facilities provided without having to pay any extra charges but the visitors need to pay for drinks and food. The park has (3) three staffs on shift (morning, afternoon and evening), two gardeners and two night guard.

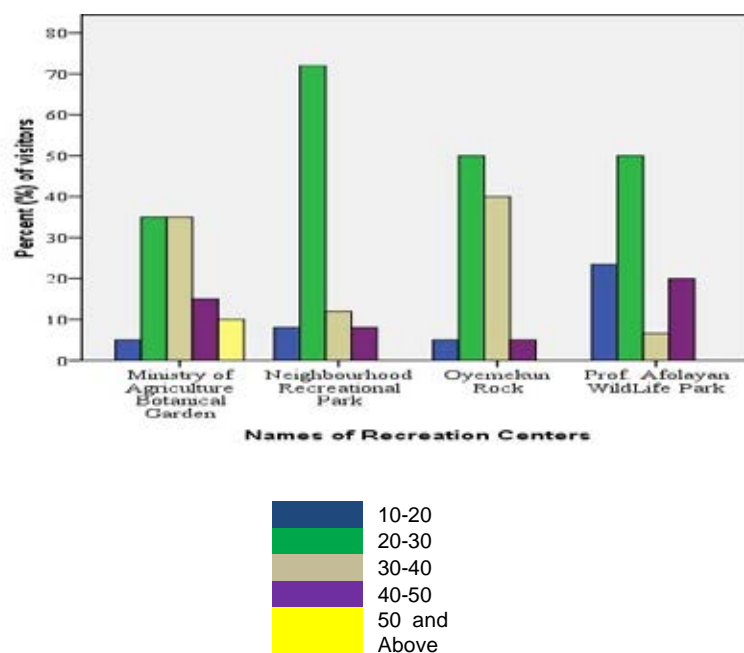
Table 7. List of animals and recreational facilities in the Wildlife Park

Animals (with scientific names)	Facilities and Services
Crocodile (<i>Crocodylus niloticus</i>)	Swings
Giant grass cutter (<i>Thryonomys swinderianus</i>)	Indoor games
Red flanked duikers (<i>Cephalophus rufilatus</i>)	Picnic sites
Gazelle (<i>Gazella dorcas</i>)	Pens of Animals
Duck (<i>Anas spp</i>)	Parking space
Goose (<i>Anser anser domesticus</i>)	Museum of Natural History
Crown crane (<i>Grus balearica</i>)	Tour guiding / Park Interpretation
Ostrich (<i>Struthio camelus</i>)	
Red capped Mangabey (<i>Cercocebus torquatus</i>)	
Baboon (<i>Papio Anubis</i>)	
Tantalus monkey (<i>Cercopithecus ethiops</i>)	
Patas monkey (<i>Erythrocebus patas</i>)	

3.2 Comparison of Visitors' Profile

3.2.1 Age composition of visitors

Findings from this study revealed greater percentage of visitors to recreation centres in Akure metropolis are within the age range of 20 – 30 years. None of the recreation centres, excluding Ministry of Agriculture Botanical Garden receives visitors over 50 years of age and above. The percentage of visitors with age range of 20 – 30 and between 30 – 40 years are the same (35%) for Ministry of Agriculture Botanical Garden. Young children between the ages of 10 – 20 were recorded low (5%, 8% and 5%) in all the recreation centres except in Prof. Afolayan Wildlife Park where the percentage of visitors between 10 – 20 years was significantly high (23%) (Fig. 2).



Age

Fig. 2. Age of the visitors

3.2.2 Gender classification of visitors

Male visitors to the recreation centers in Akure metropolis are higher (85%,88%,95%) than their female counterparts and the difference between the percentages of male to female is very significant in the entire recreation center except in Prof Afolayan Wildlife Park where the ratio of male (53.3%) to female (46.7%) is not significant. Oyemekun rock receives the highest percentage of male visitors (95%) and lowest percentage of female visitors (5%).

3.2.3 Classification by marital status

Greater percentage of visitors to Oyemekun rock (70%), Wildlife Park (66.7%) and Neighbourhood Recreation Park (80%) were single while most (55%) of the visitors to the Botanical Garden were married. Category of people that are divorcee, widow, widowers fall into others (10%).

3.2.4 Occupations of visitors

Private work owners recorded the highest percentage of patronage to both the Ministry of Agriculture Botanical Garden and Oyemekun rocks as they represented 45% and 55% respectively. This is unlike the result obtained in Neighbourhood recreational Park and Prof. Afolayan Wildlife Park where students represented 44%

and 46.7% respectively. The lowest percentage of civil servants patronage was obtained in Oyemekun rock with 5% (Fig. 3).

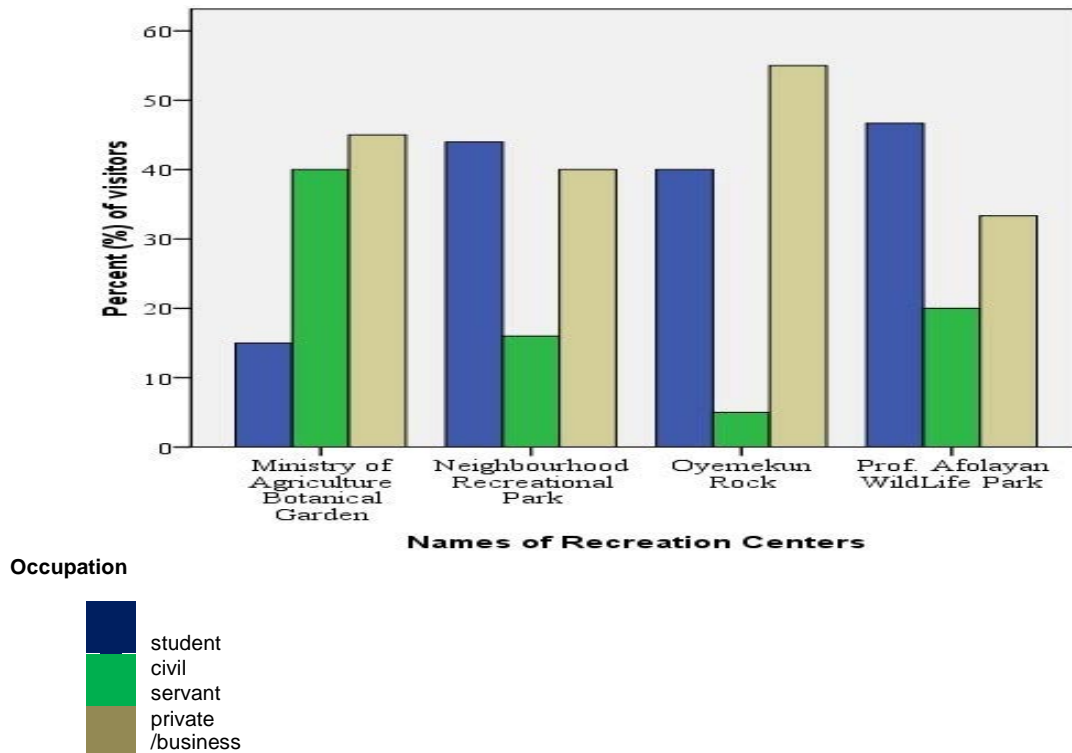


Fig. 3. Level of occupation of the respondents

3.2.5 Visitors' level of education

Greater percentage of the visitors to all the recreation centers possessed tertiary education qualification with the Ministry of Agriculture Botanical Garden recorded the highest percentage (95%) of visitors in term of tertiary level of education. Prof. Afolayan Wildlife Park receives a higher number of visitors from primary school (16.7%) compared to other centres.

3.2.6 Visitors' monthly income

Greater percentage (41.2%) of the visitors to Ministry of Agriculture botanical garden earned ₦100,000 and above monthly compared to the visitors to botanical garden. Highest proportion (39%) of the visitors to Neighborhood Recreational Park earned between ₦5000 – ₦20000 monthly. Majority (77.8%) of visitors to Prof. Afolayan Wildlife Park earned between ₦5000 – ₦20000 (Fig. 4).

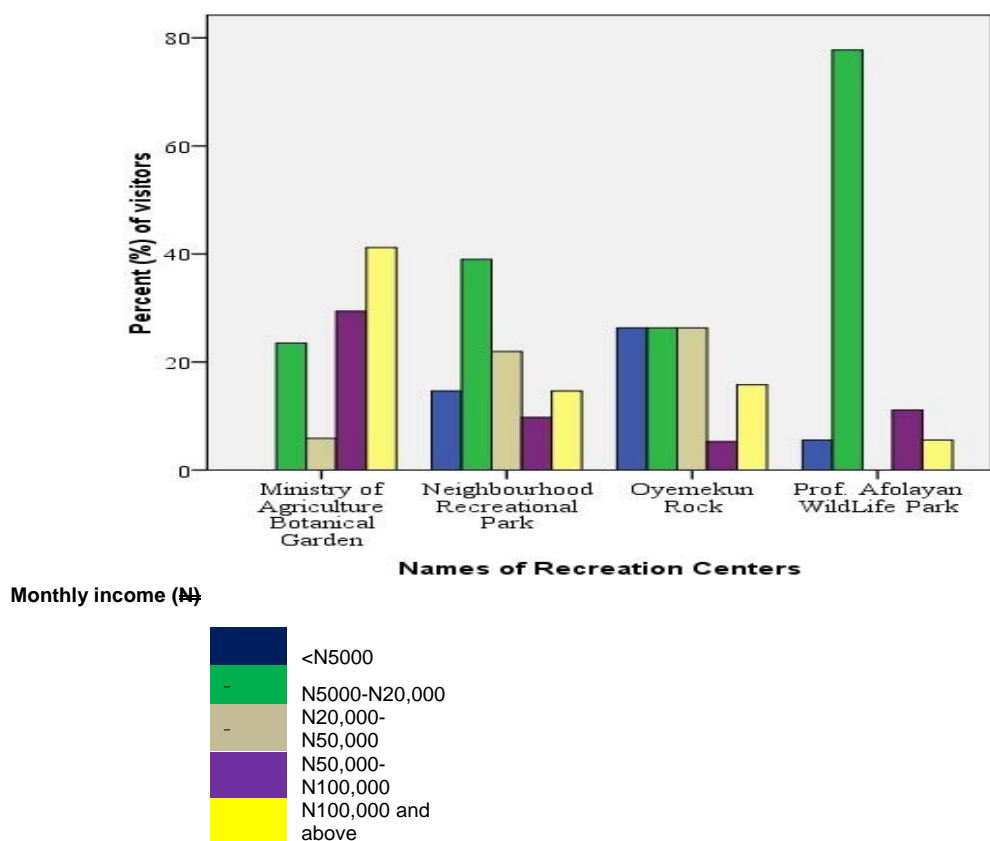


Fig. 4. Income

3.3 Purpose of Visit

Highest proportion of visitors to Ministry of Agriculture Botanical Garden went for relaxation unlike the patronage to Neighbourhood Recreational Park that was majorly for enjoyment.

The result also revealed that relaxation is the main reason visitors to Oyemekun rocks patronise the centre while greater percentage of the visitors to Prof. Afolayan Wildlife Park are for sightseeing (Fig. 5).

3.4 Major Attraction

The natural environment in both Ministry of Agriculture Botanical Garden and Oyemekun rock form the major attraction. Neighbourhood Recreational Park has the highest number of attractions which include the Basketball court, DSTV/Football watching facilities, Snookers and Table tennis. Wild animals that are being displayed in the zoological garden of Prof Afolayan Wildlife Park forms the major attraction (Fig. 6).

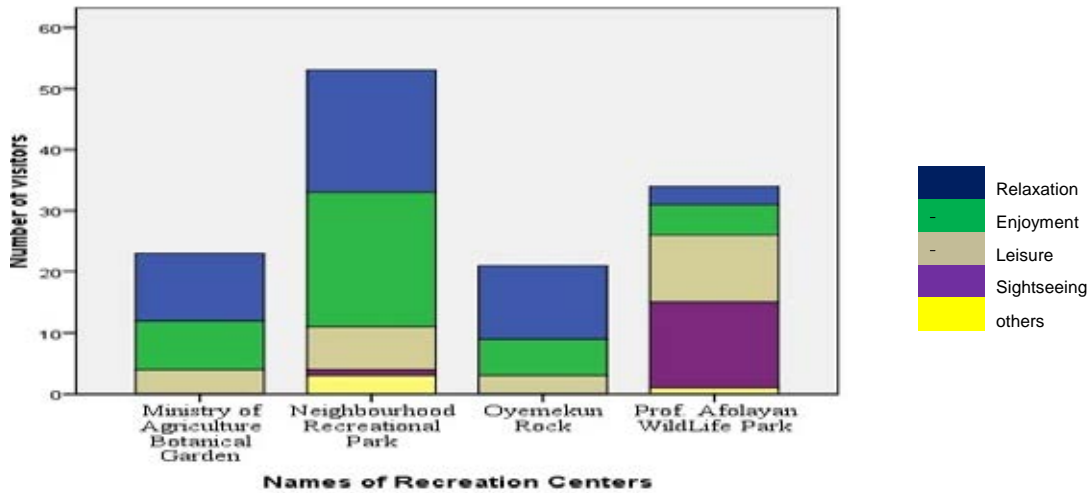
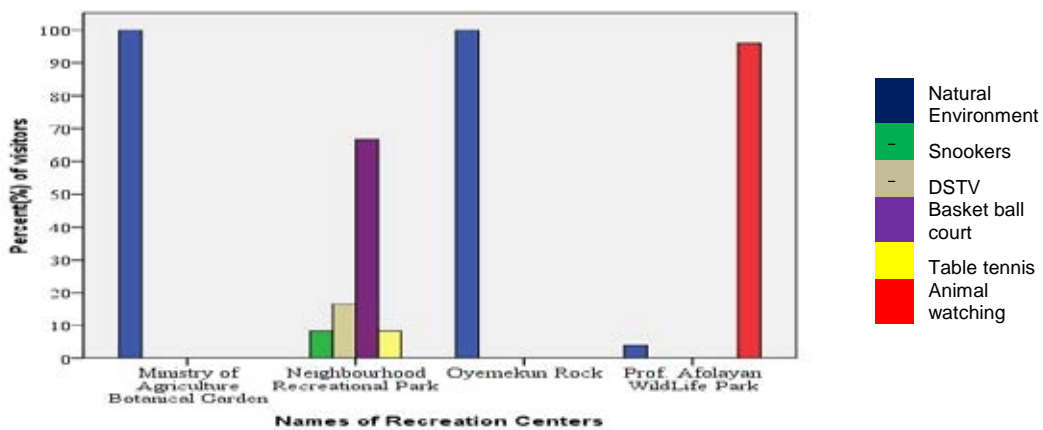


Fig. 5. Purpose of visits

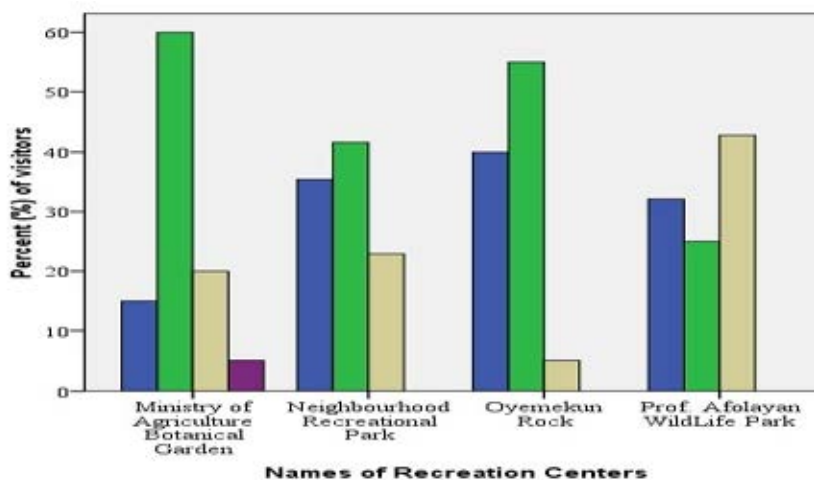
3.5 Quality of Service Offered

The largest percentage (60%) of the visitors to the Ministry of Agriculture Botanical Garden rated the quality of service provided as good while 5% indicated this to be bad. Majority (41.7%) of visitors in Neighbourhood Recreational Park rated the quality of the service to be good while greater percentage (55%) of visitors in Oyemekun rock rated the service quality to the place to be good (Fig. 7).



Major attractions

Fig. 6. Major attraction to the centres



Quality of service



Fig. 7. Quality of service being offered at the centres

3.6 Preference for the Recreation Centres

The result from the study reveals that security (66.67%) and proximity to the road (33.33%) are the two major reasons visitors preferred patronizing Ministry of Agriculture Botanical Garden. All the visitors to Oyemekun rocks prefer the recreation center simply because the place is close to their home of residence the same thing applicable to what was obtainable in Neighbourhood Recreational Center (68.75%). Visit for educational purpose and game viewing represents the same percentage (50%) for the preference to Prof. Afolayan Wildlife Park (Fig. 8).

3.7 Facilities/services enjoyed

The facilities most enjoyed at the Ministry of Agriculture Botanical Garden are the music and bar (33.3%). In Neighbourhood Recreational Park, DSTV facility (23.26%) is the most enjoyed facility unlike Oyemekun rock where the bar represents (35.71%). Animal watching I game viewing represent the greater percentage (58.3%) of the facility being enjoy at Prof. Afolayan's Park (Fig. 9).

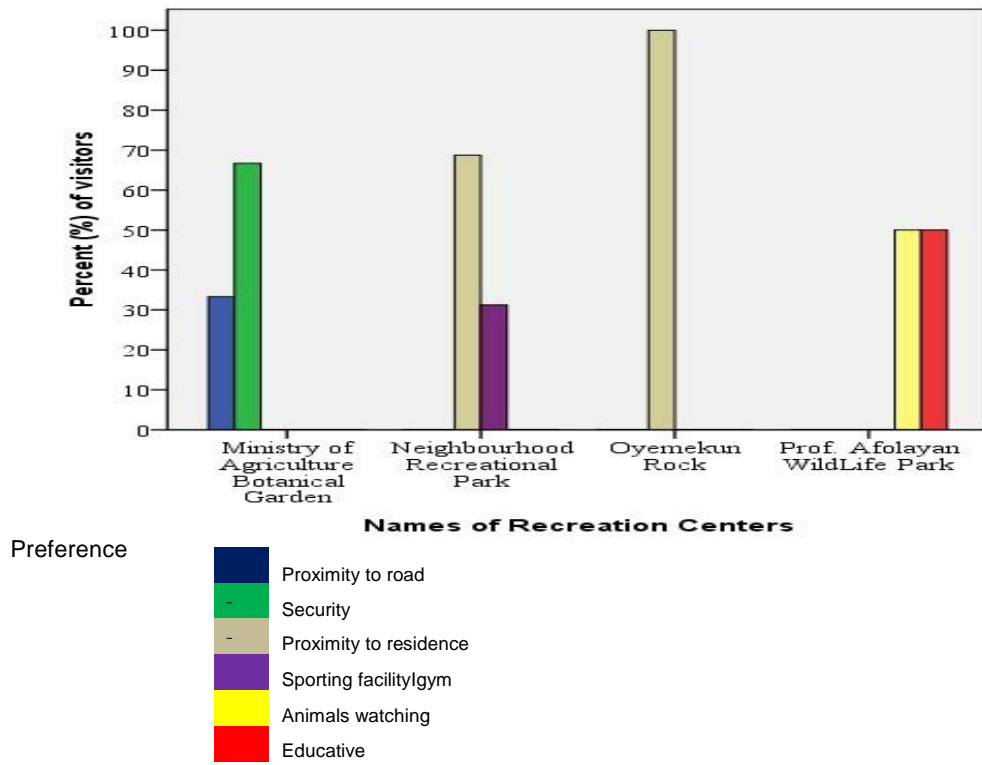


Fig. 8. Preference of visitors to the recreation centers

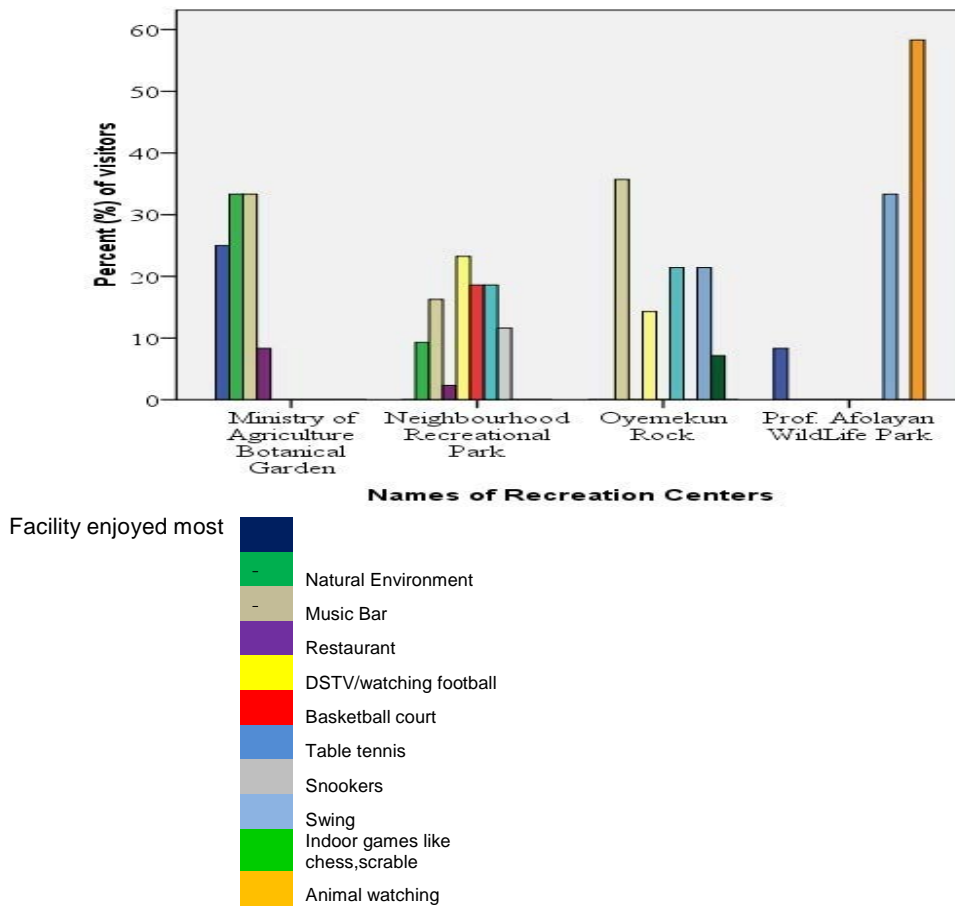


Fig. 9. Facility enjoyed most

3.8 Willingness of Coming Back

The result from the study shows that greater percentages (80%, 90%, 100% and 71.4%) of the visitors are willing to pay back a visit to the all the recreation centres used for the study (Fig. 10).

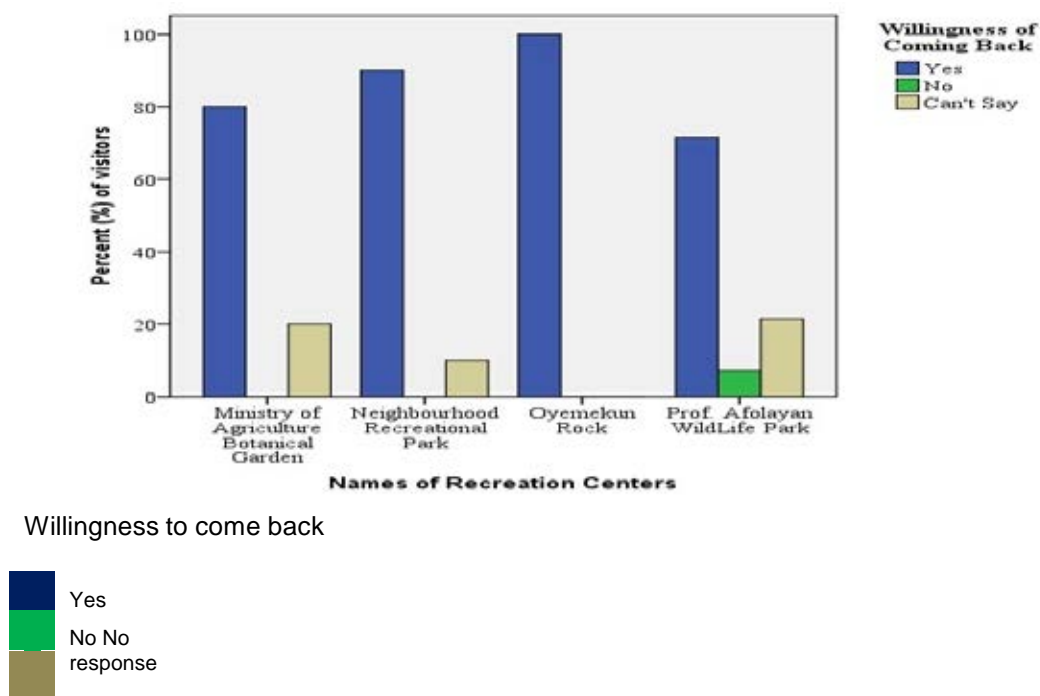


Fig. 10. Willingness to come back

3.9 Visitor's Rating of Major Facilities in Individual Recreation Centre

Major facilities at each of the recreation centres were rated as shown in Table 8.

Table 8. Recreation center rating

Recreation Center	Facilities	Rating of the standard of the facilities		
		Good (%)	Fair (%)	Poor (%)
Botanical Garden	Bar	50	50	0
	Restaurant	50	44.44	5.56
	Swings	23.08	61.54	15.38
Neighbourhood Recreational Park	Bar	74	26	0
	Restaurant	60.42	35.42	4.17
	Basketball Court	88	10	2
	Table Tennis	75.51	24.49	0
	Snookers	73.91	19.57	6.52
Oyemekun Rocks	Bar	85	15	0
	Swings	83.33	16.67	0
	Indoor Games like Chess, Scrabble etc.	42.11	47.37	10.53
	Swings	47.62	33.33	19.05
Wildlife Park	Picnic Site	46.43%	39.29	14.29
	Animal Pen	44.44	48.15	7.41

4. DISCUSSION

There are indications that Akure metropolis, the Ondo-State capital is living to actualize its objective of providing employment, income and other social services for the host communities as capsulize in UNDP, MDGs objectives. It is perceived that harnessing the potentials of the recreational facilities and services in Akure Metropolis as identified in this write up will go along way in addressing one of the critical eight UNDP, MDG objectives which is to eradicate poverty and hunger by 2015 [21]. Tourism development creates employment opportunities for the community, improve their income, reducing poverty and transforming their lives [27,28,29,10]. Information on the demographic characteristics of visitors, purpose of visits, preference and perception, income of the staff etc. are therefore necessary to achieve this aim.

4.1 Demographic Characteristics of the Visitors/Visitor's Profile

This research finding has established that greater percentage of the visitors to all the recreation sites in Akure metropolis were between the age range of 20-30 years and that none of the centers excluding Ministry of Agriculture Botanical Garden receives visitors over 50 years of age and above. This support the findings of [11], that the current data indicates that the predominant age groups who actively participate in outdoor recreation activities are those in the 25-54 bracket, although participation rates differ from one activity to another. This research study also indicated that patterns of discretionary spending also vary with age. Visitors in the age range of 20-30 years were observed to be low income earners however they constituted greater percentage of visitors to most of these sites with the purpose of watching television, relaxation, enjoyment and game viewing. According to [30] greater population of participant in recreation activities in U.S.A are those in lower age group of between 20-30 years. The authors opined that those around the age of 40 had the least leisure time, likely because of workload and busy taking care of children. More male were found visiting the recreation sites than the female. The margin was so wide in all except in Prof. Afolayan Park where female came with their wards to observe animals and picnicking. This supports the findings of [31] that more males were seen in parks than females (62% vs 38%), and they outnumbered females in all park areas except playgrounds and the track, where the numbers were about equal.

4.2 Assessment of Recreational Facilities and Services

The identified recreational facilities in Akure metropolis can be categorized into two broad types, these are nature based resources and man-made resources or built resources [32]. The nature based facilities include Prof. T.A. Afolayan Wildlife Sanctuary situated in Federal University of Technology, Akure, Alagbaka Botanical Garden at Alagbaka and Oyemekun Rock. The man made facilities include Neighborhood recreation sites in Ilu-nla. Others include Modern and Child Hospitals, ancient Deji's Palace and Mega School. These resources can also be categorized as outdoor and indoor facilities. According to [2] recreation can be classified based on individual's perspective. Prof. Afolayan Park although can be classified as a nature based site it equally offer other attractions for outdoor recreation, game viewing and relaxation. The major attractions being provided in all these recreation centers include natural environment indoor and outdoor games, basketball courts, watching the television and bar. All these were indicated to be good and satisfying the purpose of visits of the participants for relaxation, enjoyment, leisure and sightseeing. The participants expressed their preference for security and proximity (for those visiting Alagbaka Botanical Garden), closer to their home of residence (Oyemekun Rock and in addition to availability of sporting facilities (gym) for those visiting Neighborhood Recreation Centre) and education and game viewing (for those visiting Prof. Afolayan Wildlife Park). Visitor's preference differs from one Centre to the other and it could be deduced to be individualistic. According to [24] outdoor recreation brings joy and pleasure to many people, with the provision of appropriate recreational opportunities critical to the satisfaction of an individual's need for cognitive and aesthetic stimulation. The operators of these centers need to improve on the facilities being provided while those being enjoy most must be maintained others need to be improved on and additional facilities have to be provided to boost their patronage.

4.3 Visitors Perception of the Recreation Facilities

The recreation centres offer quite a good number of services to their visitors. The services being enjoy most in each of the recreation centres were indicated to include Bar service (drinks) and Music (Ministry of Agriculture Botanical Garden), Watching of football on the television (Neighbourhood recreation Park), Bar service (drinks) (Oyemekun rock) and watching of animal or game viewing (Prof. Afolayan Wildlife Park).

[33] stated that in order to see how tourism affects small local communities, one has to look into the residents own perceptions of the tourism impacts. According to [34], there have been widespread public links uses of recreational activities to overall happiness, family unity, health, improved educational opportunities and deterrence of crime and substance abuse in America. This has been recognised as the positive contributions or impacts of recreation to quality of life of the participants. The fact that greater percentage of the participants (80%, 90%, 100% and 71.4%) indicated their willingness to come back is a good indication that their satisfaction and purpose of their visits have been achieved [35]. Opined that understanding the reason why tourists return to a destination were fundamental issues for destination managers since revisit could produce more sales revenue and minimise the costs. According to [16] recreation is a discretionary, If it doesn't seem worthwhile, the individual can choose to avoid the experience or to participate somewhere or somehow else. The recreation centres were perceived to be having positive impacts on the social lives of the host communities since the centres offer purposive opportunities for relaxation, enjoyment, watching television, education and game watching or sightseeing.

4.4 Recreational Facilities and Employment Creation

A total of forty staff was observed to be engaged at the four recreation centres visited in Akure Metropolis. Average salary of the staff at each of the centres vary this is because while some are privately owned others are under the control of the government. Average salary of the workers in all these recreation centres was put at N10, 000 I month (\$59). Thus, none of the staff earned less than \$1 per day which is the number one target of UNDP MDG towards addressing Goal number 1 which is to halve between 1990 and 2015, the proportion of the people whose income is less than \$1 a day [21]. Prof. Afolayan Wildlife Park was established as research laboratory for the student in the department of Ecotourism and Wildlife Management and natural resources of the Federal University of Technology, Akure (FUTA). Apart from providing education service for the students and the visitors, money generated from this Park account for greater percentage of Internal Generated Revenue for FUTA annually. Official records on the amount of money being generated at each centre were not disclosed for reasons considered as a way to evade tax and for security. All these are good indications of the economic impacts of recreation to provide job for the host communities and also improve their income [36].

5. CONCLUSION

Akure Metropolis is endowed with natural and man-made recreational resources that are of social and economic importance to the host communities. It is one of the UNDP MDGs Cities in Nigeria with necessary potential to realise if not all but one and the foremost goal of eradicating poverty and hunger by year 2015. This research output will serve as blueprint and developmental road towards realising this objective.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Differences in Perceptions among Managers, Academics and Students of the Importance of Various Aspects of Marketing Knowledge and Skills

ABSTRACT

Aims: Knowledge and skills needed to be possessed and used by marketing practitioners in order to improve marketing management and firm performance are identified in this paper.

Study Design: The data from a survey, where marketing managers, academics and senior students in Slovenia took part, relating to the essential skills for working as a marketing manager, were analyzed by the analysis of variance in order to assess the extent of convergences or divergence among the responses of the three groups.

Place and Duration of Study: The study was conducted in companies in Slovenia, between March 2013 and May 2013.

Methodology: It was decided that a questionnaire-based survey would be the most appropriate way to gather primary data, as it would allow a comparison of the opinions of samples of marketing managers, academics and students. The questionnaire for business respondents was distributed by e-mail to a single respondent in each firm, generically described as the "marketing manager". Third and fourth year marketing students at the different faculty in Slovenia received a shorter version of the questionnaire, excluding the section relating to managers knowledge and skills. The questionnaire for students respondents was also distributed by e-mail. Additionally, faculty members were asked to distribute a version of the questionnaire throughout their departments. The questionnaire for marketing academics respondents was also distributed by e-mail. Total sample size was 375.

Results: In general we can say that marketing professionals widely used marketing knowledge and skills. However, the academic marketing knowledge only is

not enough for a successful work in the marketing department. For a successful transfer of knowledge into practice it is necessary to gain more skills.

Conclusion: The study reports the opinions on a vital aspect of marketing education shared by the three stakeholder groups. The study could easily be replicated in other countries and other institutions for assessing the generalizability of the results.

Keywords: knowledge management; marketing knowledge and skills; education; marketing management.

1. INTRODUCTION

The practice of marketing management is continually changing as it reflects the organizational, scientific and technological, economic, and social contexts in which it is embedded. As a constantly evolving discipline, academic marketing should keep up with these changes. Marketing educators must not only impart timeless marketing principles to students, they must prepare them for real world where this changes are taking place. Moreover, some academic research should address the current concerns of marketing practitioners reflecting these changes [1]. The first section of the paper presents a marketing mix concept and 360° marketing concept like two important paradigms in marketing context.

1.1 Marketing Mix and 360° Marketing Concept

The marketing mix management paradigm has dominated marketing thought, research and practice since it was introduced almost 40 years ago. Marketing, the way most textbooks treat it today, was introduced around 1960. The concept of the marketing mix and the Four Ps of marketing – product, price, place and promotion (Fig. 1) – entered the marketing textbooks at that time. Marketing Association, in its most recent definition, states that marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange and satisfy individual and organizational objectives. The marketing mix refers to the set of actions, or tactics, that a company uses to promote its brand or product in the market. Eventually the four P of the marketing mix became an indisputable paradigm in academic research, the validity of which was taken for granted. For most marketing researchers in large parts of the academic world it seems to remain the marketing truth even today [2].

The second important marketing concept is 360° Marketing (Fig. 2) is an "all around-view" on all marketing activities. Concept 360° originates from management and is largely understood within the periphery of them an agement studies as feedback on the staff and the parties concerned. View 360° aims to streng then the success and competitiveness of an enterprise by means of an "all around-view". Marketing with 0° view has the same function: By means of an "all around-view" all marketing activities are coupled in a single perspective and are combined for a successful dealing.



Fig. 1. Marketing mix – 4P

This includes the traditional thought on marketing, the new challenge of marketing activities in the Web 2.0 or of customer relationship management and the fact that new marketing approaches are characterized by exceeding designing and inter active communication. 360° Marketing is the marketing, which integrates different marketing options for an effective marketing. 360° Marketing connects the marketing activities of an enterpriises with the marketing options that emerge as a result of the markets, the customer sand through the new media. 360° Marketing

helps the marketing experts to manage the balance in the use of different media. 360° Marketing open the horizon to numerous media and leads the marketing expert in the marketing world of tomorrow through a new attitude and practical approach. Principle of all round-view 360°. Marketing motivates the marketing expert to have an integrated view of new possibilities of marketing with digital media based on the traditional marketing activities [3].

1.2 Marketing Knowledge

Marketing knowledge is the foundation of marketing discipline, but a general definition of marketing knowledge is difficult to establish [4]. A detailed definition of marketing knowledge is very important for its further development. As early as 1988 the American Marketing Association (AMA) stated in its report that there was a lack of effort aimed at the systematic development of marketing knowledge and so it triggered a debate on the generation, transmission and use of marketing knowledge [5]. Rossiter [4] listed four types of marketing skills, namely: marketing concepts, structural frameworks, strategic and research guides.



Fig. 2. 360° marketing concept

Later [6], on the initiative of his colleagues, added a fifth form, namely empirical generalizations. According to his opinion, marketing knowledge is developed and expanded by academics and consultants, companies and managers. He assumed that the marketing knowledge is declarative ("know- what"), which means that it is based on facts, it is a separate entity and thus independent from the individual's ability to apply this knowledge in practice. From his definition of marketing knowledge he also excluded tacit knowledge (values, beliefs, ideas, experience), data and individual's ability or general mental ability respectively.

Following the publication of Rossiter's definition of marketing knowledge his writing was strongly criticized. He was blamed for Rossiter [4] limiting his definition too much, as certain forms of marketing knowledge such as empirical facts, generalizations, laws and theories (e.g. the theory of consumer behavior) [7] were excluded from the definition. He was also criticized for not considering the knowledge on the implementation of marketing [8] and organizational skills and for limiting his definition to the academic marketing knowledge only, which is a synonym for so-called marketing science [9] Wierenga [9] believed that "restricting the marketing knowledge to the academic marketing knowledge is unnecessary and counter-productive and that in practice more than just encoded knowledge derived from systematic academic researches is available to marketing decision makers". He believed that the marketing science only (academic marketing knowledge), as a relatively young discipline, currently cannot provide a sufficient level of knowledge and guidance to marketing professionals for successful work in practice. Wierenga [9] also defines the marketing knowledge as: "All the insights and beliefs regarding marketing phenomenon used by marketing managers for the purposes of marketing decision-making". Marketing skills were then divided into the academic marketing knowledge and the skills used by marketing professionals in practice (Fig. 3).

Wierenga identified the academic marketing knowledge similarly as Rossiter, but he added empirical generalization and knowledge that used by marketing professionals in practice. Wierenga believed that the marketing professionals have a lot of experience in practice, which deepens their expertise. In addition, mental models, although subjective, qualitative and incomplete, are available to them and nevertheless help them to identify and resolve problems.

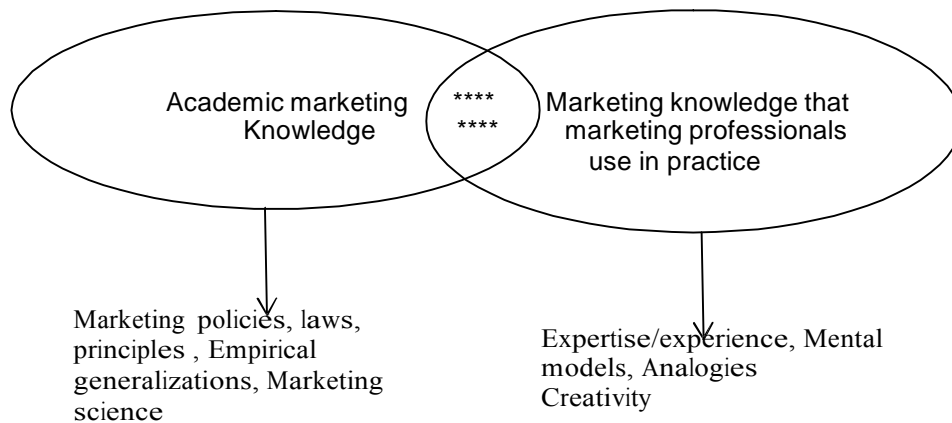


Fig. 3. Diagram of academic marketing knowledge and marketing knowledge that marketing professionals use in practice

Source: [9]

In practice, the marketing professionals solve problems in different ways and use a variety of skills, including the soft ones. Classification, developed by Wierenga [9], lists four ways of solving problems and decision-making, namely:

- Optimization, where the a marketing professional looks for the best possible solution;
- Ruling, where a marketing professional uses mental models;
- Searching for analogies/similarities, where the marketing professional tries to remember a similar problem and the solutions from the past that helps him to solve a new problem;
- Creativity, where a marketing professional tries to find new ways of solving problems.

Each marketing professional decides on his own decision how he is going to solve a particular problem, as each individual has a different approach to the resulting problem. Often a combination of different ways is used. Optimization is definitely important, as well as similarity searching. From our perspective certainly all aspects are connected. In an organization the marketing knowledge is associated with the gaining, transmission and storage of information about customers, their preferences, competitors' products. It is generally believed that the marketing knowledge is useful in practice. When remembering the upper section on dividing the marketing knowledge to the academic knowledge and knowledge used by the marketing professionals in practice (Fig. 1), we are primarily interested in the extent to which the academic marketing knowledge may be useful in practice. If marketing is

look at as a business function, then the marketing knowledge must be useful and must help companies in understanding its consumers and the business environment. Some authors see marketing as a science which originates from practice and therefore is, or should be, particularly useful function.

1.3 Marketing Skills

Skills can be divided into professional and supporting ones. Professional ones are developed by using the expertise (skills of marketing planning, market segmentation, and developing pricing strategies). Supporting skills can be used without expert knowledge. These skills can be used in different jobs. These skills include communication, interpersonal and decision-making [10]. Often, supporting skills are called managerial skills, because they contribute to the efficiency and flexibility of each individual. In an organization each individual should possess skills for working in a team and problem solving skills. Marketing professionals working in marketing, they should have the following skills:

- Communication skills [27] – we can talk about three types of communication skills, namely: 1. Speaking skills, ability to convince and active listening (public speaking, communication, ability to explain if any conflict arises for example). 2. Writing skills and ability to understand (writing reports, analyses, marketing plans, emails for example). 3. Collecting and analyzing information – information literacy (collecting data qualitatively and processing these data correctly, proper reading of information from tables and figures for example).
- Analytical skills – in reviewing the literature, it was found that individuals have under-developed analytical skills. Among the latter the ability to work with larger numbers, data, using various statistical tools, understanding data accuracy and reliability, ability of systematic thinking [3] are included.
- Ability to use modern technology – particularly ability to impeccably use computer tools (Word, Excel, email, internet, social networks, R-commander, Power Point for example). It is important to know how using these tools can make work easier and how they can help in marketing business. A person, who knows how to use all the modern technology and, besides this, has strong analytical abilities, has significant competitive advantage in the job market [23].

- Interpersonal skills – are essentially needed in marketing, since a marketing professional operates in the internal as well as external environment of an organization. These skills are the following: understanding differences among individuals, working in a team and ability to solve problems.
- Leadership [5] – including predicting, strategic thinking, ability to motivate, delegating, leading various teams, ability to solve conflicts and crises.
- Ability to plan and organize – both are strongly associated with preparing and carrying out marketing plans. These skills include ability of systematical thinking, predicting, ability of time management, having a vision for example.
- Decision making skills – it is important to back up a particular fact when making a decision. In decision making it is important to have ability to assess risks in a given situation.
- Creativity – it is essential for market functioning. It is used to identify a problem and in its practical solving. To successfully search creative solutions a reference frame and knowledge of problem solving is needed. All these must be supported by clear objectives.

Many authors have previously stated what kind of knowledge and skills marketing professional should possess. If we want to highlight the most important abilities for marketing decision-making, a vision, creativity, leadership, communication skills, motivation, prudence, organizational skills, intuition, adaptability, analytical thinking, persistence, dedication, knowledge and acquaintance should be emphasized. It is also important that nowadays a marketing professional looks for relevant information important for his work. A marketing professional needs to quickly identify business trends and to respond to it immediately. A good marketing professional builds a good relationship with a marketing team and among departments in the whole organization. He proposes new ideas for marketing to his colleagues. In practice, use of certain skills depends on various environmental factors (size of an organization, activities for example). The essence of knowledge is knowledge of marketing communication, market research and analyzing as well as consumer behavior. A good marketing professional is more effective if he takes into account knowledge and skills he needs.

In Table 1 [15] definitions of the required knowledge and skills are summarized. This list is one of the most comprehensive found in the literature reviewed. From the perspective of our environment and for the purpose of this article precisely this survey is the most interesting one, as it clearly defines and widely enough explains marketing expertise and skills. In comparison to other studies (usually carried out in the U.S.) the advantage has also been made in New Zealand, a small open economy with strong European, Pacific and Asian links and is therefore somewhat more relevant to our situation.

Table 1. The definition of the necessary knowledge and skills for marketing professionals

Knowledge	Skills
Strategic marketing	A willingness to learn
International and export marketing	Teamwork skills
Business to business marketing	Oral communications skills
Consumer behavior	Written communications skills
Product and brand management	The skills to plan their own work
Pricing	Problem solving ability
Market research and analysis	Self-confidence
Personal selling and sales management	Independent judgment
Societal and Ethical issues in marketing	The ability to be creative
Innovation and new product development	The skills to implement change
Services Marketing	A multi-disciplinary perspective
Marketing logistics/distribution logistics	Analytical skills
Marketing communications	Flexibility and adaptability
Retail marketing and management	An awareness of ethical issues
Direct marketing	Strong interpersonal skills
Internet marketing	

Source: [15]

Table 1 shows knowledge and skills that a marketing professional should possess according to Gray et al. [15]. A good marketing professional is more effective when taking into account knowledge and skills needed for his work. Of course, it is important to having already developed certain skills. Some skills are gained over a certain period of time when a marketing professional is in business for a long time.

In the next section, relevant previous researches that have been focused on managers, educators and/or students are reviewed. Then the research methodology is discussed and our findings are presented, together with their implications.

1.4 Relevant Previous Researches and Hypotheses

Over the past two decades, a number of studies have identified differences between managers and academics views about what should be taught in business schools [16,17,18]. Educational gaps have been found to exist across a range of business disciplines, including international business [16], accountancy [19], marketing research [20], and MBA programs [21]. These studies highlight a general concern that marketing and other business graduates should have good oral and written communication skills. Analytical and problem-solving skills were also mentioned in several studies [22,23,24,25,19]. One recent study suggests that communication and problem-solving skills, and the ability to think logically and work in teams, are more important for marketing assistants than specific discipline-related or other technical knowledge and skills [26]. Technical and product knowledge may become more important later in their careers [27]. This implies that the ability to learn is an important attribute for all marketing professionals, not just marketing graduates. On the other hand, some employers may perceive marketing and business education to be too theoretical and not practical enough [16,18,28], meaning that discussion of concepts, models and debates in the academic literature is perceived to take precedence over the development of softer or transferable skills, over more job-related knowledge and skills, or indeed over both types of skill. However, this dilemma is not easily resolved in a university context where emphasis is often placed on developing inquiring and critical minds rather than transferable skills. Exceptions may include accounting and market research courses, where technical knowledge and practical skills can also be important components. The study now reported builds on the extant literature, but takes a more holistic approach than many previous studies by assessing a broader array of "softer" and "harder" knowledge and skills. The aim is to identify those that are essential for marketing graduates to possess, if they are to be appointed as marketing assistants in the shorter term and to become effective marketing managers in the longer term. Only a few of the previous studies have concurrently assessed the views of managers (as prospective employers), academics and students – a shortcoming that the current study also addresses [15].

1.4.1 Research hypotheses

Based on the secondary data collected in the literature, the following hypotheses have been formed:

- H1: The most important skills among the overall skills areas in the work of marketing professionals are "Strong interpersonal communication skills", "A Willingness to learn", "Problem solving ability", "Written communications skills", "Ability of creative thinking" and "Ability to teamwork".
- H2: Key characteristics of a good managers skills are good leadership skills, organizational skills, ability to think strategically, wide awareness and understanding a business and a customer service focus.
- H3: The most important knowledge areas for a successful work of a modern marketing professional are marketing communication, product and brand management, consumer behavior and strategic marketing.
- H4: More than 80% of managers and more than 70% of academics state that in the process of formal education marketing professionals have to obtain the necessary skills and training to work quality and to solve the situation in the market.

2. METHODOLOGY AND SAMPLE

It was decided that a questionnaire-based survey would be the most appropriate way to gather primary data, as it would allow a comparison of the opinions of samples of marketing managers, academics and students. The questionnaire for business respondents was distributed by e-mail to a single respondent in each firm, generically described as the "marketing manager". Usable questionnaires were received from 125 businesses. Third and fourth year marketing students at the different faculty in Slovenia received a shorter version of the questionnaire, excluding the section relating to managers knowledge and skills. Usable questionnaires were received from 225 marketing students. The questionnaire for students respondents was also distributed by e-mail. Additionally, faculty members were asked to distribute a version of the questionnaire throughout their departments. Completed returns were received from 25 marketing academics. The questionnaire for marketing academics respondents was also distributed by e-mail. Total sample size was 375. All data were analyzed using SPSS version 12.0. Results are presented as simple means and percentages, so as to aid comparison between

groups of different sample sizes. One-way analysis of variance (ANOVA) tests were conducted to assess whether any differences between the mean ratings (as opposed to rankings) of skills and knowledge areas by each group were statistically significant at the 95 per cent confidence level. Additionally, the Scheffe and Tukey post hoc tests were applied to the results, to verify conclusions.

The profile of respondents shows that 55% of the managers who responded had spent up to five years in their current positions, almost half of them having the title marketing manager. More than 66% held university qualifications, 23% percent at bachelor's degree level and 11% percent post-graduate. The largest proportion worked in communications, followed in fast moving consumer goods, retail, food products, finance and banking and professional services. The student sampling frame comprised the third year of the bachelor's degree, fourth and final year of the honours degree and first year of the master's and second year of the doctoral's degree, all at the different faculties in Slovenia. 55% of the faculty members who responded had been teaching marketing for up to eight years. The most common teaching areas were general marketing, consumer behavior and brand management accounting for around a half of the total each.

3. RESULTS

3.1 The Importance Skills for Successful Work of Marketing Professionals

Marketing managers, students and academics were all asked to rate how essential a wide variety of skills were for successful work of marketing professionals on a scale from 5 = essential to 1 = not essential. The results are presented in Table 2. Academics and managers agree that strong interpersonal communication skills and willingness to learn are the most important skills that marketing professionals should possess. They ranked teamwork and written communication skills as third and fourth most important skills.

These rankings are in line with many of the previous studies of graduates marketing and business skills cited in Gray et al. [15]. Students also rated strong interpersonal communication skills and willingness to learn relatively highly, but thought teamwork was the most important skill.

Problem solving and ability of creative thinking were rated on fourth and fifth. Comparing their rankings with those of employers and academics suggests that more

emphasis should be placed on the development of written communication skills, in particular.

Table 2. The importance of skills areas for successful work of marketing professionals

Skills for marketing graduates	Mean responses			
	Marketing managers	Students	Academics	Post hoc test results Differences*
Strong interpersonal communication skills	4.76 (0.58)	4.62 (0.76)	4.69 (0.59)	None
A willingness to learn	4.66 (0.66)	4.54(0.73)	4.65 (0.70)	M>S*
Written communication skills	4.54 (0.69)	3.85 (0.80)	4.56 (0.70)	M. A> S*
Problem solving ability	4.26 (0.63)	4.50 (0.72)	4.22 (0.73)	None
Flexibility and adaptability	4.23 (0.71)	4.25 (0.71)	4.10 (0.89)	None
The ability of creative thinking	4.28 (0.81)	4.48 (0.77)	4.15 (0.73)	S>M, A*
Ability to teamwork	4.56 (0.76)	4.65 (0.62)	4.57 (0.83)	S>M, A*
Strategic to think and plan	4.25 (0.56)	3.82 (0.66)	4.12 (0.65)	M>S*
Accountability and responsibility	4.19 (0.78)	3.79 (0.54)	3.99 (0.65)	None
The ability to motivate and inspire others	4.21 (0.67)	3.81 (0.90)	4.0 (0.45)	None
Skills to plan their own work	4.16 (0.71)	3.76 (0.75)	3.97 (0.86)	None
Multi-disciplinary perspective	4.11 (0.82)	4.15 (0.80)	3.95 (0.96)	S>M, A*
An awareness of ethical issues	3.90 (0.90)	3.72 (0.78)	3.33 (0.99)	S>M, A*
Ability to use modern technology	3.82 (0.92)	3.87 (0.65)	3.85 (0.76)	S>M, A*
Analytical skills	3.76 (0.88)	3.76 (0.77)	3.79 (0.92)	None
Self-confidence	3.70 (0.67)	3.70 (0.89)	3.65 (0.78)	S>M, A*

Note: * Significant at 95 percent confidence level; M – marketing managers; S – students; A – academics; figures which are given in parentheses are standard deviations

Based on the presented results in Table 2 the hypothesis 1 was confirmed. It is clear that there are significant differences in the views of the three groups as to how essential a number of skills are. Marketing managers consider a willingness to learn to be more important than students do, while both managers and academics rate written communication skills significantly higher. For their part, students place significantly greater emphasis than academics and managers on teamwork, self-confidence, and ability of creative thinking, multi-disciplinary perspective, awareness of ethical issues, and the ability to use modern technology. Similar views were held by all three groups about the strong interpersonal communication skills, flexibility and adaptability, accountability and responsibility, problem solving, analytical skills, the ability to motivate and inspire others and the ability to plan their own work. It is worth

noting that there appear to be few differences in the perceptions of marketing managers and marketing academics. This suggests that academics and managers share beliefs about the importance of the softer and harder skills that graduates require. One could assume, then, that academics would build the development of these skills into their undergraduate courses.

Table 3. The importance skills for marketing managers

Manager's skills	Rating mean
Leadership skills	4.72
The ability to think strategically	4.66
Organizational skills	4.46
Wide awareness and understanding of business	4.45
Written communication skills	4.41
Customer service focus	4.40
Planning skills	4.27
Problem solving ability	4.19
Negotiation skills	4.16
Sales management skills	4.12
Oral communication skills	3.99
Flexibility and adaptability	3.96
Able to work under pressure	3.89
A multy-disciplinary perspective	3.86
The ability to be creative	3.77
Analytical skills	3.71
The skills to implement change	3.66

In the next step, Marketing managers, only, were asked to indicate on a scale, from 5 = essential to 1 = not essential, how important it was for managers to possess a selection of skills, and to nominate the three most important. Table 3 shows some disparity in answers to the two questions. Asked to rank importance, the skills that marketing managers mention most frequently are leadership skills, the ability to think strategically, organizational skills, wide awareness and understanding of business, and a customer service focus. It may be that although marketing managers need a wide variety of skills to carry out the various marketing functions, those that they rate most highly relate more to their roles as leaders and managers of marketing teams or departments. Based on the presented results in Table 3 the hypothesis 2 was confirmed.

We find that here as in the rest of the world valued slightly higher than the overall ability of specific marketing skills and knowledge. This fact is a bit of concern, as it is for some authors found [29], that there is a lack of recognition capability, which would be specific for marketing. Higher than normal in the (foreign) research falling overall socio-ethical views, such as reliability, responsibility, ethics indicating

an awareness that marketing professionals have in their work and in contact with consumers. Among the least important were ranked as more specific knowledge and skills in the field of marketing. Compared with foreign research are primarily low grade knowledge on customers (to provide consumer behavior, using a database of customers), which represents a potential weakness Slovenian marketing professionals. We find, therefore, that marketing professionals are seen as particularly important general skills are less important analytical skills. In the future, when the market has become more analytical and measurable results, you may experience difficulties in adapting to these changes. It can also be a problem ignorance of consumers and evaluating knowledge and skills in the field of knowledge of consumers as unimportant. Focusing on the customer is becoming increasingly important, and his lack of knowledge can lead to poor performance of the company.

3.2 The Importance of Knowledge Areas for Successful Work of Marketing Professionals

Respondents were asked to rank the top three knowledge areas. Managers and academics rated marketing communications most highly, followed by product and brand management and consumer behavior. Students ranked strategic marketing first, followed by marketing communications, consumer behavior, product and brand management and innovation and new product development. The variation in rankings across the groups seen in Table 4 suggest that marketing managers place strong emphasis on marketing communications, product and brand management, consumer behavior, international and export marketing, business-to-business marketing, strategic marketing and public relations marketing. Academics, on the other hand, emphasize marketing communications, product and brand management, consumer behavior, international and export marketing, business-to-business marketing and personal selling and sales management. Students place strong emphasis on strategic marketing, and consumer behavior. Based on the presented results in Table 4 the hypothesis 3 was confirmed.

Taken in tandem, the results presented in Tables 3 and 4 suggest that academics should place slightly more emphasis on the key knowledge areas that employers value, and which appear to reflect current market conditions. However, a necessary caveat is that academics who teach undergraduate students must also be aware that they are training future managers and not just future marketing assistants.

Thus, it is also important to take note of the essential knowledge and skills that managers require [15].

Table 4. The importance of knowledge areas for successful work of marketing professionals

Knowledge areas	Marketing managers	Mean responses		
		Students	Academics	Post hoc test results Differences*
Marketing communications	4.46 (0.96)	4.47 (0.77)	4.44 (0.88)	None
Product and brand management	4.38 (0.87)	4.40 (0.78)	4.39 (0.79)	S > M*
Consumer behavior	4.16 (0.77)	4.46 (0.56)	4.36 (0.76)	S > M*
Strategic marketing	3.86 (0.94)	4.58 (0.71)	3.99 (0.99)	S > M, A*
International and export marketing	3.99 (1.04)	4.16 (0.96)	4.11 (0.97)	S > A > M*
Business to business marketing	3.96 (0.78)	4.11 (0.76)	3.92 (0.79)	None
Public relations	3.90 (0.67)	3.99 (0.35)	3.79 (0.69)	None
Pricing	3.40 (1.07)	3.87 (0.79)	3.41 (0.98)	S > M, A*
Market research and analysis	3.38 (0.79)	3.95 (1.78)	3.36 (0.84)	None
Personal selling and sales management	3.34 (1.20)	3.85 (0.80)	3.79 (0.97)	S. A > M*
Societal and Ethical issues in marketing	3.30 (1.05)	3.79 (0.75)	3.21 (1.19)	S > A*
Innovation and new product development	3.29 (0.99)	4.36 (0.76)	3.18 (0.78)	S > M, A*
Services Marketing	3.28 (1.12)	3.69 (0.75)	3.56 (0.92)	None
Marketing logistics/distribution logistics	3.22 (0.97)	3.68 (0.77)	3.46 (0.86)	S > M, A*
Retail marketing and management	3.21 (0.99)	3.76 (0.78)	3.39 (0.69)	S > A > M*
Direct marketing				
Internet marketing				

Note: * Significant at 95 percent confidence level; M – marketing managers; S – Students; A – Academics; figures which are given in parentheses are standard deviations

In the next step Managers were also asked to rate the importance of various kinds of knowledge on the same scale from 5 = essential to 1 = not essential, and again to rank the three most important categories. Table 5 shows that the knowledge areas considered to be most important by marketing managers are marketing communications, product and brand management, consumer behavior, and, closely followed by strategic marketing, and international and export marketing. The rankings seem to reinforce the ratings.

Using the following questionnaire the following was determined: Do, in a process of formal education, marketing professionals obtain the necessary skills and training to work quality and solve the situation in the market?

Table 5. The importance skills for marketing managers

Knowledge areas	Rating mean
Marketing communications	4.67
Product and brand management	4.54
Consumer behavior	4.47
Strategic marketing	4.23
International and export marketing	4.19
Business to business marketing	3.99
Public relations	3.88
Innovation and new product development	3.65
Pricing	3.46
Market research and analysis	3.39
Personal selling and sales management	3.33
Societal and Ethical issues in marketing	3.29
Marketing logistics/distribution	3.26
Retail marketing and management	3.23
Direct marketing	3.16
Internet marketing	3.14
Services Marketing	3.12

Students did not answer this question. To sum up opinions of the respondents they stated that 89% of managers and 75% of academics think that only a formal knowledge is not enough and a multi-year practice in the field is required, where a marketing professional is faced with falling, rising, with denials and competition. Respondents believe that the formal knowledge is not enough, because it usually turns out that a prospective marketing professional, who reaches excellent reviews in the formal education, tends to "freeze", when it comes to achieving excellent results in the field. This happens, because he is not used to rejecting and because he takes rejection too personally. The market is constantly changing, so a marketing professional should respond to it properly. Based on the literature review and the research carried out it can be concluded that the academic marketing knowledge only is not enough for a successful work in the marketing department. It is necessary to gain more skills to successfully transfer knowledge into practice. Individuals in the workplace depend on characteristics of an organization, which may prevent/promote their development and use of his skills and abilities. In addition to knowledge and skills, in today's unstable and unpredictable environment it is also important to understand the systems around us broader and to understand the complexity of the relationships that are created within these systems. Based on the presented results the hypothesis 4 was rejected.

The results of our study are very similar to the results of the market research, conducted under the auspices of the Institute of Marketing, Faculty of Economics [30] and the market research carried out in New Zealand by Gray et al. [15]. The

comparison of the results of both of the researches carried out, it can be said that in marketing area in Slovenia the current state of marketing knowledge and skills has not significantly changed in the last few years.

4. CONCLUSION AND IMPLICATION

This study is one of the most comprehensive empirical investigations to date of the capabilities that marketing professionals require being successful in the twenty-first century. Overall, there appears to be reasonably broad agreement between Slovenian marketing managers and marketing academics about the skills and knowledge that marketing graduates must have if they are to be employed as marketing assistants. There are significant differences in the perceptions of marketing managers, students and academics about some skill and knowledge areas. This suggests that the refinement of current curricula may be in order. For the most part, managers and academics are in agreement over the critical skills and knowledge areas. Based on the literature review and the research carried out we can conclude that only academic marketing knowledge is not enough for successful work in the marketing department. It is necessary to win more skills to be successful transfer of knowledge into practice. Individuals in the workplace depend on the characteristics of the organization that may prevent/promote its development and use his skills and abilities. In addition to knowledge and skills in today's unstable and unpredictable environment is also important to the broader understanding of the systems around us and understanding of the complexity of the relationships that are created within these systems. Our study could easily be replicated in other countries and other institutions, to assess the generalizability of the results. Efforts should be made to increase sample sizes of managers, students and academics. More research is also required to investigate whether experience alone is sufficient for well-trained junior marketing professionals to acquire the extra knowledge and skills they require to become effective marketing managers, or if marketing academics should be helping them to fast-track their careers by the provision of targeted courses.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Saving-Investment Gap and Economic Growth in Developing Countries: Simulated Evidence from Selected Countries in Africa

ABSTRACT

It is a challenge for most developing countries, especially in Africa, to mobilize domestically enough capital to meet their extensive investment needs because of two main reasons: the undeveloped nature of their financial system and the low rate of access of households to basic financial products. This study analyzes the impacts of persistent savings (S)-investment (I) gaps on economic growth using a sample of 5 developing countries in Africa - Egypt, Côte d'Ivoire, Ghana, Kenya and Nigeria. The methodology of this study is based on a Ramsey model within a general equilibrium framework where consumption and savings are the determinant factors in a typical household's utility function. Calibrations and simulations indicate significant gaps between optimal and actual levels of savings and investment. Furthermore, the findings point out that these gaps are associated with relatively lower growth rates of actual output compared to simulated output, with the notable, but limited, exception of Nigeria until 2019. It accordingly becomes appropriate to suggest policies addressing both the structural and non-structural factors that limit the ability of these developing countries to effectively bolster households' deposits.

Keywords: savings-investment gap; economic growth; developing countries; Africa; JEL Classification: E27, O11, O55.

1. INTRODUCTION

Emerging countries in Asia have bolstered the long-established paradigm that identifies domestic savings as the backbone of any sustainable development process. This stylized fact has generated lots of interests among academics and development partners as attested by the extensive body of theoretical and empirical studies that exists on the impact of domestic savings on real output. Another stylized fact is that developing countries in general, and the ones in Africa in particular, present a picture dually characterized by (i) low domestic savings in volume and as a share of gross domestic product (GDP) and (ii) the absence of both tangible and adequate policies to promote domestic savings.

With a financial system that lacks depth and breadth, let alone the absence of strong and effective regulatory institutions, African countries face challenges when attempting to mobilize capital domestically to meet their massive investment needs. It is critical that these countries explore in earnest means and ways to tap into their domestic markets in light of their limited access to international capital markets. Such an approach is viable and has the merit of making these countries less dependent on international capital markets. It also reduces the uncertainty associated with the collection of funds to finance the development of infrastructure systems or support other macroeconomic policy priorities. Indeed, the twofold goal of generating sustained economic growth and making a dent in the level of poverty is unattainable for African countries unless substantial direct investments in the creation, expansion and maintenance of infrastructure are made. In other words, domestic direct investment through domestic savings or domestic capital markets must be the centerpiece of the much-needed infrastructural transformation in African countries.

According to the World Bank's African Development Indicators [1], gross domestic savings as a fraction of GDP across Africa is relatively low. It roughly stood at 20, 17 and 21 percent in the 1980s, 1990s and 2000s, respectively. Comparatively, these figures were 28, 32 and 32 percent respectively for Asian countries over the same periods [2]ⁱ.

This paper endeavors to investigate through a dynamic simulation exercise the impacts of persistent and large savings-investment gaps on economic growth. It will derive in the process the costs associated with these low savings rates in terms of economic growth forfeited.

The literature abounds in papers pertaining to savings, capital accumulation and economic growth in both developing and developed countries.

It is impossible to entertain a substantive discussion about savings, capital accumulation and economic growth without referring to the pioneers of economic development and growth models of the likes of [3,4,5,6,7], among others. The common denominator of all these studies remains the indispensable nature of both savings and investment in achieving sustained economic growth.

As elaborated by [8], a country that does not generate enough savings to fund investment must find external sources of funding or incur a cost at the macroeconomic level in the form of “slow progress in [economic] development” Ultimately, such a cost will impact income distribution in a given country.

Many Asian countries (China, Japan and East Asian Tigers) have been renowned for higher rates of savings comparatively to other regions of the globe. These high rates have prompted some scholars such as [9] to examine the optimality of savings, more specifically, as it applies to China. Using an open economy Ramsey model with both perfect and imperfect world capital, they uncover that savings in China are excessive. This finding implies that current generations forgo higher consumption, which leads to a sub-optimal level of consumption in the economy, at equilibrium.

On another note, [10] focuses on India to explore whether or not domestic savings cause economic growth. Their methodology mainly utilizes two well-known estimation techniques in the literature: co-integration and maximum likelihood. In accordance with the neoclassical and post-neoclassical models of economic growth, they establish that savings have long-run effects on income. Furthermore, they find out that growth impacts savings as well-establishing thereby that there is a bidirectional cause and effect relationship between savings and growth. [11] comments on the relationship between the balance of payments of the United Kingdom (UK) and the savings gap. Through a careful analysis of trends in UK's investment-savings gaps from 1960 to 2007, she reaches the conclusion that the balance of payments deficit experienced by this country is proportional in size to the investment-savings gap. To promote savings and reduce this gap, she proposes among other policies the imposition of taxes on consumer credit and mortgages and the subsidy of savings.

In explaining both low savings rates and large savings-investment gaps in developing countries, [12] point to the scarcity of formal financial intermediaries in these environments where informal intermediaries have flourished. For instance, there exist systems such as the Caja de Ahorros in Panama, Susu in Ghana and Ton Ton in Sierra Leone and Islamic banking, among others. Using macroeconomic identities, they determine, in the case of the latter, that savings-investment gaps are worsened as it promotes higher consumption.

This paper is organized as follows. The next section presents some perspectives regarding savings and investment in Africa. Section 3 discusses the macroeconomic model used in this study. In section 4, calibrations are made and results of simulations are shown and commented. Concluding remarks are made in the fifth section.

2. AFRICAN HOUSEHOLDS: SAVINGS PATTERNS AND HABITS

From their independence until the beginning of the 21st century, most developing countries in Africa heavily relied on overseas development assistance (ODA) to fund the bulk of investment needed to prop growth and create a sustainable economic development path. Consequently, the domestic and regional financial markets - as sources of funds - were neglected considering that no or few viable policies were actively implemented to shore up domestic savings, especially households' savings.

For the sample of African countries considered in this study, the average savings rates have hovered between 6 and 23 percent of GDP since 1980. Ghana for instance reached average savings rates of 6.2, 7.3 and 5.6 percent in the 1980s, 1990s and 2000s, respectively. These rates have remained modest, especially in the most recent years. Such a situation has underscored the heavy reliance of the country on foreign sources of capital to address its domestic investment needs. It is important to emphasize that all modern economies vie to create a competitive environment to attract foreign investment. However, one cannot stress enough the fact that foreign investment or foreign sources of capital should not be a substitute for domestic investment or domestic sources of capital, which is essential to sustain economic development and create a balanced growth path less subject to external factors or shocks.

On the other hand, Nigeria has exhibited higher rates of 19.6, 24.7 and 23.9 percent respectively in the 1980s, 1990s and 2000sⁱⁱ. These rates, although moderate, pale in comparison to those of a developing country such as China, which boasted rates of 35.4, 41.1 and 47.3 percent, respectively, over the same periods (Fig. 1).

In sum, it appears that domestic savings rates are relatively low in most African countries, except for countries like Nigeria where these rates are moderate. It is noteworthy that the lion's share of domestic savings by African households is in the form of nonfinancial assets [13]. This fact compounds the existing challenges encountered in the mobilization of resources by drastically reducing the pool of resources available through the domestic financial capital market. A natural consequence of such an environment is a rampant savings-investment gap.

Furthermore, the bank access rate remains low in our sample of countries in particular and African countries in general. The latest figures obtained in 2011 show that these rates are below 50 percent for all countries in our sample (Fig. 2). Diligent efforts to improve the bank access rate will expand a great deal the pool of funds that can domestically be tapped into.

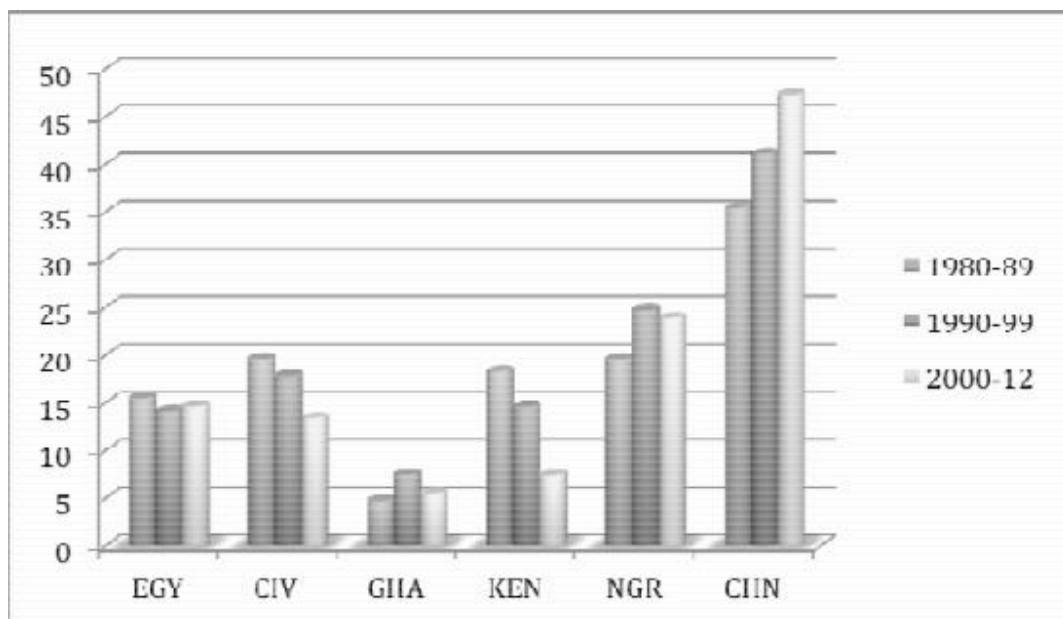


Fig. 1. Gross domestic savings (% of GDP)

Source: World Development Indicators (World Bank)ⁱⁱⁱ.

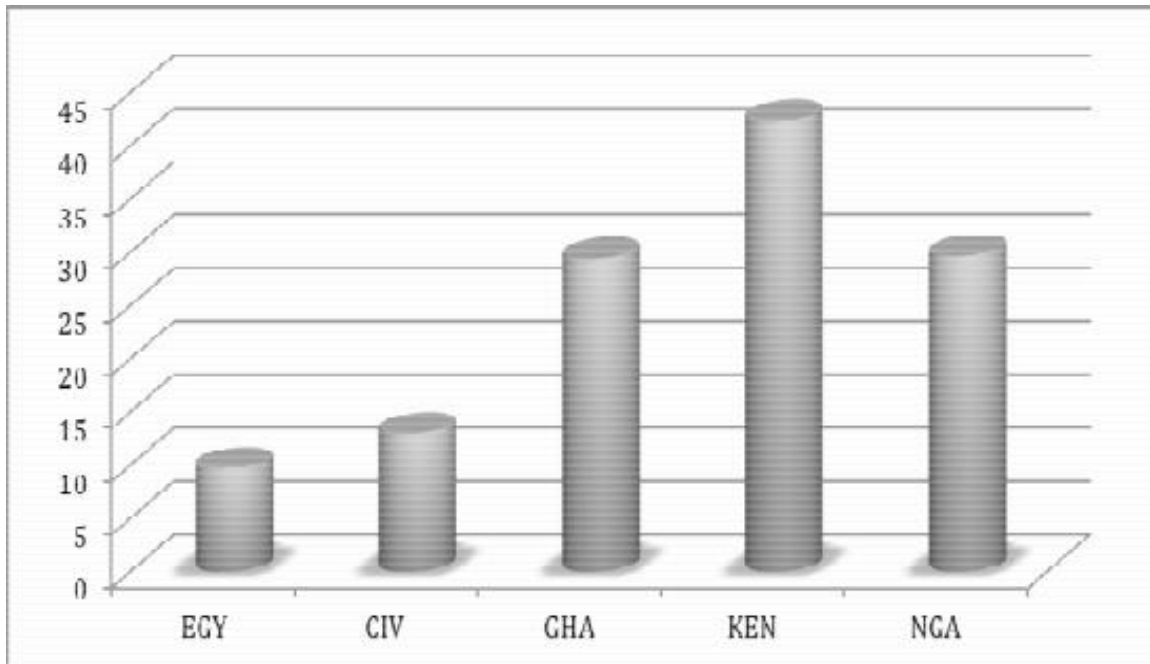


Fig. 2. Rate of Adults with an Account at a Formal Financial Institution (%), 2011^{iv}

Source: Global Financial Development (World Bank) and BCEAO (Central Bank of West African States), Annual Report, 2011.

3. MODEL

The methodology of this project is based on a Ramsey model within a general equilibrium framework. We assimilate each African developing country to a small-open economy with three sectors-household, firm and government. The model follows [14,15].

3.1 Household Sector

The representative household's lifetime utility depends on savings and consumption, which use up her entire income at each time period. The preferences of a typical household are captured by a (utility) function $U(.)$ that exhibits intertemporal dependency in consumption, through habit formation, and separability between consumption and savings. As a result, $U(.)$ can be defined as:

$$U(C_t, S_t) = \alpha \log(C_t - \nu C_{t-1}) + (1-\alpha) \log(S_t), \quad (1)$$

where C_t and C_{t-1} represent spending on consumption goods at time t and $t-1$, respectively; and S_t is savings. We assume that both C_t and S_t are nonnegative, and the former is also nonzero. α is the fraction of household's

income spent on consumption, while v captures habit formation or any aspect of past consumption patterns subsequently carried over. More specifically, the past refers to the previous period, $t-1$, only. $0 < \alpha < 1$ and $v > 0$.

v is relevant in this formulation considering that a typical African household is more likely to adopt a rather conservative approach as far as consumption is concerned. Two main rationales could support this fact. First, the average size of a typical African household or “family” is large, and its definition is culturally different from the one prevailing in Western countries. Second, there is a relatively high poverty rate and a dominant rural population. Thus, it is likely that v will carry a relatively high value.

Optimality for the representative agent is reached when she maximizes her lifetime utility with respect to C_t and S_t subject to the budget constraint:

$$w_t L_t + r_t S_{t-1} + T_t = C_t + S_t, \quad (2)$$

where, at time $t = 1, 2, 3, \dots$, w_t and r_t are the remunerations of labor and capital respectively. S_t is savings and T_t accounts for government transfers received.

3.2 Firm Sector

Output production is characterized by a Cobb-Douglas function:

$$Y_t = A_t K_t^a L_t^{1-a}, \quad (3)$$

where, at time $t = 1, 2, 3, \dots$, Y_t stands for output; A_t captures the state of technology and K_t is a measure of capital stock. Additionally, a is the partial elasticity of output with respect to capital – the capital share of output – and $(1-a)$ indicates the partial elasticity of labor with respect to output – the labor share of output. The optimization problem for the typical firm sums up to choosing the appropriate levels of K_t and L_t that maximize its profit. That is:

$$\text{Max } A_t K_t^a L_t^{1-a} - r_t K_t - w_t L_t \quad (4)$$

3.3 Government Sector

The government of any representative economy has two sources of revenue: tax and borrowing. The latter is achieved through bonds issuance, while the former applies essentially to consumption in the form of a value added tax (VAT). The revenue collected serves two main purposes and is entirely spent at each time period. On the one hand, it is used to retire previous debt and it helps finance, on the other hand, a variety of social programs and the provision of public goods through transfers to households. Based on these premises, the government budget constraint is set up as follows:

$$\tau_t C_t + b_t = T_t + R_t b_{t-1}, \quad (5)$$

where, at time $t = 1, 2, 3, \dots$, b_t is borrowing (in the form of bonds issued) and R denotes the world interest rate that applies to borrowing contracted by the government on international capital markets^V.

Following the definition of the model, we proceed to solving it by deriving the first-order conditions and steady states that will serve as the basis for simulations.

The first-order conditions associated with the representative firm yield:

$$r_t = a A_t K_t^{a-1} L_t^{1-a} \quad (6)$$

and

$$w_t = (1-a) A_t K_t^a L_t^{-a} \quad (7)$$

Equations (6) and (7) can further be expressed on a per capita basis:

$$r_t = a A_t k_t^{a-1} \quad (6')$$

and

$$w_t = (1-a)^a A_t k_t \quad (7')$$

where, at $t = 1, 2, 3, \dots$, k_t represents capital per unit of labor.

The transition law of capital can be written as:

$$K_t = (1-\delta)K_{t-1} + I_t \quad (8)$$

where I_t is investment at $t = 1, 2, 3, \dots$

Lemma: S_t is not different from I as government's savings does not exist, or is assumed negligible. In other words, $S_t = I_t^{vi}$.

Using Equation (1) and lemma 1, Equation (8) becomes:

$$S_t = K_t - (1-\delta)K_{t-1}. \tag{9}$$

Therefore, the final form of a typical household's budget constraint is:

$$w_t L_t + r_t S_{t-1} + T_t = C_t + K_t - (1-\delta)K_{t-1}. \tag{10}$$

The Lagrangian resulting from the optimization problem is written as follows:

$$L = \sum_{t=1}^{\infty} \varepsilon^t [\alpha \log(C_t - \nu C_{t-1}) + (1-\alpha) \log(S_t)] + \sum_{t=1}^{\infty} E_{t-1} \varepsilon^t \lambda_t [w_t L_t + r_t S_{t-1} + T_t - C_t - K_t + (1-\delta)K_{t-1}] \tag{11}$$

Using Equation (11), the first-order conditions are derived as follows, after rearranging:

$$\lambda_t = \frac{\alpha}{C_t - \nu C_{t-1}} + \frac{\alpha \nu}{C_{t+1} - \nu C_t} \varepsilon, \tag{12}$$

$$\varepsilon^t \lambda_t \left[\frac{a(1-a)}{K_t} Y_t + \frac{a(a-1)}{K_t^2} Y_t S_{t-1} - 1 \varepsilon \right]^{t+1} E_t \lambda_{t+1} (1-\delta), \tag{13}$$

$$\varepsilon^t (1-\alpha) \frac{1}{S_t} = \varepsilon^{t+1} E_t \lambda_{t+1} R_{t+1}. \tag{14}^{vi}$$

The parameters of the model are a , α , δ , ν and E and the identified exogenous variables are R_t , A_t , w_t and r_t and T_t .

3.4 Parameterization and Calibration of the Prototype Model

After deriving the solutions to the economic problem, the simulation processes for the paths of savings and investment, and savings-investment gap, and output can be completed for Egypt, Côte d'Ivoire, Nigeria, Ghana and Kenya. This step requires the parameterization of our model that is summed up in Table 1.

Table 1. The parameter values

Parameters	Source	Values				
		EGY	CIV	GHA	KEN	NGA
a	WDI, AfDB	0.6	0.7	0.7	0.69	0.7
α	WDI, AfDB	0.8	0.85	0.83	0.7	0.65
δ	WDI, AfDB	0.08	0.095	0.086	0.081	0.045
v	Authors	0.6	0.65	0.65	0.65	0.65
ϵ	WDI, AfDB, IFS	0.891	0.95	0.814	0.842	0.887

In a second step, the prototype model is calibrated for each country using the year 2010. Simulations are conducted from 2010 to 2040 using the method by [16, 17]. As far as the data generating process is concerned, an AR (2) model is used for Côte d'Ivoire and Ghana.

For Nigeria and Kenya, an ARMA (2,3) is considered, while an ARMA (3,1) is found to be appropriate Egypt^{viii}.

4. RESULTS^{ix}

Fig. 3 reports the outcomes of simulations for Côte d'Ivoire (CIV) when the SI gap is contained and reduced. Indeed, from 2010 through 2040, the simulated gap remains on the average 52 percent lower than actual values. More specifically, this figure hovers around 46, 55 and 54 percent for the 2010s, 2020s and 2030s, respectively (Table 2). On the other hand, it appears that such a reduction in the gap for this country generates a substantial boost in output. This boost ranges between 10 and 13 percent over the period of interest through 2040, with an average of 12.5 percent. In other words, the country's real output level is expected to be about 12.5 percent higher than actual (real) output, on the average, if it were to diligently implement policies intended to halving the SI gap.

Table 2. Reduction targets in SI gaps (in percentage)^x

PERIOD	CIV	EGY	GHA	KEN	NGA
2010-2019	46.8371932	19.5196052	75.4863834	74.17878333	-
2020-2029	55.03938464	19.25681193	66.45335995	48.74071509	70.24448219
2030-2040	54.80382436	18.64896329	66.90283	30.54222683	73.04731857
Average	52.2	19.1	69.6	51.1	40

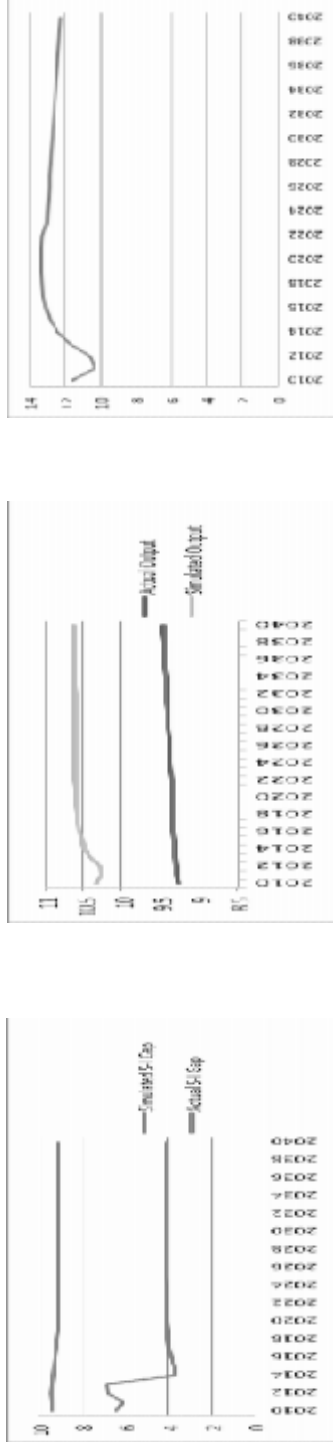


Fig. 3. Côte d'Ivoire

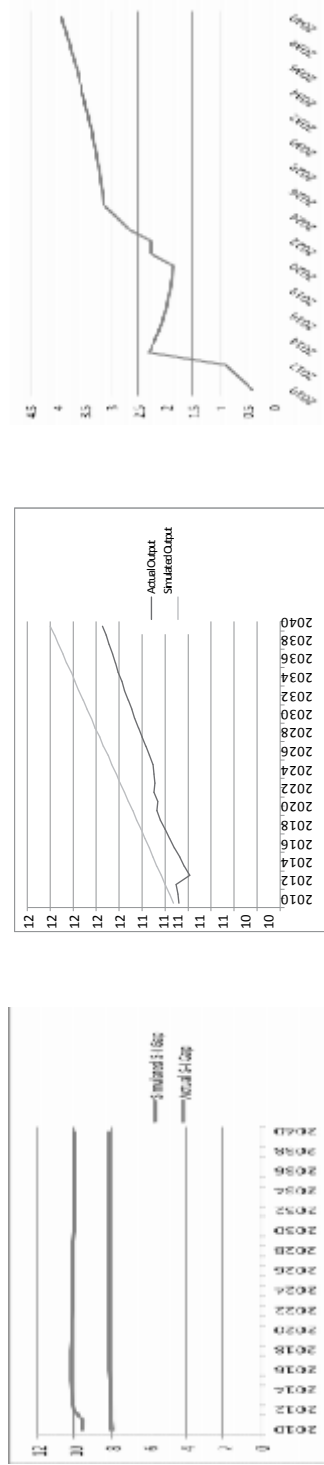


Fig. 4. Egypt

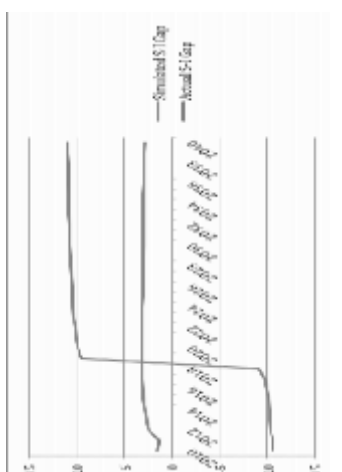
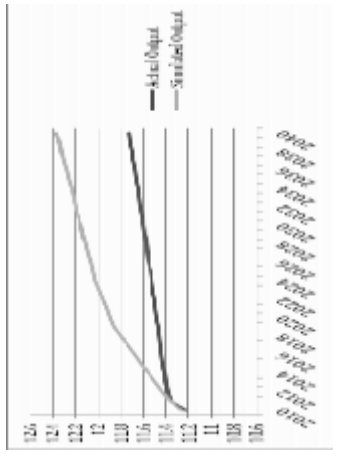
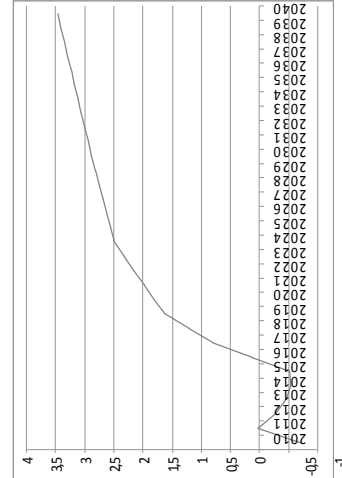
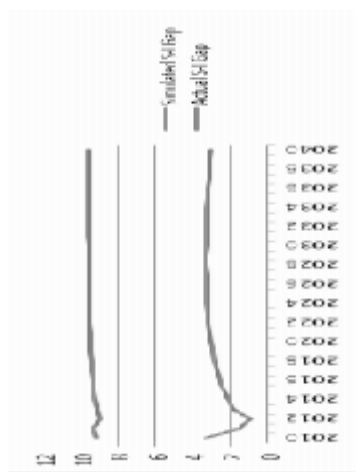
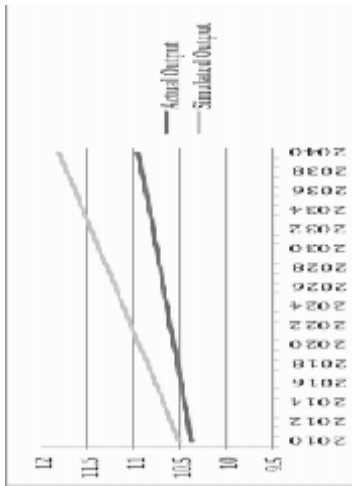
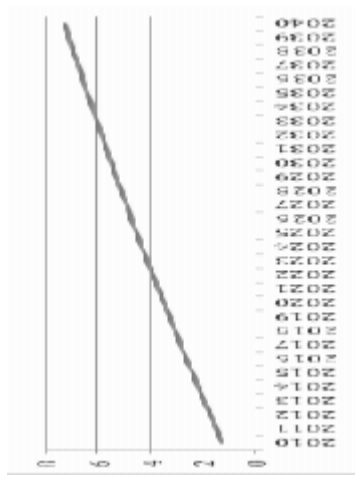


Fig. 5. Kenya

Fig. 6. Nigeria

As far as Egypt (EGY) is concerned, Fig. 4 reveals that the simulated SI gap is about 19 percent lower than the actual one from 2010 to 2040 (Table 2). By curbing this gap, the study points out that EGY will be able to reach a level of output about 2.7 percent greater than its actual level, on the average, over the period aforementioned. This figure is relatively small compared to the one of CIV. However, it is noteworthy that these simulations find out that EGY will cross the \$1 trillion landmark for RGDP in the vicinity of the year 2035.

As reported in Table 2, the simulated SI gap is found to be 69 percent below its actual level for Ghana, on the average. This is the largest decrease for the 5-country sample considered in this study (Fig. 5). This figure reaches a peak of 75 percent in the 2010s. Over the period of interest, the analysis shows that simulated output is about 8 percent higher than actual output once the reduction target of SI gap is achieved.

For Kenya (KEN) and Nigeria (NGA), the simulations reckon reduction targets of 51 and 40 percent, respectively, in SI gaps (Figs. 6 and 7). These targets in turn bring about an additional real output gain of 4.5 percent for Kenya and 2 percent for Nigeria. For the latter country, the real output will cross the \$1 trillion mark around 2025, approximately 10 years before Egypt.

Moreover, a peculiarity is noteworthy. Indeed, until around 2019, simulations results indicate that savings surpass domestic investment. As a result, one notices that simulated output globally trails actual output over that time period. This finding is unique to NGA. However, from 2019 onwards, it appears that the trend is reversed as savings lag behind domestic investment.

This fact transpires as well in the comparison between simulated and actual output with the former outpacing the latter.

Overall, this simulation exercise for CIV, EGY, GHA, KEN and NGA has highlighted that a reduction in the SI gap is associated with a faster expansion of real output.

To reduce this gap in practice, concrete steps to reverse the low access rate of households to financial institutions could be taken to grow the available pool of domestic fund to finance domestic investment. Among other measures that could be impactful, a framework should be implemented to drastically reduce or eliminate altogether fees charged to individuals to open and/or operate a bank account - savings or checking. Indeed, these fees prove exorbitant in an

environment where tens of millions live with less than a dollar a day. Furthermore, paperwork must be slimmed down to the minimum, as obtaining certain documents, namely identity cards, can prove challenging for many [18]. Another approach that could be contemplated is the introduction of a well-thought subsidy scheme for savings, as advocated by [11].

Moreover, to increase the access of households to financial outlets, para-financial institutions and new technologies should be introduced and expanded. For instance, post offices and other microfinance institutions could be part of the solutions. It is also imperative that authorities develop safeguards that protect all depositors, especially the small ones, as confidence in the financial system is indispensable. This is crucial as illiteracy rates are still high in these developing countries. Indeed, it is unlikely that an illiterate farmer in some remote area will harbor enough confidence to deposit his hard earned income with any institution. As far as new technologies are concerned, the prevalence of cell-phone users in most African countries can be an asset in promoting mobile banking based on the experiences of countries like Kenya and Nigeria.

5. CONCLUSION

This paper has endeavored to investigate the relationship between SI gaps and output using a Ramsey model within a general equilibrium framework. Simulation exercises for a selection of 5 developing countries in Africa are conducted. Within our framework and the 5 sets of calibrations performed, results seem to conclusively point to positive impacts of reductions in SI gaps on output expansion. This finding suggests that the implementation of effective policies to decrease the SI gap could be considered as a viable option by decision-makers in their attempt to boost economic growth in their respective countries.

All in all, developing countries in general and African countries in particular should earnestly open a new chapter regarding the mobilization of resources to finance their vast investment needs. Mobilizing and relying on - their own - domestic resources should henceforth be front and center of that new chapter, which will usher in the beginning of a new development paradigm in Africa.

Notes

ⁱThe Asian countries considered are China, South Korea, Philippines, India, Indonesia, Malaysia and Thailand.

ⁱⁱThe years 2000s are extended through 2012 to include the most-up-to-date data in this study.

ⁱⁱⁱData from Nigeria were collected from the African Development Bank Socio-economic database [19].

^{iv}For member states of the West African Economic and Monetary Union, data were unavailable for Côte d'Ivoire and Cape Verde in the WDI database. For other countries in this Union, data show Burkina Faso with the highest rate at 13.4%.

^vThese include as well borrowings from bilateral and multilateral partners - World Bank, International Monetary Fund, African Development Bank, and so forth.

^{vi}This lemma, which is commonly derived and used in the macroeconomics literature, does not depart a great deal from a stylized fact in most developing African countries, as public savings is by and large marginal.

^{vii}The intertemporal Euler Equation is:
$$\frac{(1-\alpha)}{S_t} = \varepsilon R_{t+1} \left[\frac{\alpha}{C_{t+1} - \nu C_t} + \frac{\alpha \nu \varepsilon}{C_{t+2} - \nu C_{t+1}} \right].$$
 It is obtained by deriving $E_t \lambda_t$

from Equation (12) and substituting in Equation (14).

^{viii}These models provide the strongest econometric results with White Noise residuals and lowest AIC and SIC values. Furthermore, approximations methods for all solutions were developed following synthesis presented by [20].

^{ix}For each figure, the third exhibit represents the average percentage increase (or change) in simulated output – above actual output.

^xIn the 2010s, savings exceed investment by about 19 percent for Nigeria. This explains the low average for this country over the entire simulation period.

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The directions of development of the market of foodstuff in the conditions of the new financial relations

Abstract: In this article to solve the food problem in the country, increasing export potential and extensive dissemination of economic integration proposed the creation of free economic zones. At the same time in the future reception of the country in the WTO, improvement of import and export balance, development of national economy and not oil sector are noted as positive factors. Found the reflection of the direction of development of the food market in article.

Keywords: import, export, produce, market, free trade zone, the WTO.

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Направления развития рынка продовольственных товаров в условиях новых финансовых отношений

Аннотация: В статье для решения в стране продовольственной проблемы, увеличения экспортного потенциала и обширного распространения экономической интеграции предлагается создание свободных экономических зон. Одновременно в будущем прием страны в ВТО, совершенствование импортно-экспортного баланса, развитие национальной экономики и ненефтяного сектора отмечаются как положительные факторы. В статье нашли свое отражение направления развития продовольственного рынка.

Ключевые слова: импорт, экспорт, продукция, рынок, свободная экономическая зона, ВТО.

На конференции в речи Президента Азербайджанской республики Ильхама Алиева, посвященной 3 годовщине исполнения «Государственной Программы социально-экономического развития регионов в 2009-2013 годах» говорится - «В 2015-2016 годах у нас будет много сельскохозяйственной продукции, направленной на экспорт. Если мы не будем их экспортировать, тогда не сможем обеспечить сельское хозяйство. Т.е. они должны работать во взаимодействии с рынками. Мы заменим импорт, одновременно мы должны выйти на рынки других стран с продукцией направленной на экспорт». Это еще раз требует в будущем быстрого развития в республике производства продукции направленной на экспорт, производство конкурентоспособной продукции согласно современным требованиям, и выход на мировые рынки в более широком масштабе. Азербайджанская экономика и продуктовый рынок республики должен формироваться на новой основе и развиваться согласно современным требованиям. Из проведенных исследований видно, что с точки зрения обеспечения продовольственной безопасности и надежного обеспечения населения продуктами питания в республике существуют широкие возможности, и страна в ближайшем будущем решит эти проблемы [1, 2]. Таким образом, в республике существуют широкие возможности не только полного удовлетворения внутреннего спроса в сфере производства продукции питания, одновременно выхода на международный рынок большого количества продукции питания имеющей большой спрос в мире. Построение экономического развития согласно современным требованиям в этой отрасли увеличение уровня интенсивности экономики и эффективности позволит по всем отраслям продовольственной проблемы в стране увеличить производство. Формирование таких условий может послужить причиной основательных изменений баланса импорта и экспорта. Т.е. с одной стороны, основательному уменьшению импорта на основе интенсивного развития местного производства, с другой стороны обеспечит увеличение экспорта. Другими словами, нынешнее соотношение импорта и экспорта, будет изменено в пользу экспорта, и экспорт будет преобладать над импортом. Со взгляда импорта-экспорта на отдельные виды продукции остановиться полностью импорт некоторой продукции, и наоборот некоторая часть продукции будет больше внутреннего спроса и направиться на экспорт [3]. Импорт некоторого вида продукции по объективным и субъективным причинам будет уменьшен. Т.е. речь идет о продукции питания,

производство которой по объективным причинам ограничено. Если возьмем за основу эти перспективы экономического развития, в будущем будем ожидать изменения в балансе импорта экспорта в республике. Тенденция наряду с общим экономическим развитием в республике в балансе народного хозяйства послужит изменению соотношения импорта и экспорта и быстрому увеличению удельного веса экспорта. Увеличение экспорта и приобретение возможности страны выхода на мировые рынки означает производство более качественного и конкурентоспособного производства продукции. В общем экономическом развитии страны, и в направлении формирования экспорто-направленного баланса импорта и экспорта есть большие перспективы. В балансе продукции питания, являющейся одной из важных отраслей ненефтяного сектора республики в перспективе ожидаются изменения. Эти изменения будут в двух направлениях. С одной стороны, как и в составе импорта, так и в составе экспорта ожидаются структурные изменения, зависящие от внутреннего спроса и предложения и от общего экономического развития. Потому что, с одной стороны по мере развития общества и увеличения цивилизации, изменяется рацион питания населения, увеличивается спрос на более калорийные и качественные продукты питания, с другой стороны увеличивается его удельный вес и наконец, естественный рост населения оказывает свое воздействие на этот процесс. Второе направление в балансе преобладание экспорта над импортом в дальнейшем увеличение удельного веса экспорта в общем балансе. Это, прежде всего, значит усиление производства внутри страны и общее развитие экономики. С другой стороны обеспечение продовольственной безопасности означает нормальное обеспечение населения продуктами питания. Наконец, это означает постепенное превращение страны из страны, занимающейся импортом продуктов питания в страну, занимающейся экспортом продуктов питания и означает присоединение к международной экономической интеграции в еще более широком масштабе в мире. Как видно преобладание экспорта над импортом является очень большим социально-экономическим вопросом и как отмечено выше должно стать основным направлением экономической политики каждого государства. Как видно из статистических материалов, одним из важных сторон экспорта должен стать конечный продукт [4]. Т.е. в экспорте сырья должен быть меньший удельный вес сырья и экспорт должен обосновываться на конечный продукт. Как указано

выше в операциях импорта и экспорта это является одним из важных вопросов и должно учитываться в экономической политике. С этой точки зрения, в экспорте Азербайджана преобладают грецкие орехи, орехи, эфирные масла, спиртные напитки в первую очередь коньяк и шампанские вина, оливковые масла, шафран, икра рыбы, консервы, минеральные воды, консервы из фруктов и овощей, и др. Это естественно положительное явление и дает информацию о том, что экономика Азербайджана промышленного характера в особенности о развитии пищевой промышленности.

Для решения проблемы продовольственной безопасности в республике, усиления потенциала экспорта развития экономической интеграции одним из важных вопросов является создание свободных экономических зон (СЭЗ) и обеспечение их нормального развития [5]. Создание СЭЗ приведет к усилению внешних экономических связей каждой страны, и как одно из направлений международного трудового разделения присоединению к мировой экономической цивилизации. Таким образом, создание СЭЗ создаст условия для выхода экономики из национальных рамок и присоединение к международному сообществу. А это в свою очередь означает построение экономики на новой основе согласно мировым стандартам, последним достижениям научно-технического процесса, организации производства согласно передовым формам, новым методам управления, высокоспециализированному кадровому потенциалу. Естественно это является хозяйственной формой имеющей широкие финансовые возможности, создает условия для притока зарубежных инвестиций и имеет высокую экономическую эффективность. Поэтому, в последний период в мировых странах экономическая политика уделяет особое значение этому вопросу. В развитых странах Западной Европы создание СЭЗ широко распространено и дает очень высокую экономическую эффективность. Даже сейчас, СЭЗ создаются на уровне отдельных государств и достигают высокого социально-экономического подъема. Например, к этой категории стран относятся Объединенные Арабские Эмираты (Дубай), Сингапур, Гонконг, Малайзия. Опыт показывает, что создание СЭЗ положительным социально-экономическим процессом, не зависящим от объема, направления, и круга действия и являясь одной из форм передового разделения труда, действующего в международном масштабе в целом является важным фактором, который дает толчок к развитию производительных сил в целом. Поэтому, надо

использовать в нашей республике достижения социально-экономического процесса и передового разделения труда. Это в первую очередь означает, вложения зарубежных инвестиций в отдельные регионы и в целом в экономику республики, применение в производстве новой техники и технологии на основе инноваций и расширению современной инфраструктуры. Другими словами это означает, присоединение республики к мировой цивилизованной экономике, как по форме, так и по содержанию. А это в свою очередь, означает современную экономику, сильное производство, и высокую социально-экономическую эффективность. У республики есть большая необходимость в этом, и в скором времени экономика Азербайджана по всем параметрам должна присоединиться к мировой экономической цивилизации.

С регионального взгляда, по нашему мнению на нынешнем этапе было бы целесообразным создание СЭЗ в Куба-Хачмазском, Шеки-Закатальском, Гянджа-Казахском экономических районах. В этих районах направления производства, социально-экономические ресурсы, существующий производственный потенциал, факторы геополитического и географического размещения и другие факторы развития дают возможность для создания в этих регионах СЭЗ. Создание в этих регионах СЭЗ, их присоединение к международной экономической интеграции по нашему мнению послужит ускорению социально-экономического развития, привлечению в оборот в более широком масштабе и эффективной форме местных производственных ресурсов. Наряду с этим создание СЭЗ, их эффективная деятельность, свободное прибытие в республику иностранных инвесторов и инвестиций их финансовые вложения должны выполняться согласно международным стандартам. По нашему мнению к ним относиться нижеследующее:

- Должны быть акты и нормативно-правовая база международного характера, создающая условия для развития СЭЗ, регулирующая его деятельность. Это в особенности, должно относиться к налоговой, таможенной системе, и к юридически-собственническим отношениям в предпринимательстве, должно согласоваться с международными экономическими требованиями.

- Для деятельности зарубежных компаний в СЭЗ, следует создать соответствующие условия, должны быть смягчены налоговые погашения и налоговая система в целом должна быть стимулирующей;

- Таможенную систему следует согласовать с международными стандартами, и она должна быть привлекательной. Даже на определенный срок, для привлечения иностранных инвесторов, следует снизить таможенные ресурсы ниже международных нормативов.

- Над операциями импорта и экспорта должен быть особенный государственный контроль, следует устранить искусственные препятствия, должна быть обеспечена прозрачность.

- Учитывая реальность СЭЗ в Азербайджане, деятельность иностранных компаний должна быть производственного характера и построена на производстве конечного продукта. Потому, что как отмечено выше, экономика Азербайджана в будущем должна быть построена на производстве конечного продукта и должна быть ограничена в производстве сырья.

По нашему мнению, в Азербайджане для развития экономики страны и обеспечение продовольственной безопасности необходимо создание СЭЗ их деятельность должна быть взята за основу и должны соблюдаться соответствующие условия.

Одним из положительных факторов, оказывающих влияние на совершенствование баланса импорта экспорта, обеспечение развития ненефтяного сектора национальной экономики является вступление нашей страны во Всемирную Торговую Организацию (ВТО). Естественно вступление в эту международную организацию желание каждого государства. Вступившие в эту организацию, приобретают определенные льготы и преимущества в социально-экономическом развитии и усиливают международные экономические связи. Другими словами, вступившие в эту организацию, страны могут более широко использовать достижения международного разделения труда, и получают определенную гарантию в обеспечении экономической безопасности. С другой стороны, члены этой организации обязаны работать более ответственно, более быстро и эффективно, с более эффективным темпом. А это в целом, означает более быстрое развитие производительных сил в стране, их присоединение к мировым проектам и их выполнение. Для этого естественно должна быть высокая техника и технология, высокий кадровый потенциал и другие ресурсы. В общем, вступление в ВТО означает присоединение в международную экономическую интеграцию и использования их преимуществ.

Азербайджан, вступив в ВТО, приобретет определенные возможности в социально-экономическом развитии, может усилить и обновить свой экономико-производственный потенциал согласно современным требованиям. Вступление в эту организацию наряду с усилением социально-экономического развития в стране, может послужить основательным изменениям в балансе импорта и экспорта, в ненефтяном секторе, в том числе позитивным структурным изменениям на продовольственном рынке. Таким образом, в новых финансовых условиях, дальнейшее развитие продуктового рынка республики и структурные изменения в балансе импорта и экспорта должны по нашему мнению проводиться в следующих направлениях:

- В условиях нового экономического механизма, в том числе являющийся его составной частью финансового механизма следует провести изменения в балансе экспорта – импорта и должно измениться соотношение импорта и экспорта;

- Баланс в основном должен быть экспортнонаправленным, и следует в более широком масштабе выходить на мировые рынки;

- Основательное усиление местного производства и за счет этого обеспечение продуктами питания страны привело к уменьшению объема импорта. Импорт должен быть по продуктам питания, производство которых ограничено или его вообще нет;

- Экспорт должен быть направлен на сырье и в основном должен быть направлен на конечный продукт. С этой целью, как отмечено выше в республике следует создать отрасли промышленности и сильный промышленный потенциал производящий конечный продукт.

- Азербайджан на мировом продуктовом рынке в скором времени должен превратиться из страны импорта в страну экспорта;

- Согласно требованиям мирового рынка и ВТО основательное увеличение конкурентоспособного и качественного производства продукции и направление своего экономического потенциала в эту сторону. В настоящее время в этой отрасли ведется много работ;

- Азербайджан используя свои природные, экономические, социальные преимущества на мировых рынках должен уделять особое внимание производству и экспорту продукции приносящей большое количество иностранной валюты в страну;

- На производство и экспорт этой продукции должна быть государственная поддержка и основательная финансовая помощь. С целью стимулирования экспортного потенциала страны, следует сделать определенные льготы налоговых и таможенных пошлин и даже в определенный срок освобождение от них бы целесообразным;

- Должен быть положен конец безосновательному импорту и его следует предотвратить со стороны государства. В особенности, не отвечающий санитарно-гигиеническим нормам, выход некачественной продукции на внутри республиканский рынок и в этом направлении должна быть остановлена деятельность некоторых субъектов. В настоящее время в этой сфере много негативных фактов;

- С целью усиления экономики в стране и увеличения экспортного потенциала, использования в широком масштабе достижений международного трудового разделения и для присоединения к мировой экономической цивилизации считаем целесообразным скорейшее вступление республики в ВТО. Естественно, все это требует определенных согласований нормативно-правовой базы ВТО, законам экономического развития;

- Привлечение иностранных инвесторов в экономику страны, построение технической основы производства согласно современным требованиям и в более широком масштабе выход на мировые рынки являющийся одним из цивилизованных форм трудового разделения свободные экономические зоны (СЭЗ) создания.

И для их нормального функционирования в республике считаем целесообразным создания соответствующих условий. И это по нашему мнению является одним из атрибутов современного хозяйствования.

В стране в будущем формирование рынка продуктов и в этой сфере должны быть основные направления и тенденции развития и совершенствования импорта и экспорта. Именно формируемая и развивающаяся внутри этих условий и принципов баланс импорта и экспорта означает продовольственную безопасность и эффективную структуру баланса импорта и экспорта. Это означает как в мире так и в Азербайджане быстрое развитие и интеграцию мировую экономику. Самое главное что Азербайджан на основе современного интенсивного хозяйства, новой техники и технологии и высокой производственной цивилизации на основе высококачественных и конкурентоспособных

конечных продуктов (в особенности продуктов питания) превратиться из страны импорта в страну экспорта.

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Investing in socially-economic sphere of the subject of Federation as a function of the regional financial system

Abstract: The relevance of the article consists in the fact that in the modern Russian scientific economic literature is insufficiently presented research on the impact of financial system on economic and social development in General and at the regional level, in particular. The article describes the author's position consists in the fact that the composition of functions carried out by the regional financial system and forming mechanism of influence of monetary circulation on the socio-economic sphere of the subject of Federation, a special role is played by the investment. Research of influence of investments on the indicators of development of the subject of Federation should take into account the specificity of such its forms, as loan and stock. These forms of investments may be tactical (current investments) or strategic (capital investment), and depending on this, there are various implications for the direction and pace of development of the region.

Keywords: investment, region, subject of Federation, the socio-economic sphere, the financial system, stock investing, loan investing.

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***Инвестирование в социально-экономическую сферу
субъекта федерации как функция региональной
финансовой системы***

Аннотация: Актуальность статьи определяется тем, что в современной российской научной экономической литературе в недостаточной степени представлены исследования, посвященные влиянию финансовой системы на социально-экономическое развитие вообще и на региональном уровне, в частности. В статье изложена позиция автора, заключающаяся в том, что в составе функций, реализуемых региональной финансовой системой и формирующих механизм воздействия денежного обращения на состояние социально-экономической сферы субъекта федерации, особую роль играет инвестирование. Исследование влияния инвестирования на показатели развития субъекта федерации должно учитывать специфику таких его форм, как ссудное и фондовое. Эти формы инвестирования, могут носить тактический (текущее инвестирование) или стратегический (капитальное инвестирование) характер и, в зависимости от этого, возникают различные последствия для направленности и темпов развития региона.

Ключевые слова: инвестирование, регион, субъект федерации, социально-экономическая сфера, финансовая система, фондовое инвестирование, ссудное инвестирование.

Задачу выявления связи между состоянием региональной финансовой системы и уровнем развития социально-экономической сферы субъекта федерации целесообразно решать в рамках исследования комплексных функций регионального оборота финансовых ресурсов, каждая из которых включает специфические в операционном отношении формы аккумуляции и распределения (перераспределения) денежных средств. Такими комплексными функциями представляется обоснованным признать инвестирование, кредитование населения, организацию денежного обращения, сохранение и защита от инфляции денежных средств, валютные операции и страхование.

Инвестирование по своему экономико-юридическому содержанию представляет собой процесс приобретения активов (имущественных прав) с целью извлечения прибыли [1] и в контексте связи между финансовой системой и хозяйственным комплексом региона должно рассматриваться, согласно представлениям автора, как фундаментальная функция влияния финансовой системы на процессы развития социально-экономической сферы мезоэкономического субъекта. Такое положение обусловлено тем, что именно

инвестирование, при соблюдении условий его достаточных (но не избыточных) объемов и эффективной структуры, следует признать основным фактором развития объекта, обеспечивающим его ресурсную базу [2].

Как показано в трудах по современному инвестиционному менеджменту, достаточность объемов инвестирования достигается посредством точного объективного обоснования инвестиционной потребности объекта (макро-, мезо-, микроэкономического), а структурная эффективность – на основе построения иерархии комплексов социальных и экономических приоритетов объектов инвестирования [3, 4].

В исследуемой системе связей инвестирование может осуществляться в таких формах, как ссудное и фондовое. При этом в рамках ссудной формы следует выделять капитальное и текущее инвестирование, а, рассматривая фондовую форму – инвестирование посредством использования механизмов первичного рынка ценных бумаг и инвестирование посредством участия во вторичном обращении фондовых ценностей.

Сущность ссудного инвестирования определяется кредитным характером отношений между субъектами финансовой системы региона и регионального хозяйственного комплекса, предусматривающим вложение денежных средств инвестора (организации финансовой системы) в активы реципиента инвестиций (организации социально-экономической сферы) на условиях возвратности, срочности и платности. При этом текущее ссудное инвестирование ориентировано на создание финансовых условий решения тактических задач реципиента, относится по срокам к среднесрочному и краткосрочному кредитованию, а по целям – к финансированию потребностей в оборотных средствах [5].

В отношении влияния текущего ссудного инвестирования на развитие регионального хозяйственного комплекса следует отметить, что существенное влияние такого рода возникает, когда текущее финансирование совмещается с капитальным либо с первичным фондовым финансированием; в иных случаях эта форма обеспечивает, главным образом, поддержание функционирования организаций.

Целью капитального ссудного инвестирования является кредитование процессов создания новых основных фондов организаций регионального хозяйственного комплекса, что определяет его долгосрочный характер, а формируемые в результате денежные потоки обеспечивают финансовыми

ресурсами стратегическое (в современных условиях, как правило, инновационное) развитие реципиента инвестиций [6]. Данное положение позволяет выделить капитальное ссудное инвестирование, как принципиально важный фактор влияния на развитие хозяйственного комплекса и на позитивные изменения социально-экономической сферы субъекта федерации в целом.

В контексте решения задачи выявления существенных связей финансовой системы региона и социально-экономической сферы субъекта федерации важным представляется исследование субъектной структуры процесса ссудного инвестирования с установлением инвестиционного потенциала его отдельных участников. При этом следует исходить из того, что этот потенциал обусловлен объективными особенностями специализации таких организаций финансовой системы, как банки и страховые компании.

Способы формирования, высокая динамика и недостаточная прогнозируемость состава банковских пассивов (обязательств банка), которые, согласно фундаментальному требованию к их качеству, должны в каждый период времени обеспечиваться объемными и динамическими параметрами активов (обязательств перед банком) [7], что не позволяет банковской составляющей выделять значимые (более 30-40%) доли общих ресурсов на предоставление долгосрочных ссуд.

В то же время страховой бизнес по своей сущности позволяет достаточно обоснованно прогнозировать структуру своих пассивов [8], которая в принципе является существенно менее динамичной, чем у банков. Эта особенность страховой деятельности делает страховые компании в современных условиях важнейшим участником инвестиционных процессов, потенциал ссудного капитального финансирования которых в нашей стране не используется в полной мере [9].

К субъектам страхования следует относить не только собственно страховые организации, но и негосударственные пенсионные компании, поскольку последние, по существу, выполняют одну из страховых функций и в странах, где развита эта форма социальной защиты населения, играют важную роль в процессах капитального инвестирования.

Объектами ссудного инвестирования на практике являются все субъекты хозяйствования социально-экономической сферы субъекта федерации, независимо от операционной направленности и формы собственности, что требует от

субъектов финансовой системы в каждом отдельном случае инвестиционного взаимодействия определять целесообразность выделения финансовых ресурсов, применяя специальные методики анализа каждого потенциального реципиента инвестиций, учитывая при этом значимость последнего для комплексного (социального и экономического) развития региона.

Особенно важной указанная задача представляется в случае капитального ссудного инвестирования, поскольку в его объектах денежные средства связываются на длительный срок и в значительных масштабах, повышая его риск исходя из естественного снижения общего уровня диверсификации инвестиций. Для обеспечения необходимого уровня эффективности использования предоставляемых на капитальное развитие денежных ресурсов, по нашему мнению, необходимо по специальной методике проводить тщательный анализ каждого потенциального реципиента таких инвестиций.

Фондовая форма инвестирования ориентирована главным образом (за исключение вексельного краткосрочного облигационного обращения) на капитальное финансирование инвестиционных потребностей посредством приобретения прав собственности или (и) долгосрочных долговых обязательств реципиентов инвестиций [10]. Влияние применения фондовой формы инвестирования организациями финансовой системы региона на развитие социально-экономической сферы региона осуществляется по-разному, в зависимости от того, используется ли инвестором первичный или вторичный рынок ценных бумаг.

В том случае, если реципиентом инвестиций (региональной организацией социально-экономической сферы) принято решение о привлечении финансовых ресурсов посредством рыночной продажи эмитированных им фондовых ценностей (IPO прав собственности или долговых обязательств) и он становится участником первичного фондового рынка, то региональный инвестор получает возможность прямого вложения средств непосредственно в капитал данной конкретной организации, а фактически – в конкретный инвестиционный проект. Такой механизм на основе общей конечной заинтересованности в эффективности вложений связывает в единое целое финансовую систему региона и его социально-экономическую сферу, формируя долгосрочные связи, реализация которых является важнейшим фактором развития субъекта федерации.

Необходимо в этой связи отметить, что в качестве реципиента инвестиций при фондовой форме инвестирования выступают, помимо производственных предприятий, органы государственной власти региона, финансирующие дефицит регионального бюджета посредством размещения облигационных займов, что для ряда субъектов Российской Федерации является принципиально важной формой обеспечения денежными ресурсами социально-экономических и научно-технических программ развития.

Вторичное обращение фондовых ценностей, эмитированных региональным инвестором, заключается в приобретении организациями финансовой системы субъекта федерации ценных бумаг, главным образом, для получения курсового дохода, а эмитент прямых доходов от таких операций не получает. Однако рост рыночных котировок является важнейшим фактором повышения инвестиционной привлекательности эмитентов, который обуславливает не только возможность успешного размещения ими новых выпусков ценных бумаг, но и создает условия получения ими дополнительного доступа к источникам ссудного капитального финансирования за счет роста состоятельности данной организации, как заемщика высокого ранга [11].

В процессе исследования влияния вторичного обращения фондовых ценностей региональных эмитентов на показатели социально-экономического развития регионального хозяйственного комплекса необходимо учитывать такое важное обстоятельство, как то, что повышение курсов приводит к росту локальных региональных биржевых параметров (индексов) и, соответственно, к росту инвестиционной привлекательности региона в целом.

Субъектную структуру фондовой формы инвестирования образуют не только банки и страховые компании, формирующие и регулярно корректирующие состав принадлежащего им портфеля ценных бумаг (проводящие фондовые операции), но и организации – профессиональные участники рынка ценных бумаг (инвестиционные компании, паевые инвестиционные фонды и другие). Принципиальным требованием к составу субъектов фондового инвестирования является широкое включение в него внерегиональных инвесторов, что позволяет не только расширить объемы поступающих в регион инвестиционных ресурсов, но и создавать условия повышения инвестиционной привлекательности субъекта федерации, выводя ценные бумаги региональных эмитентов на национальный и, далее, на международный фондовый рынок.

Следует учитывать то, что внерегиональная направленность имеет для фондового инвестирования существенно большее внимание, чем для ссудного, поскольку на территории всех субъектов Российской Федерации функционируют, помимо региональных, национальные банковские структуры в лице филиалов и представительств банков, главные офисы которых расположены в других регионах.

Объектная структура фондовой формы инвестирования в региональном хозяйственном комплексе формируется, главным образом, под воздействием рыночных механизмов, определяющих как целесообразность вложения денежных средств посредством приобретения эмитированных данной организацией фондовых ценностей так и их стоимость. Однако в ряде конкретных ситуаций представляется необходимым регулирование рыночных процессов с целью ориентации потоков инвестиционных ресурсов в направлении социально значимых для субъекта федерации объектов, с применением, в первую очередь, экономических методов, включая государственное участие в проектах и государственные гарантии сохранности инвестиций.

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Comparative analysis of the European Union and the Eurasian economic union at the present stage of development

Abstract: The article presents a comparative analysis of Eurasian economic union and the European Union on legal, conceptual and practical aspects for the use of the richest experience of the EU. Analyzed the main features that determine the role of the EU as a center of power in the world as a geopolitical player with strong economic potential. It was also found that in the near future Eurasian economic union may become a meeting place post-Soviet states with the united Europe.

Keywords: economic integration, Eurasian economic union, European Union, supranational level, international relationships.

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Сравнительный анализ Европейского Союза и Евразийского экономического союза на современном этапе развития

Аннотация: В статье проводится сравнительный анализ Евразийского экономического союза и Европейского Союза по организационно-правовому, концептуальному и практическому аспектам с целью использования богатейшего опыта ЕС. Выделены основные признаки, которые определяют роль ЕС как центра силы в современном мире, как геополитического игрока с мощным экономическим потенциалом. В ходе исследования было также установлено, что в ближайшее время ЕАЭС может стать переговорной площадкой постсоветских государств с объединенной Европой.

Ключевые слова: экономическая интеграция, Евразийский экономический союз, Европейский союз, наднациональный уровень, международные отношения.

Экономическая интеграция является характерной особенностью современного этапа развития мировой экономики и определяется как частный случай общемирового процесса интернационализации хозяйственной жизни, который достигнут в условиях глобализации. Движение к такому единству происходит в организованных рамках при целенаправленном содействии со стороны государств – участников. Наиболее ярким примером экономической интеграции является Европейский союз.

Европейский союз (далее ЕС) – объединение европейских государств, участвующих в процессе европейской интеграции. Предшественниками ЕС были: 1951–1957 – Европейское объединение угля и стали (ЕОУС); 1957–1967 – Европейское экономическое сообщество (ЕЭС); 1967–1992 – Европейские сообщества (ЕЭС, Евратом, ЕОУС) [1].

Пространство СНГ не включает образования, сравнимые со столь продвинутым интеграционным объединением как ЕС. Между тем необходимость углубления интеграционных процессов на этом пространстве вполне очевидна. Одним из направлений подобного углубления должно стать полноценное функционирование Евразийского экономического союза, который в настоящее время переживает этап становления.

Евразийский экономический союз (далее ЕАЭС) представляет собой международное интеграционное экономическое объединение на базе Таможенного союза и Единого экономического пространства, договор о создании которого синхронно ратифицирован странами-учредителями – Беларуссией,

Казахстаном и Российской Федерацией 29 мая 2014 года, а в 2015 году к нему присоединились Армения и Киргизия в качестве полноправных членов [2].

Представляется целесообразным провести сравнительный анализ двух вышеназванных интеграционных объединений по количественным параметрам [3].

Таблица 1. Сравнение Евразийского экономического союза и Европейского союза по количественным параметрам по состоянию на 2015 год

Сравниваемая позиция	Данные по ЕАЭС	Данные по ЕС	Соотношение сравниваемых данных ЕАЭС/ЕС
1	2	3	4
Количество субъектов союза	5	28	1:9,3
1	2	3	4
Суммарный валовый внутренний продукт стран союза	1 трлн. 782 млрд. евро, то есть 4% от глобального ВВП	13 трлн. 068 млрд. евро, то есть ≈ 25% от глобального ВВП	1:7,3
Общий объем внешней торговли союза с третьими странами	700 млрд. евро	3 трлн. 416 млрд. евро	1:4,88
Величина экспорта товаров и услуг из союза	440 млрд. 150 млн. евро	1 трлн. 732 млрд. евро	1:3,9
Импорт союза	259 млрд. 849 млн. евро	1 трлн. 683 млрд. евро	1:6,4
Доля союза в мировой торговле (%)	0,5	20	1:40
Крупнейшие торговые партнеры союза (страны, объем взаимной торговли в евро)	Китай (65,5 млрд.), Нидерланды (51,4 млрд.), Германия (47,4 млрд.)	США (497,3 млрд.), Китай (433,74 млрд.), Россия (335,9 млрд.)	Касательно торговли с Китаем 1:6,6

Анализ количественных данных показал на факт масштабного отставания ЕАЭС от ЕС по макроэкономическим показателям, по месту и роли в системе международных экономических отношений. В отличие от ЕС субъекты ЕАЭС не имеют пока по-настоящему конкурентоспособных народнохозяйственных комплексов [3].

Проанализированные моменты определяют роль ЕС как центра силы в современном мире, как геополитического игрока с мощной экономической базой. Насколько быстро ЕАЭС сможет достичь таких результатов, покажет время.

Общее между ЕС и ЕАЭС заключается в следующем: в определенных областях решения принимаются независимыми наднациональными институтами, а в других — осуществляются посредством переговоров между государствами-членами; право Союза составляют: международные договоры в рамках Союза, международные договоры Союза с третьей стороной, решения и распоряжения высших органов Союза, принятые в рамках их полномочий. И для ЕС, и для ЕАЭС характерна географическая децентрализация системы органов управления (табл. 2) [1,4].

Таблица 2. Сравнение наднациональных институтов Европейского союза и Евразийского экономического союза

Институт ЕС	Назначение	Аналог в ЕАЭС
1	2	3
Европейский совет	Высший политический орган ЕС, состоящий из глав государств и правительств стран-членов ЕС	Высший Евразийский экономический совет
Совет Европейского союза	Наряду с Европейским парламентом, один из двух законодательных органов Европейского союза	В настоящее время отсутствует
Европейская комиссия	Высший орган исполнительной власти Евросоюза. Отвечает за выполнение решений Союза, контролирует соблюдение его законов в странах-членах и, если требуется, возбуждает в суде Европейского союза иск против стран-членов за нарушение членских обязательств	Евразийская экономическая комиссия
Суд Европейского союза	Высший суд ЕС	Суд Союза
Европейский парламент	Имеет три важнейшие задачи: законодательство, бюджетирование и контроль Европейской комиссии	В настоящее время отсутствует
Европейская счетная палата	Институт, осуществляющий аудиторскую проверку	В настоящее время отсутствует

	бюджета Союза и его учреждений	
Европейский центральный банк	Центральный банк Евросоюза и зоны евро	В настоящее время отсутствует

Проведенный анализ показал, что в ЕАЭС в отличие от ЕС, отсутствуют наднациональные политические органы. Известно, что особо значимое место в системе данных органов ЕС занимает Европейский парламент. В ЕАЭС идея создания Евразийского парламента была отклонена Правительством Республики Казахстан. Также не был решен вопрос о создании Счетной палаты ЕАЭС. Однако Счетная палата России, Комитет государственного контроля Республики Беларусь, Счетная палата Кыргызстана, Счетный комитет Казахстана, Контрольная палата Армении договорились о сотрудничестве на предмет аудиторской проверки бюджета Союза. В отношении наднациональной банковской системы можно отметить, что Евразийский банк развития сконцентрирован не только ЕАЭС, так как его сфера деятельности распространяется не только на государства – члены ЕАЭС.

Проведя сравнительный анализ институциональной основы, можно сделать вывод, что между ЕС и ЕАЭС прослеживается гораздо больше несовпадений, чем общих позиций.

Важно отметить, что в своем развитии ЕС уже давно были пройдены стадии формирования валютного и финансового союза и сейчас происходит становление банковского союза. В рамках ЕАЭС на сегодняшний день нет никаких предпосылок создания валютного союза и перехода к единой валюте.

В ЕС на протяжении достаточно продолжительного периода времени стабильно функционирует единый рынок нефти и газа, единое энергетическое пространство. В ЕАЭС такой рынок планируется создать уже к 2025 году.

На основании вышеизложенного, можно сделать вывод, что ЕАЭС выступает в качестве только экономического союза. На этой интеграционной ступени стороны отказались от политической составляющей. Также в отличие от современного ЕС в ЕАЭС образца 2015 года никак не выявляются общий финансовый мегарегулятор, общий знаменатель в области макроэкономической, антимонопольной, валютной и финансовой политики.

Заслуживает также быть отмеченной общность интересов между ЕС и ЕАЭС в интерьере реалий современного мира. Наличие такой общности дает

им шанс формировать ту европейскую архитектуру, которая отвечает требованиям времени. Для более тесного сотрудничества данным группировкам необходимо более точно определить стратегические цели развития. Наиболее благоприятным результатом развития взаимоотношений может служить подписание соглашения об упрощении таможенных барьеров и специальных экономических условиях для перемещения отдельных видов товаров между ЕС и ЕАЭС [5].

Самым оптимальным решением является выстраивание взаимосвязанного и совместимого пакета договоренностей в «треугольнике» ЕС – страны «Восточного партнерства» (прежде всего, Украина) – Евразийский экономический союз с перспективой выхода на глубокие и всеобъемлющие соглашения интеграционного характера, охватывающие все заинтересованные стороны «интеграционного моста» от Лиссабона до Владивостока.

Возможно, в будущем ЕАЭС может стать переговорной площадкой постсоветских государств с объединенной Европой, то есть ЕАЭС найдет уникальную миссию, которую не сможет выполнить больше никакая другая из уже существующих международных и межгосударственных интеграционных группировок.

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The industrial policy of Bulgaria – problems and challenges

Abstract: From its establishment to the present the European Union (EU) develops and enriches a unique economic and political partnership between the countries located in Europe. Implemented through a system of voluntary and democratically adopted interrelated contracts by Member States, it aims to promote Europe's global leadership in economic, political and social scene. The development is concentrated on the specific dimensions of the industrial policy in Bulgaria and analyses its problem sectors.

Keywords: industrial policy, industrial structure, Bulgaria.

In a turbulent, hostile and rapidly changing environment each country, including Bulgaria, is meeting a series of challenges to the promotion of industrial production, innovation and entrepreneurship. They are supplemented by temporary "diversion" of attention to the realization of short restorative and sometimes economic rescue measures and programs initiated by the economic and financial changes occurred in the world. In this paper is made an attempt by looking "back" and "forward" in the issues of industrial policy, to outline the challenges and prospects of the industry in Bulgaria.

1. Bulgarian industry and industrial policy (InP) during the accession to EU

Until 1989 the Republic of Bulgaria was a typical industrial country in which the industrial enterprises, were creating over 50% of national income. After starting the process of economy reorganization a strong decline in the pace of industrial development in the country began, and in 1993 it reached the lowest point of industrial production - only 51.5% from that in 1989. To some extent, this negative trend slowed in the period of preparation and accession to the European Community.

It then started and almost completed the process of structural reforms and privatization of industrial enterprises. But its very slow pace generates extremely negative consequences for large "strategic" (and not only), industrial enterprises and the collapse of giants such as "Kremikovtzi" - Sofia, "Steel" - Pernik and others. The enterprises from light and food industry were in better situation because of the cheap labor used.

The private manufacturing sector was in very unstable situation too. Until 1990 it does not exist in the structure of the economy. After 1991 the equality between different types of property enables the rapid emergence of many small private enterprises, which provided relatively high pace of development of this sector. The indicators in this respect were showing the achieved results - in 1992 by a modest 2.8% in the structure of industrial production in 2000 it accounts for about 15%. As a lasting trend was the increasing number of enterprises, as in most part they were the food and light industry, construction, transport, trade and services.

Since 1999 the policy of the country in terms of industrial production is consistent with the requirements of the European Union (EU). This is the result of the procedure launched by the preparation and the country's accession to the EU. European legislation in the field of industrial policy finds its expression in the "Action Programme to strengthen the competitiveness of European industry". In line with it the industrial policy of Bulgaria aims to strengthen the competitiveness of industry through: businesses restructuring; supporting industrial cooperation; increasing quality; encouraging innovation; and creating a favorable investment climate. For this purpose was elaborated and adopted a new Innovation strategy, Investment program and Strategy for industry development as a part of the National Development Plan 2000-2006, covering three main sectors - industry, tourism and small and medium enterprises. In terms of industry was recognized that was need accelerated continuation of the privatization process. As a result of it by the end of 2001 51.9% of all state assets were privatized. In parallel with the privatization process with high rates continues the liquidation and bankruptcy of unprofitable enterprises. To 31.10.2001 236 state enterprises were in the process of liquidation and the other 159 were in various stages of bankruptcy proceedings. All these actions aims to implement the necessary industrial production restructuring.

The other main priority of the government in this period was the creation of a favorable business climate and stimulate investment. Therefore, and in accordance

with the requirements of harmonizing our legislation with the EU has proceeded to changes in tax legislation. It is performed and easing regulatory regimes at the end of 2000 63 of such were canceled.

In 2006 Bulgaria has achieved a growth of 6.1% at the expense of developing private sector growth and investments. There is a fast expanding industrial sector, which generates 31% of value added of the country. The highest share in the Industry sector was the processing industry - 73% of value added created in the sector. The branches of this industry were very good developed - the food industry - 14.3%; engineering - 9.6%; clothing - 8.9% of GVA [1]. Despite these significant results the Bulgarian industry during the period is still with a low level of production processes concentration, low automation degree, using old technology and inability to substantially increase the value added.

2. The Industrial Policy of Bulgaria after the accession to EU – main aspects

Since 1.01.2007 Bulgaria became a member of EU. This necessitated the implementation of effective measures in increasing the competitiveness and productivity of the economy and particularly in industry, which become an integral part of state regulation. It is performed on the basis and principles of European regional policy. Its main tools are: Structural Funds (European Regional Development Fund, European Social Fund, the European Agricultural Fund); Community Initiatives (INTERREG III; URBAN II; LEADER +; EQUAL); Cohesion Fund (Member States whose GDP per capita is below 90% of the EU average, for projects in the field of environment and trans-European transport networks); Pre-accession assistance (PHARE, ISPA, SAPARD); European Investment Bank; European Bank for Reconstruction and Development; European Investment Fund; European Central Bank.

The main government regulation functions are concentrated in the Ministry of Economy. It develops the objectives and priorities of the state strategy and implements the state policy in the field of industry, trade, tourism, privatization and management of state holdings in the listed areas. This policy is implemented on the basis of the developed and adopted National Strategic Reference Framework (NSRF) and the Operational Program "Innovation and Competitiveness 2014-2020". NSRF describes the country's strategy to increase the competitiveness of the Bulgarian economy. It includes:

- Analysis of disparities, weaknesses and potential for development.
- Strategy interventions in basic types of activities and priorities Improving basic infrastructure; improving the quality of human capital; promoting entrepreneurship; balanced territorial development.
- Operational programs and mechanisms for coordination and complementarity of all financial instruments of the European Union.

With the greatest importance to the industry is The Operational Program "Innovation and Competitiveness 2014-2020". It justified the strategic priorities and guidelines for the development of our economy. The program is funded by the European Regional Development Fund and the national budget.

The introduction of new strategies, policies and tools to develop competitive advantages and overcoming the technological and technical delays in individual sectors require implementation of a number of changes in tax legislation, reducing administrative burdens and limitations and to create better conditions for the entrepreneurship development. All this provide the necessary conditions for further transformations in the structure of Bulgarian industry.

The changes in the industrial production structure of this period have been accompanied by positive changes in labor efficiency in the industrial sector [2]. They find expression in increased productivity, reducing the share of labor costs in the manufactured industrial production and improving the organization of production and labor in the different economic structures, which has become an important positive factor for countering the onset of next year economic crisis.

The results are conclusive evidence that the restructuring process in the industry, albeit too slow and sometimes controversial, achieved largely their goals - establishment of a new branch structure, with a dominant share of the manufacturing sector is the basis for the development of the national economy.

Unfortunately, the attractiveness of industrial structures is much lower than such in the service sectors, communications, finance, etc. To overcome this tendency is necessary to carry out policies aimed at creating favorable conditions for the development of industrial entrepreneurship. This requires the development of special branch sectoral strategies, expanding the opportunities provided by EU structural funds, schemes creation for innovative projects financial support and introduction and implementation of specific European regulations in terms of

environmental quality products, etc., united under the name "integrated industrial policy".

Instead of conclusion

The analysis of the problems and challenges facing Bulgarian industrial policy is a proof of the need to take more serious measures to reduce bureaucracy at various levels of state and local authorities; encouraging innovation, with a view to increasing productivity; improving energy efficiency in all sectors of the economy and development of transport infrastructure. Only the absorption of structural funds, expansion of cooperation and coordination between research structures and business organizations, improving the administrative capacity and simplify the existing rules and procedures to speed up funding in all sectors would ensure increased competitiveness of the Bulgarian industry. Since the implementation of the action in these and other ways it depends on how Bulgaria will continue its development in the new programming period.

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Information and communication technologies in regulation of agricultural enterprises

Abstract: The article is devoted to the problem of information and communication technologies usage in development of investment and innovation model of the agricultural enterprises. The efficient implementation of information and communication technologies in the branch of government regulation of the agricultural sector is investigated. The authors suggests directions for rapid formation and development of the information society in Ukraine with the aim to increase the competitiveness of the agricultural enterprises.

Keywords: information and communication technologies, traits of the information society, government regulation, competitiveness of the agricultural enterprises.

The development of the agricultural sector is declared as a priority of Ukraine's economy, one of the conditions necessary for its national security. In modern conditions the national security of any state is increasingly dependent on the development of innovative sphere of all sectors of the national economy which leads to modernization and investment attractiveness of enterprises, including the agricultural ones.

Now the innovative way of enterprises development is closely connected to the spread and the increasing role of information and communication technologies, the use of which in combination with the harmonious development of society and the state is one of the most important factors of economic growth in each of the international community. The positive dynamics of information and communication sphere acts as a central indicator of the competitiveness of agricultural enterprises. Only factor of technological change ensures sustainable development, regardless of

its place in the world ranking. Therefore, information and communication technologies require much attention from the government to create investment and innovation in a competitive status of farms.

The problems of state regulation of agriculture in Ukraine was widely researched by foreign authors such as A. Tretyak, A. Amos, B. Mesel-Veselyaka, P. Sabluk, I. Eschenko, Yu. Palkin, L. Fedulova, I. Mikhasyuk, V. Kremen, G. Kramarenko, N. Shatalova, A. Danilenko, V. Shlemko, I. Altukhova, Y. Balandin, M. Baketta, D. Vannin, I. Kryachkovoyi, Alexander Chayanov etc. Among Ukrainian scientists who have studied this perspective, we can mention G. Maznyeva, I. Hanin, A. Korchynska, G. Utkin, A. Zelenkova, A. Reva and others. However, an extremely important issue for Ukraine concerning information technologies for the effective management of state regulation of competitiveness of farms has not yet been the object of extensive research.

This article aims to study the role of ICT in state regulation of agricultural enterprises on the basis of investment and innovation.

In market economy, the key factor is the ability to increase the competitiveness of enterprises not only providing high efficiency production directly, but also getting the ability to openly express in the market and present their profitable production, products and services by producers. In addition producers as well obtain analytical and marketing information necessary for successful business development. All these opportunities became possible with the creation of modern information and communication technologies.

A critical review of scientific papers and literature testifies that the technological component of the information society became independent in terms of creating information technologies, information system. However, in our view, to consider them in isolation from each other is not very successful as information systems are the basic condition for the operation of information technology. These terms are closely related. Thus, information technology - a process consisting of clear rules for regulated operations, actions, steps of different complexity to computer data. Information in farm management system is a set of interrelated components that characterize different parts of information about the entity in the implementation of management functions within its organizational and management structure [1]. Information systems of agricultural production designed to increase efficiency and

quality of processing information necessary for decision making for individual business units and across the entire enterprise as a whole.

This decisive factor in the implementation and application of information technology and information systems works with information, but rather the actions associated with it, processing, storage, transmission, sharing not only within and between subjects of the information object, but externally using appropriate network technologies (communications). Based on that, it is most appropriate to use the term information and telecommunication technologies that are considered in this study as a set of modern technologies used for managing, processing, storage, visualization, modification and transmission of information on the status of use of agricultural land - the most important strategic resource for farm enterprise.

It is obvious that in today's information and telecommunication technologies (ICT) extend the effective management as providing managers, financiers, business leaders at all levels of the newest methods of processing and analysis of economic information needed for decision making, which leads to increased competitiveness of enterprises. Moreover, the design and implementation of management activities are impossible without constant receipt and consumption of information and should be based on adequate information security. This implies that for forming and implementing of managerial influence we require exact information on the state of the control system and the processes occurring in it.

In practice this means that for management of any social system the system requires not only the information but also some details that help to create an adequate solution for task management. Unnecessary or excessive information only complicates the process of information flow processing, preparation, adoption and implementation of important management decisions. An important condition for this is that the information is received on time [2].

Under these conditions, farm managers generator serves the information received, a kind of filter for its further elaboration and testing in the management process now to get the best solution and realization of the final goal - the creation of a strong, competitive company, able to maneuver in the market and meet the requirements of modern challenges. From this position, the information has become of global value, combining the world into a single system that exists here and now, that operates in the online mode.

Today, apparently, there is no single individual who has not used the Internet and mobile communications. World Wide attracts its users with empowerment and characteristics of traditional farm management. The Internet is highly efficient in presenting information and learning that enhances communication manufacturer, retailer and consumer [5]. It is effectively used for field and desk marketing research, analysis of demand and supply products manufactured in the domestic and foreign markets, statistics on the number of visitors to the site allow you to make an adequate picture of the popularity of not attracting visitors to action and a function as "leave your comment on the company "can serve as a survey restricted to leave users and potential customers on the status and future prospects of the company - producer of agricultural products.

Given these possibilities the number of Internet users in Ukraine for the period 2010-2013 reached 25 million people, which is 46% of the total population. Our country is among the leaders on the growth of the number of Internet users among the European countries. According to research company Gemius in cooperation with IAB Europe in 2011, Ukraine has become a leader in the rapidly growing market of online advertising and ranked second in the rate of growth of the Internet audience [10].

According to official data of the State Statistics Service of Ukraine in 2012, 91.1% of Ukrainian enterprises used computers in their work. Among them, 62.7% of companies have their own internal computer network [11].

Another situation is presented in rural areas - places of agricultural production. Despite the fact that all rural areas (regional centers) are connected to main channels, many villages have not implemented adequate high-speed Internet access. In addition, the widespread use of the Internet in agriculture sphere with traditional conservatism and distrust of farmers to new marketing technology, information technology, as well as directly ignorance and lack of qualified specialists in farms.

Ignoring agricultural enterprises rapid spread of the Internet network can result in loss of much of the potential profit and market share, significantly weakening the competitiveness and future opportunities for further development. So they should understand that the application of information and communication technologies and the development of trade through a worldwide network is the future of agriculture in Ukraine.

Deep theoretical study of the problems of information now allowed a new approach to the understanding of the nature of information in general and its role in enterprise management. Previously, information was understood as the one transmitted by people verbally or in writing. Another view of information is as follows "information can be characterized as the preservation and restoration of the carrier state of order and its sources, influences of the media" [2]. In the modern interpretation of that proposed by UNESCO, the information is considered as "universal substance that permeates all spheres of human activity, is the leader of knowledge and ideas, a tool of communication, understanding and cooperation, assertion stereotypes and behavior" [2].

However, with the development of design, production and subsequent spread of information technology in various spheres of society, we believe that information increasingly becomes a commodity that has some unique features. It is important to highlight that market information and information technology there is now rapidly developing and, which, in turn, transferred to a new post-industrial society qualitative state - information society, which is, according to L. Fedulova [6], the 5th technological structure, with its inherent characteristics.

However, in Ukraine the level of influence of technology on the development of the national economic system is inadequate and clearly displayed through ICT Development Index, the calculation of which is assigned by expert and quantitative estimates of the prevalence of Internet access in schools, competition among Internet service providers, government action to promote the use of ICT, the availability and effectiveness of legislation regulating the ICT, the number of mobile subscribers and Internet users.

In 2008 Ukraine occupied the 54th position among 154 countries in the world on this index in the ranking [14]. Thus, Ukraine has a tendency to build capacity of the country's readiness to use ICT in all spheres of public life. We are quite sure that the focus of reform and overcoming the crisis of the economy need to introduce mechanisms to promote greater use of information and communication technologies in the country should be taken care of by the state and public authorities.

ICT is a condition for accelerating economic development and competitiveness of agriculture, including:

- Development of state standards and other regulations for cryptographic protection of information and digital signature;

- Bridge between urban and rural areas, developed and depressed regions through the expansion of telecommunications infrastructure;
- The improvement and harmonization of forming the legal framework focused on priority development of the ICT industry, creating a competitive market environment and the development of public-private partnerships;
- Institutional support for coordination of state institutions in the industry, improving the efficiency of state agencies to implement government programs priority area;
- Development of the standardization in information technology and telecommunications;
- Significant expansion of public access through the Internet to state information resources and services, an integrated information and analysis system of state and local government, national government information systems in health, education, science, environment, public e-procurement system, and simplifying the reporting procedure, registration of businesses, customs clearance of goods through the introduction of reception and transmission of documents via the Internet;
- Providing entities for remote control of production, trade and logistics;
- The introduction of digital terrestrial and cable TV, as well as of broadband Internet resources (Wi-Fi, Wi-Max) in all settlements of Ukraine, as well as railway stations, airports etc.
- Promotion of non-cash payments for goods and services received by customers.

Due to the above said, we can conclude that public authorities today should primarily create conditions ensuring not only increase in information capacity but also its maximum realization in the public interest. Moreover the state should directly guide the development of innovative research and development in advanced areas of scientific and technological development.

In assessing the effectiveness of investment in ICT, including the introduction of electronic document to summarize land cadastre, scientists A. Shchedrin and A. Bondarenko suggest economic and quality electronic correspondence in quantitative form [12]. So now it makes sense for farm managers to acquire contemporary media culture as a part of their general, professional and managerial culture, and as a guarantee of appropriate level of management activity. In our opinion, management and information culture turns into an indispensable element of

professional competence of an expert, especially the head of the enterprise. Modern information technology tools support the management of a single information space and can significantly streamline its head performance management functions. It also allows them to create reliable information support of the preparation and adoption of comprehensive reasonable management decisions based on a careful analysis of the entire set of possible alternatives considering the advantages and disadvantages of each and forecasting the possible consequences of their adoption and implementation.

International experience strongly suggests that effective support management activities required complex information society. In 2012 the State Statistics Service of Ukraine conducted a survey of 49 thousand domestic enterprises (about 8% of the total number of active enterprises of Ukraine) regarding their use of ICT [15]. According to this study, 86.7% of respondents had access to the Internet. Every fourth company had a functioning homepage in the internal computer network (Intranet) and wireless access to their internal computer networks [15]. Of the total number of surveyed enterprises connected to the Internet, every second company received access to the worldwide network through mobile phones. However, broadband Internet access was used by only 37.8% of respondents [15]. This proves insufficient penetration of modern ICT in the activities of domestic businesses and the availability of capacity development. We should also note that this data sampling and percentage of surveyed firms is quite low, throughout our country these indicators are less and optimistic.

In this regard, special attention is the state regulation of the agricultural sector of Ukraine should be placed to the formation of investment and innovative model of industrial development and the development of national information society with an attractive investment climate, adaptation to existing national standards requirements to improve the international competitiveness of agricultural products and also under development and worthy of funding science and technology.

A. Shpykulyak agrees with this statement telling that "the economy based on knowledge - is the only way that society should develop, only ensured progress, innovation and competitiveness" [4].

The unprecedented backlog in development and management of agricultural enterprises of our country from the world's producers because they are 40 years focused on the innovative way of development, use and environmentalizing

intensification of agricultural production processes, using modern technology knowledge-intensive agricultural production.

The only way to ensure the competitiveness of agricultural products, improve production efficiency and economic growth in Ukraine is technical and technological re-equipment of agricultural production and development of high-tech energy-saving technology [8]. The author is convinced that it will be possible provided that the official state policy of Ukraine will focus on the use of scientific knowledge as the main resource for economic growth, the introduction of measures to restore and develop the scientific and technological potential and careful development of advanced methods of a systematic approach to such highly complex objects as state regulation of investment processes in the agricultural sector on the basis required by the law of Ukraine, transformations and innovation, information and standardizing nature, and require the use of interdisciplinary methodologies.

Information and communication technologies that nowadays become one of the main pillars of farms' competitiveness have been recently experiencing dynamic changes. Large and underdeveloped domestic market of information and communication technologies, a high level of popularity and appropriate special education with an unconditional state support, coupled with economic growth can become prerequisites for conversing Ukraine into a leader in information and communications sector, which in its turn, will improve state regulation system of agricultural enterprises.

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Increasing export potential of apparel companies amidst globalization and import substitution

Abstract: This article is dedicated to efforts to stimulate export of apparel companies. The authors offered recommendations to apparel companies to increase export of their products, which is an integral part of the Strategy for Development of the Russian Light Industry for the period until 2020.

Keywords: apparel industry, export, import substitution, export financing, export credit insurance, state support.

In August 2012, Russia accessed to WTO. As a result, the apparel industry faced a decrease in duties for apparel products. In their article "Impact of the WTO accession of the Russian Federation on development of the foreign trade activity of the apparel industry", the authors analyzed terms for removal of customs duties for light industrial goods, including apparel products, and concluded that there would be a drastic decrease in customs duties for virtually all types of apparel products from 2013 to 2015 [1]. There will be a decrease in customs duties for apparel products within two and a half years instead of 7 years as scheduled before; import duties will rapidly near zero and completely be removed in 2016. In these circumstances, the apparel industry may be impacted by two key factors: growing import of apparel products, i.e. possible decline in value of Russian apparel products and decrease or removal of import duties for qualitative raw materials and equipment, which can possibly compensate for prices for Russian apparel products.

Starting in March 2014, several countries, such as USA, EU, Australia, New Zealand, and Canada, imposed sanctions on Russia. Later, this list was expanded. However, these sanctions do not directly affect the apparel industry, as they mostly impact other industries. But they hit several large Russian banks, such as VTB, VEB,

Sberbank, Gazprombank, and Rosselkhozbank. This situation indirectly affects the amount and interest rates of loans extended to apparel companies, causing troubles in financing of these companies.

In the Strategy for Development of the Russian Light Industry for the period until 2020 and Action Plan on Its Implementation, one of the key areas is ensuring effective and innovative development of the light industry. It is expected that we face a decrease in import volumes (raw materials, spare parts) and an increase in export volumes. Given that textile, apparel and fur industries (up to 75%) have the biggest relative share in the assortment structure of the light industry, any change in the relative share of apparel imports and exports will dramatically alter components of the light industry. In their article "Export and import structure analysis of the apparel industry as part of implementation of the first stage of the Strategy for Development of the Light Industry in 2009-2010, the authors compare growth rates of export and import by key figures of apparel and textile products in 2009-2010 [2]. The 2010 export and import analysis shows that the total share of apparel and textile products is ranked fifth in the merchandise import table, which makes up 6.02% of total import, while in the merchandise export table it makes up 0.07% of total export only. Thus, the import of light industrial goods exceeds the export of the same goods 86 times. The 2010 export and import structure analysis shows that the difference between import and export of apparel and textile products is not that palpable as it is mineral commodities, fuel and energy resources, metals and metal products, cars and equipment. Consequently, there is a great potential for export of apparel and textile products and substitution of such imported goods.

The forecast for development of the light industry export for the period of implementation of the Strategy is as follows: in 2012 – 58.65 bln. rubles, 2013 – 64 bln. rubles, 2015 – 78.7 bln. rubles, 2016 – 87.1 bln. rubles, and in 2020 – 105.5 bln. rubles. Achieving these figures includes bringing the export growth to 105.5 bln. rubles and ensuring import substitution of products, including strategic purpose products, worth 110.7 bln. rubles by 2020 by expanding volumes of hi-tech export of science-intensive products and improving the structure of the foreign trade turnover. Further output growth of apparel and textile industries of the Russian Federation allows forecasting the growth of export if the export development strategy in this industry is implemented properly.

Implementation of innovative development plans requires more than one of the WTO accession factors – decrease in customs duties for raw materials and equipment necessary for manufacturing of apparel products. It is more important and essential in these circumstances to develop export of apparel products. However, elements of state support, which are in place thus far for development of apparel export, are very scarce, difficult to use at certain apparel companies; few interaction aspects have been elaborated.

In their article "Analysis of the state financial support for the Russian apparel industry", the authors carefully analyzed the Decree of the Government #803 as of November 1, 2008 On Approval of the Rules For Public Guarantees of the Russian Federation in Foreign Currency For Provision of State Support For Export of Industrial Products (goods, works, services) [3]. Based on the above-said study, the authors drafted a table for the procedure and terms for receipt of the public guarantee. But the existing mechanism for receipt of public guarantees does not allow apparel companies to promptly use them, as most companies are small and medium-sized businesses. Over the last 5 years, they were offered only subsidies to reimburse a part of their costs on raw materials. In 2014, the Government provided, among other things, 793.3 mln. rubles in subsidies. Thus, matters of state support for export of apparel products are still pending yet essential.

In their article "Export financing mechanism as a tool of state support for the apparel industry export", the authors considered schemes for financing of the apparel industry against public guarantees, which can boost exports in the apparel industry [4]. The analysis of support for exporters in other countries (Germany, Poland, Switzerland, Italy, France, and Czech Republic) allowed highlighting the most effect methods of export financing for Russian companies: lending for pre-export financing, lending for an apparel supplier exporter, direct lending for a buyer of apparel products abroad, indirect lending for a buyer of apparel products abroad.

At the Second Russian Forum "Light Industry" organized by the Ministry of Industry and Trade of the Russian Federation (Moscow, from November 30 to December 1, 2015), there were reports on development of additional measures of state support for Russian light industrial businesses. The participants considered extension of loans to light industrial producers totaling 15 bln. rubles in 2016. They also planned organization of the federal equipment leasing system housed by OJSC

Rosagroleasing in a similar way to the existing program for agricultural producers. It was decided to keep on subsidizing loans borrowed for working capital financing.

However, all these measures to support the light industry, including apparel industry, do not include programs on increase of the export potential of apparel companies. In order to forge and efficiently use the mechanism to boost the export potential of apparel companies amidst the current economic situation in Russia, it is necessary to consider a comprehensive approach on the part of the state, including amendments to customs, foreign exchange, and tax laws. It is also necessary to review federal programs on development of the foreign trade of the light industry. It is imperative to strengthen the financial support for exporters, by using export stimulation, subsidies and lending, development of insurance for foreign trade deals.

The comprehensive approach includes both a brief intervention and a long-term state support for the foreign trade of apparel companies. In the short-run, such actions contribute to intensive development of the industry and suggest increasing the share of Russian products in the domestic market. The long-term support provides for partnership on the part of the state in export credit insurance and financing of exporters, which must contribute to increase in the apparel export volumes.

In order to solve these tasks, it is necessary to take the following steps:

- *In customs regulation* – to decrease rates for importation of the newest apparel equipment. To provide for non-tariff regulation for decrease of apparel product imports.

- *In tax regulation* – to provide for reduced VAT rates for importation of apparel equipment. In order to increase sales of apparel products in the domestic and external markets: to decrease VAT and income tax or offer VAT and income tax benefits, to develop a system of compensations for R&D in quality improvement of exported apparel products.

- *In the foreign trade* – to organize free exhibitions and fairs, to hold conferences, advertising campaigns to promote exports abroad under the auspices of the state, to use preferences from the WTO accession.

- *In the intellectual property* – to simplify procedures and terms for receipt of trademarks by apparel companies for creation of domestic brands.

- *In the financial support* – to extend loans on preferential conditions for the purchase of apparel equipment, financing and insurance of export transactions.

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The definition of innovation attractiveness of economic activities of industry in the region

Abstract: The article contains the analysis of the problems of methodical provision of innovation attractiveness of regional branches of industry. The ways of improvement of economico-statistical calculation of innovation attractiveness are suggested. Approbation of the method is carried out by the example of Odessa Region industries. The article contains the reasons and tendencies of change of innovation attractiveness of regional industries.

Keywords: economico-statistician analysis, innovation climate, method, branch, industry, region, attractiveness.

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Визначення інноваційної привабливості видів економічної діяльності промисловості в регіоні

Анотація: У статті досліджуються проблеми методичного забезпечення інноваційної привабливості галузей промисловості регіону. Пропонуються напрямки удосконалення економіко-статистичної оцінки інноваційної привабливості, а також апробація методики на прикладі галузей Одеської області. Стаття аналізує причини та тенденції зміни інноваційної привабливості галузей промисловості регіону.

Ключові слова: аналіз економіко-статистичний, інноваційний клімат, методика, галузь, промисловість, регіон, привабливість.

Вступ. Останнім часом найбільшу актуальність для реального сектора економіки придбало питання залучення інвестиційних коштів і у зв'язку з цим побудови механізму оцінки інноваційної привабливості галузі регіону. Даний вид оцінки проводиться нарівні, а часто і в першу чергу, з аналізом сприятливості регіонального інноваційного клімату у порівнянні з умовами регіонів-конкурентів. У більшості випадків інвестор має певні напрацювання або конкретні рішення в певній сфері економічної діяльності і їм вже вирішено питання про галузь, в якій буде здійснюватися проект. У такому випадку йому належить вибір регіону чи територіального утворення, що найбільшою мірою задовольняє специфіку реалізації інноваційно-інвестиційного проекту. Проте останнім часом відбуваються процеси диверсифікації виробництва, і тоді ключове значення набуває процес вибору не регіону, а галузі застосування капіталу. Чи не виключений і такий варіант, коли інвестор вибирає таку галузеву спеціалізацію проекту, при якій він з яких-небудь причин може бути реалізований тільки в одному заздалегідь певному регіоні.

Аналіз публікацій. У роботі над статтею автор спиралась на праці наступних вчених: Захарченко В. [1 – 4], Колодиневний С. [5], Лазарева Є. [6], Пілющенко В. [7], Яковлев А. [9].

Мета статті: запропонувати комплексну методику економіко-статистичної оцінки інноваційної привабливості промислових видів діяльності у регіоні.

Постановка завдання. Тому, підсумовуючи все сказане вище, підкреслимо, що для інвестора можуть бути прийнятні три варіанти ситуації:

1) аналіз інвестиційного клімату регіонів відбувається паралельно з оцінкою інноваційної привабливості галузі;

2) інвестиційний клімат регіону аналізується в першу чергу, а інноваційна привабливість галузі – в другу;

3) спочатку відбувається оцінка інноваційної привабливості галузі, а згодом – аналіз ступеня сприятливості інвестиційного клімату території, на якій планується розташувати виробництво.

Очевидно, що в будь-якому випадку інвестор оцінює інноваційну привабливість галузі, під якою слід розуміти узагальнюючу характеристику окремих галузей (видів економічної діяльності) з позицій перспективності їх розвитку, прибутковості інвестицій та рівня інвестиційного ризику [2; 3].

Виходячи з аналізу існуючих методик оцінки інноваційної привабливості галузей економіки слід зазначити, що всі вони, так чи інакше мають економічну сутність, роблять свої висновки про ступінь інноваційної привабливості галузі на основі розрахунку змін у галузевій структурі інвестицій [1; 5; 8].

Виклад основного матеріалу. Пропонована в даній статті методика комплексної економіко-статистичної оцінки інноваційної привабливості галузей економіки має наступні відмітні особливості:

- повністю відповідає сутності визначення інноваційної привабливості галузі і передбачає її кількісну оцінку;

- заснована на трирівневій системі економіко-статистичних показників, розбитих на 2 блоки: специфічні (12 показників) і неспецифічні (19 показників);

- не виділяє показників потенціалу, некомерційного ризику та активності, а використовує показники, що цілісно відображають всі зазначені складові інноваційної привабливості галузей;

- заснована на використанні економіко-статистичних показників та показників, розрахованих на основі програмних документів, що дають більш об'єктивну оцінку, ніж показники, засновані на експертних оцінках, що виключає фактор суб'єктивізму;

- маловитратна, оскільки використовує в своїй основі показники, які щорічно збираються і офіційно публікуються Держстатом України та її територіальними органами, а також показники, що розраховуються на основі публікованих офіційних програмних документів;

- оперативна, оскільки дозволяє, з одного боку, використовувати показники, які Державна служба статистики та її територіальні органи розраховують максимум за 3 повних місяці з дня закінчення розглянутого періоду, і показники в програмних документах, що мають термін дії не менше одного року, а з іншого боку, за наданими показниками за короткий відрізок часу розрахувати інтегрований показник інноваційної привабливості кожної з розглянутих галузей;

- оновлювана, оскільки щорічно список показників, розрахованих на основі програмних документів або використовуваних у своїй основі нововведення законодавства, може змінюватися;

- виключає процедуру зважування показників як в блоці, так і кожного блоку для результуючого значення оцінки інноваційної привабливості галузі;

- має рівну кількість рівнів (трирівнева);
- містить різноспрямовані по впливу на інноваційну привабливість галузі показники: позитивні та негативні. При цьому негативні показники приводяться до порівнянного виду з позитивними із збереженням вихідної міжрегіональної диференціації їх числових значень;
- базується на індексному методі розрахунку;
- призначена як безпосередньо для галузевого інвестора, тобто інвестора, що має інвестиційні ресурси і ставить своєю метою вкладення їх у певну галузь реального сектора економіки, так і для адміністрацій всіх рівнів державного управління;
- має доступний алгоритм розрахунку.

До числа специфічних показників в методиці віднесені основні показники функціонування галузей, що відображають результати їх діяльності, безпосередньо пов'язані з випуском інноваційної продукції або наданням послуг за який-небудь період, найчастіше за рік. Їх склад не схильний змінам протягом тривалого періоду часу. Всі вони відображені в регіональних статистичних щорічниках, видаваних територіальними органами Державної служби статистики України.

Неспецифічні показники не мають безпосереднього відношення до випуску продукції чи надання послуг: вони являють собою відносні або узагальнюючі показники функціонування галузей. Їх склад підданий змінам в значно більшій мірі, ніж специфічних. Дані за цими показниками представлені в регіональних статистичних щорічниках, видаваних територіальними органами Державної служби статистики України нормативно-правових актах і додатках до них.

Перелік специфічних і неспецифічних показників використовуваних при оцінці інноваційної привабливості галузі, наведено в таблиці 1.

1. Визначення ступеня деталізації оцінки (галузі економіки, галузі промисловості (сільського господарства, транспорту і т.д.), підгалузі або виду економічної діяльності).

2. Вибір економіко-статистичних показників та показників з програмних документів (програм соціально-економічного розвитку регіону, що діють в даний момент в регіоні) та їх дорозрахунків до виду показників-індикаторів.

3. Структуризація показників-індикаторів по блоках у відповідності зі ступенем специфічності їх впливу на інноваційну привабливість галузей.

Таблиця 1. Показники економіко-статистичної оцінки інноваційної привабливості галузей регіону

Специфічні показники		Неспецифічні показники	
1		2	
№	Назва показника	№	Назва показника
1	Число підприємств галузі	1	Питома вага продукції і послуг підприємств приватної форми власності
		2	Питома вага великих і середніх підприємств у загальному обсязі виробництва
2	Об'єм продукції галузі	3	Чисельність промислово-виробничого персоналу
		4	Чисельність робочих
		5	Середньорічний сальдований результат прийняття-вибуття працівників
3	Індекс фізичного об'єму продукції, розрахований у процентах до попереднього року	6	Середньомісячна номінальна нарахована заробітна плата промислово-виробничого персоналу
		7	Питома вага збиткових організацій
		8	Обсяг заборгованості покупців
4	Індекс фізичного об'єму продукції, розрахований у процентах до 1990 р.	9	Обсяг заборгованості постачальникам
		10	Питома вага числа організацій, що мають прострочену заборгованість покупців
		11	Питома вага числа організацій, що мають прострочену заборгованість постачальникам
5	Сальдований фінансовий результат (прибуток мінус збиток)	12	Обсяг інвестицій в основний капітал
		13	Обсяг інвестицій в основний капітал організацій з участю іноземного капіталу
6	Рівень рентабельності продукції	14	Обсяг фінансових вкладень у великі і середні підприємства та організації галузі
7	Продуктивність праці	15	Обсяг довгострокових фінансових вкладень у великі і середні підприємства та організації галузі
8	Частка матеріальних витрат у загальній структурі витрат на виробництво і реалізацію продукції	16	Кількість проектів державної цільової програми, здійснюваних у галузі
9	Наявність основних фондів основного виду діяльності	17	Обсяг фінансових ресурсів, які виділяються з державного бюджету на здійснення проектів державної цільової програми, реалізованих в галузі
10	Знос основних фондів основного виду діяльності	18	Обсяг фінансових ресурсів, які виділяються з регіонального бюджету на здійснення проектів державної цільової програми, реалізованих в галузі
11	Коефіцієнт вибуття основних фондів основного виду діяльності	19	Обсяг фінансових ресурсів, які виділяються з позабюджетних джерел на здійснення
12	Коефіцієнт поновлення основних фондів основного		

виду діяльності	проектів державної цільової програми, реалізованих в галузі
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Алгоритм розрахунку оцінки інноваційної привабливості галузі економіки регіону має в своїй основі наступні кроки:

4. Приведення різноспрямованих показників-індикаторів до виду позитивних.

5. Вибір в якості підстави так званих «найкращих» даних ($Y_{i\text{найкращ.}}$) по кожному з показників-індикаторів, прийняття його за одиницю, розрахунок індексів значень даного показника в інших галузях по відношенню до «найкращого» ($\frac{Y_i}{Y_{i\text{найкращ.}}}$). «Найкращими» є найбільші значення показника, якщо суспільство зацікавлене в їх збільшенні, і найменші значення індикаторів, якщо має місце об'єктивна тенденція до їх зниження.

1. Методом багатовимірної середньої отримані числові значення індексів усіх показників по кожній галузі підсумовуються всередині кожного з блоків

($\sum_{i=1}^n \frac{Y_i}{Y_{i\text{найкращ.}}}$) і діляться на кількість показників-індикаторів всередині кожного

блоку, утворюючи середній інтегральний індекс по кожному з блоків ($\bar{t}_{СП} = \frac{M_{СП}}{12}$

та $\bar{t}_{НСП} = \frac{M_{НСП}}{19}$).

2. Загальна оцінка інноваційної привабливості кожної галузі знаходиться як середнє арифметичне з отриманих оцінок по кожному з виділених блоків ($\bar{t}_{сп}$).

3. Найбільшому середньому значенню присвоюється найкращий рейтинг (перший), а найменшому – найгірший (останній).

Модель методики комплексної економіко-статистичної оцінки інноваційної привабливості галузей регіону представлена на рис. 1.

На основі даної методики проведені розрахунки рейтингу інноваційної привабливості галузей промисловості Одеської області у 2014 р.

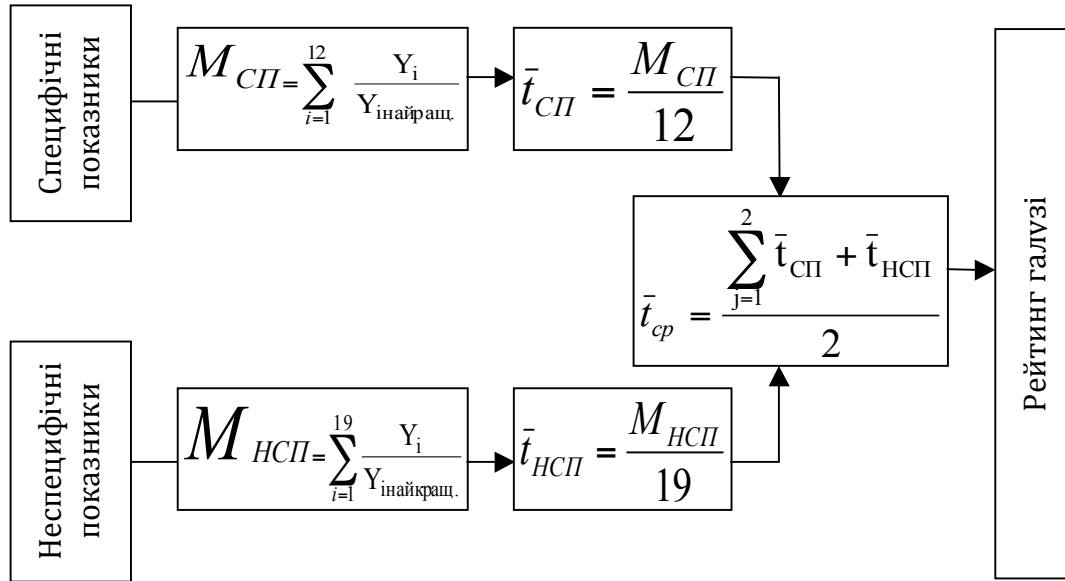


Рис. 1. Модель методики комплексної економіко-статистичної оцінки інноваційної привабливості галузей економіки регіону

Результати представлені у таблиці 2.

Таблиця 2. Рейтинг інноваційної привабливості видів економічної діяльності Одеської області у 2014 р.

Галузь	Інтегральний індекс по блоку специфічних показників	Інтегральний індекс по блоку неспецифічних показників	$\sum t_i$ (гр. 2 + гр. 3)	\bar{t}_i	Підсумковий рейтинг
1	2	3	4	5	6
Енергетика	6,23	8,73	14,96	7,44	3
Металургія	4,13	6,18	10,31	5,12	5
Хімічна та нафтохімічна промисловість	5,54	9,89	15,43	7,68	2
Машинобудування та металообробка	4,03	5,44	9,47	4,79	6
Промисловість будівельних матеріалів	5,61	6,05	11,66	5,83	4
Легка промисловість	4,30	4,92	9,22	4,63	7
Харчова промисловість	5,91	10,22	16,13	8,07	1

В результаті розрахунків виявлено, що найбільшою інноваційною привабливістю серед галузей володіли: харчова промисловість, машинобу-

дування та металообробка, електроенергетика, а найгіршою – паливна промисловість, хімічна та нафтохімічна промисловість, чорна металургія.

В харчовій промисловій області зосереджена найбільша кількість промислових підприємств, для яких характерний високий рівень продуктивності праці, великий обсяг продукції, що випускається, незначний знос та коефіцієнт вибуття основних фондів, найвища ступінь фінансової збалансованості у розрахунках між постачальниками та покупцями, найбільший обсяг фінансових вкладень, у тому числі довгострокових, у крупні та середні підприємства галузі, пріоритет у підтримці з державного бюджету у рамках державних цільових програм, що в підсумку і зумовило лідируюче положення у рейтингу.

Крім цього, у галузі діяла найбільша кількість збиткових підприємств, найвища серед галузей заборгованість покупців за поставлену продукцію і надані послуги та в зв'язку з цим неможливість розрахунку з постачальниками, відсутність припливу іноземних інвестицій у галузь, а також незацікавленість державного і регіонального бюджету у фінансуванні проектів галузі, включених у державну програму соціально-економічного розвитку Українського Причорномор'я.

Дану роботу виконано у межах проведених досліджень: НДР «Механізм прискорення інноваційної динаміки регіону» (№ ДР 0107 И 001069), «Формування конкурентоспроможної економіки регіону Українського Причорномор'я із урахуванням екзогенних та ендогенних факторів інноваційного розвитку» (№ ДР 0109 И 005904).

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Problems and prospects of the Daghestan tourism

Abstract: This article is devoted to problems and prospects of tourism in Daghestan. The publication focuses on the peculiarities and advantages of the region, perspective for development of a tourist industry.

Keywords: tourism, economic profit, investments, natural resources, brunch of industry, recreational system.

Nowadays tourism is one of the most profitable kinds of business in the world. As the interbranch complex of a social infrastructure, tourism plays one of the leading roles in the economy of a country or of a region, providing the great part of the gross national product and being a powerful lever of influencing the employment of population. Tourism influences practically all branches of economy. It has become a significant sector of the economy of many countries of the world where the tourism revenues exceed those of agriculture.

Today a significant number of big businessmen consider tourism as a source of incomes, for it has been rapidly developing as a leisure industry. The experience of many countries makes certain both the economic profit of tourism and its influencing the prosperity of population.

Daghestan, the largest of the North Caucasian autonomous republics of the Russian Federation, due to its natural and climatic peculiarities is a region quite perspective for development of a tourism industry. Situated on the western coast of the Caspian Sea, it is the southernmost territory of the Russian Federation. Geographically Daghestan is situated at the junction of two continents – Europe and Asia. Daghestan means «The Land of Mountains» and the republic lives up to its name, because a vast part of its territory is covered with mountains except for the flat depopulated steppes and semideserts in the north. By land and the Caspian Sea Daghestan borders on five states – Azerbaijan, Georgia, Kazakhstan, Turkmenistan and Iran, and within the Russian Federation it neighbours on Stavropolsky Krai, Kalmykia and Chechnya. The most distinctive feature of Daghestan is its ethnic

diversity; the two-million-strong population is predominantly of Caucasian or Turkish origin, comprising a total of 35 nationalities and ethnic groups, each having and speaking their own language. The working language is Russian, spoken by all, and the other popular languages are English and Arabic. None of the nationalities constitutes a clear majority, or occupies a dominant position. Daghestan is sometimes called a paradise for linguists, where they can study any of each large number of languages.

Speaking of the attractiveness of the republic, one can say that Daghestan differs advantageously from many other regions of Russia by its geographical and natural and climatic conditions. It has no analogues on the Euro-Asian continent on the quality and the quantity of climate and balneological resources concentrated at a comparatively small territory. Mild climate, warm sea, sandy beaches, pure ionized air, mineral springs and medical muds, unique flora and fauna, rich harvests and assortment of fruits and vegetables and berries, abundance and diversity of beautiful landscapes, thousands of historical and cultural monuments – this is a brilliant base for Daghestan to become one of the biggest modern centers of tourism and rest in the Russian Federation. Due to its unique nature, with more than 270 sunny days a year, high mountains and fine seaside, sandy beaches and picturesque valleys, deserts and waterfalls, medical springs and ecologically pure products, generous hospitality, customs and traditions, Daghestan is the most suitable and profitable place for developing a tourist business.

A tourist industry was formed in Daghestan in seventies-eighties of the XX-th century being one of the most profitable and dynamically developing branches of industry. By the end of the eighties the republic owned a rather developed service system for tourists. In 1990 more than 350,000 people visited Daghestan, and the demand for tourist and excursion services exceeded the possibilities of the recreational system. In 1992-1995 there were signs of stagnation in the tourist sphere of Daghestan. The Chechen war was one of the major reasons of it. The number of tourists reduced, the volume of services fell down, the construction of sanatoriums and campings was preserved. In 1995-1998 tourism in Daghestan was in its rising, but it mainly became exit. Over than 90 percent of the turnover of tourist business came to foreign shop-tours. Today approximately 10 percent of tourist enterprises in Daghestan deal with organization of entry tourism, and the sphere of sanatoriums and resorts is extremely weak.

It's obvious that the general feature of the tourist services market is that it cannot exist and develop independently from the state. The main goal of the state is to work out the strategy of the tourist activity, its legal regulation, assistance to the enterprises of the hotel and tourist complex in developing production. To revive the branch the law «On a Tourist Activity in Daghestan» was adopted. More than twenty tourist routes have been worked out, and alongside with entertaining and fact finding tourism, the ethnographic, horsing, mountain skiing, adventure, pilgrim, yachting, village and many others, including fishing and hunting are planned to be developed.

There are a lot of places suitable for tourism in Daghestan. A curative climate, the enormous sand beach stripe on the Caspian sea-coast, the ionized air and the unique distinctive culture and art of the Daghestan people – all that can definitely make the republic a kind of a tourist Mecca.

When speaking of Daghestan one cannot help mentioning Derbent, one of the most ancient places in the world, nearly 5 thousand years old. The fortress of Naryn-Kala is an extremely interesting place and is really worth seeing. The great historical and architectural legacy, originality, closeness to sea and many other factors turn Derbent into a centre of the Daghestan tourism. The fact that Derbent is among objects protected by the UNESCO Fund of the World Cultural and Natural Heritage certifies a historical importance of the town. Despite the problems of the last decades that caused the unfavourable situation with tourism, Derbent has always been visited by tourists, because the interest towards the town was always great both in Russia and abroad. The atmosphere of calmness is as topical as a service level in town, and tourists face both a well-equipped beaches and a treatment of the local people.

It's planned to develop not only the excursion tourism but also the scientific (conferences and symposiums), the pilgrim, archaeological, the business (exhibitions) and the sport (hunting, fishing, horsing) ones.

The opportunities for the development of spa business are the most possible in central and southern regions of Daghestan. There are places that combine both a mountain and a sea landscape, and there are many historical places and the mineral springs, as well. By the power and curative properties they approach the world famous resorts.

There are more than 300 mineral springs in Daghestan, many of them characterized by a complex of nature factors. The biggest are the Talghi spring, the balneological health resort of Akhty, the sanatorium of Kayakent and others. The

typical features of the Daghestan lakes are the large stocks of medicinal mud which are particularly great in the coastal lakes. The total area of the mud deposits in Daghestan is 110 hectares. Not only mineral waters and mud but also the mountain air has certain medicinal characteristics. Freshness, clearness and ionization distinguish it. All that combined with a beautiful nature and abundance of sunny days make the mountain climatic resort of Ghunib one of the best in its way.

Daghestan has a plenty of amazing relics of nature. You can meet here the biggest in the world dune of Sary-Kum, and the subtropical liana forest (the only one in Russia), and the Sulak Canyon which is deeper than the famous Colorado Canyon, and many of the other creations of nature.

Everyone is sure to get interested in Daghestan villages inhabited by the craftsmen creating the glory of the Daghestan folk works. The fame of unique centers of traditional arts, like Kubachi and Untsukul, Kumukh and Gotsatle, Balkhar and Tsovkra, retains the tourists' attention nowadays.

The Caspian Sea is rich in the valuable fish, so there are opportunities for amateur fishing, too.

There is a lot of natural, historical and other places of interest in Daghestan that have been poorly studied and even unknown yet.

Unfortunately, such a great number of various recreation resources haven't been used completely because of poor infrastructure and lack of advertisement. Advertisement is necessary everywhere, and in the sphere of tourism especially. A lot of countries in the world allocate great sums of money for tourism advertising, and it certainly makes a good result.

Unfortunately, it still remains unprofitable in Daghestan to invest money in tourism: the market is too small; the number of tourists is too limited. Why don't people want to rest in Daghestan? The simplest answer is that the rate of the tourist service is not high and its quality leaves much to be desired. But today one can see the process of improving the sphere of service in Daghestan. A great number of cafés, restaurants, expensive shops, cinemas appeared there. Nevertheless, the tourists are not eager to come here, and one of the problems lies in the fact that the private investors do not want to see the prospects and profits of investing in construction of hotels, and campings, and seashores.

Obviously, the development of tourist industry is the most perspective trend of economic, cultural and social growth of Daghestan. It is necessary both to increase

the investment volume on the Daghestan tourist and hotel market, and to stimulate the customers stream's dynamic to growth.

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The concept of improving forecasting of socio-economic development

Abstract: This article is devoted to the construction of the algorithm improve forecasting of socio-economic development of the region through the establishment of common principles and methodological approaches to the development of forecast system.

Keywords: region, strategy, economic development, social problems forecasting.

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Концепция совершенствования прогнозирования социально-экономического развития региона

Аннотация: Данная статья посвящена построению алгоритма совершенствования прогнозирования социально-экономического развития региона, через формирование общих принципов и методологических подходов к разработке системы прогнозов.

Ключевые слова: регион, стратегия, экономическое развитие, социальные проблемы, прогнозирование.

Актуальность. На современном этапе социально-экономическое развитие экономики Украины невозможно без учета территориальных особенностей, в частности, сильных и слабых сторон функционирования региональных экономических систем, благоприятных и негативных тенденций развития

регионов. Это обусловлено наличием значительной дифференциации в обеспечении необходимыми экономическими и социальными ресурсами. Именно на уровне регионов решаются вопросы воспроизводства производительных сил, реализуются проекты социально-экономического развития, удовлетворяются ключевые социальные нужды населения, а показатели развития региональной экономики является критерием определения уровня экономического развития государства в целом. Поэтому обоснование организационно-методологического обеспечения прогнозирования социально-экономического развития региона актуально и своевременно.

Основной материал. Неравномерность развития регионов усиливает научный интерес к этому вопросу. Начиная с рассмотрения региона как структурной единицы, в рамках экономической географии, и основываясь на процессном, комплексном и системном подходах, при осуществлении соответствующих исследований, ученые учитывают многоаспектность категории «регион». Используют также междисциплинарный подход, который приводит анализ регионального развития с разных точек зрения, а именно, экономики, государственного и регионального управления, региональной политики, регионального менеджмента и др. [6].

Следует отметить, что значительная часть существующих недостатков системы прогнозирования находится в плоскости научно-методического обеспечения. Поэтому разработка и обоснование прогнозов и сценариев развития региона, побуждает к углублению внимания в этом аспекте и последующих поисков ее совершенствования. Система прогнозирования должна охватывать сферу методологии и организации разработки прогнозов, информационного, экономико-математического, эконометрического, технического, организационного управления процессами обеспечения разработки прогнозов и содействие их использованию.

Результатами процессов прогнозирования социально-экономического развития региона должны стать научно обоснованные ответы на ряд вопросов: как изменятся потребности общества в будущем какие возможности существуют в обществе для удовлетворения этих потребностей в будущем какие результаты социального и экономического развития могут обеспечить необходимый уровень удовлетворения потребностей; какие пути целесообразно выбрать для их достижения; какие ресурсы необходимы для их

реализации и степень присутствия их в обществе; проблемы угрожают дальнейшему развитию и какие существуют пути их возможного предупреждения и ликвидации; какой комплекс научных, законодательных и организационно-технических мероприятий может обеспечить получение ожидаемых результатов и другие. Для ответа на поставленные вопросы система регионального прогнозирования должна иметь содержательную методологическую и структурное единство независимо от специфики прогнозируемых объектов [3, 5, 6].

Более четкую систему подготовки региональных прогнозов, по нашему мнению, возможно, сформировать за счет внедрения в практику прогнозирования алгоритма социально-экономического развития региона.

1-й этап. Актуализация и подготовка к сдаче прогноза. Актуализация разработки и реализация, прежде всего, комплексных средне-долгосрочных прогнозов это важная задача составления прогнозов. Только в единстве кратко, средне- и долгосрочных прогнозов является возможность разработать и реализовать эффективные управленческие решения и обеспечить устойчивое социально-экономическое развитие региона на долгосрочный период. С целью усовершенствования организационно-методического процесса разработки и реализации прогнозов и создание целостной системы прогнозирования в типовой программе нами предлагается принять ряд нормативно-правовых актов. В указанных нормативно-правовых актах должны найти отражение следующие вопросы: формулировка задач для разработки прогноза; организационное и программное обеспечение процесса разработки прогноза. Задача для разработки прогноза должны быть четкими и однозначными, то есть необходимо детально охарактеризовать: сам объект прогнозирования; определиться с типом и формой составления прогноза; установить сроки, по подготовке и реализации прогноза; отметить состав разработчиков.

В качестве основных целей для различных типов прогнозов нами предлагаются следующие: краткосрочный прогноз - обоснование параметров бюджета региона на очередной финансовый год и плановый период. Формирование ежегодной инвестиционной программы развития области; среднесрочный прогноз - создание основ для составления целевых программ развития на среднесрочную перспективу, а также финансового плана на ближайшие пять лет. Результаты среднесрочных прогнозов должны

использоваться в качестве исходных материалов для детальной проработки первых лет долгосрочной программы. В среднесрочном периоде появляется возможность определения приоритетов инвестиционной политики, так как реализация многих инвестиционных проектов осуществляется в течение 5-7 лет.

Долгосрочный прогноз - формирование базы для составления концепций, стратегий и программ социально-экономического развития региона на долгосрочную перспективу. В долгосрочном периоде возможны кардинальные изменения во вспомогательном механизме, структуре производственно-технологической базе экономики. Это позволяет реализовать главные цели социально-экономического развития области.

В результате составления прогноза развития региона должны быть решены следующие основные задачи, как: данная характеристика экономики региона до конца прогнозного периода в условиях сохранения сложившихся тенденций и степень достижения поставленных целей; рассмотрены и обоснованы возможные альтернативные варианты достижения желаемого состояния экономики региона в том случае, если цели развития не достигаются при инерционном варианте развития; проведена оценка сбалансированности между ранее выдвинутыми целями развития и имеющимися ресурсами; осуществлен анализ и сравнение прогнозных вариантов по количественным и качественным показателям социально-экономического развития; обоснован механизм социально-экономической политики, обеспечивающей достижение целей развития региона.

2-й этап. Сбор, систематизация исходной информации. В качестве главных требований к информационному обеспечению следует принять достоверность, достаточность, системность (возможность взаимосвязи показателей различных информационных блоков и уровней между собой), сопоставимость и тому подобное. Учитывая принятые на первом этапе цели и задачи прогноза, разрабатываемого нами, предлагается определиться со спецификацией информации, выяснить основные источники информации и возможность получения необходимых данных. В результате чего будет сформирована исходная информационная база данных. Отсюда, информационное обеспечение предлагается формировать за счет следующих источников.

- Информация органов статистики;

- Информация министерств и ведомств исполнительной власти, рекомендуется к использованию в виде унифицированной системы показателей, характеризующих социально-экономическое положение объекта;

- Собственная информация органов государственной власти;

- Информация предприятий, организаций различных секторов экономики;

- Аналитические материалы различных организаций, учреждений в разработке закономерностей социально-экономического развития области за предыдущий период, особую ценность в этом контексте представляют фундаментальные исследования по данной проблематике;

- Нормативно-справочная информация, в которой приводятся система норм и нормативов, коэффициентов эффективности, пропорций и соотношений и тому подобное;

- Материалы обзоров экономической конъюнктуры приграничных стран, с которыми предприятия и организации области осуществляют внешнеторговые связи.

Следующим шагом является проведение априорной оценки имеющейся информации. В качестве основного критерия оценки, имеющейся информации, мы считаем использовать степень соответствия информации требованиям сформулированной задачи прогнозирования. Данная соответствие должна определяться как по состоянию и тенденцией развития региональной социально-экономической системы, так и за ее взаимодействием с внешней средой и с качеством использованной информации.

На данном этапе исследования следует также осуществить выбор между объемами необходимой информации и расходами на ее получение [7]. При этом должен учитываться и фактор времени, то есть срочность получения информации, которая интересует разработчика.

3-й этап. Анализ и синтез региона как объекта прогнозирования. Выявляются ключевые параметры и условия, которые определяют перспективы социально-экономического развития области (потенциал региона, положительные и отрицательные тенденции в экономике и социальной сфере, проблемы и возможные «точки роста», внешнеэкономические условия, взаимосвязи и пропорции, сложившиеся в экономике и т.д.). В качестве основных направлений анализа и синтеза социально-экономической системы области нами рекомендуется принять следующие:

- Оценка природно-экономического, ресурсно-производственного потенциала региона, как комплексной социально-экономической системы;
- Определение специализации, комплексности и структуры регионального производства, а также анализ производственных процессов, пропорций и диспропорций в развитии региона;
- Выявление тенденций (положительных и отрицательных) социально-экономического развития региона за предыдущие годы в зависимости от горизонта прогнозирования, а также анализ динамики развития и состояние основных отраслей экономики;
- Анализ эффективности государственного управления на региональном уровне должен осуществляться не менее чем за последние пять лет;
- Определение внешних условий функционирования экономики региона.

Таким образом, используя методику анализа и синтеза социально-экономического развития, формируется гипотеза о механизме функционирования региона и его перспективы. Это позволит решить одну из главных задач - повышение обоснованности разрабатываемых прогнозов для области. Важным элементом всего аналитического процесса является его итеративность. Соблюдение принципа итеративности позволяет осуществлять процесс регионального прогнозирования экономно и эффективно. При проведении анализа социально-экономического развития области рекомендуется использовать различные методы, а именно: SWOT (анализ, выработка стратегических альтернатив), PEST (анализ внешней среды региона), SNW (усовершенствованный анализ сильных и слабых сторон региона).

4-й этап. Определение целей, показателей и ограничений развития - без них прогнозы, разрабатываемые, не имеют практического значения. Цели социально-экономического развития должны соответствовать следующим основным требованиям, как: соизмеримость, иерархичность, вариантность, достижимость. Их определения необходимо осуществлять при использовании системного подхода.

Однако, на наш взгляд, состав показателей среднесрочного и особенно долгосрочного прогнозов необходимо существенно сократить. В составе долгосрочного прогноза целесообразно оставить только ведущие макроэкономические индикаторы. При формировании целей и показателей прогнозов развития области предлагается применять следующие основные методы, как:

метод ПАТТЕРН и его модификации, морфологического анализа и экспертных оценок. Необходимо принять, пороговые (допустимые) значения основных индикаторов социально-экономического развития области. Превышение пороговых показателей угрожает экономической безопасности региона. Распределение региональных пороговых значений следует проводить в соответствии с Концепцией национальной безопасности государства.

5-й этап. Формирование сценариев развития области. Неопределенность исходной экономической информации можно снизить за счет разработки системы предположений, то есть гипотезы. В гипотезе отражаются теоретические и интуитивные предположения о механизме функционирования социально-экономической системы региона. Выдвинутая гипотеза позволит сформулировать возможные сценарии социально-экономического развития.

Разработанные сценарии развития области с помощью содержательного анализа проверяются на возможность их реализации. Использование экспертного метода при разработке сценариев дает возможность значительно сократить ошибки в прогнозировании, которые на данном этапе обусловлены только субъективными причинами. Профессиональная деятельность экспертов позволит сформировать коллекцию сценариев, которой можно пользоваться при прогнозировании развития регионов.

6-й этап. Выбор методов моделей прогнозирования. С целью повышения качества прогнозных расчетов рекомендуется применять один базовый, или несколько альтернативных методов прогнозирования. Эти методы должны согласовываться между собой и дополнять друг друга в определенной последовательности. Соответствующий выбор методов прогнозирования рекомендуется использовать с учетом имеющейся информационной базы, сроков составления прогноза, целей и задач по прогнозированию, а также особенностей и условий развития региона. Такой подход даст возможность сформировать определенную технологию использования системы методов и создать инструментарий социально-экономического развития региона.

7-й этап. Проведение прогнозных расчетов. С учетом ранее принятых сценариев развития и на основе подготовленной модели производятся расчеты прогноза социально-экономического развития области по нескольким вариантам. При проведении прогнозных расчетов рекомендуется использовать

различные модификации пакетов прикладных программ, в том числе: MS Excel, STATISTICA, Stat graphics, Econometric Views и другие [1].

8-й этап. Оценка качества разработанных прогнозов. Ценность прогнозов развития определяется не только в значимости с прогнозируемых социально-экономических процессов, которые происходят, но и в качестве самих прогнозов. Качество составленного прогноза является одной из центральных проблем в процессе принятия управленческих решений и во многом влияет на эффективность региональной экономической политики. Оценка качества в обязательном порядке должна осуществляться ретроспективными данными. Такая проверка позволит оценить адекватность использованных методов и моделей прогнозирования.

9-й этап. Мониторинг разработанных прогнозов. Эффективность прогнозирования социально-экономического развития области в значительной степени определяется возможностью своевременно отслеживать и вносить коррективы в тенденции развития с целью преодоления кризисных явлений и формировании благоприятных условий для развития. Решение указанной проблемы возможно при условии создания системы регионального мониторинга. Мониторинг в современных условиях должен стать неотъемлемой частью технологии прогнозирования социально-экономического развития области.

Основной информационной базой мониторинга являются статистические данные. Для преобразования существующей статистической информации в достаточном, своевременную и представительную базу, необходимо внести значительные изменения в организации и финансировании деятельности статистических органов на всех уровнях [2]. По нашему мнению, созданная система мониторинга области должна быть интегрирована в информационно-аналитическую систему «Мониторинг, анализ и прогнозирование социально-экономического развития и финансового состояния регионов. Оценка перспектив объективно существующих направлений развития общественной деятельности требует формирования прогностического стиля мышления, соответствующих знаний и компетенции, высокой степени общей культуры и образованности, умения видеть и понимать изменения и тенденции окружающей среды, умение использовать научно обоснованные методологии

прогнозирования и их инструментарий. Все это требует систематического повышения квалификации специалистов по прогнозированию.

Выводы. Предложенная структура системы регионального прогнозирования, алгоритм интегрированного процесса прогнозирования, содержание его этапов, методов и моделей реализации позволяют определить направления качественного совершенствования системы знаний по теории и практике прогнозирования социально-экономических и связанных с ними процессов развития регионов.

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Resistance to dubious financial transactions: international and Russian contexts

Abstract: Currently the growing volumes of legalization (laundering) of the shadow capital become one of the most disturbing trends in the global financial crimes statistics. Money laundering is interconnected with such phenomena as capital flight, corruption, terrorism financing, the use of offshore jurisdictions to conceal the origin of the income and tax evasion. The Russian and international experience of the resistance to dubious financial transactions were in the article analyzed.

Keywords: legalization of shadow incomes, dubious financial transactions, money laundering, terrorism financing, tax evasion, offshore jurisdictions.

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Противодействие сомнительным финансовым операциям: международный и российский контексты

Аннотация: В настоящее время рост объемов легализации (отмывания) теневых капиталов занимает одно из лидирующих мест среди наиболее тревожных тенденций в мировой статистике финансовых преступлений.

Легализация незаконных доходов сопряжена с такими явлениями, как бегство капитала за рубеж, коррупция, финансирование терроризма, использование офшорных юрисдикций для сокрытия источника происхождения доходов и уклонения от налогов. В статье проанализирован международный и российский опыт противодействия сомнительным финансовым операциям.

Ключевые слова: легализация теневых доходов, сомнительные финансовые операции, отмывание денег, финансирование терроризма, уклонение от налогообложения, офшорные юрисдикции.

В центре внимания международного сообщества находится проблема легализации теневых доходов, под которой понимается придание правомерного вида владению, пользованию или распоряжению денежными средствами, иным имуществом или правами на него, полученными в результате управления (владения) теневыми финансовыми потоками.

В настоящее время рост объемов легализации (отмывания) незаконных доходов занимает одно из лидирующих мест среди наиболее тревожных тенденций в мировой статистике финансовых преступлений. По нашей оценке, в последние годы доходы от теневого финансового оборота составляют от 2 до 5% мирового валового продукта, т.е. порядка \$3 трлн. в год, при этом ежегодно в мире легализуется более \$600 млрд. Легализация незаконных доходов сопряжена с такими явлениями, как бегство капитала за рубеж, коррупция, финансирование терроризма, использование офшорных юрисдикций для сокрытия источника происхождения доходов и уклонения от налогов. Следовательно, противодействие легализации теневых доходов становится одной из наиболее актуальных задач, стоящих как перед международным сообществом, так и перед каждым независимым государством.

Первые научные исследования теневых денежных потоков появились в США и странах Западной Европы в конце XX в., они преимущественно имели закрытый характер и проводились, как корпорациями, так и государственными структурами. В дальнейшем теневые финансы стали объектом изучения международных организаций. Ряд принципиальных аспектов, сопряженных с развитием теневых финансов, получили отражение в работах таких зарубежных ученых, как П. Гутман, Б. Далаго, Э. Де Сото, А. Картрайд, Р. Кларк, В. Рейсмен, А. Уайли, Ф. Шнайдер и др. Основное внимание в их исследованиях

уделялось нелегальному обороту финансовых потоков, определению нелегальных доходов, направлений их легализации. Среди российских авторов, анализирующих различные вопросы неформальных финансов, можно выделить Абакумова Н.Н., Болотского Б.С., Давтяна М.А., Есипова В.М., Зубкова В.Н., Ковалева А.М., Миркина Я.М., Мовсисяна А.Г. и др. В целом их научные труды посвящены отдельным проблемам теории и практики неформальных денежных потоков.

В современных условиях один из ключевых каналов легализации незаконных доходов и финансирования терроризма – банковские системы. Использование банковских систем для незаконных целей, обусловлено, прежде всего, множеством видов оказываемых услуг финансового посредничества и огромными объемами операций, что обуславливает актуальность избранной темы.

Цель данной статьи – выявление векторов реформирования системы противодействия легализации (отмыванию) теневых доходов и финансированию терроризма (ПОД/ФТ). Задачи исследования: рассмотреть институциональные основы противодействия сомнительным операциям; определить ключевые аспекты сомнительных финансовых операций (международный и российский подходы).

Согласно формулировке президентской комиссии США по организованной преступности (1984): «Отмывание денег – процесс, посредством которого скрывается существование, незаконное происхождение или незаконное использование доходов и затем эти доходы маскируются таким образом, чтобы казаться имеющими законное происхождение» [1]. Позднее данный подход был конкретизирован. В соответствии с Законом США «О борьбе с отмыванием денег» [2], финансовая операция квалифицируется как отмывочная, если лицо, ее совершающее: знает, что используемые в сделке средства, приносят незаконные доходы; целенаправленно содействует указанной противоправной деятельности; осведомлено, что финансовая операция проводится в целях сокрытия характера или источника доходов, маскировки местонахождения, обеспечения конфиденциальности владения или распоряжения доходами; располагает информацией, что конечной целью сделки является уклонение от предоставления в орган государственной власти необходимых отчетов об операции.

Венская конвенция ООН 1988 г. постановила считать легализацию доходов, полученных от незаконного производства или сбыта наркотических средств, уголовным преступлением. В то же время, преступления, не связанные с оборотом наркотиков, например, уклонение от уплаты налогов, не попадали под приведенное в Венской конвенции определение преступлений, связанных с отмыванием доходов [3].

В Страсбургской конвенции 1990 г. отмечалось, что лишение преступника доходов, добытых преступным путем, – один из эффективных и современных методов борьбы против опасных форм преступности [4]. Государства, подписавшие Страсбургскую Конвенцию, взяли на себя обязательство квалифицировать в качестве уголовных правонарушений следующие виды умышленных действий: конверсию или передачу материальных ценностей, если известно, что они приобретены незаконным путем для сокрытия их криминального происхождения или для помощи избежать наказания лицам, причастным к совершению основного правонарушения; сокрытие источника происхождения, размещения, движения или действительной принадлежности материальных ценностей, когда лицу известна их криминальная природа; приобретение, владение или распоряжение материальными ценностями, если в момент их получения лицу было известно их криминальное происхождение; прямая или косвенная причастность лица к совершению правонарушения, а также покушение на его совершение.

Согласно Страсбургской Конвенции, отмывание денег понималось не только как легализация доходов, полученных от наркоторговли, но и как легализация доходов, полученных от других видов незаконной деятельности.

С позиции ФАТФ, отмывание денег – процесс сокрытия или маскировки существования, незаконного происхождения, движения, назначения или использования имущества или денежных средств, полученных незаконным путем.

С точки зрения юридического подхода *экономическое содержание отмывания денег* рассматривается как совокупность действий хозяйствующих субъектов, направленных на придание легитимности владению, пользованию или распоряжению денежными средствами или иным имуществом, полученных незаконным путем. Основная характеристика этого процесса – криминальное происхождение капиталов, предназначенных для легализации (например,

капиталы получены в результате торговли наркотиками, контрабанды оружия, коррупции).

По сравнению с отмыванием денег *финансирование терроризма* чаще всего имеет другую экономическую природу. Денежные средства используются для реализации криминальных целей, а не для сокрытия незаконной прибыли. Террористические капиталы не всегда имеют нелегальные источники происхождения и не всегда используются только для непосредственного осуществления террористических актов. Аккумуляция финансовых ресурсов в террористических целях может проходить в рамках закона, например, через деятельность благотворительных фондов, которая выходит за рамки традиционных сценариев отмывания денежных средств. И террористы, и участники процесса отмывания денежных средств используют одинаковые механизмы легализации данных средств, такие как структуризация платежей для оптимизации контрольной отчетности, а также неформальные системы перевода средств.

Трансформация рыночных отношений в РФ отобразилась на российских дефинициях ПОД/ФТ. Так, согласно Уголовному кодексу Российской Федерации (УК РФ) под легализацией (отмыванием) доходов, полученных преступным путем, понимается: «совершение финансовых операций и других сделок с денежными средствами или иным имуществом, заведомо приобретенными другими лицами преступным путем, в целях придания правомерного вида владению, пользованию и распоряжению указанными денежными средствами или иным имуществом» [5].

Наряду с УК РФ, определение «отмывания денег» дает Федеральный закон № 115-ФЗ «О противодействии легализации (отмыванию) доходов, полученных преступным путем, и финансированию терроризма» (Закон № 115-ФЗ). Согласно статье 3 этого закона, «легализация (отмывание) доходов» есть «придание правомерного вида владению, пользованию или распоряжению денежными средствами или иным имуществом, полученными в результате совершения преступления» [6].

Под приданием правомерного вида полномочиям собственника подразумевается совершение различных действий (операций с акциями, облигациями, валютными ценностями и других сделок с денежными средствами или иным имуществом), направленных на затруднение выявления преступного происхож-

дения денежных средств или иного имущества и создание таких условий владения, пользования и распоряжения ими, которые позволяют считать их полученными правомерным путем. Из определений «отмывания денег», данных УК РФ и Законом № 115-ФЗ, следует, что отмывание денег это уголовное преступление.

Вместе с тем российское законодательство не содержит понятия «обналичивание». Так, в Законе № 115-ФЗ «обналичивание» как недобросовестное действие упоминается лишь косвенно: при снятии со счета юридического лица наличных денег в сумме равной или превышающей 600 тыс. рублей в случаях, если это не характерно для его предпринимательской деятельности; в данном случае банк обязан уведомить об этом факте Казначейство (с 4 февраля 2016 г., ранее Росфинмониторинг), сообщив данные держателя счета и получателя денег, что подчеркивает особое внимание банка к операциям клиентов по снятию крупных сумм наличных денег, как вероятно связанным с легализацией (отмыванием) доходов. Сравнение категорий «отмывание денег» и «обналичивание» позволяет сформулировать следующее определение последнего термина: «обналичивание» – это операция по переводу безналичных денежных средств государства и организаций в наличный теневой оборот с целью минимизации налоговых и социальных обязательств хозяйствующих субъектов.

Обналичивание может рассматриваться как отмывание денег лишь при определенных обстоятельствах, а именно, когда безналичные средства выводятся в наличный теневой оборот с целью сокрытия источника их происхождения или уклонения от налогообложения.

В настоящее время в мировом банковском сообществе особенно остро стоит проблема противодействия отмыванию доходов, полученных преступным путем. Общий ущерб, наносимый российской экономике и обществу указанными незаконными действиями, сложно поддается оценке по причине их присутствия во многих экономических преступлениях. Так, отмывание денег тесно связано с такими явлениями, как бегство капитала, коррупция, использование российскими компаниями и банками офшорных юрисдикций для сокрытия источника происхождения доходов и уклонения от налогов.

Несмотря на ряд весомых преимуществ, которые предоставляют офшорные зоны, есть и недостатки, причем, существенные. Эти зоны могут

быть одним из способов финансовых махинаций, мошенничества нечестной налоговой конкуренции и разного рода банковских афер. Не всегда можно пресечь незаконную деятельность в сфере экономических преступлений, так как законодательная база не совершенна, и потому проблемы офшорного регулирования бизнеса до конца не решены.

Многие компании при ведении бизнеса стали выходить за пределы своей страны. По оценке доклада Eurodad (European Network on Debt and Development) страны Европы ежегодно недобирают в государственный бюджет около 1 трлн. евро, а развивающиеся страны – 600–870 млрд. евро. Только в одной Италии потери бюджета от неплательщиков налогов составляют 119,6 млрд. евро. Больше всего потерь, т.е. 49,5 млрд. евро, приходится на налог с прибыли предприятий, за которыми следуют потери налоговых сборов на добавленную стоимость - 44,7 млрд. евро [7]. Так, в 2015 г. суммарный объем зарубежных накоплений Microsoft достиг 2 трлн. долл. (45% годового прироста) [8]. Около 36,5% всех инвестиций в российскую экономику (в общей сумме более \$132 млрд.) пришло из таких офшоров, как Республика Кипр, Люксембург и Британские и Виргинские острова [9]. Средства, поступившие в РФ из указанных юрисдикций, вероятнее всего, были отделены от источника происхождения, легализованы и в дальнейшем внедрены обратно в легитимную экономику России, что нанесло и продолжает наносить существенный ущерб интересам и безопасности государства.

Эксперты вынуждены признать, что зачастую офшоры являются местом отмывания денег и недобросовестного уклонения от налогов. Необходимо подчеркнуть, что нелегальный бизнес использует офшоры, главным образом, для сокрытия доходов, в том числе полученных от криминальных видов деятельности, к которым относится контрабанда оружия, наркотиков, терроризм. Офшорные банковские убежища конвертируют теневую прибыль в легальную, например, для приобретения недвижимости и законного бизнеса.

Использование банков, созданных в офшорных юрисдикциях, осуществляется в ряде мошеннических операций, направленных против банков и бизнес-структур других стран. Так, широкое распространение получил выпуск фиктивных или необеспеченных векселей, депозитных сертификатов и других финансовых инструментов. Этому благоприятствуют такие особенности офшорного режима деятельности банков и других компаний, как фактическая

анонимность владельца, минимальные затраты для учреждения банка, отсутствие законодательных требований к размеру уставного капитала, неэффективный контроль за соблюдением законодательства, возможность создания фирм с названиями, вводящими в заблуждение. Используя законы банковской тайны в офшорной зоне, маскируется ложный характер налогового убежища, мультиплицируется количество экономических преступлений. Одновременное сосуществование с разными налоговыми и организационными системами тем более становится неприемлемым, когда одним странам приходится вводить режим экономии, сокращать бюджетные расходы, в то время как другие, привлекая зачастую деньги, полученные нелегальным путем, благоденствуют.

Итак, опираясь на мировой опыт, мы установили, что на современном этапе развития деятельность офшорных зон оценивается неоднозначно: существуют две противоположные позиции: первая заключается в том, что офшорные финансовые центры с хорошей репутацией играют законную и существенную роль в международной торговле, а их безналоговая структура позволяет оптимизировать финансовые потоки и управление рисками. Оппоненты же подчеркивают, что офшорные зоны нередко используются для осуществления подозрительной или противозаконной деятельности. Именно это является основной проблемой, которая «вменяется в вину» офшорным центрам.

В число сомнительных операций входят сделки, целью которых является трансграничное перемещение денежных средств, т.е. имеющие признаки фиктивности и, как правило, связанные с торговлей товарами и услугами, покупкой/продажей ценных бумаг, предоставлением кредитов и переводами средств на собственные счета за рубежом. Следовательно, основные мотивы осуществления сомнительных операций – уклонение от налогообложения и легализация теневых доходов, в том числе путем использования офшорных юрисдикций. Несмотря на многообразие «отмывочных» схем, отношения экономических субъектов, связанные с отмыванием преступных доходов, имеют общую природу и составляют отдельный рынок финансовых продуктов. Как на любом рынке, основным мотивирующим фактором на стороне спроса выступают качество и цена услуги финансового посредничества.

Таким образом, создание эффективной системы противодействия легализации преступных доходов – одна из актуальных проблем всего международного сообщества, в том числе Российской Федерации, т.к. поиск путей реформирования ПОД/ФТ играет существенную роль в реализации концепции наращивания собственного потенциала национальной экономики.

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Abstract: This article examines the factors of investment attractiveness. Analysis of the impact of individual factors on foreign investment flows to these countries. Assesses the role of investment in development of Russians economy.

Keywords: investment, foreign direct investment, investment attraction factors.

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Аннотация: В статье рассмотрены факторы инвестиционной привлекательности. Проводится анализ влияния отдельных факторов на потоки иностранных инвестиций в страны. Оценивается роль инвестиций в развитии экономики России.

Ключевые слова: инвестиции, прямые иностранные инвестиции, факторы инвестиционной привлекательности.

Some problems of investment development of the Russian economy

Некоторые проблемы инвестиционного развития экономики России

В современных условиях привлечение инвестиций стало неотъемлемой реальностью функционирования экономики, в нем заинтересованы как развитые, так и развивающиеся страны. Привлечение инвестиций способствует развитию экономики, внедрению новых технологий, обновлению изношенных основных производственных фондов, созданию новых рабочих мест и других немаловажных составляющих элементов развития страны.

Инвестиционная привлекательность страны зависит от совокупности факторов, которые необходимо рассматривать системно при оценке инвестиционного климата страны. Факторы инвестиционной привлекательности страны неразрывно связаны с ее жизнью и экономическими показателями, а также непосредственно с самим понятием инвестиции. Эти факторы являются одним из критериев оценки оптимальности и выгодности вложений для инвестора, а также общим индексом или показателем благосостояния и развитости экономики той или иной страны. От уровня развития и состояния этих факторов зависит состояние и развитие экономики практически любой страны.

Привлечение инвестиционных ресурсов в экономику страну во многом зависит от совокупности политических, экономических, социальных, организационно-правовых и географических факторов.

Экономический фактор является своеобразным индикатором состояния экономики страны для потенциального инвестора, в которую он может вложить свой капитал. Экономический фактор состоит из уровня экономического роста, размеров и емкости рынка, размеров внешнего долга, конвертируемости валюты, силы валюты, уровня внутренних накоплений, степени совершенства налоговой системы, уровня развития инфраструктуры, уровня развития инноваций.

Рассмотрим более подробно показатели экономического фактора. Показателем уровня экономического роста является коэффициент прироста уровня валового внутреннего продукта на определенном временном промежутке. Обычно инвестор просматривает сравнительно небольшие временные промежутки, но не стоит забывать, что они зависят от того, какое время инвестор будет ожидать отдачи от собственных вложений.

По оценкам экспертов Всемирного банка, доля инвестиций в основной капитал в России по отношению к ВВП в 2012 году достигла 24% (еще в 2009 году была 19%) [1].

Параметр «размер рынка» определяет размеры потенциального спроса и имеет очень важное значение в оценке инвестиционной привлекательности той или иной страны. Размер рынка определяется опираясь на многие факторы и показатели такие как, например, количество населения (или потенциальных потребителей), конъюнктура спроса, величина спроса на аналоги проектируемого товара или же прогнозный спрос и другие. Емкость рынка зависит от потребности рынка в данном товаре или услуге, а также других факторов. К этим факторам можно отнести: степень освоения данного рынка, появления на рынке аналогичных или других товаров со схожими свойствами, эластичность спроса, уровень цен, изменения макроэкономических показателей, качества товара, эффективность продвижения на рынок и затрат на рекламу. Знание данного показателя дает инвесторам информацию, какие товары пользуются спросом и, следовательно, в какую отрасль лучше всего вкладывать свои средства.

Зависимость от размера внешнего долга также входит в группу экономических факторов. Внешний долг страны по определению, данному МВФ, – это объем непогашенных текущих, не связанных никакими условиями обязательств в виде основной суммы и процентов, принятых резидентами одной страны по отношению к нерезидентам, а также обязательства резидентов страны к нерезидентам, подлежащие погашению в определенное время в будущем. Последствия государственного долга приводят к существенному сокращению возможностей роста потребления для населения данной страны, а также увеличению налогов для оплаты растущего долга и связанных с ним процентов. Размеры внешнего долга страны – это важный показатель для любого крупного инвестора. Ведь большой размер внешнего долга в совокупности со слабой экономикой и зависимостью от других стран вряд ли привлечет крупные, а главное долгосрочные инвестиции в страну.

Конвертируемость валюты показывает фактический уровень развития страны. Конвертируемость национальной денежной единицы обеспечивает стране выбор наиболее выгодных рынков сбыта и закупок внутри страны и за рубежом, возможность привлекать иностранные инвестиции и осуществлять

инвестиции за рубежом. Конвертируемость национальной денежной единицы также обеспечивает стране иностранную конкуренцию, которая стимулирует национальные предприятия, подтягивает их до международных стандартов по ценам, издержкам и качеству. Обладание свободно конвертируемой валютой – это естественно большое преимущество в условиях выбора инвестором той или иной страны для своих вложений.

Немаловажное значение для экономического роста имеет уровень внутренних накоплений. Этот показатель характеризует возможные колебания уровня ВВП. Разница между объемом ВВП и потреблением, оптимально 24% от ВВП, дает 4-5% роста ВВП в год, соответственно намечая определенный рост экономики и некую экономическую стабильность.

Очень важным фактором для привлечения инвестиций является степень совершенства налоговой системы, так как стабильная налоговая система, максимальное упрощение налоговой системы, ослабление налогового прессинга путем снижения налоговых ставок, оптимальное сочетание прямых и косвенных налогов, приведение в соответствие с налоговым законодательством иных законов, так или иначе затрагивающих порядок исчисления и уплаты налогов, максимальный учет при налогообложении реальных издержек хозяйствующих субъектов, связанных с их производственной деятельностью, совершенствование подоходного налогообложения физических лиц, разработка гибкой шкалы налогообложения с учетом инфляционного процесса и другие условия способствуют привлечению иностранных инвестиций. Нестабильность налоговой системы снижает инвестиционную привлекательность экономической системы, поскольку увеличивает непредсказуемость результатов инвестиционной деятельности. В целом снижение налоговой нагрузки создает предпосылки для роста инвестиционной привлекательности страны.

Показатель «уровень развития инфраструктуры», входящий в перечень экономических факторов, рассматривается с точки зрения развития рыночной, транспортной, инженерной, социальной и информационной инфраструктуры. От наличия и доступности объектов инфраструктуры зависит себестоимость продукции, возможность реализации товаров и услуг, информированность населения о новых видах произведенной продукции и т.д. Чем ниже уровень развития и доступности инфраструктуры в экономической системе, тем ниже вероятность получения инвестором дополнительной прибыли, потому что выше

риск потери, порчи товара при транспортировке, выше издержки на доставку и реализацию продукции, а, следовательно, тем ниже ожидаемая прибыль инвестора и ниже привлекательность экономической системы для инвестирования. Развитая инфраструктура уменьшает отрицательный эффект от разбросанности бизнеса по территории страны и больших расстояний между промышленными регионами, способствуя интеграции страны в мировую экономику. Так, например, развитые системы транспортного сообщения, коммуникаций, электроснабжения способствуют эффективному функционированию рынков и развитию экспортно-импортной деятельности.

Фактор «уровень развития инноваций» характеризуется резким повышением сложности и эффективности труда, требующего высококвалифицированной рабочей силы. Чем меньше срок с момента разработки до момента внедрения в производство достижений научно-технического прогресса, тем выше его эффективность и тем выше привлекательность этого производства для инвестора [2].

Немаловажное значение имеет показатель уровня развития инноваций. Инновационный фактор определяется развитием науки и тенденциями превращения ее в непосредственную производительную силу. Современная наука является мощным стимулятором развития техники. Чрезвычайно важным в связи с этим становится объем затрат на НИОКР. Чем выше их доля в структуре распределения прибыли, тем выше уровень развития производства.

Большое значение для привлечения инвестиций имеет политический фактор. Наиболее важным политическим фактором является политическая стабильность страны. Политическая стабильность зависит от уровня и характера политической активности, позиций политических лидеров, от их умения выражать общенациональные интересы и консолидировать политическую волю граждан, от способности к критическому анализу своей деятельности, от соблюдения ими нравственных и правовых норм. Именно политическая стабильность является составной частью понятия стабильности государства, а оно в свою очередь влияет на степень привлечения иностранного капитала в страну. Этот очень важный фактор может легко объяснить причины инвестиционного кризиса в ряде развивающихся странах, например в России. Как известно от различных политических маневров зависит многое и в экономике, поэтому, когда происходят жесткие и непредсказуемые перемены в

политической жизни страны ее рынок и рынки соседних государств реагируют незамедлительно. В таких условиях невозможно привлечь большие объемы иностранного капитала, что объясняется элементарным неоправданным риском для инвесторов.

Организационно-правовой фактор описывает наличие и степень совершенства нормативных актов в области инвестиционной деятельности. Если в стране более устойчивая и совершенная законодательная база, регулирующая инвестиционную деятельность, а состояние других факторов, включая стабильную политическую систему, также благоприятное, то степень привлекательности страны для иностранного капитала значительно увеличивается.

Социальный фактор показывает уровень качества жизни населения, демографическую ситуацию в стране, продолжительность жизни, уровень безработицы. Все это является не маловажным для страны, так как говорит об уровне жизни в целом.

Выгодное географическое положение и развитый природно-ресурсный потенциал страны увеличивает степень инвестиционной привлекательности страны для иностранного капитала. Природно-географический фактор состоит из наличия природных ресурсов, климатических условий, выгодного географического положения. Этот фактор является определяющим для развития производства, поскольку выступает источником экономических ресурсов. Например, в России находится 10% всех продуктивных пахотных земель мира и более 50% мировых чернозёмов, по объёму выработки электроэнергии Россия занимает 3-е место в мире.

От рассмотренных выше факторов напрямую зависит приток капитала в страну, а соответственно, и ее потенциальные возможности к развитию за счет привлечения как зарубежных, так и отечественных инвестиций (государственных и частных).

Для России данные факторы распределились следующим образом:

Факторы	Ранг значимости	Оценка значимости фактора для привлечения ПИИ в страну					Пояснения
		1	2	3	4	5	
Экономические	0,5				•		Занимает 9 место по показателю ВВП

Политические	0,2				•		Занимает 66 место в рейтинге политической нестабильных стран
Организационно-правовые	0,05				•		Занимает 120 место в рейтинге по легкости ведения бизнеса
Социальные	0,15				•		Занимает 69 место по уровню жизни населения
Природные	0,1					•	Большие запасы газа, нефти

Сегодня объем инвестиций в экономику России оценивается в 60–70 млрд. долл. Норма инвестирования в экономику России составляет 13-20%. Привлекаемый объем инвестиций недостаточен для обеспечения полноценного воспроизводства основного капитала, в то же время закрепляет за российской экономикой роль источника первичных ресурсов и продукции их «первого передела» для мировой экономики. России нужен радикально новый подход к развитию экономики, означающий переориентацию с топливно-сырьевой на наукоемкую и инновационную специализацию, способный принести реальные экономические результаты лишь в средне- и долгосрочной перспективе.

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Role of financial recourses at improvement of technical maintenance of agrarian sector

Abstract: The present condition of financial recourses that are the great role improvement of technical maintenance of agrarian sector of the country is estimated at the article. At the same time, the shortcoming of financial recourses, the limitation of abilities to produce, including, the annual grow of number and need of population in the country are noted to be required to specify the composition of economic system of measures at the sector of use of recourses. From this point of view, the integral elements of that system of measures are determined at the article.

Keywords: food safety, agrarian sector, agriculture, financial recourse, technical maintenance.

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Роль финансовых ресурсов в улучшении технического обеспечения аграрного сектора

Аннотация: В статье оценивается реальное состояние финансовых ресурсов, имеющих огромную роль в улучшении технического обеспечения аграрного сектора страны. В то же время подчеркивается нехватка в стране финансовых ресурсов, ограниченность производственных возможностей, а также, рост с каждым годом численности и спроса населения, спрос к уточнению состава системы экономических мер в сфере использования ресурсов. С этой точки зрения в статье определены составные элементы данной системы мер.

Ключевые слова: продовольственная безопасность, аграрный сектор, сельское хозяйство, финансовые ресурсы, техническое обеспечение.

В современных экономических условиях расширение своей деятельности товаропроизводителей, действующих в аграрном секторе нашей страны, зависит от количества финансовых ресурсов. Нехватка финансовых ресурсов, имеющих огромную роль в улучшении технического обеспечения аграрного сектора, приводит к снижению уровня обеспечения продовольственной безопасности страны. Эта актуальная проблема (нехватка финансовых ресурсов сельскохозяйственных товаропроизводителей) наблюдается почти во всех странах. В настоящее время осуществляются последовательные и комплексные меры регулирования для устранения проблем в данной сфере и усиления деятельности товаропроизводителей. В улучшении финансового состояния предпринимателей, действующих в аграрном секторе, огромное значение имеют указы и распоряжения Президента страны. С точки зрения увеличения финансовых ресурсов, очень большую роль играл указ Президента страны «О некоторых мерах по ускорению реформ в аграрном секторе» от 22 марта 1999 года. В указе подчеркивается, что все еще остаются в силе налоги и платежи, сохранившиеся с периода существования системы планового хозяйства и по этой причине произведенные продукты зачастую обходятся с убытками, в результате наблюдается снижение производства ряда сельскохозяйственных продуктов, повышение уровня безработицы среди сельского населения. Для устранения таких негативных тенденций, развивающихся в аграрном секторе, Президент страны анализируя реальное положение, потребовал разобраться в причинах недостатков и искусственных препятствий и принятия срочных мер. После данного указа Президента страны был поднят вопрос освобождения сельскохозяйственных производителей от оплаты налогов, за исключением земельного, на 5 лет, и отчисления задолженностей за данные налоги. В тот период в Государственный Комитет по Земле и Картографии Азербайджанской Республики дали серьезное поручение о завершении выдачи соответствующих юридических документов собственникам земли для ускорения в селе развития рыночных отношений и предпринимательства. От Центрального Банка Азербайджанской Республики и Кабинета Министров потребовалось искать источники дополнительных кредитных

ресурсов, обеспечивающих развитие аграрного сектора, в частности, частных предпринимательских хозяйств и исследовать их направленность в этих целях и для решения этих проблем представить предложения Президенту страны. Наряду с указанными, в связи с указом от 22 марта 1999 года Кабинет Министров Азербайджанской Республики принял постановление о предоставлении льгот (на 2 года) производителям сельскохозяйственной продукции в розничной продаже нефтяных продуктов. После выполнения задач и поручений, вытекающих из данного указа, появились большие возможности для развития структур, занимающихся предпринимательской деятельностью в аграрном секторе и превращения их в устойчивые рыночные субъекты. В результате отмены многочисленных налогов и платежей, сохранившихся с периода существования системы планового хозяйства, указанной в указе, финансовые возможности сельскохозяйственных предприятий и хозяйств с каждым годом улучшились. С одной стороны, освобождение производителей сельскохозяйственной продукции от многочисленных налогов и платежей, а с другой стороны, продажа нефтяных продуктов производителям продукции на льготных условиях, дали толчок развитию аграрного сектора и привели к увеличению экономической производительности производства продуктов в этом секторе.

С учетом жизненной важности аграрного сектора, сохранение в силе на долгое время предоставления льгот производителям сельскохозяйственной продукции в розничной продаже нефтяных продуктов, могло бы оказать большой эффект на развитие предпринимательских структур, действующих в данном секторе и сельскохозяйственных товаропроизводителей. Но с сожалением должны отметить, что применение льгот на небольшое время в рассматриваемом аспекте в определенной степени уменьшил масштаб ожидаемого эффекта и образовался перерыв в осуществлении мер в данном направлении. Перерыв, образованный в данной области, привел к ухудшению финансового положения сельскохозяйственных товаропроизводителей и предпринимательских структур, действующих в аграрном секторе и с точки зрения приобретения материально-технических ресурсов, к увеличению препятствий. В дальнейшем восстановление льгот сельскохозяйственным товаропроизводителям и предпринимательским структурам в приобретении ряда материальных ресурсов создал дополнительный стимул к повышению

производства продуктов. В настоящее время продолжается исполнение мер, осуществляемых в этом направлении и обеспечивается продажа на льготных условиях нефти и нефтяных продуктов, а также, удобрений, производителям сельскохозяйственной продукции.

Нужно отметить, что практика организации необходимых материально-технических ресурсов на льготных условиях для удовлетворения производственных потребностей товаропроизводителей, действующих в аграрном секторе, существует и во многих странах, где развиты рыночные отношения. Этой практикой пользуются и в странах, входящих в Союз Независимых Государств. Изучению данной практики и применению на долгое время с учетом установившихся реальностей аграрного сектора нашей страны, есть большая нужда. Это очень нужно в период усиления экспансии на рынок сельскохозяйственных и продовольственных продуктов из зарубежных стран. Только применяя необходимые льготы и разрабатывая и осуществляя меры в соответствии с системой мер регулирования предпринимательской деятельности аграрного сектора развитых стран, возможно обеспечение конкурентоспособности на внутреннем рынке товаропроизводителей в названном секторе нашей страны и превращение их в устойчивые рыночные субъекты.

В улучшении состояния финансовых ресурсов, имеющих огромную роль в техническом обеспечении аграрного сектора очень важную роль играли целевые Государственные Программы, реализующиеся в нашей стране. В нашей стране принята Государственная Программа (2002-2005) по развитию мелкого и среднего предпринимательства и исполнены меры, предусмотренные в программе. Развита правовая база мелкого и среднего предпринимательства, произошли значительные продвижения в сфере регулирования предпринимательства. В настоящее время действуют организации, оказывающие образовательные, информационные и консультационные услуги мелким и средним предпринимателям и их деятельность с каждым годом усиливается. Благодаря формированию механизмов финансовой поддержки сословию мелких и средних предпринимателей, уменьшение их налоговой нагрузки, усиление стимулирующей роли налоговой системы, сделаны и продолжают определенные работы в направлении предпринимательской активности. В целях предотвращения необоснованного и незаконного вмешательства в деятельность предпринимателей, обеспечено применение «Контрольной

книжки». Расширена деятельность региональных инфраструктур предпринимательских структур, развиты их знания в общественной и производственно-торговой сфере. Расширение государственными и негосударственными организациями системы необходимых знаний мелких и средних предпринимателей повысило их конкурентоспособность на внутреннем и внешнем рынках и улучшило рыночные позиции.

В улучшении финансового состояния товаропроизводителей, действующих в аграрном секторе, свое положительное влияние оказали Государственные Программы по социально-экономическому развитию регионов Азербайджанской Республики (2004-2008 гг., 2009-2013 гг. и 2014-2018 гг.). В Программах особо подчеркивалось, что одним из передовых направлений экономической политики Азербайджанской Республики является усиления роли предпринимательства аграрного сектора в решении экономических и социальных проблем и для этого их деятельность нужно поддерживать, должны быть определены рамки мер государственной помощи предпринимателям и усилена нацеленность осуществляемых мер. Поэтому усовершенствование регулирования предпринимательской деятельности в нашей стране, уточнение механизмов, оказанной им технической и финансовой помощи, усиление правового обеспечения предпринимательства и создание благоприятного условия для развития предпринимательства в регионах в программе поставлена как цель. Для достижения этой цели сформированы определенные структуры в аграрном секторе и обеспечена их деятельность.

Известно, что доходы товаропроизводителей, действующих в аграрном секторе в сравнении с доходами предпринимателей, занимающихся с предпринимательской деятельностью в других областях экономики, подвергаются наиболее резким изменениям, а если взять в общем, всегда склонны к уменьшению. Такое положение наблюдается почти в большинстве странах мира и приводит к появлению проблем нехватки финансовых ресурсов товаропроизводителей, действующих в аграрном секторе. Для решения данной проблемы сельскохозяйственных товаропроизводителей, действующих в этом секторе, во всех странах мира разрабатываются и реализуются целеустремленные меры. В данной системе мер важное место занимает выделение дотаций, субвенсий и субсидий по продуктам, производство которых имеет стратегическое значение и обходится убытками.

В Азербайджанской Республике для улучшения финансового состояния сельскохозяйственных товаропроизводителей осуществляется их субсидирование. Для устранения препятствий, встречающихся в процессе производства у производителей продукции, Президент страны издал распоряжения «О государственной поддержке производителей сельскохозяйственной продукции» от 23 января 2007 года, «О дополнительной поддержке по обеспечению производителей сельскохозяйственной продукции семенами, удобрением и племенным скотом» от 21 августа 2008 года. Кабинет Министров Азербайджанской Республики утвердил «Правила по представлению помощи за счет средств государственного бюджета производителям сельскохозяйственной продукции за используемые топливо и моторные масла при возделывании посевных площадей» от 15 февраля 2007 года.

Для устранения нехватки финансовых ресурсов, имеющих огромную роль в улучшении технического обеспечения аграрного сектора имеется практика их кредитование на льготных условиях, выдача предпринимателям кредитов низкой процентной ставкой, оплата за счет средств государственного бюджета или частных фондов, определенной части процентных ставок за выданный кредит, оплачиваемых производителями. В зарубежных странах оказывается финансовая поддержка по страхованию своей деятельности от рисков разного характера, часть страховой оплаты в страховые организации оплачивается государством.

Устойчивое развитие аграрного сектора в данной области невозможно без организации совершенной страховой системы. И в данной области создана определенная правовая база. Принимая во внимание практику зарубежных стран, где развита рыночная экономика, был принят Закон Азербайджанской Республики «О стимулировании страхования в сельском хозяйстве» (18 июня 2002 года). Осуществление предусмотренных мер в данной области, может привести к улучшению финансового состояния товаропроизводителей. Это может быть возможным благодаря реализации ряда задач в стимулировании страхования в сельском хозяйстве. Эти задачи состоят из следующих: определение видов имущества, в страховании которых оказывается помощь государством, страховой оплаты и части страховой оплаты, оплачиваемой за счет средств государственного бюджета; установление максимального предела страховых тарифов; оплата части страховой оплаты, подсчитанной по

страховому договору и оплачиваемой за счет средств государственного бюджета и т.д.

В настоящее время продолжают целенаправленные работы над созданием системы страхования, соответствующей характерным особенностям области в сельском хозяйстве и в сельском хозяйстве страховочный рынок еще переживает период своего формирования. С учетом требований, вытекающих из характерных особенностей области, создание этого рынка и обеспечение деятельности может дать сильный толчок развитию предпринимательства и устойчивости рыночной деятельности товаропроизводителей. Из государственного бюджета выделяются средства в определенной сумме для возмещения части нанесенного ущерба во время выхода из строя посевных площадей в результате стихийных бедствий и техногенных факторов. Но к сожалению, до сих пор в нашей стране не удалось добиться страхования значительной части посевных площадей. В таких условиях очень трудно говорить о переходе аграрного сектора в устойчивый этап развития. Принимая во внимание занятия значительной части предпринимателей, действующих в аграрном секторе и семейных хозяйств, производством зерна и значения зерна в обеспечении продовольственной безопасности страны, в первую очередь, нужно добиться страхования значительной части зерновых посевных площадей.

В условиях рыночных отношений для улучшения финансового состояния товаропроизводителей, действующих в аграрном секторе, очень важно оказание им информационных и консультационных услуг. В глобализованном мире для товаропроизводителей у информации нет замены и оказание таких услуг не ограничивается международными организациями. В Государственных Программах по социально-экономическому развитию регионов Азербайджанской Республики (2004-2008 гг., 2009-2013 гг. и 2014-2018 гг.) предусмотрено осуществление в связи с улучшением информационного обеспечения товаропроизводителей на основе информационных технологий. В Государственных Программах предусматривалось завершение формирования информационного обеспечения товаропроизводителей, издание для предпринимателей информационных сборников и создание центра информационно-консультационных услуг. В настоящее время информации разного характера доводятся до предпринимателей посредством разных изданий, линией государственных и

негосударственных организаций. Но большая часть этой информации являются технологическими информациями, существующие с периода бывшего союза и в данных изданиях информациям экономического характера отводится мало места. В то же время в данных изданиях анализ информации ведется непрофессионально. В частности, состояние рынка и оценивание маркетинговой среды - анализ маркетинга не выполняются на уровне требований. Поэтому обоснование принятия решений по производству и продаже продукции товаропроизводителями, действующими в аграрно - промышленной сфере, не бывает на нужном уровне и это оказывает негативное влияние на их финансовое состояние.

В улучшении финансового состояния товаропроизводителей, действующих в аграрном секторе, большое значение имеет создание элементов рыночных инфраструктур (консультационные, торговые, рекламные услуги, маркетинговое исследование и т.п.). На самом деле, без создания перечисленных элементов рыночных инфраструктур, о нормальной деятельности рынка и речи не может быть. К сожалению, процесс создания элементов рыночных инфраструктур еще не завершен и это очень ограничивает предпринимательскую деятельность аграрного сектора на основе рыночного механизма и снижает конкурентоспособность производимых продуктов. Как известно, система рыночной хозяйственности по сравнению с экономической системой, основанной на методы административной власти, обеспечивает более рациональное распределение ресурсов, имеющихся в масштабе общества, по продукциям, производство которых необходимо. Так как, в условиях рыночных отношений наличие конкуренции между разными предприятиями и хозяйствами, стимулирует выделение ресурсов, имеющихся у предпринимателей, на производство продуктов, необходимых и оцениваемых людьми. В таком случае, руководители предпринимательских субъектов стараются более рациональному использованию ресурсов, достигая их удобной комбинации. Отметим, что данный процесс не всегда идет в желаемой форме и с точки зрения рационального использования ресурсов, появляется потребность разработки и реализации необходимых экономических мер регулирования.

С одной стороны, нехватка финансовых ресурсов, имеющих огромную роль в улучшении технического обеспечения аграрного сектора и ограничен-

ность производственных возможностей основных видов продовольственных продуктов, с другой стороны, рост численности и спроса населения с каждым годом требует уточнения состава системы экономических мер. По нашему мнению, к элементам названной системы мер можно отнести следующие:

- разработка нормативов в области использования ресурсов;
- установление нормативов в области предотвращения загрязнения окружающей среды;
- установление и применение стандартов безопасных продуктов с точки зрения питания людей;
- соблюдение нормативов в области использования ресурсов и применение системы платежей, санкций и льгот за отклонения от них;
- организация контроля системы соблюдения экономических условий хранения ресурсов;

Разработка и реализация вышеперечисленной системы мер может привести к повышению уровня обеспечения продовольственной безопасности по продуктам, произведенных в аграрном секторе страны.

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Coordination as a factor in the organization and improvement of social management processes

Abstract: The article depicts the mechanism of coordination. The goal set by the authors is to analyze its essence and to trace the diversity of its manifestations. The tasks that arise from this goal are connected with analysis of views on coordination, supported by short classifier revealing its wide application in basic social processes that determine the achievement of greater efficiency in the management of society.

Keywords: coordination, management, society, processes, mechanism.

Nowadays the problems in social development management deepening are among the dominant ones. They influence the speed of development of the social processes and at the same time are challenging for conducting new research. The dispute led by a number of authors rather than the nature and type of basic management functions, and the differences between them is somewhat provoked and situated in coordination. In this sense it can be argued that research in the management of socio-economic systems is a step that is essential enough because it creates conditions for phenomena of this kind to be analyzed in their natural social environment, to reveal their potential and diversify the content of the factors that optimize the finding a balance in social development and improvement.

From the analytical review of the scientific literature, the views of different authors on coordination are not insignificant in volume, but also create conditions for the formation of several groups [5]:

The first group of authors including Ansoff unites the view that all activities register the need to coordinate and thus achieve the goal of the common business.

Coordination is the linking of activities that rationalize the existence of the organization and determine the achievement of its mission and purpose.

Afanasyev et al. viewed coordination as a means to achieve a dynamic equilibrium both inside the system and between the system and the environment itself.

The next scientific community where Silagi also worked requires an understanding of coordination as a method which gives meaning to organizational functioning.

A team of Bulgarian scholars including Velev, Savov and others, attempts to involve coordination to basic management functions. Nikolov and Neykova build on their beliefs by adding another feature of coordination - the ability to harmonize the presence of all functions in the management process.

A group representing the coordination of such activities was formed whose goal was conflict resolution in two discourses:

- A) as a method of ignoring conflicts;
- B) as a basis of negotiation process in reaching agreement.

Of all the above-mentioned views on coordination the following can be found and summarized: that the majority of writers associate coordination with management, drawing a link between coordination and effective management and believe that this creates synergy between the system components on the occasion of their interaction.

All of the abovementioned determines the formulation of the conclusion that coordination is an essential mechanism for managing and achieving balanced development. Yet it is worth noting that it remains unspecified whether this is a key management function, hyper function or functional activity of other different types of status.

It is for this reason that the following covers the objectives and tasks of coordination and attempts to classify its main varieties. The realization of coordination as a management function is woven into the management process and ensures its unity and harmony. Coordination in the management of modern organization is related to the achievement of certain objectives. Actually in any economic system it is adopted to ensure normal functioning and coordination in the organized interaction of all elements for a successful achievement of the purpose for which it is initiated and the system itself exists.

This particular explains the main purpose of coordination, namely ensuring the stability, unity, equilibrium and balance of performance, refinement and development of the social system and its organizational and structural units.

This primary goal can be decomposed into two aspects.

- 1) Achieving harmony in the implementation of the activities of the economic system in the event of unforeseen changes in the external environment;
- 2) Achieving synergies in the operation of the system in the occurrence of unforeseen internal organizational changes and others.

General coordination objectives relate to relationships and connections of the system with the external environment and the ratios and relationships of the elements making up the system [3]. All these relations and ties should be coordinated in time and space to achieve sufficient consistency for optimal sound performance. The common objectives should be considered as a method to achieve the goal, justified by coordination.

General coordination goals are formulated for a shorter period of time as opposed to the main purpose and are expressed in a rational linking strategies in the development of the behavior of the economic system and the behavior of its elements.

In turn, the overall objectives are subject to decomposition and thus form targets involved in certain tasks such as:

- 1) Optimizing the efficient interaction;
- 2) Improving communication inside the organization;
- 3) Development of systems for connection to the macro environment;
- 4) The maximum approach to the needs of society.

As a result of the implementation of organizational tasks one can observe improvement of interaction with suppliers, specification of the delegated powers and achievement of full unity and consensus.

Coordination objectives are part of the objectives of the management system. They are related to the outcome of the coordination of each system and their implementation depends on the specific tasks that relate to the subject of coordination. Depending on the targets tasks can be classified into these groups: basic, common, complex and specific.

The main task of coordination is to find ways to obtain a synergy in the interaction of all organizational levels. This task requires coordination of the activities

of time and place; consolidation of strategic initiatives for the company's development and prosperity, and providing a consistent orientation of the enterprise. Reaching this interaction is included in the competence of senior management.

Common task in coordination can be defined as:

1) Matching the needs of society, the potential of the organization and opportunities for maximum satisfaction.

2) Coordination between the interests of society and the organization in the range of social interests to those of the individual.

Solving the common tasks of coordination applies the principle of the unity of social, collective and personal interests, and in this context full synchronization is achieved.

The complex tasks concern the powers of certain senior management positions and affect the coordination and reconciliation of behavior in areas managed by them that can be:

1) Coordination of different purposes.

2) Ensuring a balanced interaction between the available human resources.

3) Consistency of the stated strategies.

It is interesting to note that the coordination of organizational strategies forms a good climate for inward processing of management and objective possibility of making the most accurate management decisions. In reality in this case the direction of coordination does not determine the strength of the effect. The correlation between corporate, business, functional and operational strategy occurs in the process by which the objectives are transformed into results, and the results determine strategies. In this sense, coordination of strategies is an essential management task and a major organizational priority [4].

Coordination of modern methods and technologies for improving management efficiency is also a specific task with complex nature. It is aimed at coordinating the decisions that relate to improving efficiency through the introduction of new methods and technologies of management.

Considering the objectives and analyzing the possible tasks of coordinating various events give reason to perform convention. Its implementation relies on specific signs and gives an idea of the phenomenon occurring as a process, explaining coordination. In carrying out the classification of coordination it is appropriate to use signs based on which different types of coordination engage with

relevant groups. The result of the development of this classification allows for analysis of the contents and nature of coordination, but would also provide information for further development of practical applications for coordination.

According to the direction in which the coordination takes place, varies vertically and horizontally. Vertical is carried out from top to bottom in the management hierarchy and the network of distribution of powers, depending on a number of factors including the delegation of decision.

Vertical coordination conducts negotiation of private interests on an organizational level the common interests. It supports and promotes the realization of the overall management function of the system as it is carried through unity and coherence of actions mainly in hierarchical order. Such an opinion is advocated by some authors who commented that "... linear power as a consequence - the emergence of the "chain of command" - play a key role in the coordination of the entire organization.

Horizontal [2] coordination ensures cooperation between the various units of the same level of government cooperation with other departments of the business organization and rhythm in the work of each department.

Coordination [1] is carried out primarily by the body, which is superior in terms of those whose activity is coordinated. But there is coordination on objects subordinated to the body coordinate.

According to the nature of the effects on the realization of coordination there are four main groups of impacts associated with activities: order, regulation, control and organization.

Depending on the shape and strength of the impact, coordination function is active and passive.

The means of active coordination are associated with the introduction of regulations and standards.

Passive and active coordination supplement is aimed at fulfilling the prescribed allocation of tasks to achieve and maintain the necessary unity and harmony.

Depending on the degree of direct involvement of the manager, coordinating function can be regarded as direct and indirect.

Direct coordination is characterized by the implementation of specific coordination activities and operations of the Head.

In indirect coordination the chief leave the staff to find a way to reconcile with the overall objective of the organization on their own.

According to whether the coordination is done within the system or outside the system, we distinguish between internal and external coordination.

Depending on the management process we can classify coordination twofold: functional and processional.

According to the organizational communications we discern structural linear, functional, internal consultation, cooperation and information coordination.

In terms of whether the coordination of relevant activities are regulated in advance or occur spontaneously we distinguish between formal and occasional coordination.

Depending on the time of the coordination function, it can be preemptive and corrective.

Generally the so presented classifier can be argued to identify with the main trends in public social events coordination. Although the characteristics which affect the set are built, mainly formal management features, is significant and leading classifier is proof of the place and role of the coordination in modern social governance.

The above provides an opportunity for the following conclusions to be structured:

First. The essential feature of the coordination gives reason to believe that its options are expanding, and the goals and tasks to be performed with its help are becoming more critical for success in the management and development of the modern organization in particular and the society in a broader plan. This real and specific and universal mechanism makes it possible to find a balance in both publicly stated interests, and coordination of their implementation, ie it can be summarized as creating conditions that make sustainable social development.

Second. Full and confirmed presence, registered by the mechanism of coordination forming conditions in the process of realization of modern management to develop and improve the society needs more efficiency.

Third. Analysis of diverse manifestations inherent in coordination formed the understanding that this mechanism not only is constantly in the process of actual management in the present, but allows applications and development in the future. It is this resilience and scientific aspects of the application level and prove that on the

occasion of coordination and its application science and practice together, ie Science discovers and formulates and practice test and prove.

In conclusion it can be said that conceptually coordination is a real and workable alternative to social governance, providing the weighing of each organizational and social level, and creates the conditions for more sustainable and successful adjustment of future development and efficient improvement of society.

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Cluster analyzis of development of small-scale and private business in the regions of republic of Uzbekistan

Abstract: Transition to market relations was revealed by necessity of search of new forms and the methods adequate to formed tendencies of market restructuring to production management in regions. In article principles and development mechanisms of clusters taking into account their advantages as the special form of the territorially-branch organization of manufacture promoting realization of innovative enterprise projects of economic development in regions of Republic of Uzbekistan (RUz), causing synergetic effect of interaction with scientific institutes are formulated at interested participation of state structures of management.

Keywords: innovative projects, cluster, synergetic effect, economy, small business, private business.

Formations of mechanisms of acceleration of development of economy, which in the conditions of competitive market relations probably mainly on the basis of development of innovative activity of small-scale business and private business. Development of adequate models of the organization and investment and financial maintenance of innovative development of small-scale business and private business at high degree of risks of innovative projects extremely actually. Unlike production management used before a branch principle cluster the approach allows creating the effective economy focused on activation and commercialization of discoveries and inventions that will promote maintenance of positive structural shifts in economy of RUz. Under cluster it is understood territorially localized group of economically co-operating subjects of the purposeful economic it is industrial-economic activities, interconnected by among themselves co-ordinated actions in the course of realization of innovative projects on the basis of shown thus synergetic effect of system interaction. Introduction cluster the approach, promotes development and modernization of economy on the basis of innovative potential to introduction of

cluster's the approach, promotes development and modernization of economy on the basis of innovative potential of small and private business. Close integration into the uniform enterprise environment by industrial and innovative integration with the large enterprises, corporations, and design and research establishments is necessary for small-scale business and private business. Revealing of measures on increase of management efficiency by investment activity of regions of RUz on the basis of formation, functioning and developments кластеров will allow to develop principles, forms and formation methods in them regional cluster economic policy [1]. It causes effect of acceleration of innovative development of manufacture and economy in regions of RUz for achievement of competitive advantages and effect of a synergy of interaction of managing subjects on the basis of strategic cluster and inter-cluster economic partnership. In this case of cluster carries out also a role of the tool of the system organization of innovative development of economy. Formed of cluster effect of interested mutually advantageous partnership of manufacturing enterprises, the organizations of an industrial and market infrastructure as commercial banks, the investment, insurance companies, educational, scientific, consulting and other centers, at interested participation of governing bodies in subject of RUz causes directions of economic development and progressive market oriented economy, focused to re-structuring of regional economy. A main objective cluster politician is achievement by the enterprises entering into it and the organizations of competitive advantages in the domestic and world markets on the basis of revealing and realization of innovative potential of small and private business. As a result of realization cluster's politicians appear strong and weaknesses of economic development of region which is favorable to enterprise structures more accurately [2]. The cluster approach allows more full, target image to use personnel, raw, labor potentials, and possibilities of an industrial and market infrastructure open access to researches and recommendations of domestic and world centers of science thanks to which costs decrease, the exit on the new markets is provided that in turn stimulates increase in quantity of the small and average enterprises. Clusters are formed exclusively under the influence of market tendencies and differ from territorially-industrial complexes presence of the internal competitive environment, aspiration to reach competitive advantages of participants in the internal and external markets with the maximum use of innovative strategy of development. The special form of the support promoting development of innovative activity of the enterprises in

system of cluster, the policy of creation of zones of economic preference which create special conditions for their intensive development is. For example, development «the special industrial zone "Dzhizak" - it is visible that the group cluster became a basis of definition of the cores «growth points», capable to create special economic benefit of interaction on an innovative basis on branches, as motor industry, the electrical engineer, chemical and light industry, tanning, shoe, pharmaceutical spheres, manufacture of building materials, the medical equipment, articles of food [3]. Productivity of functioning of small enterprise in clusters, also as well as productivity of functioning of the branch of market represents the multidimensional phenomenon. The small enterprises united in cluster: first of all, are the special subjects of the market in the special industrial zone. As the subject of the market in regions act not simply small enterprise, and cluster. The primary goals cluster's projects are: grow the qualities of management at the enterprises cluster increase of competitiveness and quality of production at the enterprises-suppliers and development of mechanisms of subcontracting; stimulation of innovations and development of mechanisms of commercialization of technologies cooperation support between research collectives and the enterprises; assistance to marketing of production let out by the enterprises - participants of cluster and to attraction of direct investments. Maintenance of formation of favorable conditions of development of cluster including: increase of system effectiveness of vocational training assistance to cooperation development between the enterprises and the educational organizations; realization of target investments into development of an engineering and transport infrastructure housing construction realized taking into account development problems of cluster; granting of tax privileges according to the current legislation; decrease in administrative barriers. Each of directions of assistance to development of cluster taking into account features of differentiation of powers is realized both on federal and at regional and local levels. With a view of maintenance of efficiency of realization cluster's politicians of RUz of executive power rendering of methodical information-analytical consulting and educational support to enforcement authorities of regions of RUz is provided. Maintenance of realization of measures on development of the international cooperation in the given sphere is supposed. Application of cluster approach thereby gives necessary tools and the development methodology, allowing strengthening possibility of participation of small and average business at the expense of formed synergetic effect of interaction. At the same time,

carrying out cluster's politicians is directed on increase of efficiency of functioning of economy of region of RUz, development of an industrial infrastructure of support of small business. The cluster's approach to management of economy within the limits of a zone of economic preference provides effective interaction of the enterprises and the organizations various кластеров branch, territorial and a functional purpose, forming thus special synergetic effects inner cluster and inter cluster's interactions.

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Indicators of conduct employees in the enterprise

Abstract: The article reviewed the data model of competencies in the company, which takes into account a variety of knowledge, skills and personal characteristics of individual employees of the company are described in the form of indicators of behavior.

Keywords: competence model, HR management, human resources, training, re-training of personnel, management of social policies.

In modern enterprises competences play an important role, especially in the practice of human resource management. A set of competencies in enterprises located in the center of all the work with the staff and is used for a specific purpose, which makes it possible to accurately predict job performance employees. The level of competence of staff, his professionalism and teamwork skills, including training and retraining of personnel, acquires strategic importance to the company [1]. One of the factors in the successful development of JSC Tashkent regional electricity companies are security manpower is correct establishment of working and efficiency of the use of time, the growth of labor productivity. Analysis of the impact on the labor force activities at JSC Tashkent regional power companies usually begin with a study of security staffing employees and efficient use of time. During 2015 in the JSC Tashkent regional power companies to increase productivity was 5.95%. The level of payroll is 26.02%. The main guideline of social policy at the present stage is to stimulate the economic activity of the individual worker JSC Tashkent regional electricity companies. The staff is an integral part of the JSC Tashkent regional power companies and personnel management, it is an essential element of this interaction. Recently, the JSC Tashkent regional power companies used a functional approach, which is based on the allocation of the HR function, its goals and objectives within the functioning of the enterprise. Organizational approach for HR in the JSC Tashkent regional enterprise grid is defined as a set of interrelated economic, organizational and socio-psychological methods to ensure the

effectiveness of its employment and competitiveness. The company interaction of subject and object is considered as a set of mechanisms, technologies, tools and procedures for the implementation of the HR function. The system of personnel management in JSC Tashkent regional enterprise grid is a set of goals, objectives and main activities aimed at ensuring the continuous improvement of enterprise competitiveness, productivity growth and quality of work, provision of high social efficiency of the collective. It consists of several subsystems that perform corresponding functions. Personnel management in the enterprise, being social, and contains several aspects. Recently, JSC Tashkent regional power companies have begun to use social and psychological support of personnel management, to raise the efficiency of work, which involves issues related to mentoring and management staff and has many aspects, it can be based on different conceptual positions.

Behavioral indicators from our point of view suitable for togas, how to work with the staff [2]. We have considered the behavioral indicators for the workers in the enterprise. Behavioral indicators for according to our methodology, the employees evaluated on:

1.0 - where the employee regularly finds problems, shortcomings in the work seeks and finds in the shortest time solutions to problems, is able to determine the best option solutions, is working on the elimination of the causes that may lead to the re-emergence of these problems, making for 3 and more rational suggestions on improve the work always takes the initiative to improve the image of the enterprise.

0.5 - where the employee usually identifies problems at work, looking for the best ways to solve problems, making a 1-2 rational suggestions to improve the work usually takes the initiative to improve the image of the enterprise.

0 - where the employee sometimes identifies problems in work and eliminates them. Sometimes it brings rational suggestions to improve the work.

- 0.5 - where the employee is unable to identify operational problems, when they occur, is limited to a statement of fact, not able to offer a way to eliminate the problem, so it is usually waiting for a decision from the head.

- 1.0 - where the employee is not able to identify problems in work or suggest ways to eliminate them, he tends to create additional problems of its activities, always in need of help, expect to dictate to him what to do. Do not show initiative.

The findings of competence "professionalism" for employees of the company are as follows:

+1.0 - where the high level of professionalism, - the employee is fluent in the basic regulatory documents and professional terminology, a wide range of knowledge about the policy of the company, constantly improving, he adds knowledge, knows the features of the labor process.

+0.5 - where professionalism above the expected level. The employee knows the basic regulations, is able to apply them in most work situations, constantly improving, he adds knowledge, knows the features of the labor process, efficiently organizing the workplace, work process, has great equipment.

0 - where the professionalism shown at the expected level and the employee knows the basic regulations improves, adds knowledge, knows the features of the labor process, it can rarely happen minor glitches related to the improper use of the equipment.

-0.5 - The professionalism of employees below the expected level. The employee does not know properly normative documents; it may occur significant failures do not allow some of the standard tasks related to the ignorance of the rules of use of the equipment.

-1.0 - Unsatisfactory professionalism, where the employee has no idea about most of the regulations, it is very often there are significant failures associated with lack of knowledge of the rules of use of the equipment; it does not meet the requirements of the institution to the knowledge of functional responsibilities. An employee leaves many tasks incomplete or incorrectly completed, not fulfilling targets.

For the staff of JSC Tashkent regional electricity companies, social security involves the provision of guarantees and compensation, creation of conditions for labor activity and it provides for safe working conditions, health and ability to work, equal pay for equal work. Social services are provided in order to attract and secure the skilled workers, encourage staff and increase the income of workers, create an image of the company and a favorable opinion of him. JSC Tashkent regional power companies can obtain certain benefits provided by social services.

Can improve productivity, reduced turnover, reduced loss of working time because of illness. The interest of employees in the company and its successful economic activity, the higher the greater the number of benefits and services provided. This reduces turnover, as the employee is unlikely to want to lose numerous benefits for dismissal, such a policy may provide additional income of

employees in the case of the low level of wages or offered in the interest of attracting and retaining a skilled workforce with a high level of pay.

Using the competencies given good results to improve productivity in the enterprise.

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Control system perfection Liquidity of commercial bank in Republic of Uzbekistan

Abstract: Liquidity is the major characteristic of activity of the bank, testifying to its reliability and stability. The correct estimation of liquidity and its effective management concern the most important questions in activity of the credit organizations. Many banks of foreign countries showing dynamical growth could not solve a liquidity problem in strongly changeable financial environment. In article liquidity problems in bank system are considered.

Keywords: liquidity, managements of liquidity, sufficiency of the capital, bank system, commercial banks, liquid means.

Insufficient level of liquidity often is first sign of presence at bank of serious financial difficulties. In such situation it usually starts to lose deposits that reduce its available funds and forces to get rid of the most liquid securities. Liquidity of bank system exceeds 65% those in 2.2 times above the standard estimation in world practice "high" [1]. Administrative decisions concerning size of liquid means cannot be separated from other types of service and activity of other divisions of bank. The probability of occurrence of internal problems in bank for acceptance of administrative decisions by bank in the field of maintenance of sufficient level of liquidity of balance, management of risk of unbalanced liquidity of bank and formation of an organizational substructure of management by liquidity allows to define, estimate and predict results of the analysis of liquidity in due time. Management of liquidity and risk demands application of effective strategy which would allow settling a disbalance of active and passive operations, to estimate a risk level of current and perspective liquidity, to define bank strategy in a situation of presence of a lack of liquidity. This strategy is caused not only internal problems in management of liquidity of balance, but also external changes in the interbank market. For liquidity maintenance performance of following conditions is necessary: the compensated cost of actives of bank should exceeds volume of its obligations to clients; to provide

conformity of the entering and proceeding monetary streams formed as a result of realization of bank and economic operations of bank; performance of economic specifications of liquidity of the balance, the Republic of Uzbekistan confirmed by the Central Banks of Republic of Uzbekistan work on increase of level of capitalization of bank system, strengthening of its liquidity, stability strengthening is spent. The cumulative capital of banks of Republic of Uzbekistan in 2012 has made 5.0 trillion Uzbek sum (National currency of Republic of Uzbekistan), and in 2013 it has made 6.2 trillion Uzbek sum. Level of sufficiency of the capital of bank system makes 24.3% that exceeds in 3 times of the requirement established by Basel committee on bank supervision (8%) [2]. Given indicator as of January, 1st, 2013 has reached more than 6.2 bln. sum. Level of current liquidity is one of factors of an estimation of stability of bank system which last year's exceeds 65% that in 2 times above from the established minimum level. For the initial information for the liquidity analysis the balance data, reports on performance of the economic specifications, confirmed Central Banks of Republic of Uzbekistan are used: data of the stand-alone account of active and passive operations on terms of their realization, the information on quality of a credit portfolio and stability of deposits, the payment calendars given about turns under loan, settlement and current accounts, the forecast of a condition of the monetary and financial markets. Sources of studying of liquidity of balance are: an estimation of sufficiency of the capital, the analysis of a coordination of separate kinds of passive and active operations from liquidity positions, an estimation of a diversification of actives and passives, a coordination of active and passive operations on terms. In practice liquidity of bank is defined according to liquidity of its balance: the balance of bank is considered liquid if means on an active allow covering at the expense of their fast realization urgent obligations on a passive. Researches have shown that, level of liquidity of bank is influenced by structure of actives of balance and accordingly structure and kinds of active operations. Estimating real level of liquidity of concrete bank, it is necessary not only to take into consideration potentially possible profitableness of any active, but also to consider that degree of risk which is connected with probability of a non-return of bank means on corresponding active operations. As liquidity of bank comprises two sign (timeliness of performance of obligations and lost-free), it depends on set of factors both internal, and the external character, defining quality of activity of bank. Liquidity of commercial banks is regulated basically by refinancing and influence on their

credit status. Change of liquidity of banks acts as a core of the monetary and credit policy spent by Central Bank of Republic of Uzbekistan. According to new and more rigid standard to 4.5% the minimum size of a liquid reserve of own capital of bank or so-called factor of fixed capital of the first level is increased. Till 2012 this level made 2%. At the same time, from present 4.5% to 6% level of the capital of the first level of bank which represents its most liquid actives is raised. The decision of Basel committee each bank is obliged to create the special buffer reserve capital at a rate of 2.5%. The liquid reserve of factor of fixed capital of the first level and a buffer reserve becomes the basic protection of banks in case of new financial shocks. In common they make 7% of the banking capital. In practice of analytical work at control of structural liquidity of commercial banks is GAP - the analysis. Its essence consists in analytical distribution of actives, passives and extra balance positions on the set time ranges according to certain criteria. The most preferable method of the analysis of risk of loss of liquidity is the method of the analysis of rupture in terms of repayment of requirements and obligations. Liquidity maintenance can be reached at completely balanced promptness of actives and passives (zero GAP in all range on promptness). Often in the conditions of expected growth or decrease in interest rates GAP for the purpose of profit increase aspire to make, accordingly, positive or negative. In this case the problem of maintenance of liquidity inevitably becomes complicated, and the aggravation occurs after the lapse of some time when intermediate term actives and passives pass in the category short and very short. In this sense the problem of maximization of profitableness is included into the inevitable contradiction with a problem of maintenance of full liquidity. Usually GAP - analysis has a number of conceptual lacks: GAP - analysis does not consider distinction in dates of repayment of positions within one range, it is supposed that all of them are repaid simultaneously. GAP - analysis does not consider the monetary streams connected with реинвестированием in a separate range. Owing to the given simplifications, the more widely the time range, is less accuracy of estimations; GAP - analysis does not consider changes of time of monetary streams which can result from changes in interest rates. The time coordination of actives and passives is real cannot be a basis of an estimation of liquidity of bank. Management of liquidity is one of the most important operative problems in managerial process by bank. The errors supposed in management by liquidity are painful for bank as lead to essential losses (it can occur as because of decrease in profitableness at the expense of too

large supply high liquid gain less or low-profit actives, and owing to frequent attraction external short-term and consequently more expensive resources); owing to liquidity crisis bank work can stop. Therefore in bank Position «On the organization of management and liquidity control» principles of the analysis of current and long-term liquidity, an estimation of instant liquidity and action for restoration of liquidity of bank reveal. In management of a liquidity condition it is possible to allocate two extreme directions: a policy of steadfast control over reserves and a policy of constant maintenance of reserves at level, sufficient for satisfaction of requirements about norms of obligatory reserves and during the peak periods of growth of deposits. The majority of banks adhere to some middle. Big banks find favorable strictly to supervise available funds, and small banks realize that contribution which can bring skillful management of cash desk in maintenance of the general profitableness of operations more and more. Management of cash assumes performance by bank of set of calculations and drawing up of reports for concrete bank, including the daily report “Presence of money resources in cash desk”.

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Humanities & Social Sciences

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Which is Learnt First Regular or Irregular Simple Past Forms? A Quantitative Study in the Context of the Undergraduate Arab Learners of English (ALEs) under Two Different Teaching Methods

ABSTRACT

Aims: To investigate which simple past forms are learnt first, regular or irregular forms, under two different methods of teaching writing, in the context of foreign language learning.

Study Design: Quantitative analysis for all the simple past forms produced by the participants in three chronological written texts collected in the experiment.

Place and Duration of Study: Sample of Male Arab Learners of English studying in a high school in the Sultanate of Oman 2010.

Methodology: 74 Arab Learners of English forming two groups, 34 represents the Experimental Group following the Innovated Writing Process approach, and 34 represents the Control Group following Traditional Product Writing approach.

Results: Arab Learners of English in the Experimental Group produced 670 (40.31%) regular simple past forms in the three chronological written texts and 992 (59.69%) irregular simple past forms. This is compared with participants in the Control Group who produces 588 (37.88%) regular simple past forms and 964 (62.12%) irregular simple past forms.

Conclusion: Arab Learners of English learn the irregular simple past forms before the regular simple past forms in two different teaching methods of writing.

Keywords: regular past; irregular past; SLA; simple past.

ABBREVIATIONS

AB: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Experimental Group (the first writing after the first two weeks following the WP).

AM: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Experimental Group (the second writing after the first two months following the WP).

AF: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Experimental Group (the third and the last writing at the end of the experiment after spending four months following the WP).

BB: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Control Group (the first writing after the first two weeks).

BM: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Control Group (the second writing after the first two months).

BF: Tracing the target-like and non-target-like simple past forms used by the samples of the study in the Control Group (the third and the last writing at the end of the experiment after spending four months).

RTL: Regular target-like simple past form.

RNTL: Regular non-target-like simple past form.

RTL: Regular target-like simple past form.

RNTL: Regular non-target-like simple past form.

1. INTRODUCTION AND RELATED LITERATURE

The aim of the study is to identify which simple past verbs is acquired first, regular or irregular simple past forms in the context of Arab Learners of English ALEs, under two different teaching methods. Having into consideration the grammar textbooks and teachers of EFL/ESL start teaching the regular forms of the simple past before the irregular simple past forms. In addition, the samples of the study are Male Arab Learners of English and had been learning English as a foreign language for eight years attending four to five sessions per week on average. It was expected that they would have acquired regular simple past forms before irregular simple past forms, but as first language learners, acquiring irregular past forms comes before acquiring regular past forms.

The researcher thinks that the Words and Rules model may shed light on the interlanguage data to do with simple past tense forms.

That leads the researcher to discuss and evaluate the Words and Rules model and illustrate its implementations in Herschensohn's study in which he has used the Words and Rules model in his discussion, aiming at investigating which form was acquired in the context of Arab Learners of English as foreign language learners. In the following, the model will be discussed.

1.2 The Words and Rules Model

English has two types of verbs: regular and irregular. Regular verbs end with *-ed*. So, they are predictable such as: *walk-walked*, *look-looked*, *play-played* and so on. The list of regular verbs is open-ended. New ones are being added to the language all the time. When new words entered the language such as *fax*, *spam* and *mosh*, the past tense forms do not need to be introduced separately: it is deduced that they are *faxed*, *spammed* and *moshed*, which means we tend to add *-ed* to any new verbs [1]. It is noticed that children as first language learners not only create new words but venture into putting new verbs in the past tense using *-ed*. For instance: *smunched*, *speeched*, *eat lunched* and *cut-upped egg*. In addition, all children make errors in their speech such as: **/ bought a fire dog for grillion dollars*. And, **/ stealed some of the people out of the boat*. This overgeneralization of the *-ed* rule is reflected in the samples of simple past tense forms from the Arabic data in the present study such as; **catched*, **thinked*, **goed*, and **finded*. The second type of verbs in English language is the irregular forms which do not have the *-ed* ending, for example: *hold-held*.

In contrast to the regular verbs which are orderly and predictable, irregular verbs are chaotic and idiosyncratic. The irregular verbs in English do not have a definite rule like regular verbs.

The past tense of sink is sank and the past tense of sing is sang. But the past tense of *cling* is not **clang*, but *clung*, the past tense of *sting* is not **stang*, but *stung*. The past tense of *bring* is neither **brang* nor **brung*, but *brought*. Also, irregular verbs form a closed list. The number of irregular verbs in English is only about 150-180, and there have been no recent additions [1].

1.2.1 Evaluating the words-and-rules theory

According to the Words-and-Rules theory, regular forms are generated by rules while irregular forms are retrieved from memory. According to the way that memory works, the more often you hear something the better you remember it. Therefore, uncommon words have weak memory entries and should be harder to retrieve [1]. The statistics of the English language provides a good resource to look at how often both the regular and irregular verbs are used.

Pinker [1] illustrated the statistics of using regular and irregular verbs in a text of a million words. Here is a Top Ten list, the ten most common verbs in English:

Verb	Number of occurrences in a million words of text
1. <i>be</i>	39,175
2. <i>have</i>	12,458
3. <i>do</i>	4,367
4. <i>say</i>	2,765
5. <i>make</i>	2,312
6. <i>go</i>	1,844
7. <i>take</i>	1,575
8. <i>come</i>	1,561
9. <i>see</i>	1,513
10. <i>get</i>	1,486

Pinker [1]

The top ten verbs are all irregular. The top four are also irregular in both past and present tenses, at least in terms of pronunciation in the case of the last two: *be-is/are*, *have-has*, *do-does*, and *say-says*. And the first and sixth spots contain verbs whose past tense forms are different words altogether: *be-was/were* and *go-went* [1].

Here are some of the least common verbs in English:

Verb	Number of occurrences in a million words of text
<i>Abate</i>	
<i>Abbreviate</i>	
<i>Abhor</i>	
<i>Ablate</i>	
<i>Abridge</i>	
<i>Abrogate</i>	
<i>Acclimatise</i>	

Pinker [2]

As we can see, all ten verbs mentioned are regular. A conclusion could be drawn which is that irregular verbs are the most common verbs and vice versa. The reason is that irregular forms have to be memorized repeatedly to survive in a

language and the most commonly heard forms are the easiest to memorize. In the following, implementing the Words and Rules model in Herschensohn's Study will be presented.

1.2.2 Implementing the words-and-rules model in Herschensohn's study

It was indicated that the mastery of verbal inflection is significant in second language acquisition for there is a possible indication of morphological, syntactic and semantic competencies [2]. In the grammars of native speakers, researchers have distinguished two kinds of morphological knowledge, namely: rule-governed and rote-learned (Pinker, 1999). As Herschensohn [2] explained, in the domain of verb inflection, regular alternations like *play-played-played*, *work-worked-worked* illustrate rule-governed morphology, while alternations like *see-saw-seen*, *go-went-gone* illustrate rote-learned forms. Commenting on the rule and rote model, Herschensohn [2] added, the rule-governed operation is open-ended - applying to the new verbs that enter the language; and onto processing, it is also not subject to frequency effects. By contrast, rote-learned forms are a closed class and are subject to frequency effects in processing: Herschensohn [2] argued that the more frequent verbs are processed faster than rarer forms and hence made a conclusion that in such evidence as this, the rule-governed and rote-learned forms are thus stored differently in the mental grammar. Beck [3] also made a similar observations positing that a "dual storage" of morphological forms exists in the mental grammars of L2 speakers.

It was discussed the relative importance of naturalistic input versus instructional input in L2 acquisition. Klein [4] in Herschensohn [2] categorised second language acquisition as either spontaneous or guided. The term "spontaneous learning" is used to denote the acquisition of a second language in everyday communication that occurs in a natural fashion and free from systematic guidance. On the contrary, guided acquisition refers to the domestication of a natural process that differs from spontaneous by its structured presentation of materials, and contrived opportunities for practice and systematic intervention. It was argued that, while naturalistic input is important to second language acquisition, it does not guarantee mastery of L2. However, instructional support and conscious effort on the part of the L2 learner do not assure L2 acquisition either [2]. It was contended that learners who receive naturalistic input acquire unconscious knowledge exclusively

from primary linguistic data [5,6]. Schwartz [5] provided convincing arguments supporting why primary linguistic data are necessary for the growth of the system of linguistic knowledge.

On the other hand, there are studies [7] that support the importance of guidance for second language acquisition. Ellis [7] cited evidence concerning structured input in second language acquisition, suggesting that instructed learners outperform naturalistic ones particularly with the use of instructional aids useful in learning linguistic rules and formula.

Some empirical studies in areas ranging from morphology to syntax postulated that form-focused instruction can play a remarkable role in improving post-instruction awareness of morphology and syntax in second language. For example, Scott [8,9] made a comparison between implicit and explicit grammar teaching, and concluded that explicit teaching results in improved recall and production on tests targeted to the grammar points in question. Moreover, White [10,11] and Arteaga and Herschensohn [12] measured the efficacy of instruction in cognate recognition and posited that teaching particular points can result in statistically measurable improvements on a short term basis.

In discussing the relationship between explicit and implicit knowledge, Fotos and Nassaji [13] noted that some researchers [14,15,5] argued that there is no relationship between the two forms of explicit and implicit knowledge. However, many SLA researchers now believe that there is a relationship that exists between them, particularly through the performance of activities that promote the learners' attention to target forms while processing input [16,17,18,19,20,21,22] or, through repeated practice and increased exposure for example, [23,24,25] or, through making the learning process more efficient by helping learners attend to features in the input that they would not otherwise notice [26,27,21].

In the same vein, Herschensohn [2] mentioned that most form-focused studies have generally agreed that instruction is not detrimental to second language acquisition, for it enhances instead the process of guiding the learner towards certain rule-governed behaviours of the target language. Herschensohn [2] further added, second language learners do not assimilate all the grammatical structures they have been taught about or lose certain knowledge over time. Findings by [28] provided evidence that instruction does not ensure learning and it is difficult to pinpoint where, how and when a given piece of grammatical knowledge actually becomes integrated

into the interlanguage grammar. In what follows, an evaluation of Herschensohn's study will be presented.

1.2.3 Evaluation of Herschensohn's study

The nature of the Interlanguage morphology of two subjects was discussed in [2]'s study: one from an instructional context and the other from a natural learning perspective. With a set of data collected from two subjects - Emma and Chloe, Herschensohn [2] identified the characteristics of their errors by evaluating the appropriateness of a rote and rule morphology model after addressing the question of spontaneous versus instructed input.

In that study, Emma learnt French in a formal environment. Her exposure to French input was one hour per day in the classroom with additional time permitted for studying through text, workbook, audio and video tapes. She did not receive primary linguistic data (PLO) from the teacher supervising her, who was not a native speaker. In contrast, Chloe was in a nearly total francophone environment. She lived with a French family. In addition, she took a normal academic programme in a French lycee. She was obliged to use French in written assignments. She reported receiving correction from teachers, peers and family both in the academic setting and in social conversation outside the school.

It was pointed out that the most significant difference between Emma's and Chloe's exposure to French language during the six-month period was in the realm of naturalistic input: Chloe was exposed to large amounts of naturalistic French whereas Emma received limited input in a classroom setting. Chloe received five hours a week of English and 107 hours of French whereas Emma was exposed to five hours a week of French and 107 hours of English, whereas. [2]'s findings show that both subjects achieved an increase of tokens for the target-like usage. Chloe had a slightly higher marking for target-like usage than Emma. In the final interview, Chloe used 91 tokens versus 85 for Emma. The number of lexically distinct verbs has also increased. Emma's verbal vocabulary is higher at 38 than Chloe's with 32.

It was also examined L2 verb inflection to determine how morphological knowledge is represented in the L2 grammar and how such knowledge is developed. Herschensohn's study reveals that the exact nature of morphological storage for the interlanguage grammars of Emma and Chloe is not verifiable. But it is possible to infer that the learners store morphological information both as individual items and as

rule-governed patterns. Herschensohn [2] also demonstrated that the Words and Rules model provides a reasonable account of the L2 morphology as it is presented in her corpus. The ability of Chloe and Emma to produce accurate verbal inflection is an indication that the grammatical knowledge of morphological rules and inflectional forms is on-line, ready for actual discourse. Herschensohn [2] concluded that both subjects have interlanguage grammars with morphological knowledge which resembles that of the native speaker.

The outcomes of Herschensohn's study do not show any significant differences between the two different contexts namely instructional input versus naturalistic input. It appears that both subjects achieved an increase in morphological competence despite the fact that the level of inflectional accuracy of Emma is 89% against 98% for Chloe. The only difference is Chloe's nearly error free performance in verb inflection which might be attributed to her six-month exposure to spontaneous input. Herschensohn posits that Chloe's improvement must be attributed to her exposure to primary data and her ability to use PLO to construct her L2 morphology although the focus of her formal instruction was on literature, biology and maths not French grammar. On the other hand, Emma is exposed to L2 data only as formal instruction, yet she manages to learn a substantial amount of regular and irregular morphology and she was able to use it in real discourse. In what follows, I will discuss the Foreign Language Learners and the acquisition of regular and irregular simple past forms.

1.3 Foreign Language Learners and using Regular and Irregular Simple Past Forms

Previous works on the acquisition of the simple past tense in English as an L1 have noted that irregular simple past forms are acquired before regular simple past forms. Brown [29] presented the following order of language acquisition:

- Present progressive -ing (Mommy running);
- Plural -s (Two books);
- Irregular past forms (Dady went);
- Possessive's (Oaddy's hat);
- Copula (Annie is happy);
- Articles the and a;
- Regular past -ed (She walked);

- Third person singular simple present -s (She runs);
- Auxiliary be (He is coming).

It was confirmed that children learning English as a first language mastered the morphemes at different ages, but the order of their acquisition was very similar. In other words, irregular simple past forms are acquired before the regular simple past forms [30]. Bardovi-Harlig [31] concluded that irregular morphology precedes regular morphology in learning English as L2 as well. In the current study, I will investigate the Words and Rules model using all the written texts collected from all the subjects in both the Experimental Group and the Control group to investigate whether Arab learners of English follow the same sequence. However, their L1 is different from L2.

In discussing the errors of second language learners acquiring the simple past, Ramadani [32] discovered that the most common error students make in using simple past tense is with the structure of question sentences in the simple past tense where the use of regular or irregular verbs generate a different meaning. He also noted that remembering the irregular past tense form is another problem. In the same vein, Yap and Alsagoff [33] investigated errors in past tense marking in Singapore secondary school students' composition. They claimed that a learner will acquire an appropriately morphological tense marking for telic verbs (i.e. achievements and accomplishments) before atelic verbs (i.e. states and actives). They mention that the Aspect Hypothesis suggests that the distribution of tense errors can be predicted on the basis of telicity. In their study, they formulate and test the hypothesis that the aspectual classes of verbs can explain patterns of errors in past tense marking. Their data collection consists of the middle of year examination composition scripts from a secondary school to ensure that the outputs from the subjects are not influenced by teachers or peers. Compared with the current study, the output was as a result of the teacher's input in both groups. Findings from their study reveal that the lexical semantic of verbs can account for tense marking errors.

In the Swedish Learners of English context, Andersson [34] investigated what types of errors the students make regarding time and tense and, secondly, compares the types of errors made with the results found from 1995 in *To Err Is Human* [35]. The result shows that most errors occurred in the present tense. As many as 117 errors were found in the present tense whereas 80 errors were found in the past tense, and 66 errors were found in the future tense. The errors made in the past tense are categorized into four groups, namely, the simple past, the present perfect,

the past perfect, and the past passive. She found that out of the 80 errors found in the past tense, 50 percent occurred with the simple past tense. She concludes that the school must start to teach grammar explicitly in order to give the students the chance to use the language in a target-like way in communication. In the following lines, methods will be presented.

2. MATERIALS AND METHODS

This section discusses the teaching methods used in the experiment, the subjects of the study, the research question and the methods used in the analysis of the written texts.

2.1 Teaching Methods Used in the Experiment

In the experiment, two types of teaching methods were followed. The first type is the Traditional Product Writing (TPW) implemented with the Control Group, and the second type is the Innovated Writing Process (IWP) implemented with the Experimental Group. Type two (IWP), is presented in detail in [36]. In the following part, I will shed light on the teaching methods.

2.1.1 Describing the Traditional Product Writing (TPW)

The TPW is a method of teaching writing, which emphasizes the students' finished written product. It is termed a product-oriented approach which focuses on what to write and the rules for writing; the teacher is the only one who evaluates the final product. My MA study Mourssi [37] indicated that product writing is a teacher-centered method, in which there is no role/space for the students to interact, discuss, negotiate, or get concrete feedback. Although some students can imitate certain styles of writing, the majority of the students produce weak written pieces which are full of non-target-like forms. The teacher evaluation is provided by putting a tick or writing "good, very good, well done or bad" and there is no space for interaction or enough feedback.

The product approach has been evaluated by a number of applied linguists who have shown the weaknesses of the product approach in language acquisition: Pincas [38] comments that in the product approach, the use of language is the manipulation of fixed patterns, these patterns are learnt by imitation; Eschholz [39] mentions that the product approach merely results in mindless copies of particular

organizational plan or style; Prodromou [40] criticizes that the product approach for devaluing "the learners' potential" both linguistic and personal; Jordan [41] comments that the product approach has no practical applications; Nunan [42] similarly mentions that the product approach focuses on writing tasks in which the learner imitates, copies and transforms models supplied by the teacher. I think that the product approach does not teach how to write independently or teach learners how to think, and most of the students feel bored during the writing task.

2.1.2 Describing the Innovated Writing Process (IWP)

Mourssi [36] declared that the IWP and the CGLTA were designed to be a bridge to apply recent SLA and applied linguistic theories in pedagogical settings; the aim was for the IWP to create a relationship between Sociocultural Theory (SCT) and pedagogical settings in the classroom, while the CGLTA aimed to draw on error/contrastive analyses with metalinguistic feedback within a communicative framework.

Mourssi [43,36] thought that there should be a method which could be implemented to narrow the gap between the L1 and the L2 learners' internalized grammar system and which takes into consideration the big differences between the Arabic and English language. The researcher thought that this might be achieved by increasing the role of the teacher's interactions and instructions while concentrating on analyzing L2 learners' interlanguage grammar. The explanation and analysis of the learners' non-target-like forms should be performed using explicit grammar learning following Meaning negotiation and Form negotiation when it is needed and using corrective feedback. Implementing these stages might motivate L2 learners and give them the opportunity to revise and redraft their writing - most of them feel that writing activity is a boring task and they do not have desire to revise and redraft as well - to develop their internalized grammar which will be reflected in their writing.

Mourssi [43,44] explained that the procedures of the IWP include: the processes of contrastive analysis and error analysis (metalinguistic feedback) based on the learners' mistakes; explicit grammar teaching; negotiation of meaning and form based on the learners' level of interlanguage grammar; interaction between teacher-students and students-students in a form of communicative grammar language teaching approach; and finally, feedback which is either direct or indirect.

2.2 The Subjects of the Study

Two classes were selected from a total of 12 enrolled in grade 12. The target location was in one of the Omani government male secondary schools (High School). Each group consisted of 37 Arab Learners of English (ALEs), with ages ranging between 16 and 18, pre-intermediate to intermediate level in English. The subjects were all Arabic speakers and had been learning English as a foreign language for eight years attending four to five sessions per week on average. One aim of this study is to identify which simple past form is first acquired, regular or irregular simple past forms under two different teaching methods? In the following, the research question is presented.

2.3 The Research Question

The current study seeks to answer the following question:

Which simple past forms is first acquired? Is it regular or irregular simple past forms? Are Arab learners of English as foreign language learners follow the same stages of first language learners (who acquire the irregular simple past forms before the regular simple past forms)? This is to provide empirical evidence in relation to the acquisition of the simple past tense forms to test hypotheses emerging from the Rote and Rule model, and thus contribute to the advancement of theory on Second Language Acquisition.

2.4 Methods Assigned to the Research Question

For the research question presented above, quantitative analyses were followed for all the simple past tense forms produced by the samples in 222 written texts which had been collected chronologically. The author thinks that in order to explore which simple past forms are acquired first, three writing texts were collected from each sample in both groups, the first writing text (AB) from the Experimental Group and (BB) were collected after the first two weeks; the second writing (AM) from the Experimental Group and (BM) from the Control Group after the first two months while the third writing (AF) from the Experimental Group and (BF) from the Control Group were collected at the end of the experiment. The author thinks that writing is one way to get evidence of the state of a student's internalised grammar system. Discussion will be presented in the following section.

2.4.1 The criteria used in discussing the written samples

Three pieces of writing produced chronologically as part of the course produced excellent data for the investigation of students' interlanguage development and a decision was taken to look in detail at simple past tense forms. The researcher used the three writing texts, produced in chronological order as the course went on, to trace both qualitatively and quantitatively the development of simple past tense forms. The instructions were very clear to all the subjects in both groups, which was "Use the following pictures to write a story using the simple past tense in about (100) words". The three chronological writing texts constitute the type of "text data" highlighted in [45] as being suitable for morphological analysis.

In general, the Innovated Writing Process IWP and the Communicative Grammar Language Teaching Approach CGLTA [46] were designed to be a bridge to apply recent SLA and applied linguistic theories in pedagogical settings; the aim was for the IWP to create a relationship between Sociocultural Theory (SCT) and pedagogical settings in the classroom, while the CGLTA aimed to draw on error/contrastive analyses with metalinguistic feedback within a communicative framework [46]. One aim of the current study is to investigate which form is learned first, regular or irregular simple past form.

Each occurrence of a simple past tense form in the students' written samples was carefully counted and analyzed. Intuition has been used to allocate examples to different categories. It is noticed that learners use different forms, for example: using *run* instead of *ran*, and using *thanks* instead of "thanked". With respect to the distinction between types and tokens in calculating the rates of development in L2 learners' simple past forms, even though *goed* or *wented* are non-target-like forms, they show some kind of development in a student's interlanguage grammar. Each form produced by the subjects is discussed and analyzed for the purpose of this study. The regular and irregular verbs are presented in numbers and percentages to show whether regular or irregular forms were produced first, and to give the reader an insight into how frequently each type of error and mistake occurred.

Categorizing the forms in sequence interlanguage stages is based on particular categories that were established from the start and were confirmed as the study went along, the categories were also confirmed by calculating all the non-target-like and the target-like forms produced by all the samples of the study. The students' non-target-like forms were categorized into seven types as follows: first,

using the root or the simple present forms, second, using spoken target-like forms but written non-target-like written forms, third, overgeneralizing the *-ed* to irregular verbs, fourth, using verb to *Be* + the simple past, agent, the past participle or the gerund etc, fifth, number concord errors in the target-like verb forms, sixth, using blended forms (using *have, has* + the simple past or the past participle, and using infinitive *to* + the past simple or the past participle), finally, overgeneralizing a subrule of irregular simple past on other irregular simple past or regular simple past [47,48].

The total number of essays analyzed was 74, with 37 samples from the Experimental Group and 37 samples from the Control Group. These essays were of about 100 words each. The total amount of simple past tokens for the Experimental Group was 1587 forms, and the total amount of the simple past tokens for the Control Group was 1500 forms.

All the regular and irregular target-like and non-target-like simple past tense forms were carefully counted in all the stages, to cover all types of interlanguage behaviour which occur in the three stages of the experiment and to get an empirical evidence and consistent results for the study showing how the simple past form is acquired by ALEs and what interlanguage stages they may pass through to correctly acquire the simple past tense forms in English. It is worth mentioning that in the current study all verb forms were identified in the texts produced by all the students in the Experimental and the Control Groups. These were divided into target-like and non-target-like forms.

The analysis of the acquisition of the simple past forms in English using the students' written essays produced as part of the IWP was not a straightforward matter and the results must be interpreted with caution. In categorizing the learners' non-target-like forms, some non-target-like forms were repeated in different stages. So, it was difficult to make a clear dividing line between one stage and the next. Analyzing all the non-target-like forms produced by all the subjects of the study in both groups, and categorizing the interlanguage stages followed in acquiring the simple past tense, does not mean that these stages can be generalized to all second language learners in acquiring the simple past forms in English, but attempts to cover most of the variety of types of interlanguage behaviour adopted by ALEs while acquiring the simple past tense forms in English. The acquisition of simple past for this detailed study seems to be varied perhaps because Arabic L1 students may be in different stages from the stages investigated by other researchers in different

contexts. E.g. using the verb to be with the root or with the simple past form or with the past perfect form (*was go*, *was went*, and *was caught*) can represent one of the characteristics of the interlanguage grammar development followed by ALEs in the acquisition of the simple past tense. I also think that explicit teaching/learning and metalinguistic feedback can help students - ALEs - go through the stages more quickly and this point will be investigated later on.

Another issue in categorizing the stages of interlanguage behaviour is that some second language learners produced some non-target-like forms which cannot be grouped into a recognizable category; this is because it is difficult to establish which verbs they are. For example: *stoke* (S 11 AB), *colle* (S 15 AB), *arer* (S 3 BB), *dicet* (S 14 BB), and *akrusnt* (S 27 BB). It was difficult to categorize these forms as performance non-target-like forms such as: *showted*, *brook*, *trayed*, *foneshed*, and *snated* which are categorized as stage two in the interlanguage grammar development stages proposed in the acquisition of the simple past tense in the current study. Producing these forms (*showted*, *trayed*, *snated*, *finished*, and *hapenned*) can be evidence that the student's internal grammar has taught him/her that you should add *-ed* to these verbs, and can be evidence that the learner has developed the regular "add *-ed*" rule. Learners who produced these forms at this stage need to learn the target-like form in learning the simple past tense in English in order to improve their written accuracy.

3. RESULTS AND DISCUSSION

In response to Research Question, participants' target-like and non-target-like regular and irregular simple past forms were noted. The learners' development in their use of the regular and irregular simple past tense forms was traced in three different written texts produced by the participants in the Experimental and Control Groups.

3.1 Tracing the Participants' Simple Past Forms during the Experiment

In the following paragraphs, a comparison is made between the Experimental Group and the Control Group at the three different stages. First, the development will be traced of the regular and irregular simple past tense forms used in the three different written texts collected from the participants in both Experimental and Control

Groups stage by stage. This is followed by tracing the target-like and non-target-like regular and irregular simple past forms used in the three different written texts.

3.1.1 Tracing the Participants' Regular and Irregular Simple Past Forms during the Experiment

Table 1 shows the raw and relative percentages of regular and irregular simple past tense forms in the three chronological written texts produced by ALEs in the Experimental Group and the Control Group.

Table 1. Regular and Irregular Simple Past forms produced by the Experimental Group and the Control Group at the three stages

Group/Stage	Regular simple past	Irregular simple past
AB	221 (42.10%)	304 (57.09%)
AM	223 (39.47%)	342 (60.53%)
AF	226 (39.52%)	346 (60.48%)
Total	670 (40.31%)	992 (59.69%)
BB	207 (38.05%)	337 (61.95%)
BM	187 (37.40%)	313 (62.60%)
BF	194 (38.18%)	314 (61.82%)
Total	588 (37.88%)	964 (62.12%)

The first part of Table 1 represents the Experimental Group. It shows that the participants used a number of 221 (42.10%) regular simple past forms in the first writing text, and used a number of 304 (57.09%) irregular simple past forms in the first writing text. And the number of the regular simple past increased slightly in the second writing text. They used a number of 223 (39.47%) regular simple past forms compared with 342 (60.53%) irregular simple past forms. In the final piece of writing, the percentage of regular forms increased to 226 (39.52%) compared with 346 (60.48%) irregular simple past forms. A comparison between the regular simple past forms and the irregular simple past forms shows that the participants in the Experimental group used a total number of 670 (40.31%) regular simple past forms compared with 992 (59.69%) irregular simple past forms.

The second part of Table 1 represents the Control Group. It shows that the participants used 207 (38.05%) regular simple past forms in the first writing text, compared with a number of 337 (61.95%) irregular simple past forms. They used a number of 187 (37.40%) regular forms compared with 313 (61.82%) irregular simple past forms in the second writing text. The proportion of regular simple past forms

increased in the third writing text to 194 (38.18%) compared with 314 (61.82%) irregular simple past forms. A comparison between the regular simple past forms and the irregular simple past forms shows that the participants in the Control group used a total number of 588 (37.88%) regular simple past forms compared with 964 (62.12%) irregular simple past forms.

3.1.2 Tracing the Participants' Target-like and Non-target-like Regular and Irregular Simple Past Forms during the Experiment

Table 2 shows the raw and relative percentages of the target-like and non-target-like regular and irregular simple past tense forms in the three written texts produced by ALEs in the Experimental and the Control Groups.

Table 2. Target-like and non-target-like forms produced by the Experimental Group and the Control Group at the three stages

Group/Stage	Regular simple past		Irregular simple past	
	Target-like	Non-target-like	Target-like	Non-target-like
AB	123 (56%)	98 (44%)	173 (57%)	131 (43%)
AM	130 (58%)	93 (42%)	212 (62%)	130 (38%)
AF	209 (92%)	17 (8%)	320 (92%)	26 (8%)
Total	462 (68.95%)	208 (31.05%)	705 (71.05%)	287 (28.95%)
BB	66 (32%)	141 (68%)	138 (41%)	199 (59%)
BM	80 (43%)	107 (57%)	159 (51%)	154 (49%)
BF	147 (76%)	47 (24%)	218 (69%)	96 (31%)
Total	293 (49.83%)	295 (50.17%)	515 (53.42%)	449 (46.58%)

The first part of Table 2 represents the Experimental Group. It shows that the participants used a number of 123 (56%) target-like regular simple past forms in the first writing text. And the number of the target-like regular simple past increased in the second writing text. They used a number of 130 (58%) target-like regular simple past forms while the number increased to 209 (92%) target-like regular simple past forms. In the final piece of writing, the percentage of non-target-like forms reduced from 44% to 8% over the end of the course.

Table 2 also shows that the participants in the Experimental Group used a number of 173 (57%) target-like irregular simple past forms in the first writing text. And the number of the target-like irregular simple past increased in the second writing text. They used a number of 212 (62%) target-like irregular simple past forms while the number increased to 320 (92%) target-like irregular simple past forms. The participants in the Experimental Group produced 131 (43%) non-target-like irregular

simple past forms in the first writing text and the number reduced to 130 (38%) non-target-like irregular simple past forms while the number reduced to 26 (8%) non-target-like irregular simple past forms.

The second part of Table 2 represents the Control Group. It shows that the participants used 66 (32%) target-like regular simple past forms in the first writing text. The proportion of target-like regular simple past forms increased in the second writing text to 80 (43%) and to 147 (76%) in the third piece of writing. The participants produced 141 (68%) non-target-like regular simple past forms in the first writing text but the number reduced in the second piece to 107 (57%) non-target-like regular simple past forms and to 47 (24%) non-target-like regular simple past forms in the final piece of writing.

Table 2 also indicates that the participants in the Control Group used a proportion of 138 (41%) target-like irregular simple past forms in the first writing text, but the number of target-like irregular simple past forms increased in the second writing text to 159 (51%) and to 218 (69%) in the final piece of writing. The participants in the Control Group produced 199 (59%) non-target-like irregular simple past forms in the first writing text reducing to 154 (49%) in the second piece of writing and to 96 (31%) in the final piece of writing. The results of the experiment for both Experimental and Control Groups show an increase in production of target-like simple past forms usage. The table indicates: the Experimental Group's target-like regular simple past forms usage increases from 123 (56%) to 130 (58%) to 209 (92%), while the target-like irregular simple past forms usage grows from 173 (57%) to 212 (62%) to 320 (92%). The table indicates also: the Control Group's target-like regular simple past forms usage increases from 66 (32%) to 80 (43%) to 147 (76%), while the target-like irregular simple past forms usage grows from 138 (41%) to 159 (51%) to 218 (69%).

The numbers of the verbs used by the two groups whether they are target-like or non-target-like, regular or irregular verbs, refer to the differences which are significant, these results and the differences reflect and support the results the Words and Rules model and Brown [29]'s study, and indicate that ALEs follow the same sequence of first language learners in learning the irregular simple past forms before the regular simple past forms.

4. CONCLUSION

Comparing the number of target-like regular and irregular simple past forms between the Experimental Group and the Control Group reveals that both groups have achieved a remarkable increase in the number of target-like regular and irregular simple past forms, but the Experimental Group achieved a higher percentage than the Control Group. There are many reasons behind these results. The most important two are: the Experimental Group practised the IWP and the CGLTA, and followed the techniques of revising and redrafting based on focus-on-form in a communicative way through interaction.

What is also noticed during the experiment is that Arab learners of English have a group of integrated resources and different strategies-primary linguistic data as well as cognitive strategies for grammatical rule formation - in order to perform the different tasks related to L2 learning. Some of them depend on the L1 and try to transfer or borrow using cognitive strategies-practising, receiving and sending messages between each other, analyzing and reasoning and creating structure for input and output - which enable them to understand and produce new language by different means.

To sum up, ALEs acquire the irregular simple past forms before the regular simple past forms, although each group was under different teaching method of writing. It is concluded that ALEs follow the same the same sequence of first language learners in learning the irregular simple past forms before the regular simple past forms. However, textbooks and teachers start presenting the regular simple past forms before the irregular ones.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Homework: An Interface between Home and School. Is it a Myth or a Reality in Rural Zimbabwean Primary Schools?

ABSTRACT

This research examines the functionality of homework in rural Zimbabwean primary schools. The research acknowledges that, whereas homework is intended to extend the learning from school to home for the benefit of learners, in reality, is this happening in rural schools where a number of parents and guardians are either lowly educated or economically disempowered? The intended collaborative effort between teachers and parents does not seem to be working out well in some of the schools. Where this partnership is dis-functional, what is the likely effect of homework on learners? This research, therefore, examines the functionality, or lack of it, and the net-effect of homework on both the learner and the teacher. Inherently, the research also looks at the attitudes of rural parents and guardians towards the perceived roles they are supposed to play in homework management. A parent in this research is defined as 'the biological parent or legal guardian; the person legally entitled to custody of a learner or any person who fulfils the obligation towards the learner's schooling [1].

Keywords: homework; accountability; collaboration; quality assurance; partnership; rural.

1. INTRODUCTION

The idea of homework is premised on the understanding of the need to ensure that learners in schools are getting the best help they need to succeed in their education. The concept of homework is based on the belief that it is the duty of the identified individuals in schools and society whose role should be supportive of learners to help them in their educational endeavors. Research indicates that family-based learning influences the effectiveness of school on a child. It may be a significant factor among the complex forces associated with inequality of educational opportunity that may push up learners' capacity to endure the demands of schooling.

Pollard and Bourne [2] note that if most of a child's education happens outside school, especially in the home, and if parents are co-educators of the child with teachers, "then it seems logical to make the two elements of school learning and home learning compatible, and for teachers to use that home learning as a resource. Homework, therefore, is (or should be) an organized and collaborative activity involving the school and home aimed at improving the performance of learners. Children need someone at home who will offer them encouragement in their schoolwork, understand their strengths and limitations, and be aware of what they are studying [3]. If homework were meaningfully implemented it could prove an important ingredient for experiential, learner-centred learning since "conventional classrooms don't contain the kinds of real-life resources we need to link school learning and life [4]. This paper, thus, examines the meaning and function of homework within the context of education. The aim is to check whether the implied values of homework are being realized in rural primary schools in Zimbabwe. The world over, educators, policy makers and researchers are increasingly recognizing school, family and community partnerships as important for student success [5]. The question in this research therefore, is whether this partnership does exist in rural primary schools in Zimbabwe.

2. RESEARCH QUESTIONS

This research attempted to answer the following research questions.

1. Do schools have homework policies?
2. Is homework set and managed effectively?
3. Are responsibilities of the student, the parent and the teacher clearly outlined?
4. Is marking and feedback consistently done in line with the school's marking policy?

3. CONCEPTUAL FRAMEWORK

The concept of homework is premised on the need for accountability in education. According to Maurice Kogan [6], accountability was traditionally viewed as a duty to render account of work performed to a body that has authority to modify that performance by the use of sanction and reward. For Sallis [7]; Wessels [8], however, accountability in this era "is seen as a requirement to have one's work tested,

debated and judged within some more or less formal structure. Success may not necessarily be rewarded or failure punished in the true sense of these terms, but there is an implied obligation to give reasons for actions taken as a way of reviewing outcomes and to submit to judgment on the performance in all the circumstances of the task which one accepts as own. In other words, even though there may not be outright material rewards or observable punishment for teachers (and parents) regarding the outcome of children's learning, there is an implied demand for accountability. Accountability as a concept refers to a process of providing information to others, "enabling judgment to be made about the extent to which the school is responsive to the needs of students, the local community and society at large Coldwell and Spinks in Thurlow, Bush and Coleman [9].

Accountability is a concept that hinges on quality assurance. Quality control presupposes that a product or service is going wrong but quality assurance prevents it from going thus West – Burnham in Thurlow, Bush and Coleman [9]. Quality is defined in terms of customers needs rather than those of the suppliers. Thus, in education, quality is defined in conjunction with educational needs of learners than teacher needs. Martin [10] notes that, "accountability systems drive academic work and learning just as surely as assessment systems drive student learning. Homework therefore, is driven by the teachers desire for partnership with parents to be accountable and realize quality assurance in education.

The high demand for teachers to be accountable for the students success has led to questions on fairness of such charge. Of significance is the outcry that once learners leave school, teachers have no control over what they do or not do. As noted by Sallis [7], how can we demand "accountability from teachers only when even research has shown that home support is essential to a child s success? After all, for rural day schools in Zimbabwe, children spend the greater part of their lives at home than at school. In this case, the home needs to play a complementary role to augment teachers efforts. Teachers therefore, should 'demand home support in their endeavor to realize quality assurance.

Homework is a call for teachers and parents to exercise accountability towards the learners. In the accountability framework, there are various agencies who seek to monitor the quality of the outcome. These include school inspectors, heads of schools, departmental heads, the learners (who are the silent and indirect monitors),

parents (who play a double role of instructing and monitoring) and the school authorities.

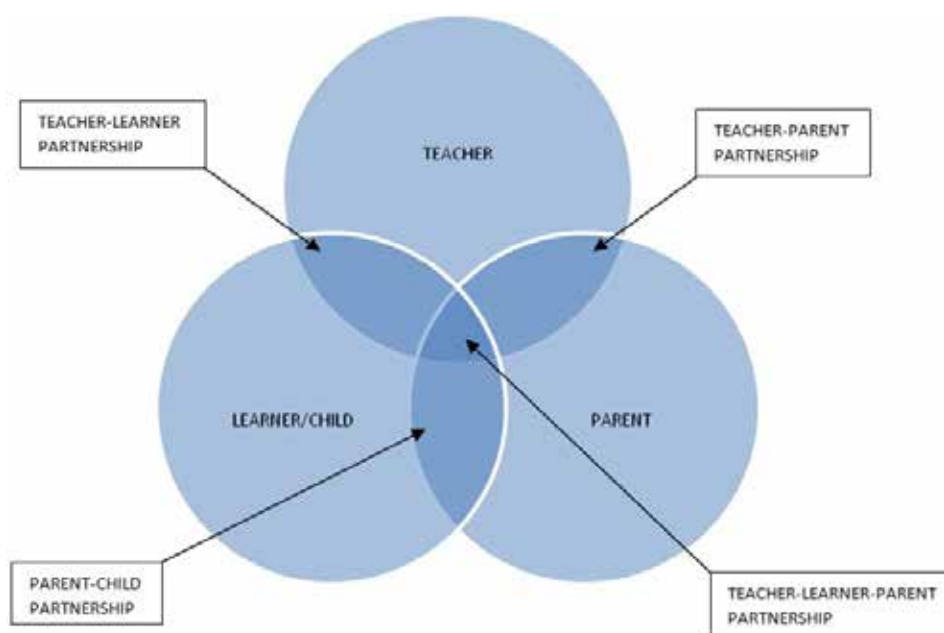
3.1 Homework

Homework is a widely used but also one of the more controversial aspects in the education system [11]. Homework itself can be understood to be an out-of-class activity that is used as an extension of classroom work. LaConte [11] identifies three main types of homework, i.e. practice assignments to reinforce newly acquired or taught skills or knowledge, preparation assignments to provide background to particular topics, and extension assignments designed to practice learnt material or just to encourage learners to do more research. It can therefore be observed that homework is purposeful and goal-directed.

One can argue that homework calls for collaboration between teachers and parents for the purpose of creating a permissive environment that promotes acquisition and learning. In this regard, there should be greater co-operation between teachers and parents. Homework, it shall be argued, fosters a sense of common purpose for teachers and parents. In this way, teachers and parents become “natural allies who share the common goal of wanting to assist children to develop their full potential [12]. In other words, homework is a concept that calls for parents to be partly accountable for the learning of their own children. After all, they choose schools for their children and therefore should take an active role in educating them. The school and families have not always shared the same perspectives on what is needed in the child's best interest [1]. Homework should play that role for teachers and parents to realize the need for collaboration. Homework creates partnerships that can be diagrammatically presented as shown below.

The framework presents a tripartite relationship that exists among teachers, learners and parents. It can be noted that homework acts as the inter-connector in the threesome relationship so created to raise the learners educational standards. The teacher assigns learners (teacher-learner partnership) to some homework, so designed to achieve set targets. In turn, the learner takes that homework home where he/she enlists the assistance of the parents or caregivers (parent-child partnership). The parents, in the advent of homework, are expected to play a triple role. First, they should necessarily create conducive environment where learners can concentrate on their homework, i.e. quiet and uninterrupted places.

The collaborative framework for teachers-learners-parents partnership



Secondly, parents should also provide relevant materials for learners to carry out their research. Thirdly, parents should also monitor and assist learners during homework. Their help need not be giving answers to learners but helping them to arrive at the correct answers. One wonders how much of our rural parents understand the philosophy behind homework? Can our rural parents meaningfully play this role? Is it not possible that some may simply work out the answers and give to the learners in the mistaken notion that this is what is required of them? Wolfendale [13] notes that some parents ways of assisting their children lack the necessary grounding in teacher professionalism hence may even jeopardize their children's learning. In some cases also, some teachers fear that allowing learners parents to take part in educational instruction undermines their professionalism. To avert these possibilities, there is therefore need for parents and teachers who teach their children (teacher-parent partnership), to occasionally meet and share ideas on how homework activities should be managed. In the homework framework above, this is where parents and teachers need to meet outside the learner's presents. Such occasions afford them time to share the problems they may be facing and thus strategize their activities.

In cases where problems may persist, then the three (teacher, parent and learner partnership) should come together to try and rectify the problems affecting homework. In this regard, it is doubtful that such is happening in most of our rural schools. It would seem that teachers are closed in their own world of 'school business is school business' and likewise, parents in their 'teaching is for teachers, why do they (teachers) want us to do their work? Unless these problems are meaningfully addressed, the concept of homework may remain a ritual with very little returns. Where it is dis-functional, homework can become tortuous for the learners. "Teachers need to think carefully about what kinds of teaching and learning are best done in class, and what is best done in the community (either in groups of learners or through independent learning) [4].

One can also note that most rural homes in Zimbabwe are characterized by low incomes making it difficult for parents to provide the necessary ingredients that are vital to the success of the homework system. What more with some parents having received very little or no education! This researcher is aware of some parents who do not seem to care about their children's learning. There are also others who are at times overwhelmed by stressful life-events, and whose own experiences of schooling were not positive enough for them to overcome fears and anxieties about school and teachers [13]. Coupled with that are the realities of rural areas in Zimbabwe where manual work is the mainstay for survival. Very few parents resist the temptation to send these children on family errands or assign them to some manual work without any allowance for these children to do their homework. Some of such parents believe that their children should have done their work when they were at school. The fact that they are bringing work home might be misconstrued for negligence at school where, parents would believe, they should have completed their work. Included in the parent population are also grannies looking after children left in their care when the parents succumbed to AIDS. To what extent can these grannies help with homework? The problems identified above call for greater planning. For homework to work positively, it is necessary to provide "the required preparation, learning resources and facilities and the parent 'education regarding homework-management [4].

Notwithstanding the challenges shown above, homework still forms "an essential part of education and it gives our pupils the chance to practice, consolidate and extend their knowledge and skills in their education [14].

Macbeth [15] sees “home-based learning as corollary to school-based learning within a compact alliance characterized as mutual information exchange. Exercising schoolwork at home bridges the dichotomy between the school curriculum and knowledge that resides in the family. As Muijs and Reynolds [11] note, if managed well, homework has the potential to yield useful results. Homework can lead to better retention of facts and knowledge, increased understanding, improved critical thinking skills, improved information-processing skills and the possibility of extending the curriculum. In addition, better study habits, positive attitudes towards schooling and studying, and learning beyond the school walls are some of the long term benefits of homework. In the long run, the process would ultimately develop autonomous problem-solvers who are self-directed and motivated. What is of essence is meticulous planning of homework that persuades parents to move away from their protective model [16] where they tend to abrogate the responsibility of the education of their children to teachers. Parents should be shown reason and benefits of their involvement. The nature of parents and the form of assistance they can offer should be matched to ensure that even the grannies would have something positive to contribute in the said partnership. Homework should also be well planned to avoid burn-out in learners which may lead to lack of interest, cheating and possibly copying of work from the able ones. Quantity and concept load should not play the devil's advocate leading to discouragement of learners.

For homework to be effective, it must adhere to a number of principles [11] i.e. not to use homework as punishment, that the teacher should mark homework and provide immediate feedback, that the feedback should be in the form of instructional feedback rather than simply grades, that homework should be integrated into the themes studied, that it should reinforce major curriculum concepts, and that if homework is not completed there should be consequences attached to that to avoid non-compliance in future.

4. RESEARCH METHODOLOGY

This research collected both qualitative and quantitative (mixed methods) data about teachers' perceptions on homework, about parents' views regarding the same and about primary school learners' views on the administration and management

of homework. Greene, Caracelli and Grahmann [17] identify “five main purposes of using a combination of methods, namely: triangulation; complementarity; development; initiation and expansion. Through the mixed method, it was hoped that triangulation, “a process in which multiple forms of data are collected and analyzed [18], would help check on consistency of answers given by respondents.

Marshall and Rosseman [19] say “qualitative research is pragmatic, interpretive and grounded in lived experiences of people. Qualitative research is very useful especially “where the data are in the form of people's worlds [20], views and perceptions. In other words, “qualitative research, allowed the researcher to get inner experiences of participants [21]. In this research, a mixture of the survey and ethnography was employed. Surveys provide “a snapshot of how things are at a specific point in time [22]. In other words, the survey design was very useful in providing information about the current state of affairs regarding homework in the selected area. As for the ethnographic approach, “the portrayal of an insider's perspective, in which the meanings of the social action for the actors themselves (teachers, parents and learners), was paramount [23]. For that reason, qualitative data was collected to understand clearly, the feelings and views of participants. Their reasons for given actions could thus be understood from their own explanations. Quantitative data, on the other hand, was collected from teachers regarding homework and its management. This helped the researcher to check on the extent and the spread of use and/or abuse of homework.

4.1 Sampling and Collection Procedures

In total, 4 schools were visited out of the eight that make up the Njelele Primary Schools Cluster. Twenty (20) primary school teachers from the four sampled schools from a total of forty-eight (48) in the cluster (41.7%) took part either by completing the questionnaire or being interviewed. These (teachers and learners) were selected using the randomization process where the ballot system was employed. Of the 20 teachers who took part, 10 were interviewed. As for the learners, 20 were randomly selected from the sampled schools for interviews. On the other hand, 20 families were purposively selected for home visits.

These were selected using purposive sampling to ensure that they were the same families from where the interviewed learners came from for comparability of the results. Any of the available parents of the selected families was interviewed. Data collection was done using the questionnaire and the interview. In all cases where interviews were held, the researcher made field notes to preserve data for analysis.

4.2 Limitation of this Study

It is worth noting that this research was confined to Njelele Primary Schools Cluster which has a total of eight schools. Results, thus, need to be understood within the context referred to as characteristic of schools making this cluster.

5. RESULTS AND DISCUSSIONS

The results presented below were collected from the sampled teachers, parents and learners. The schools visited and individuals interviewed are referred to using codes for ethical reasons. The four schools visited are SPS, ZPS, GPS and MPS and are all rural day primary schools in Gokwe South District in the Midlands Province in the Njelele Primary Schools Cluster that has a total of eight schools where four were sampled. Five teachers from each of the four schools took part giving a total of twenty teachers.

Data collected through the questionnaire are presented in form of tables, a graph and pie charts for analysis and interpretation. Qualitative data was preserved in field narrative reports. Data was collected between the months of November 2011 and March 2012.

The demography details of participants indicated that the age range of teachers was 25-60 years. The sample comprised of 13(65%) females and 7(35%) males. Years in service ranged from 3-28 years. Of the twenty teachers, 9(45%) had Certificate in Education and 11(55%) had Diploma in Education. As for their highest academic qualification, 13(65%) had Ordinary level, 2(10%) had Advanced level and 5(25%) had a Bachelor of Education (Primary) Degree. As for learners, their age range was 8-12 years. These were drawn from Grades 4-7. Interviewed parents were aged between 21 and 80 years. Interviews with parents were conducted in Shona (Interviewees L1).

Table 1 below presents data collected from teachers through the questionnaire. Reasons for agreeing or disagreeing are also presented in the same table against the questions that so demanded. In this way the qualitative nature of their answers were provided.

The findings, as shown in Table 1 question 2 below, indicate that the majority of the schools visited (75%) did not have any policy on homework leaving teachers to employ homework anyhow. In the absence of a school policy on homework, each teacher plans and executes such tasks based on his or her own whims. Also, 75% confirmed that they neither held any meetings (question 7a) over homework nor any consultations (question 8a) over learners school work with their parents. None of the participating teachers discussed with parents how to manage homework (question 8c). Most of the interviewed parents did confirm that there was no such provision. The results confirm the fear the researcher had that the homework system may not be achieving its intended results in some rural schools. Where there is no shared vision and responsibilities (teacher and parent), then homework may not achieve what it is intended to achieve. A high percentage of teachers (65%) confirmed that they did not even know who specifically assisted their learners with homework (Table 1 question 4). None (100%) of the participating teachers had any homework management plan for learners staying with illiterate parents/guardians (Table 1 question 10).

Table 1. Teachers views on the use of homework (N=20)

Qs No.	Themes	Yes	%	No	%	Reason /Explanation
2	Any school policy on homework?	5	25	15	75	
3(a)	Do you assign homework to your learners?	20	100			
3©	Homework in which subjects?					3(d) -Practice
	English	20	100			-Improve their standards
	Mathematics	20	100			-Further their learning
	Shona	10	50			
	All subjects	5	25			
4	Do you know who assists your learners with homework?	7	35	13	65	
7(a)	Any meetings with parents over homework?	5	25			7(b) Once a year during prize giving
				15	75	Never meet parents over homework
8(a)	Do you hold consultation days?	5	25			8(b) Once a year
				15	75	
8©	Any discussion of			20	100	

homework management with parents?					
9	Is homework helpful?	18	90	2	10
				-Yes for some Not really for weak learners	
10	Any homework management for those with illiterate parents?	20	100	-They have to look for help from their neighbours	

The researcher decided to statistically test the level of difference for questions 2, 4, 7(a), 8(a) and 9 shown in Table 1. The excel programme was employed to calculate the t-test using 2 unequal variance where the 'Yes (X value) and 'No (Y value) were tested for significant level of difference on teachers perceptions regarding the value of homework.

The following questions were statistically tested on teachers' perceptions regarding the value of homework

	Yes (X)	No (Y)
2. Any school policy on homework?	5	15
3a. Do you assign homework to your learners?	20	0
4. Do you know who assists your learners with homework home?	7	13
7a. Any meetings with parents for homework	5	15
8a. Any consultation days with parents?	5	15
8c. Any discussions on homework management?	0	20
9. Is homework helpful?	18	2
10. Any homework management plan for those with parents?	0	20
t - computer calculated value (EXCEL) for unequal variance	t-calc. =	0.379586 = 0.38

Significant level of t at 0.05 and 12. $0.05 + 2 = 0.025$ with 12 degrees of freedom Critical value (observed) = 2.179 i.e. 2.18 to 2 decimal points Conclusion: Since t calculated falls within the acceptable range we fail to reject H_0 and conclude that there is no significant level of difference.

In-view of the interpretation of the t-test result above, the notion that there is a significant difference between those who agreed and those who disagreed with the expressed views is not supported. However, it should be noted that this could be a result of a small sample that was used for this research. A similar test could be done with a bigger sample to find out whether the result remains the same. The qualitative data in this research though suggest that the lack of proper homework management noted is in fact only a tip of an ice-berg. Perhaps with more research in this area the state of affairs will become apparent.

Fig. 1 below shows that 26% of the interviewees (parents) were illiterate. The question is what role do these parents play in homework management? Are they even aware of the positive impact they can play in their children's learning?

The research, however, established that homework was being assigned (100% in Table 1 question 3a) notwithstanding its quality and manner of management. 90% of the teachers participating in this research confirmed that they believed that homework was quite helpful (Table 1 question 9). This belief was confirmed by 75% of teachers who assigned homework 3 times a week while 25% assigned twice a week (Graph 1). The research also established that the subjects for homework are English (100%) and Mathematics (100%). These are subjects that have tended to be popularized in the ordinary level certificate in Zimbabwe and are quite determinant in terms of further education beyond ordinary level or employment. This could explain why homework at this level has tended to be concentrated in these areas. Interviews with selected learners revealed that indeed the majority of teachers were assigning homework. There were fewer cases where both learners and parents confirmed that learners were not assigned homework. There was a worrisome discovery that was noted from some learners who never brought homework. These learners noted that they were required to complete all their homework at school during the tea and lunch breaks or after lessons in the afternoon. By the time they left school in the afternoon they were required to submit the work. Asked as to whether teachers assisted with the homework during such times, none of the interviewees indicated getting such assistance. This researcher was at a loss whether to call this homework or just extension work because of the way the work was organized. When this was checked during interviews, one teacher did confirm that this was happening in some schools. The teacher insisted calling this homework. She noted, "This is homework because the pupils would be working on their own after lessons (perhaps showing varying perceptions on homework). Even if they took the work home most parents won't be able to assist them. They don't know how to complete the work (Interview 5, 2 February 2012: Name code, Teacher SKA). Interviews with parents confirmed the claim by this teacher. Interviews with parents were held in the medium of Shona which is their L1. Some parents were not educated and indeed confessed that they did not know the answers to the school work that their children would be working on. Included in this group were the grannies, the illiterate and some who were merely schooled but not

really educated. What became apparent in these interviews was that most parents were unaware of the various ways they could contribute in homework management. Some parents also felt that they were too busy to spare time for the learners. In their views, learners were best served by teachers at school so that when they came home they would assist with home chores and in the fields.

Lieracy Level of Parent

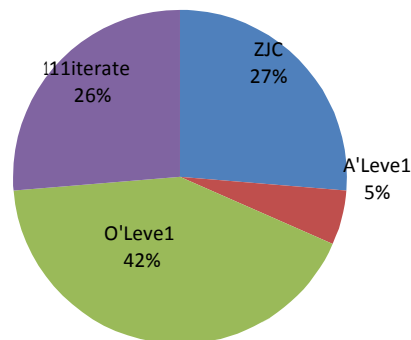
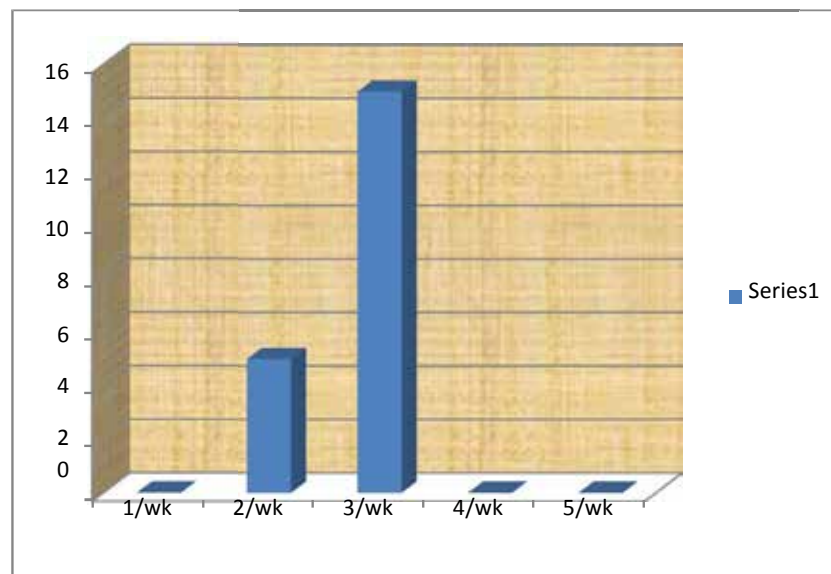


Fig. 1. Showing literacy level of parents

Another variety of the 'homework' mentioned (This researcher did verify this issue.) was given in the form of morning work. For instance, at school GPS, the researcher discovered that Grade 5, 6 and 7 learners had to arrive at school at about 0645 hours in spite of the fact that their school day was timetabled to start at 0800 hours. This was to enable them to complete the said work which was due when lessons started at 0800 hours. In spite of the good intentions of teachers, this may need to be examined in the context of the net effect on the learner. Some of our rural students in Zimbabwe walk for distances that are up to 10 kilometers to school.

It is prudent at this point to note that a comprehensive homework programme should examine closely the kinds of co-operation that should exist amongst teachers, learners and parents. A comprehensive teacher-learner-parent partnership should necessarily look at the nature of homework management to ensure that each parent (depending on his/her capacity) makes a positive contribution. This could be in the form of creating conducive environment for learners to concentrate on their homework, provision of materials (e.g. reading and writing materials, pens, pencils, adequate lighting etc) and other basic needs that may have indirect effects like the Maslowian basic needs. Parents should also create appropriate time for children to do their homework. Their demand for learners to assist with work at home and in

the fields should be balanced with the need for learners to do homework in an environment that allows them to meaningfully concentrate on the task.



Graph 1. Showing frequency of homework per week (Qs 3b: How often do you give homework to your learners?)

Table 2 below presents findings regarding how the homework was treated. The researcher felt it important to establish this because of its capacity to either encourage or discourage learners thus affecting learners future treatment of homework. Findings reveal that 40% of teachers marked and provided feedback to learners. 35% allowed learners to mark their work whilst the teacher gave answers and 25% revealed that learners exchanged and marked each other's work whilst the teacher gave answers. This researcher believes that the teachers who marked homework and provided feedback to learners may indeed positively propel the learners endeavours provided the feedback was not in form of just marks without incisive comments that are in form of instructional feedback [11]. The problem with learners marking each other's work is that there is no guarantee that the marking would be accurate neither will there be instructional comments. It is also doubtful that the teacher would later check all books for accuracy in the marking. In such a situation are we not likely to reinforce incorrect answers? Despite the fact that none of the teachers revealed that some teachers did not assess the assigned homework, interviews with learners did reveal that some teachers never looked at the assigned homework. This researcher did examine some homework books as follow up to the claim by some learners. Indeed the exercise books revealed that some teachers did not bother to look at the work. This researcher was at a loss as to why

these teachers bothered to assign the homework? One learner claimed that her teacher would ask them to display their homework and those who did not have the work would be beaten. The issue just ended there, the homework would thus be left unmarked.

It can be noted at this point that there is need to come up with clearly defined objectives for every piece of homework that teachers assign learners to. A clearly defined work plan and management process of the work should be put in place to ensure that homework contributes meaningfully to the learning process. Homework should not be a ritual whenever and wherever it is employed. Improperly done homework can create negativity in learners and once that happens then it would have lost its value.

Table 2. Treatment of submitted homework (Qs 5: What do teachers do with submitted homework?) (N=20)

Q	Treatment of submitted homework	Frequency	%
5	Teacher marks it and gives feedback	8	40
	Learners mark their work as teacher gives answers	7	35
	Learners exchange books and mark each other's work as teacher gives answers	5	25
	Leave it unmarked and move on to new work	0	0

When learners were asked about what happened with those learners who failed to present their completed homework on time various answers were given as shown in Table 3 below.

25% revealed that their teachers send non-compliers to the head's office for canning. 35% said their teacher punished the offenders and according to the learners this was usually in the form of canning. Interestingly, 40% sent such learners out and were only admitted back into class once the work was completed. What this researcher could not establish was whether the completed work would be checked for accuracy before readmission or simply that the learner had written something. The researcher notes that the problem with this form of punishment is that such learners may be losing much more than the value of the homework itself. Although none of the teacher respondents did reveal that some teachers simply ignored the assigned homework, learners revealed that some teachers simply 'forgot about the work and never bothered to check on it. One wonders why assign the homework in the first place. Given this scenario where learners see no value in homework the likely effect is that they may not put their mind to it. Also significant in the results in

Table 3 is to assess the impact of the type of punishment meted on those who failed to submit homework. One may ask as to which methods are likely to reinforce homework in future and which are likely to create negative evaluation of homework by learners? The punishment for offenders should at the end of the day propel learners into doing their homework positively in future. Learners must have a positive view of the process. The process should create a self-belief image in learners. In that way there would be a possibility for learners to do the best they can and possibly look for help where need be. This of course would work if the home-school linkage is soundly planned for to ensure that learners get assistance both at school and home.

Table 3. Treatment of non-compliance in homework (Qs 6: What happens with those who fail to submit homework?) (N=20)

Q	Treatment of non-compliers	No	%
6	Sent to the Head's office for canning	5	25
	Teacher punishes them	7	35
	The teacher sends them out of the lesson to first complete the work before readmission into lesson	8	40
	-	-	-
	The teacher ignores it	-	-

Effective planning of homework needs also to take into account the nature of the parent/guardian. The manner of assistance needs to be matched with capacities that helpers at home are able to provide. Fig. 2 below reveals that among the parents who took part in this research were grandmothers (20%). Some of them were illiterate and others advanced in years. Teachers need to be decisive in terms of what form of assistance they can render. Fig. 2 also reveals that 25% of participating children came from extended families (uncles and aunts owing to the deaths of their biological parents) and the set up in the majority of cases, in the view of this researcher, did not seem to create supportive environments. This is not to say this is the case with every family of this situation. In particular, 2 cases of the visited homes were particularly disturbing for the researcher. In both cases, the two children did not even have adequate exercise books for daily exercises let alone homework books. They seemed to be overloaded with home chores. Claims of absence of proper environments for school work by the two children were not, however, confirmed by the guardians who were not interested in talking about their surrogate children. From an outsider's perspective these homes were not properly framed for educational work. There was also a case of a child headed family where a 16 year old boy (Interview 8, 11 February 2012, name code Parent MN) looked after his

siblings owing to the death of their parents. There was collaboration between the siblings and the boy regarding his assistance with homework. This researcher, however, notes the burden of providing for the siblings as cause for worry regarding the extent to which he could assist with homework. These are cases that require teachers to seriously consider, and indeed make provisions for when they give homework.

Type of family head

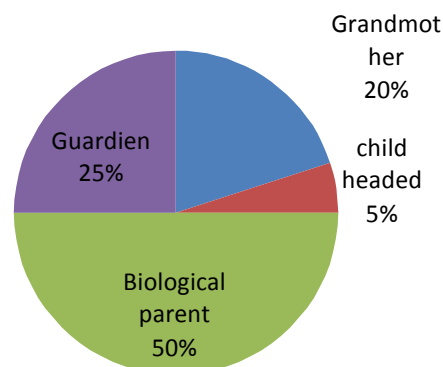


Fig. 2. Shows the type of family head

6. CONCLUSION AND RECOMMENDATIONS

Discussion of results in this research revealed that for most of the schools and families visited, the homework system was not being implemented successfully. This research unraveled some of the realities in some of the rural schools in Zimbabwe regarding homework management. Some of these realities certainly call for meticulous planning on the part of those designing homework. As noted by Lemmer and van Wyk [1], there are several challenges to the success of the Teacher-Learner-Parent partnership for the promotion of children's learning. These include limited knowledge and experience of parental involvement (no shared responsibilities), time constraints, unsupportive family structures, cultural and social barriers and lack of a well-defined school policy on home-school linkage. There is equally need for a shared understanding of the nature of parental involvement as well as a shared and negotiated involvement of illiterate parents. The planners should also ensure that there is correlation between the learner's level of education and the kind of parental assistance to be offered. In other words, there must be a well-designed and executed context analysis to know the various situations that obtain in

learners families. This might seem a mammoth task but is indeed a worthwhile one. It does not help to pretend that we are doing something when we are probably doing the opposite. Even the procedures so designed to enforce homework should be re-evaluated. Whatever we do, we must be able to explain how that will lead to learners improved scores. This should be done as a matter of principle perchance we may improve our learners learning.

This research thus, concluded that there was no homework policies at the four schools visited. As a result, teachers were operating in isolation. There was no systematic approach to homework owing to the absence of a school policy on homework. The research also discovered that marking of homework and provision of feedback was erratic in cases and that tends to work negatively against homework. Notwithstanding the problems noted above, the research did establish that most teachers in the sample were assigning homework to their learners. It is worth noting that these results need to be understood within the context of the schools that make up Njelele Primary Schools Cluster.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Learning - the Israeli Way: Key Educational Experiences and Classroom Noise

ABSTRACT

Aims: The present study exposes that meaningful learning experiences in Israeli schools take place in noisy and highly active classrooms. In contrast to common assumptions, we show that significant learning takes place in "active" classrooms, where "activity" reflects students' enthusiasm, curiosity and interest.

Place and Duration of Study: The study took place in Israel and collected evidence along three years.

Study Design: The study used a convenience sample of adults who reported about their strongest educational experiences in life. The sample proved representative of Israeli high school populations. The present article is based on the analysis of 483 retrospective key educational experiences that adults had during their school days.

Methodology: We used interpretive methods to analyze major themes and patterns but also coded experiences in order to assess the quantitative ecology of "noisy" experiences in school.

Results: A thematic qualitative analysis of the episodes shows that key educational experiences occurred when the content of instruction was authentic, relevant and challenging. Key experiences also reflected teachers' use of competitions, instructional peaks, varied skills employed in research projects, free choice of activity, presentations in front of an audience, and the use of surprises in learning. The article shows that many experiences took place on field trips, while others transpired during what seemed like ordinary frontal, teacher-centered instruction.

Overall, these key educational experiences reflect the "deviance" of individual teachers from patterned instructional programs, and students' "chaotic-like" behaviors during the pre-planned school schedule. During key educational experiences the teachers were deviating from formal instructional schedules and the students were neither sitting in silence, nor complying with formal directives. Rather, they were shouting with enthusiasm, rejoicing in their learning, at times ignorant of the fact that they were actually learning.

Conclusion: This article shows that in Israel learning is equated with noisy and rather informal modes of instruction, suggesting that "active" methods have long-term educational effects on students' lives.

Keywords: learning; classroom instruction; key experiences; Israel; culture.

1. INTRODUCTION

"In one of my social studies courses for high school seniors, I conducted a discussion on possible contradictions between democracy and national security. The pupils worked in teams, preparing arguments for or against each position. The discussion between the groups provoked excitement, with pupils fervently shouting at each other. Suddenly in walks the principal, asking if all was under control. I answered that it was. After class the principal approached me and asked whether I had discipline problems in class and whether I had managed to finish teaching the required material" (reported by a high school teacher).

This incident reflects a common wisdom among educators, pupils, and parents alike, namely that silent classrooms are conducive to learning [1]. According to this position, silent classrooms provide conditions for effective learning, where teachers can cover the required curriculum in predetermined timing and at a predetermined level [2-4]. It is further assumed that noisy classrooms provide fertile ground for pupil misbehaviour and disengagement. For example, critiques of open or progressive schools claim that unorganised debates, open discussions and individualised learning might provide pupils with an opportunity to use the noise and din during such activities to disrupt classroom order. The common assumption is that learning in such settings undermines classroom order and exacerbates discipline problems. Learning and noise are regarded, then, as oxymoronic.

This assumption is indeed heralded by principals who pride themselves on the silent learning climate in their schools, regarding it as proof of effective learning. Teachers, too, consider silent classrooms as a key for learning and are inclined to identify a silent classroom with efficient learning. Even pupils and parents emphasize

the importance of a solemn atmosphere for learning, claiming that pupils cannot study properly in "noisy" classrooms.

In contrast, a growing body of scholarship has begun to undermine the sweeping conclusions of this common wisdom. Such criticisms stem from recent theoretical developments that point out the inability of traditional bureaucratic school systems (which opt for silent classrooms) to cater for long-term meaningful learning amongst pupils. Theoretical trends such as "constructivism in education", "active learning", and "authentic instruction" look for instructional and curricular features that allow pupils to have meaningful long-term learning experiences [5-8]. Furthermore, an increasing volume of research showing that there is no simple correlation between classroom noise and pupils' achievements supports such trends. This literature further suggests that under certain conditions silent classrooms might even create alienation and pupil disengagement [9,10].

Moreover, critical scholars claim that silence primarily serves schools as a control device, thus curtailing significant learning [11]. They claim that many schools maintain silent atmospheres as a disciplinary means, thus compromising significant didactic goals [12]. They argue that administrators settle for class attendance, focusing on the accumulation of required credit points for graduation exams. Many pupils react to such school policies with opposition, expressing little involvement in class and a protest of roaring silence. Nevertheless, most of them are well aware of the importance of a graduation diploma for their future. Consequently, they go through the motions and pretend to be busy learning, knowing that a facade of involvement is the real scale by which they are evaluated in school [13]. But behind their expressed silence, they harbour disengagement, alienation, and hostility towards school and school learning [14,15].

The debate over the silent classroom has theoretical and practical implications, and has consequently received much attention. While the academic critics of the silent classroom have gained momentum, educational policies in the past decades have pressed more firmly on schools to attain predetermined curricula and standards. For example, in the US the *National Commission on Excellence in Education*, and its repercussions in standards-based reforms two decades later has increased the emphasis on bureaucratic procedures and control mechanisms. In the UK, the National Curriculum has similarly pressed for standardisation and control of

instruction and curricula. Such reforms have not passed unnoticed in the world, Israel including.

Notwithstanding the importance of this debate over silent, controlled classrooms, most of the extant literature on the topic is polemic in nature and ideologically driven. This state of affairs precludes any firm conclusion put forth by the protagonists in the debate. Furthermore, most of the studies on this issue were conducted in ordinary or traditional classrooms, where learning is focused on transferring "dead ideas" from teachers to pupils. As a result, they could not examine the extent to which significant learning takes place in silent classrooms.

To overcome these limitations, the present study assesses the extent to which silent classrooms enable students to experience meaningful instruction. It does so by analysing retrospective key educational experiences that have left a long-term mark on pupils' lives. The study uses the most significant learning experiences that adults recall from their school days in order to reconstruct the type of instructional practices that were evident in those classrooms. On this empirical basis it seeks to reassess the claims about the efficacy of silence in classrooms.

1.1 The Classroom as a Learning Society

Willard Waller (1932) characterised the classroom as a learning society that imposes contradictory tasks on teachers: namely to teach and to motivate pupils. On the one hand, teachers are required to transmit the required curriculum in large heterogeneous classrooms. To that effect, they have to teach the pupils a pre-planned and pre-scheduled curriculum and prove to their superiors (as well as to parents) that their pupils achieve formal requirements. In order to meet this goal teachers are encouraged to discipline their pupils and safeguard the orderly environment of the classroom. Hence, they are keen on having a silent classroom, constantly supervising pupils and organising instruction using pre-prepared lesson plans [16,17].

On the other hand, the constant supervision and disciplinary control of pupils contradict the second task of teaching, namely motivating pupils, exciting them, and arousing their interest in learning. Different studies have shown that significant learning experiences occur when teachers supply pupils with a free choice of topics, challenging material, high level of skills, and relevant subject matter [5,9]. Therefore, in order to attain their second task, teachers have to ease their disciplinary

supervision and minimise pupil control. Overall, the more teachers try to supervise and control pupil behaviour, the less they succeed in arousing motivation in their pupils, and vice versa.

There is evidence that in facing this dilemma most teachers choose to supervise classroom learning, thus compromising meaningful learning and inquiry. Studies have shown that the duality of the classroom as a learning society leads teachers to perceive silence levels as a central measure for assessing their professional capacity as teachers [18,19]. Many teachers also know that supervisors, head teachers, and parents all expect them to maintain a silent classroom in order to assure amicable learning conditions for the pupils [20]. These conclusions are supported by findings of leaders in school effectiveness studies, who concur that silent and focused classrooms are more conducive for learning [21].

The inevitable compromises that teachers make - preferring controlling rather than motivating their pupils - stem from the organisation of the school [7]. The bureaucratic principles of public schools reward teachers who discipline their pupils, while obstructing those who seek to motivate the pupils by using informal strategies [22]. The following analysis suggests that silence in classrooms is indeed driven by organisational considerations.

First, hierarchical teacher-pupil relationships encourage teachers to maintain distance from their pupils, avoiding improvisation and flexibility [17]. They prefer to follow pre-set course outlines while preventing pupils from developing an independent learning agenda. Second, the bureaucratic requirement to abide by impersonal rules and regulations leads most teachers to meticulously cover the material in the curriculum while blocking new initiatives and learning ideas that are not "test material". To meet these requirements, teachers strictly hush their classroom so that they can "cover the material" in time. Thus, dictation from the teacher's notebook and reading out aloud from pre-prepared worksheets create the feeling of serious and silent learning, especially to external spectators. Third, school inspection rules also pressure teachers to maintain silence. Inspectors mainly assess external features of classroom instruction: They check national school timetables, assess the attainment of the National Curriculum, focus on decreasing dropout rates, and on controlling pupil misbehaviour. Studies have indeed shown that inspectors focus on symbolic and formal aspects of teaching, placing less emphasis on the inherent technology of teaching, namely the motivation to learn and the

meaningfulness of instruction [23]. Thus the ministry of education, school inspectors, and head teachers are all busy maintaining the core rituals of schooling, preferring silent classrooms to productive and meaningful, but unorganised learning environments.

This analysis suggests that bureaucratic schools encourage most teachers to discipline their pupils and insist that their classroom study in silence. Moreover, such traditional schools promote the belief that silence in the classroom indicates that pupils are busy learning.

Consequently, silence is usually equated with learning while noise and disorganisation are regarded as disobedience.

2. RESEARCH BACKGROUND

Although there is no direct evidence to prove that meaningful learning experiences can take place only in orderly, silent classrooms, there are different theoretical threads that indeed seem to support this general contention. First, Carroll's model of learning prompted many researchers to examine the effectiveness of teaching in terms of time [24]. The model assumed that all pupils can learn, and that pupils' talent variability required differential time allotments for achieving similar outcomes. Following these premises, different scholars measured the time allotted to learning in different classrooms, assuming that the time allotted for learning in a silent classroom equals to the time pupils are actually engaged with instruction [25-27]. These studies have shown that silent and controlled classrooms use up to 80 percent of the time allotted. Other studies have shown that noise level and pupil opposition in lower socioeconomic classrooms decrease the effectiveness of teaching by enlarging the gap between allotted time and engaged time [12].

A similar argument emanates from studies of school organisation. For example, a comparison between private and public schools suggests that orderly learning environments and achievement-directed school cultures provide more opportunities to learn and higher normative pressure toward school learning [28-30]. Thus, pupils in private and Catholic schools in the U.S. have higher achievements than their compatriots in public schools due to the fact that private schools have more orderly and silent classroom environments. In comparison, portraits of life in public schools show that many classrooms are noisy and disobedient, with teachers sacrificing instructional demands in order to attain the facade of a controlled

classroom. With some generality, then, these studies support the claim that silent classrooms are indeed more effective for learning.

Third, school effectiveness studies - a conceptually independent body of literature - have a similar view. These studies have attempted to extract basic features of school organisation and culture, which set some schools ahead of the pack, and emphasised that silent and controlled school environments yield high achievements [31-35]. In contrast, in schools that lack leadership and control mechanisms over pupil achievement, pupils evade learning while settling for the lesser side of the educational opportunities that schools provide.

Although they differ conceptually and methodologically, these three lines of study concur that orderly and silent classrooms constitute the grounds for efficient learning. They also seem to agree that noisy, uncontrolled classrooms harbour disobedience and pupil disengagement. Notwithstanding this agreement, these theoretical schools share similar shortcomings, which should preclude a hasty acceptance of their conclusions about the effectiveness of silent classrooms for meaningful learning.

There is reason to suspect that what these studies call "learning" is not really meaningfully experienced as such by pupils. These cumulative models of learning assume that learning is a slow process that takes time to materialise, with pupils accumulating knowledge by sitting in classrooms day after day, year after year. There is reason to believe, however, that meaningful learning experiences cannot be equated with the outcomes measured by most studies in educational research. School achievements in mathematics, science, or reading cannot be equated with meaningful learning experiences. Consequently, these studies have not yet provided sufficient evidence to decide that silent classrooms are indeed necessary for producing meaningful learning experiences.

Overall, existing research does not provide us with a resolution to the question of whether a silent classroom is actually a learning classroom, or more accurately whether a learning classroom is necessarily a silent one. The aim of the present study is to fill in the gap in this literature and test the claim that a meaningfully learning classroom requires silence. Unlike most studies in this field, the present study examines meaningful and significant learning experiences that were reported by adults many years after their school days. Thus, by analysing these significant learning experiences, the present study attempts to examine whether these

experiences occurred in classrooms that were silent, and if not, to assess the "noisy" activities in those situations.

2.1 The Study

In contrast to studies that use scholastic achievements as a criterion, the current endeavour uses meaningful, key learning experiences to assess the nature of effective instruction. Key learning experiences are those that have proved to have a decisive effect on pupils' lives [36-38]. They were episodes that allowed learners to evaluate their wishes, capacities and opportunities, and enabled them to break free from prior limitations and set themselves on a new path. These are the educational episodes that adults deemed to be the most influential in their lives, therefore serving as keys to their lifelong development.

2.1.1 Sample

The present study is based on a snowball collection strategy that culminated in a sample of 505 respondents, aged 21 and above (with a range of 21 to 75, and a mean age of 37 years). The sample is representative of the Israeli population, with the exception of rural residents who were over-represented. Students from two universities interviewed two adults from their neighbourhood, and personally reported on their own key educational experiences. After narrating their experiences, respondents filled out a questionnaire, which focussed on their best key experience. The present study focuses solely on school-related experiences. It is based on reports of 379 of the 505 respondents who reported on key experiences that took place in school. Overall, these respondents reported on 483 learning experiences. We used several criteria to select experiences: (a) we only used experiences we could tie with socioeconomic and educational background variables; (b) we focused on experiences which incorporated all the necessary features of organization, phenomenology and outcomes (see below); (c) we selected only those experiences which matched the task.

The extracted experiences were divided by school level. Most key experiences were recorded in high school ($n = 229$), with a smaller share in middle schools ($n = 92$) and primary schools ($n = 162$). Statistical testing did not show any correlation between respondents' age and the type of institution that most prominently affected their life. This finding suggests that the results do not reflect memory-related recency

effects. Moreover, it is possible that the design of the study triggered respondents to tell a story as a "turning point" narrative [39], though the phrasing of the questions asked respondents to report their best life experiences, or the most significant ones, without hinting at the fact that the study focuses on critical moments.

2.2 Methodologies

Data gathering was based on in-depth interviews in which the respondents were asked to report their three most significant learning experiences, whenever and wherever they occurred. After the interview, respondents were asked to choose the most significant experience of the three, and to answer a closed questionnaire related to it. Respondents were taped during the interview and the entire transcripts were taken from the tapes. Respondents were asked to address three main aspects of their key experiences:

Organisation - in this part the respondents were asked to describe the organisation of the activity, focusing on teaching practices and methods.

Phenomenology - in this part the respondents were asked to report their feelings during the activity, while discerning between intellectual, emotional, and identity-focused phenomenological experiences.

Outcomes - in this part the respondents were asked to report the long-term effects of their key experiences, while discerning between effects on their values, behaviours, pragmatic decisions, and personality.

2.3 Data Analysis

The study used a grounded-theory approach, combining deductive and inductive content analysis of the interviews. The analysis started with a deductive coding of the narratives using categories derived from the pilot study. Further categories were inductively gleaned from the data. Each experience was divided into segments (sentences and paragraphs), and each was assigned a main title. Similar titles were grouped into theoretical categories, which were developed and refined as the coding continued.

Grouped categories relate to different teaching characteristics (i.e., authenticity, surprise), and to attitudes toward a "silent" and a "noisy" classroom. Other categories served to count episodes where noise indeed reflected disciplinary problems. After completing the coding, the frequency count of key experiences in

each category was summed up. While we focus on the qualitative aspects of those key experiences, we thought that a quantitative estimation of the "ecology" of outstanding instructional practices is important in delineating the prevalence of various features of those events.

2.4 Rationale of the Present Study

The present study examines instructional characteristics that were salient during key educational experiences. The main objective is to characterise the instructional methods and strategies that teachers used during these episodes. Conceptually, this approach seeks to assess whether these are "silent" strategies, and whether these methods indeed controlled and silenced pupils. This exercise is of utmost significance for the present study for two reasons.

First, if key educational experiences were not formed when teachers used "silent" methods, but rather when instruction was "noisy", then the claim that meaningful learning can take place in seemingly uncontrolled and noisy classrooms is borne out by the data. Second, to the extent that key educational experiences have indeed occurred in silent classrooms, we will be in a position to examine what actually happened during these silent episodes, namely whether pupils were passive (simply listening to a teacher), or rather were busy with disciplined learning activity. Finally, our approach enables us to assess the extent to which Israeli cultural codes drive "noisy classrooms" to prove effective in creating lifelong learning experiences [40].

3. FINDINGS

The reporting of findings is divided into four sections. The first two sections test the assumption that meaningful learning experiences mainly occur in silent classrooms. They examine the instructional strategies and methods that teachers used during key educational experiences, focusing on informal activities on the one hand, and on the contents of the activities on the other. The third section shows that a significant number of key experiences occurred outside the classroom, during field trips and "noisy activities". The fourth section suggests that even teacher-centered, lecture-type instruction can remain engraved for life, conditioned on their instructional characteristics.

3.1 Contents and Activities in Key Educational Experiences

Table 1 presents the frequency distribution of the categories, which were used to describe instruction during key, highly meaningful learning experiences. Based on the analysis of the narratives, we distinguish between content and activity characteristics. The reports suggested that many key experiences occur in silent classrooms, but that the content of instruction during these episodes was relevant, authentic and challenging. However, the results clearly suggest that many key experiences took place in noisy classrooms, where the activities did not allow teachers to maintain a silent, orderly environment.

Table 1. Frequency distribution of content and activity feature in key educational experiences

Teaching Strategy	Type	Frequency (N)
Authenticity	Content	121
Relevance	Content	63
Challenge	Content	58
Performance in Public	Activity	56
Experimentation	Activity	34
Use of Multiple Skills	Activity	32
Constructing Peaks	Activity	25
Allowing Choice	Activity	21
Using Competitions	Activity	20
Using Surprises	Activity	10

The following exegesis of the results uses original transcripts from respondents' reports in order to exemplify the contents and activities during key educational experiences, and to characterise the atmosphere during these episodes. We usually cite one quote for each category, although we could have provided many more. The numbers appearing at the bottom of the quotes refer to respondents' ID code and memory number.

3.2 Content Characteristics

The most salient content characteristic appearing during key educational experiences is authenticity. Authentic instruction is usually defined as teaching real-life topics, or as doing real-life activities [5]. Most respondents considered authentic instruction as "learning from life and about life" - learning that is neither scholastic nor disconnected from real-life and the adult world. Rather, the contents of instruction extend from real-life topics and connect pupil learning to their surrounding world.

Authentic instruction brings pupils into direct contact with reality, without the mediation of a formal and emotionless school curriculum, which by its very nature relates to pupils' "ratio", or cold reason [41]. In contrast, direct contact with real-life situations allows pupils to feel and think at the same time, thus engraving the educational activity for a long time.

The analyses suggested that authentic instruction usually took place outside the ordinary classroom, immersing pupils in real-life situations. These settings were devised using learning expeditions and by visits to institutions, or by an active participation in an event [42]. These visits and active participation in authentic settings can turn routine topics into lifelong, key educational experiences. For example, a 24 year old respondent described an authentic lesson his teacher devised instead of a routine social studies lesson.

"In our social studies class in the 11th grade, we conducted discussions about motor vehicle accidents. At one time we went to visit the hospital where many accident casualties were hospitalised, some in critical condition, some even comatose. It is rather difficult to admit, but no teacher, no lecturer, nor traffic professional who came to the classroom to talk to us, no officer or doctor could ever be such a strong and real education figure as that critically wounded person in that ward. The learning method was the situation itself... healthy children standing face-to-face with an accident victim" (44/3).

The second most frequent category was relevance. Understanding, as John Dewey claimed, happens only through an experience, which is related to pupils' lives [43]. Learning must stem from past experiences and build up from the local to the universal. Similarly, many scholars claim that learning has to happen "close" to the individual (in his "proximal zone of experience", as Vigotsky says), and relies on pupils' original experimental discoveries. This perspective indeed promotes school reform in many places, which opt to adopt relevant instruction and curriculum that connect with pupils' lives. As children differ from each other in their abilities, interests and past experiences, a relevant curriculum must allow each one to choose his or her personal topic of interest. Noteworthy in this respect is TheodoreSizer's dictum that "Kids Differ" [8,44], a basic principle later developed in his Coalition of Essential Schools.

Examples for relevance in teaching reappear in respondents' narratives of their key educational experiences. For example, a 30 year old educational counsellor told us about the research project she did during the seventh grade.

"Seventh grade was the Bar Mitzvah year in the kibbutz, part of which was dedicated to a project which examined a topic related to Israel. At that time I was reading a book by Dvorah Omer, called "Love unto Death", which describes a love affair between a young girl from the army during 1947-8, and one of the boys there, who was later killed. As a seventh grader I was touched by the story and decided to write my project on that. It was a true story and I decided to write my paper on that topic... My father drove me to Dvorah Omer's house and I talked to her... she let me read some of the diaries that the girl (Zohara) kept, which were the raw material for the plot... My father also drove me to see one of Zohara's childhood friends... reading Zohara's diaries and talking with her friends linked the reality and my imagination (the book)... the mere connection of something I read with its reality made that experience that much more unique and fascinating... my decision to study literature and education rose out of my feelings and interest in studies which could be applied to reality" (279/1).

The third most frequent content characteristic is challenge (n = 58). Many respondents, some of whom had previously defined themselves as mediocre or poor pupils, noted that their "great moments of learning" were characterised by the difficult challenge they faced. Often, those were tough research assignments given to pupils in or out of school. In other cases, pupils were faced with topics and assignments that were intellectually and emotionally challenging, and promoted stormy and lengthy debates in class. All in all, challenging assignments demanded that pupils make the most of their personal resources (thinking, will-power, self-discipline and motivation), while requiring high performance levels, concentration and engagement. One of the most challenging instructional strategies was based on teamwork where pupils had to solve difficult problems and assignments in a group. A respondent who reported on his physics class provided an apt example for this category.

"The teacher presented us with a time-limited challenge, namely to build a device which produces its own energy... the pupils spent the whole weekend trying out different ideas and methods, using all the material and knowledge they possessed as well as their creative imagination... of course we did not make it, but...

we did not feel we were busy learning, but rather that we were dealing with the challenge of proving to that teacher that we could do it" (200/1).

The challenge in those tasks is often accompanied by a time limit, which creates a sense of urgency among pupils. In this and other cases we learnt that pupils dropped all other activities and focused their energy on solving the problem, since it was important for them to prove to their teacher that they could meet the challenge.

3.3 Characteristics of Informal Activity

Besides content characteristics, the analysis has pointed to seven other informal features of key educational experiences. The frequency count of these features appears in Table 1, and the following discussion elaborates on a number of them.

The most frequent instructional strategy we found ($n = 56$) is performance in public. Respondents have a varied perception of an "audience", including peers, adult guests (e.g., parents), and external evaluators. Performing in front of an audience puts pupils in a stressful situation and encourages them to attain their best performance. We have found that public success and immediate feedback arouse intense feelings and self-fulfillment among respondents. For example, a 44 year old respondent recounted that at the age of 15 she enjoyed her geography classes particularly because the teacher appointed her as a "little teacher". At the beginning of every lesson the respondent conducted a 10-minute rehearsal with her class peers.

"I enjoyed the activity very much. It was lots of fun standing in front of the class, explaining the issues and discovering that pupils are interested and understand my explanations. I felt I was in command of the curriculum, that I was a good pupil, and that I was well able to explain the lesson to my classmates. The presence of the pupils prompted me to continue and explain and repeat it every time. This made me highly satisfied" (368/2).

The second most frequent instructional activity was research and experimentation. As many scholars already noted, significant learning occurs when pupils actively understand the material, through experimentation and research activity [5,43,45]. Respondents' recollections of key experiences suggest that they were asked to gather data, perform tests, systematically document incidents, analyse data,

and prepare a research report. Experimental work in biology class, or writing a theoretical paper in a social science class, created an almost singular experience where pupils felt that they are finally responsible for creating, criticising, and validating knowledge. For example, a respondent reported that as part of his high school geography lessons he had to choose one elective course out of several options, and he chose navigation because it interested him. In this informal framework, the geography teacher taught the pupils to read maps and draw navigation routes.

"Learning was practical. We went out for two- or three-day field trips. At the beginning of each trip the teacher explained the maps, and then the pupils went out for a hands-on experience, alone or in pairs... The independent experimentation was very enjoyable. It gave us a feeling of independence and control, confidence, and a sense of orientation... In time, this preoccupation with navigation turned from a hobby into a semi-professional career. I took part in many navigation competitions in Israel and won first prize in quite a number of them" (384/3).

The third instructional strategy we deciphered was skills. Indeed, supporting a rich research tradition [46-48], the present study found that instructional activities that used a variety of pupils' skills tended to leave their mark for many years. Examples are numerous and varied: artistic skills (acting, dancing, singing, painting), technical skills (building and dismantling construction) or personal skills (handling time pressures, organisation management, teamwork). In all the narratives in which this strategy appeared, the activity demanded that pupils use more than one skill. A good example is the story of a respondent who today works as a guide in a science museum.

"In the ninth grade biology class, we were asked to write a paper on air pollution. Later, the teacher asked for volunteers to put up an exhibition on air pollution. I volunteered and together with a team of five other pupils we were busy for a whole month preparing the exhibition. It was important for us to put across the message to all pupils, in a clear and understandable way, so that even those who were not interested in the subject would support the issue. Our cause was sublime: to arouse awareness of the risks of air pollution. Unlike our theoretical paper, here we had to use many skills, working under a pre-set timetable and using creative and original skills. For example, we drew the globe crying for help: "My hole in the ozone layer was growing and the icebergs were melting..." On another poster, we pasted all

kinds of sprays ejecting preones, which attack the ozone layer. In order to illustrate acidic rain we drew black forests, deserts and wilderness, versus green and fresh grass with budding flowers. The teacher gave us a free hand in deciding which topics to focus on, and how to present them... The exhibition, which we built single-handedly, was positioned at the entrance of the school and was highly successful... We received praise from other pupils. During the activity I felt self-fulfilled and experienced a sense of vocation. Constructing the exhibition by ourselves gave me a sense of motivation to learn and apply myself; it taught me what teamwork and cooperation is all about, and I felt in control of the subject matter" (451/1).

This report illustrates the importance of using pupils' skills. Firstly, the use of skills can influence pupils' engagement in class, as they are given the opportunity to express their skills and capabilities - a very different feat to what is commonly demanded in silent, orderly classrooms. Secondly, exhibiting their prowess using different media (painting, writing, putting up exhibitions, theatrical shows) allows otherwise lesser involved pupils to take part in organising such activities [6]. Furthermore, the multi-media character of such activities promotes the use of many senses (touch, vision, hearing, smell, and even taste) and touches a variety of interests, thus allowing almost every pupil to take part in the activity and enjoy learning.

Another strategy that teachers used to challenge and motivate pupils was evident in their use of competitive situations. Respondents reported that their peak motivation occurred during the competitions that their teachers conducted in class. Competitiveness was not the main theme of the activity, but rather a catalyst that the teacher used to prompt pupils to take an active part in learning. Nevertheless, competitions can transform a dull lesson into a highly emotional endeavour. As a result of such arousal in class, pupils retain long-lasting memories of the content of instruction, or of its moral principle. For example, a young respondent described a covert though significant competition that her teacher initiated between her pupils.

"As part of my high school curriculum I chose to study Arabic. In my final year we had to pass an oral graduation test. But most pupils, myself included, had a very hard time with that. We felt stressed and tense, fearing the test... One day the teacher invited us over to her house. We watched a short videotape of her last visit to Egypt, listened to songs in Arabic, and she gave us some refreshments. We talked and laughed like friends... Then the teacher asked us to tell a story in Hebrew, and

she helped us write it in Arabic. Then she prompted us to have a dialogue in Arabic about the meaning of the stories. Thus, we began a sort of invisible, but positive, competition, as each pupil wanted to express his own opinions and oppose the others... Finally, we learnt to love Arabic and succeeded nicely" (451/1).

Surprise - although the least prevalent strategy we extracted - represents another unique means by which teachers arouse intense feelings and motivation. Surprises in activities create highly emotional excitation and promote pupils' cognitive insight. Furthermore, such situations create high motivation among pupils, who seek to discover or solve the mystery that the teacher cast into the activity. Surprising activities could take form in a variety of ways. According to some reports, key educational experiences took place when pupils did not know what to make of the teacher's plotted lesson. For example, one respondent described a surprising activity that her science teacher created in primary school.

"The teacher, a colorful personality, called for a volunteer and asked him to lie on her desk (usually covered with test tubes). She blindfolded him and forbade us to react throughout the experiment. In addition, we were neither told what the subject matter was, nor about the purpose of the experiment, so we did not know what to expect. The teacher inserted pieces of paper between the volunteer's toes and lit them. The pupil began rotating his legs as if he was riding a bicycle and just in time the teacher removed the burning pieces of paper. This is how I learnt the fascinating topic of instincts. The surprise caused excitement in class" (51/1).

This story demonstrates that pupils had no clue as to what was about to happen in class. Then, in what seemed like a scene from a highly charged emotional gathering, e.g., where the preacher is inspiring his congregation, the respondent had an insight - the topic of the lesson, which earlier had seemed to be an unfocussed, chaotic educational activity, became clear to her.

In reviewing the results, it appears that key educational experiences did not take place in silent classrooms. The analyses have shown that pupils were all but slumber: they were active, fervent, enthusiastic, and keenly interested in the topic; they were emotionally aroused, feeling excitement and fulfillment. The content and activity characteristics described here suggest that for instruction to have long-lasting effects on pupils' lives, it cannot be based on simple teacher-centered strategies. Likewise, teacher-centered, controlled and supervised

classrooms left few traces in pupils' recollections. Rather, instruction that passed the test of years was based on "noisy" and seemingly disorderly strategies.

Performance in public was necessarily predated with uncontrolled, cheerful rehearsals; competitions generated shouts and enthusiastic engagement; relevance and authenticity made things dear to pupils' lives, thus implicating their selves in the activity, resulting in highly emotional and fervent involvement. Although we do not test this hypothesis here, we conjecture that instructional activities that combine several of the above mentioned content and activity features are more likely to have long-lasting effects on pupils' lives than those that use only one or none at all. All in all, the evidence suggests that although key educational experiences did not necessitate noise or disorder in class, they rarely occurred in silent, highly supervised classrooms. The next section elaborates on this claim.

3.4 Outward Bound: Learning Outside the Classroom

Dewey and Whitehead, the American pragmatic philosophers, noted at the beginning of the twentieth century that instruction through the use of experimentation could translate disconnected scholastic knowledge into the child's own reality, and thus revive "dead ideas" [43,49]. According to their position, only experimental learning, which connects classroom learning with authentic and relevant topics outside the school, deserves the title of education. The findings of the present study support this philosophical view, by showing that key educational experiences occur "in the real world", i.e., outside schools' boundaries [42].

Indeed, many respondents (n = 65 or 13.5% of the experiences) pointed to the fact that their key educational experiences took place outside the classroom. Learning through field trips, visits to an orchard, and excavating genuine archaeological sites combined theoretical content (previously studied in class) with its authentic, natural setting. Outward-bound activities are enriching, helping pupils gain insight about the topic and its natural context. For example, a 45 year old respondent spoke about her high school biology classes, which took place outside the classroom. She described how enjoyable these field trips were, and why pupils were cooperative the whole time.

"My high school science teacher was an avowed science lover and an expert on reptiles and plants of all kinds... Few were the lessons we had indoors. Sometimes we were in the lab, and sometimes we strolled in the fields surrounding

the school, or travelled far away on field trips... he used to talk about the topics while picking up stones and telling us: "Look, under this stone I found the reptile which is called so and so..." We never dared interrupt his lessons, because the experience was so engaging that we did not want to make trouble in class and be punished and miss the next field trip" (304/1).

3.5 Silent Engagement in Teacher-Centred Classrooms

Significant learning experiences rarely occurred in silent classrooms. Nevertheless, the evidence suggests that under certain conditions even teacher-centred instruction can produce key educational experiences. The analysis found that many respondents reported their significant learning experiences to have occurred in teacher-centred classes ($n = 75$), where teachers combined authenticity, relevance, surprise, or peaks into the curriculum. Integrating these characteristics in teaching resulted in pupils' cognitive curiosity and emotional involvement with instruction. For example, one respondent described her high school history teacher as follows:

"The teacher entered the classroom and said she was going to talk about the Holocaust. This was not surprising, as it was part of the curriculum. We took out our notebooks and pens but the teacher said, 'there is no need'. I have to admit that I personally did not like history nor did I like the teacher. I used to disrupt and disobey from time to time. She started the lesson with a presentation from that period. She said she was going to speak as a Holocaust survivor. She talked about her parents, about their life in the community. She didn't ask questions - it was one continuous lecture... we sat there for two long hours mesmerised. We even gave up the break. At the end of the lesson she opened the box that stood on her table, and took out a bar of soap, displaying it as her family members. We were shocked. I can still remember that lesson in detail" (232/1).

There is reason to believe that the silence in this and in similar classrooms was due to the pupils' keen interest in what the teachers had to convey. To the extent that the contents were authentic, challenging and relevant to pupils' lives, they willfully cooperated with their teacher's agenda. To the extent that such encounters required pupils to incorporate their personal resources into learning and forced them to think, to introspect or retrospect; to the extent that they learnt new things about their environment and about their own selves - to that extent pupils had immersed themselves in learning, entering a state of flow [50]. Unlike traditional teacher-

centered instruction, learning in highly challenging and authentic classrooms does not allow pupils to remain passive. Silence in these cases resulted from attentive listening on the part of the pupils, rather than from an enforced discipline by the teacher. In conclusion, the testimonies that we analysed prove that it is possible to significantly affect pupils even in teacher-centred classrooms - without the need to use "firecrackers", charisma, or highly charged rhetoric.

4. DISCUSSION

The present study has provided an initial description of instructional practices that teachers used in what time proved to be adults' most meaningful educational encounters. It has demonstrated that certain content and activity characteristics generated cognitive and emotional involvement among pupils that affected their life henceforth. The following discussion of these results touches upon four main conclusions.

First, the study has shown that most key educational experiences occurred in a "noisy classroom" rather than in a "silent" one. While the literature assumes that teacher-controlled and silent classrooms constitute arenas conducive to learning, the present study shows that meaningful, key educational experiences mostly occur during an active and noisy interaction among class peers, during a public performance in front of an audience, while working in pairs, through interviewing and arguing, and by utilizing different skills and capabilities.

Teachers' use of competitions often led to pupils shouting at each other with excitement. The construction of peaks and surprises in the curriculum generated involvement and enthusiasm. The requirement to exhibit diverse skills and capabilities often created a carnival-like atmosphere in class.

Thus, in contrast to pupils' usual silent attendance in school, the instructional strategies described here necessitated pupils to attend to relevant and authentic issues, which demanded their utmost cognitive effort. During these key educational episodes, learning did not require silence. On the contrary, silence in class would have annihilated learning and dulled the emotions that surfaced during the activity, replacing them with a cold, meticulous scholastic activity. One respondent summed up her experiences poignantly: "That was not a silent classroom, there was a lot of noise, but such a healthy noise, where everyone called out to the other: 'I found, I

discovered, come see what I've got'. That was extremely interesting, the noise, the sounds, the voices. These are things I remember until today" (200104622).

Second, some of the experiences mentioned here did not involve stormy verbal interactions. Nevertheless, the pupils were far from being passive. Instruction in such contexts impelled pupils to use their capabilities in an active and motivated manner. For example, the paper that the respondent wrote on the protagonist in Dvora Omer's story (relevance), or the preparation of drawings and presentations for the air pollution exhibition (skills), did not require that the respondents work in a noisy setting. Indeed, pupils can perform such assignments without talking, some without need for interaction whatsoever. Nevertheless, these tasks definitely demanded respondents to use their cognitive ability, skills and capabilities, while exhibiting enthusiasm and learning derived from inner motivation. All in all, it seems that a passive engagement, which characterises silent classrooms (where teachers talk and pupils listen), is rarely mentioned in the context of significant, key learning experiences.

Third, admittedly, in about 10 percent of the experiences the activity took place in the context of a teacher-centred classroom, which could be externally described as a silent classroom. Nevertheless, the results have indicated that the key experiences that occurred in these settings were not like any other silent, teacher-centred lesson in school. In almost all cases we found the lesson to be authentic, relevant and challenging, and the topics were mostly connected to pupils' lives, or to burning issues that had to do with the community, the school, or their country. Thus, although the teacher controlled the classroom and instructed in a structured method, pupils in these settings participated enthusiastically, with overt excitement or covert emotional involvement. This implies that teachers can maintain conservative instructional activities, yet modify the contents of the curriculum in creative ways, connecting with and reaching to the life-world of their pupils. Such curricular modifications can promote exciting debates that would set them apart from the tradition of neutral, insignificant and routine school learning.

Fourth, the current study suggests that the alleged contradiction between noise and meaningful learning has little empirical support. It has shown that "positive noise" was evident during key educational experiences, yet it did not harm order in the classroom. In fact, quite the reverse: respondents remembered many teachers because they promoted noise in their classroom, without losing control over

instruction or discipline. Actually, the reports have indicated that some teachers ($n = 25$) considered noise as a positive factor that improves learning and discipline in the classroom. This contrasts with the common belief held by most teachers that such noise harms the pupils' ability to learn. Moreover, 40 respondents explicitly referred to active learning and noise as beneficial, because these features formed a positive learning atmosphere, aroused interest in the topic, and caused enjoyment and, paradoxically, even order and discipline in class. The following quotes attest to this statement: "The classes were conducted as a debate, the theoretical material which we were all familiar with was taught in the most interesting way possible, and this I believe is the reason there was no need for disciplinary measures. The pupils came to learn, because of the lesson" (178/1). "The experiment related to the topic... We worked in teams and the teacher passed between us and talked with us... The noise of talking did not bother us. It was almost like a "free hour" which nobody wanted to miss (215/1).

Finally, this study supports the thesis by Waller (1932), Bidwell (1965), and Yair (1997), who claimed that instruction is undertaken in a sociologically ambivalent setting [51], with teachers torn between the need to motivate pupils and to discipline them at the same time. The results suggest that teachers who preferred to inspire their pupils and excite them through learning have been remembered in the long term. In contrast, the efforts to discipline pupils result in boring them. Thus, the bureaucratic emphasis that compels most teachers to emphasise discipline, social order and silence in class results in pupils remembering very few teachers and meaningful learning experiences. An emphasis on order, discipline and silence curtails the potential influence of teachers on pupils, and neutralises the basic goal of schooling: developing interest and love for learning, and influencing pupils' lives.

Nevertheless, the contradiction between discipline and motivation is not inherent in classroom instruction [9]. The present study suggests that by creating high motivation for learning, teachers can neutralise the need to discipline pupils since learning results from pupils' inner interest. The study has indeed shown that when instruction was authentic, relevant and challenging, when it was built on suspense, surprise, peak moments and competitions - pupils participated energetically, without causing discipline problems. The noise - and there was much noise during these key experiences - was the noise of learning, of enthusiasm, of the enjoyment involved in acts of creation. There is evidence that the insistence on

disciplining pupils results in boredom and - as a consequence of that - in noise, discipline problems, and alienation from instruction [52]. Upon reflection, it seems that teachers fear discipline problems in their classroom because they understand that what they do in their silent classroom actually bores their pupils.

5. CONCLUSION

To conclude, it seems that the question is not whether noise is conducive to learning, but rather what type of noise. The current study has shown that high noise levels that derive from enthusiasm and interest in learning do not contradict school goals. Therefore, if schools wish to affect pupils, they need to find ways to allow more teachers to be authentic, relevant and challenging. They need to expand the use of surprises, peaks, competitions, and independent research. The present study has shown that silent classrooms conceal what time will prove to be meaningless instruction. In contrast, it has shown that what externally seems to be a disorderly, chaotic classroom may actually constitute an arena that is educative and will be meaningful for a lifetime. In concluding this paper we suggest that there might be some Israeli uniqueness to our results, as culture always plays a part in learning and instruction [40]. The Israeli national habitus fits the features we identified here [53], and it is possible that students in other countries might be shocked by some of the outstanding activities we described here. Comparative studies need to ascertain this conjecture.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Didactic Lectures and Interactive Sessions in Small Groups: A Comparative Study among Undergraduate Students in Hawler College of Medicine

ABSTRACT

Aims: To study and compare didactic lectures with interactive sessions in small groups among undergraduate medical students.

Study Design: A quasi-experimental research design.

Place and Duration of Study: Hawler College of Medicine, between October 2011 and May 2012.

Methodology: Two administrative groups of students were selected out of four groups of medical students in their final year at Hawler College of Medicine. A pretest and post test evaluation of both experimental and comparison groups was conducted using the same criteria. A questionnaire was used to address students' perception of the new teaching method. For comparing the results of both groups in the examination, we computed the mean mark achieved by each group (pre and post test). Student's t-test was used to compare means of both groups.

Results: Out of 72 students who were originally included in the study, 64 students (88.8%) of both groups performed both pre and post test examinations. The age range of the students was 21-26 (mean age+ S.D 23.25+ 1.01). There was no statistically significant difference between the two means (pre and post) of the lecture format ($P = 0.15$), while the difference between the two means of problem-solving interactive class was statistically significant. Students in the study group showed higher marks than students in the lecture format ($P = 0.059$). Twenty eight (90%) students found interactive sessions more active way of learning than lectures, 29 (93%) students agreed that interactive sessions provide more group interactive skills. There were some negative attitudes like heavy workload on students (55%), and uncertainty about the accuracy of information from colleagues (52%).

Conclusion: Effectiveness of small group teaching may depend on the teaching style in small groups.

Keywords: didactic lecture; small group; interactive session; Hawler College of Medicine.

1. INTRODUCTION

The impact of teaching plays a major role in the learning outcomes in undergraduate medical education. This is more important in generating effective professionals. Its effectiveness depends on how much has been received by the students or the target audience. There are different methods of teaching; lectures, tutorials, seminars, by having a panel of experts, brainstorming, videotapes, class discussions, small group discussions, case studies, role playing etc [1].

The lecture is the most traditional method of imparting knowledge to students. It is the teaching method that is used frequently in the majority of medical schools despite the problems that are often attributed to it [2].

Student learning is one of the primary goals of universities. Suitable student-oriented teaching methods can help motivate students and help them realize their potential. One of these methods is small group teaching. It is student-centered and the tutor plays the role of facilitator [3].

Small group teaching has been the highlights of a revolution in medical education over the last 40 years [4]. Small group teaching is a rather broad term without a clear definition. It covers tutorials, seminars and small problem-solving classes. A small group is a number of people who interact in a face to face situation where the size of the group may vary from a handful of students to around 30 participants and about 8-12 is an optimal number [5, 6]. The concept of interactive sessions and small group teaching is not new. Socrates was a great exponent of this method of teaching [7].

The effectiveness of small group teaching against didactic lectures is well documented [8]. Small group teaching helps in generating free communication between the group leader and the members and among all the participants themselves. The faculty who acts as the group leader is a facilitator, allowing the participants to express themselves [6]. In fact, small group setting provides an ideal opportunity for teachers to facilitate active learner participation [5]. Reducing the size of the class will produce many benefits for teachers and students; for example. Students would receive more individual attention, teachers will be able to manage the students better, discipline problems are likely to be less and there is more interaction

between students and teachers. When the teacher spends less time in managing the students, more time can be utilized in teaching [8].

Small group teaching has become an increasingly important component of undergraduate medical education and many schools with more traditional curricula have incorporated a significant number of small group teaching sessions into undergraduate programmes for medical students [9].

The traditional lecture approach has been the core teaching method in the Iraqi medical colleges. Several activities and initiatives at both national and individual levels have been adopted for reviewing medical college curriculum and introducing new teaching methods in Iraq over the last two decades [10].

The first medical school in Iraq, Baghdad College of Medicine was established in 1927. The college adopted the Edinbrough curriculum, which reflected standard teaching curriculum of the time. Other medical colleges are subsequently established throughout Iraq and all adopted the teaching curriculum of Baghdad College of Medicine [11].

The traditional lecture approach or the content-oriented approach is still the core teaching method followed by Iraqi medical colleges. Several national activities have been adopted for reviewing medical colleges curricula in Iraq over the last three decades. The purpose was to develop a national curriculum for medical colleges relevant to community needs [10].

Quasi-experiments are studies that aim to evaluate interventions but that do not use randomization. Similar to randomized trials, quasi-experiments aim to demonstrate causality between an intervention and an outcome. Quasi-experimental studies can use pre-intervention and post-intervention measurements as well as nonrandom selected control groups [12].

The aim of this study was to study and compare two different teaching methods, didactic lecture and interactive sessions, in small group among undergraduate students in Hawler College of Medicine.

2. MATERIALS AND METHODS

This study was a quasi-experimental, pre and post intervention with control, research done in Hawler College of Medicine. Hawler Medical University (HMU) is located in Erbil city in the Iraqi Kurdistan Region. It includes four colleges: Medicine, Dentistry, Pharmacy, and Nursing. Teaching in the four colleges is in English

language. The University is affiliated to the Ministry of Higher Education and Scientific Researches of the Kurdistan Regional Government. College of Medicine has been established in 1977 comprising 12 different basic and clinical departments. It awards Bachelor degree in Medicine and Surgery (M.B.Ch.B).

A sample of 6th year medical students was selected for participating in the study. Sixth year students in Hawler College of Medicine composed of around 140 students, divided into four subgroups, each subgroup comprised 35-37 students. Two groups of students were selected, by simple random sampling method, out of four groups.

The 35 students group (19 male and 16 female) was chosen to receive the experimental model (study group) taught through interactive session while the comparison (control) group composed of 37 students (20 male and 17 female) and taught through traditional lecture format. The study was carried out at Briaty and Malafandy primary health care centres in Erbil city.

Students in the experimental group received the topics through interactive sessions (problem oriented solving class) while students in the comparison group received topics through traditional lecture format.

A multiple choice pre and post-test consisting of 60 multiple choice questions (MCQs) was developed by the team in cooperation with a neurologist, rheumatologist and a gastroenterologist. Both experimental and comparison groups received a pre-test of knowledge administered at the beginning of the first interactive sessions session and prior to the lecture for those participating in the comparison group. Both groups were re-tested (post-test) following the completion of the education event.

The Research Ethics Committee of Hawler Medical University approved the study and an informed consent was obtained from each participant after giving them full information about the study.

2.1 Educational Intervention

An educational intervention was designed to: (1) Provide students with the knowledge required for diagnosing three common medical problems in primary health care (Headache, Abdominal pain and Backache) effectively; (2) Introduce them to the tools and strategies for the management of these three conditions. The learning objectives of the educational intervention was focused mainly on developing clinical reasoning skills among the students.

Three teachers in Hawler College of Medicine trained in delivering student centred learning programmes were selected to deliver the interactive sessions and lectures. Both groups (The interactive session and lecture) were taught by the same teachers. The interactive sessions comprised 6 cases; all based on actual clinical cases. These cases were developed through consulting experts in the field and were given to the students before starting the session, students discuss with each other all aspects about the case during the session and tutor facilitated the session and clarified some difficult points about the cases when needed. The lectures were designed to cover all key content objectives identified for the study group and given as knowledge based information by the teacher. Oral instructions regarding the process of teaching were given to the students in both groups before starting the experiment.

2.2 Data Collection and Analysis

A questionnaire was used to address perception of students participated in the sessions of the new teaching method. The questionnaire comprised 10 questions. Answers were to be provided on five point Likert scales ranging from one (strongly disagree) to five (strongly agree).

Statistical package for social sciences (SPSS) version 17.0 was used for data analysis. Student's t-test was used to compare means. Paired t-test was used to compare between pre and post test scores of a single group, while t-test of two independent samples was used to compare between the mean differences of the two study groups. A p-value of $D 0.05$ was considered statistically significant.

2.3 Validity of the Test

Validity is a quantitative expression that indicates whether a test measure what it was originally intended to measure. Content validity is a form of validity refers to the assessment comprehensiveness or test appropriateness [13]. Content validity of the tests was evaluated by a committee, which consisted of teachers and experts in three topics under study. A test was developed in which the total pool of selected items was seventy-five. The test was divided into three parts of 25 items each. First part belonged to headache and second part related to backache and the last part related to abdominal pain. Firstly test was presented to the committee. Then pilot testing was conducted with ten students of same level for whom it going to be used.

Too easy and too difficult items were discarded in the light of the result of the test. At this stage 15 items were dropped. Thus the final form of the test comprised 60 items (20 items for each topic) was prepared.

3. RESULTS AND DISCUSSION

A quasi experimental design was used in this study as students were not randomly assigned to study groups. The newly implemented interactive session was integrated into the ongoing traditional study programme of the college taking into consideration practical difficulties of randomly assigning students into two groups.

The main difference between a quasi-experimental study and a true experimental study is that in an experimental study, the participants are assigned to a treatment group or a control group by random assignment. While doing so will allow you to get the best evidence of whether or not your intervention had the intended causal effect, random assignment is not always a practical step to take in the real world. It is usually impractical to ask a school or school system to divide up students in their school into two separate classes through random assignment. When random assignment is impractical, the pre-post test design, in this case, may give you the best results with minimal classroom disruptions [12].

Out of 72 students who were originally included in the study, 64 students (88.8%) of both groups sat both pre and post test examinations; 33 students were from the comparison (control) and 31 students were from the experimental (study) group. Study group participants filled out also the questionnaire on subjective perception of the interactive sessions. The age range of the students was 21-26 (mean age 23.25 ± 1.01).

The sample size was small because each administrative group consisted of around 35 students and practically was not possible to add students to each administrative group. It is important that both the treatment group and the control group are of adequate size to be able to determine whether an effect took place or not. While the size of the sample ought to be determined by specific scientific methods, a general rule of thumb is that each group ought to have at least 30 participants. Many other studies done to compare traditional teaching methods with innovative curriculum in different countries used sample size close to our study [14-19].

This study showed that the difference between pre- and post-test in lecture format was not statistically significant, while there was statistically significant difference between pre and post test in interactive session. Students in interactive session perform better than students in control group but the difference was not statistically significant.

The mean \pm S.D pre-test mark of the control was 50. \pm 10.; mean \pm S.D post-test mark was 54. \pm 10. and the mean difference was 3.6. There was no statistically significant difference between the two means (P= 0.15). The mean \pm S.D pre-test of the study group was 50 \pm 10; the mean \pm S.D mark of post-test was 56 \pm 9. The mean difference between the two tests was 6.7. There was statistically significant difference between the pre- and post-test results (P=0.009). While the difference between the mean difference of the control group (3.6) and that of the study group (6.7) was not statistically significant (P= 0.059) (Table 1).

Table 1. Mean marks of both groups (study and control)

Teaching method	Type of test	Mean \pm SD	Mean difference	95% confidence interval	P-value
Lecture (Control) group	Pre-test	50 \pm 10	3.6	(-8.6) - (-1.3)	0.15
	Post-test	54 \pm 10			
Interactive session (study) group	Pre-test	50 \pm 10	6.7	-11.7- (-1.7)	0.009
	Post-test	56 \pm 9			

The better performance of students in interactive session could be attributed to the fact that students read the case before coming to the session and did some private study in addition to the interaction during the session which may lead to better retention of information rather than memorization. Worldwide studies evaluating problem solving oriented class (interactive sessions) revealed variable findings. In a study done in Hong Kong, students showed statistically significant improvement in most of the aspects of the learning [16]. In other studies done in India (8) Iran [17] and UK [20] students scores in interactive sessions was more than lecture format. However, students in both formats showed similar knowledge in a study done in Pakistan [21] and in Netherlands [22] and students performed better in lecture format than problem based learning format in a study done in Hong Kong [23].

Out of 35 students in the experimental group (21 males and 14 females), a total of 31 students (88.5%) filled the questionnaire. The perception of the students was positive toward interactive session through their response to the questionnaire.

Twenty eight (90%) students reported that interactive session was a more active way of learning, and twenty-five (81%) of them mentioned that they feel comfortable in the discussion and twenty nine (93%) agreed that interactive session provides more group interaction skills and 26 (84%) mentioned that interactive session motivated them to use more resources (Table 2).

This is similar to the findings of studies in China [24], Hong Kong [23] and in Iran [17] in which students preferred small group interactive sessions in terms of participatory learning, team working, effectiveness, and developing self learning skills.

In China 89.4% of the respondents admitted that interactive sessions made them feel satisfied when their ideas were accepted by classmates; 80% reported that problem oriented class was more interactive than their own learning style; the majority of students reported that problem oriented class allowed them to learn on their own [25]. In Malaysia, 79.0% of respondents found problem oriented class sessions interesting; more than 65% of respondents were of the opinion that problem based sessions were beneficial in achieving their learning objectives and allowed in-depth understanding of the topic of study, and problem based class helped them in linking basic science knowledge to clinical appraisal skills and to develop group interaction skills [26]. In another study done in Hong Kong, many aspects of the small group student-centred activities were highly valued by students [27].

Table 2. Positive attitude of students toward interactive sessions

% Statements	Strongly agree and agree N (%)	Undecided No (%)	Strongly disagree and disagree No (%)
Interactive sessions is more active way of learning	28(90)	1(3.2)	2(6.4)
I am comfortable during the interactive session	25(81)	1(3.3)	5(16)
The interactive sessions motivated me to use additional learning resources	26(84)	4(12)	1(3.2)
Interactive session provide group interaction skills	29(93)	1(3.2)	1(3.2)
Enough learning resources available for interactive session	9(29)	11(35)	11(35)

There were some negative attitudes like heavy workload on students (55%), uncertainty about the accuracy of information from colleagues (52%) and stress in attending interactive sessions (22%) (Table 3).

Table 3. Negative attitude of students toward interactive sessions

% Statements	Strongly agree and agree N (%)	Undecided No (%)	Strongly disagree and disagree No (%)
Attending interactive session is stressful	7 (22)	4(13)	20(64)
Time was wasted during interactive session	11 (35)	6(19)	14(45)
Teaching was not focused	5 (16)	9(29)	17(55)
Uncertainty about accuracy of information from colleagues	16 (52)	8(26)	7(22)
Heavy workload on students	17 (55)	7(22)	7(22)

Some other studies revealed also some negative attitudes of students toward problem oriented interactive sessions. In China, students reported: uncertainty on the accuracy of the knowledge acquired (80%), time wasted during the session (35.4), teaching was not focused (32.9%), and heavy workload on the students (28.2%) [25]. In a Malaysian study, 27.0% of students found problem oriented class to be very stressful [26]. In Iranian study, students believed that they need longer discussion of the topics [17]. In study done in Hong Kong; students expressed a preference for learning and interacting with teachers than colleagues [27]. In another study done in India, majority of students favored a judicious mixture of didactic lectures and case – oriented problem solving in tutorial classes to be an efficient modality in understanding a system under study [28].

3.1 Limitation of the Study

Small sample size used in this study because each administrative group of students in the target population (6th year students in Hawler College of Medicine comprised 35-37 students and it was not possible to add students to groups). This small sample size may affect the finding of our study.

This study as a quasi-experimental study has a problem with internal validity because the authors have little or no control over many potential extraneous variables any changes observed might just be due to some factor other than the manipulation of the independent variable.

This study is limited to one college; the finding cannot be generalized to other colleges of medicine in Iraq.

4. CONCLUSION

This study shows that effectiveness of small group teaching may depend on the teaching style in small groups and also showed that majority of students have positive attitude toward problem oriented interactive sessions with few negative opinions. Further research is needed on a larger sample of students from different years of study in different subjects for better evaluation of this relatively new teaching method.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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Investigating the Effect of Social Variables on Speech Variation: Social Class, Solidarity and Power

ABSTRACT

The study presented here was conducted first, to classify speech based on functional effects by using the theory of speech act [1] as well as Brown and Levinson's politeness theory [2], and to see the effects of social class, power, and solidarity on variations observed within Persian speech. The data for the study constituted the entire conversations among the main characters of the movie called "A Separation". They included Nader, Simin, Termeh, Hojat, Raziye, and the Judge. The procedures involved first, transcribing the conversations between the characters of the movie, next, Brown and Levinson's politeness theory as well as Austin's speech act theory were applied in order to categorize the data and to examine how successfully our data could be classified based on their model. Then, the effects of social class, Power, and solidarity on speech variations were examined for discovering how social variables create variation in Persian Language. The findings revealed that first, utterances could be classified based on both Brown and Levinson's politeness theory and Austin's speech act theory. Second, social class, solidarity and power create variations in Persian. Social class raises the politeness degree of speech, while solidarity and power decrease the degree of politeness.

Keywords: speech variation; brown and levinson`s politeness theory; social class; social power; social solidarity; politeness.

1. INTRODUCTION

Mastery of formal characteristics of language can lead one to the skill of knowing the language in a static sense. In order to accomplish the communicative functions of language, one needs more knowledge than what we know as linguistic: mastery of vocabulary and grammatical rules results in developing skills required to use the language without the rich and abundant variations which are the results of several sociolinguistic factors [3].

How we speak is more revealing of us than any other non-verbal activity we may do. What we say and how we say it can reveal how polite, relevant, and mature we are; in addition, it informs the hearer more about our intelligence, personality, educational and social status compared with the way we walk, eat, dress, or make our living. Certain linguistic choices speakers make designate their social identity; it further reveals the kind of relationship which exists between them and their addressees [4]. The point is that there are always alternative ways one can articulate their point, and it is true to claim that the linguistic choices in one language may not be appropriate in another language, and this may result breakdowns in cross-cultural communication [5]. There are numerous aspects of the study of communicative competence, among which this study chooses to examine the effects of social class, power, and solidarity on speech variations.

Many researchers focus on the need for the rules of producing "communicatively appropriate performance" [6,7]. As a matter of fact, many learners may not be aware of socially and culturally appropriate forms which may lead to communication break-down or communication conflict. Therefore, according to Schmidt and Richards [6], we should try to appreciate a theory which account for language use among which speech act theory plays a crucial role.

Speech act theory is concerned with uses of language. According to Schmidt and Richards [6] speech act theory explains how speech achieves actions and how the speech acts result in both verbal and non-verbal reactions, in the realization of which face is an essential aspect. The main contribution of speech act theory is to explanation of communicative competence. Pragmatic speech acts such as invitations, refusals, suggestions, and apologies are significant components of communicative competence. Thus, the study of speech acts appears to be necessary to the understanding of intercultural studies. Many researchers [2,8,9,] have worked on speech acts to demonstrate speech act realization patterns and their characteristics in different languages [10]. There have been also research attempts focusing on the pragmatic aspects of Persian speech acts, such as: request [11,12], apology [13,14], compliment [15], refusals [16,17], complaints [18,19], griping [20], invitations [21], and requests [22].

Functions of speech are unlimited; but, researches have introduced classification of types of functions, dividing them into categories. For example, speech act theory [1] considers the illocution of the speech, the one intended by the

speaker and detected by the addressee. Austin [1] defines speech acts as acts performed by utterances such as giving order, making promises, complaining, requesting, among others. When we utter a sentence or a phrase, we are performing an act to which we expect our listeners to react with verbal or nonverbal behavior.

Politeness of speech is the primary condition of a successful communication event. The pragmatic claim is that speech needs to be polite and politeness involves taking account of addressees' feeling of self-respect and freedom of imposition as much as possible. Holmes [23] proposed that the manner in which speakers apologize or make a request enables the analyst to get to an estimation of what social category or social groups they are identified with. According to Janney & Arndt [24], "politeness is viewed as a rational, rule-governed, pragmatic aspect of speech that is rooted in the human need to maintain relationships and avoid conflicts". Speech acts are, therefore, common manifestations of politeness behavior in human interactions: the motivation which is provided for the speakers to save face.

Politeness is an integral part of every body's verbal life in any human society. How polite we choose to be not only reflects how close we feel to a person, how powerful socially we estimate the addressee to be, how much solidarity, closeness or distance exist between the interlocutors, and how power determines who should be more polite. Goff-man's [25] symbolic interactionism theory describes the many ways people use to communicate, create, and maintain social roles. In this theory, social distance is a prime characteristic of social roles, and politeness serves to regulate social distance. Different speech communities emphasize norms of politeness for different functions, and as a consequence, express particular functions differently as per their social norms imposed on them. The way people decide which form to use in a particular context depends on a few social factors such as: their social class, the social distance between participants, their relative status, and the role of social power which could all affect speech; and these and a few other factors are referred to as constituents of a speech context which is to be of a specific style representing the degree of formality of the setting.

Discussing face encompasses both face-saving and face-threatening acts. Speakers often get involved in achieving speech functions in their given contexts of use [26]. The claim is that politeness is context dependent. Brown and Levinson [2] base their theory on the concept of face which is defined as the public self image that all rational adult members have, when engaged in spoken interaction, and it must be

constantly adhered to. Face consists of two related aspects: positive face and negative. Positive face is the wish all speakers have that they be respected; their face 'wants' be desirable to fellow interactants. Negative face is the 'want' all speakers have that their actions will not be impeded by others. However, it is not possible for conversation to flow without a demand or intrusion being made on another person's autonomy; the fact is that we refer to certain functions of speech potentially face threatening. A simple act such as asking someone to sit down is a potential threat to their face; and it could be a threat to both positive and negative face. Brown and Levinson define the performance of such utterances as potential face-threatening acts (FTAs).

Koutlaki [27] contends that there exist two aspects of face in Persian culture. One, *shakhsiat* refers to prestige, the other, *ehteraam*, refers to the respect of the community for a person with a good moral standard (similar to English social status). The main difference between the two is that basically, *shakhsiat* deals with an individual's prestige gained by achievements, influence, connections, etc, while *ehteraam* has to do with the community recognition for an individual's social influence (the concept could be similar to English social class), moral behavior or judgment. Nevertheless, both components involve respectable images that one can claim for oneself from the community in which one interacts or to which one belongs. Thus, to be polite in Persian discourse is to know how to attend to each other's *shakhsiat* and *ehteraam* [27].

Some speech acts are categorized as containing threat towards the negative face of the hearer: orders, requests, suggestions, advice, reminding, threatening, warnings, offers, promises, expressions of envy, admiration, expression of hatred, and lust are examples. While those which are threatening to the positive face of the hearer include expressions of disapproval, criticism, contempt, complaint, accusation, insult, disagreement, expressions of violent emotions, the mention of taboo topics, interruption, bringing bad news about the hearer or good news about the speaker as well as other non-cooperative acts which can be listed. The positive face is in sum every person's wish not to be disrespected verbally. An order in Persian to a person of an older age could be threat not only to negative face, but also to the positive face [2].

It has been believed that every utterance or series of utterances producing a speech functional unit produced by individual speakers could be a display of,

among other factors, the degree of social solidarity and social power existing between the interlocutors. In this case, linguistic politeness is a social construct which indicates the power relation between the interlocutors. The solidarity is by nature about the quality of the relations between the interlocutors involving in a conversation event. It can be divided into differing levels based on who is conversing with whom: how related and close they are. However, as will be demonstrated, solidarity is a relational variable which increases or decreases not just by change of the characters; rather it is a highly context related quality. Measuring solidarity is obviously different from measuring other social qualities such as class, status, or power.

Fairclough [28] puts forward that power is a hidden construct in face-to-face discourse. From the list of threatening acts, we can strongly argue that the issue of power is inherent in our communication activity and is a major variable which depends on the context of the speech; it is a basic force in social relationships, the press of situations, and the dynamics and structure of personality. It is also defined as an individual's relative capacity to modify others' states by providing or withholding resources or administering punishments. Resources can be both material (food, money, economic opportunity) and social (knowledge, affection, friendship, decision-making opportunities), and punishments can be material (job termination, physical harm) or social (verbal abuse, ostracism).

Another social factor that is reflected and maintained through everyday social interactions with teachers, bosses, neighbors, and friends in homes, schools, workplaces, and religious spaces is social class which is connected to relative social power in general. Social class is a multi-faceted construct that is rooted in both objective features of material wealth and access to resources (income, educational facilities); on the one hand, and education, political influence, area of residence, and parenthood on the other hand [29]. These facets all reflect real, material conditions that shape the lives and identities of upper and lower-class individuals. Relative to their upper-class counterparts, lower-class individuals have fewer economic resources and fewer educational opportunities [29]. Moreover, people with lower-class backgrounds often face increased stress in their close relationships [30] and violence in their homes [31]; and they are the inferior conversation partner in most speech encounters [32].

Research findings in Western societies indicate that there is a distinction between social class and power [33, 34]. Generally there is a broad conceptual difference in social class and social power. Social class is based on material resources, rather than any valued resource and differs conceptually from power, which focuses more broadly on any valued resource.

For example, two managers may have the same educational background and salary, but one who has longer tenure with the company may have more power, because that manager has more intimate knowledge of company procedures and more established ties with other members of the organization. Power may predict differences in the behaviors of these managers, but social class may not. By contrast, social class should have stronger effects than power when individuals have different access to material resources, but those with less material resources have access to compensating non-material resources, so that they have as much power as those with more material resources. For example, one employee may have more material resources than another, but the latter may have access to an extensive social network. The two employees have similar levels of power, but the former has higher social class. Social class may predict differences in the behaviors of the managers, but power may not. Countries such as England and India are known to form societies of social classes, unlike countries such as Iran where social class is perceived differently.

Below, we will mention the issues of research we are interested in which are the functional analysis of the speech and investigating of the effects of social power, Solidarity, and social class on the way speech is shaped by different individuals belonging to different social classes and enjoying different degrees of power in several different contextual settings created in the Oscar winning movie "A Separation" which is world-wide popular and has enjoyed praise. The movie is a representation of how conversations manifest the role of power and social class and the solidarity in the characters' speech.

The work presented here will be of significance when it comes to investigate the differences in the relationship between speech members with different social relationships in a movie with rich conversational contexts that represents how the effect of social variables on speech can be investigated in details. Moreover Movies with plenty of conversational context between characters with different ages, genders, social power level and class are a good medium for analyzing the

effects of social variables on speech in contexts involving various power degrees and across different social classes. Besides, movies are proper mediums to study speech behaviors both within and across cultures. And in our case, the movie selected is known not only to the native Persian speakers but also to English native speakers who have interest in internationally praised pieces of work.

2. BACKGROUND

The proper task of semantics is to study relation that exists between expressions in virtue of their linguistic meaning. But of course in ordinary conversations the speaker's meaning is in general different from the sentence meaning. Often, the speaker means to perform non-literal illocutionary act, as in the case of metaphor, irony, and indirect speech acts.

A speaker who means to perform a primary non-literal speech act or to implicate conversationally something in a context of utterance intends to get the hearer to understand him by relying (1) on the hearer's knowledge of the meaning of the sentence to understand the literal speech act; (2) on their mutual knowledge of certain facts of the conversational background; and (3) on the learner's capacity to make inferences on the basis of the hypothesis that the speaker respects certain rules of conversation in performing the primary speech act in the context of utterance. According to this view, it is not possible to understand the primary non-literal speech act without having understood that this literal act cannot be the primary speech act in the rules of conversation in that context. Pragmatic is conceived as the theory of speaker meaning and it incorporates semantics as the theory of sentence meaning.

Austin [1] uses the term illocutionary act to refer to the ways in which language functions express speaker's intent, e.g. to express emotions, establish contacts, make proclamations, ask for things, etc. The speech act is also abounded unit whereby a particular social action is accomplished through speech. Hymes considers speech act to be a minimal unit, which "represents a level distinct from the sentence and not identifiable with any single portion of other levels of grammar or with segments of any particular size defined in terms of other levels of grammar" [35]. Thus speech act theory deals with the functions and uses of language, all acts we perform through speaking, and all the things we do when we speak.

Performing a speech act involves performing: (a) a locutionary act, the act of producing a recognizable grammatical utterance in the languages, (b) perlocutionary act, the act of producing certain intended effects upon the feelings, thoughts or actions of the other person, and (c) illocutionary act, the attempt to accomplish some communicative purposes such as promising, warning, greeting, reminding, informing, and commanding all being distinct illocutionary acts [36].

Pragmatics is defined as the study of communicative action in its sociocultural context. In order to be successful speakers in actual communication events, the functional approach to the study of speech, research suggests that it is essential for speakers to know not only grammar and text organization skills but also pragmatic aspects of the target language (Bachman, 1990). Communicative action includes not only speech acts such as requesting, greeting, inviting, suggesting and so on but also the pragma-linguistic ability to use language forms in a wide range of situations characterizing the context of the speech events the speakers get involved in. According to Schmidt and Richards [37] speech act theory explains how speech achieves actions and how the speech acts result in both verbal and non-verbal reactions. The function of a given utterance or a set of utterances is its illocution and speech act theory considers the illocution of the speech, the one intended by the speaker and detected by the addressee [1].

In pragmatics, our interest lies in the fact that a sentence, pragmatically called utterance, carries a message which is intended by the speaker and understood by the addressee. The issue of speech acts has been one of the most vital issues dealing with the functions of speech. The pioneers of this line of research [1] claim that the speech acts are operated by universal pragmatic principles, and some [38, 39] claim that their realizations are language specific. The fact is that although there are universal pragmatic principles which exist in all languages, their realization becomes culture specific. In fact, universal functions become culture specific when they are to be realized in a language: for instance, being polite is universal, but how to be polite depends on the cultural norms governing the speech of a specific language.

In case of the Persian language some studies have looked at the pragmatics of Persian politeness [40,41,42,27]. According to Sahragard [43], Beemen [40] is the only authoritative and comprehensive published work done on the Persian language from a sociolinguistic point of view. Nevertheless there are many researchers who

attempted in realization of politeness in Persian. Among them Zahra Akbari [44] in her article has extracted and categorized the range of politeness strategies used by Persian mono-lingual speakers in certain situations and to compare and contrast them with those employed in English, based on the model proposed by [2].

Social factors, which are either relational and context-sensitive such as solidarity and power, or non-relational such as social class, status, gender, or age, can be regarded as the factors which influence variations in speech, a thorough understanding of which is vital in order to follow norms of politeness in contexts of interactions. Different cultures find expressions in different systems of speech acts. Since decades ago, researchers [2,8,9] have worked on speech acts to demonstrate the realization patterns and their characteristics in different languages [10]. However, the works done on socio-pragmatics in Persian seem to be insufficient. There have been research attempts focusing on the pragmatic aspects of Persian speech acts; however, most of them have focused on one specific function with the aim of showing how pragmatic norms are realized differently across English and Persian. None, to our knowledge, has chosen the role of social class, solidarity, and social power in the sense we have chosen to research using pseudo natural data of a movie which could be claimed to be a familiar context for most of the analysts.

Discussing face encompasses both face-saving and face-threatening acts. Speakers often get involved in achieving speech functions in their given contexts of use [26]. The claim is that politeness is context dependent. Brown and Levinson [2] base their theory on the concept of face which is defined as the public self-image that all rational adult members have, when engaged in spoken interaction, and it must be constantly adhered to. Positive face is the wish to be respected; the face 'wants' are to be desirable to fellow interactants. Negative face is the 'want' all speakers have for being free from imposition and that their actions will not be impeded by others. However, it is not possible for a conversation to flow without a demand or intrusion being made on another person's autonomy; the fact is that we refer to certain functions of speech potentially face threatening. A simple act such as asking someone to sit down is a potential threat to their face; and it could be a threat to both positive and negative face. Brown and Levinson define the performance of such utterances as potential face-threatening acts (FTAs).

Some speech acts are categorized as containing threat towards the negative face of the hearer: orders, requests, suggestions, advice, reminding, threatening,

warnings, offers, promises, expressions of envy, admiration, expression of hatred, and lust are examples. While those which are threatening to the positive face of the hearer include expressions of disapproval, criticism, contempt, complaint, accusation, insult, disagreement, expressions of violent emotions, the mention of taboo topics, interruption, bringing bad news about the hearer or good news about the speaker as well as other non-cooperative acts which can be listed. The positive face is in sum every person's wish not to be disrespected verbally. An order in Persian to a person of an older age could be threat not only to negative face, but also to the positive face. The basis of arguments about speech variation lies on the concept of face. The two significant social variables, power and solidarity which affect face are mentioned below.

Every utterance or series of utterances producing a speech functional unit produced by individual speakers could be a display of, among other factors, the degree of social solidarity and social power existing between the interlocutors. In this case, linguistic politeness is a social construct which indicates the power relation between the interlocutors. The solidarity is by nature about the quality of the relations between the interlocutors involving in a conversation event. It can be divided into differing levels based on who is conversing with whom: how related and close they are. However, as will be demonstrated, solidarity is a relational variable which increases or decreases not just by change of the characters; rather it is a highly context related quality. Measuring solidarity is obviously different from measuring other social qualities such as class, status, or power.

In fact Language does more than helps people understand the speaker's thoughts and feelings. By using language in a subtle way, people define their relationship to each other and identify themselves as part of a social group. "In no area of sociolinguistics is this second function of language more clearly highlighted than in address forms". So there is an increasing emphasis on the study of the second person pronouns and address systems in different languages. One of the most influential study was conducted by Brown and Gilman in 1968, which, for the first time, brought the concept of "power and solidarity" into the field of sociolinguistics and identified their correlation and the pronominal usage.

Brown and Gilman [45] found that the use of the familiar pronoun T and the deferential pronoun V in European languages were governed by two forces: power and solidarity. If one person has power over another in the degree that he is able to

control the behavior of the other, he may give T and receive V. The bases of power can be physical strength, wealth, age, sex, institutionalized role in the church, the state, the army or within the family. On the other hand, solidarity implies intimacy and "shared fate" and is reciprocal. If the interlocutors are close or intimate to each other, they will mutually exchange T or V.

Fairclough [28] puts forward that power is a hidden construct in face-to-face discourse. From the list of threatening acts, we can strongly argue that the issue of power is inherent in our communication activity and is a major variable which depends on the context of the speech; it is a basic force in social relationships, the press of situations, and the dynamics and structure of personality. It is also defined as an individual's relative capacity to modify others' states by providing or withholding resources or administering punishments. Resources can be both material (food, money, economic opportunity) and social (knowledge, affection, friendship, decision-making opportunities), and punishments can be material (job termination, physical harm) or social (verbal abuse, ostracism).

Power is positively associated with speaking time and speaking out of turn [2,46]. Similarly, those with greater power are more likely to express their private opinions and true attitudes [47,48,49,50]. For example, high-power individuals are more likely than those without power to openly express their opinions during a group discussion [47,48], and they are unfazed by the expressed attitudes or persuasion attempts of others [49,50]. In contrast, low-power individuals' own attitudes and opinions are shaped by their high-power counterparts. Even when subordinates try to engage in overt acts of upward influence to improve their own situation and thus reduce the gap in power, they are likely to feel that their voice has fallen on deaf ears.

In fact high-power individuals tend to be more optimistic, more confident about their choices, and more action-oriented [51,49,52]. When there are inhibiting forces in the environment, power-holders act as if those forces were invisible [50] and take more goal-directed action [52]. For example in bargaining contexts, those higher in power are also more likely to initiate a negotiation and to make the first offer [53]. Negotiating and making first offers have both been shown to lead reliably to the accumulation of more resources and thus more power [54].

High-power individuals are also more optimistic and confident than low-power individuals [51,49]. For example, the powerful feel more optimistic about possibilities

for career advancement than do individuals without power [51]. These effects of power are important mechanisms of hierarchy maintenance because confidence and optimism are predictive of achievement and success across a range of tasks [55,56]. This increase in optimism also affects attraction to risk, with high-power individuals showing greater risk preferences and making riskier choices than low-power individuals [51,57].

The third social variable which is of interest in this study is social class, which is unlike the other two variables, an attribute which does not supposedly ever change as an attribute of a person. The effect of social class is reflected and maintained through everyday social interactions with teachers, bosses, neighbors, and friends in homes, schools, workplaces, and religious spaces. Social class is connected to relative social power in general; however, it is not always in correspondence with social power. Social class is a multi-faceted construct that is rooted in both objective features of material wealth and access to resources (income, educational facilities); [29] on the one hand, and education, political influence, area of residence, and parenthood on the other. These facets all reflect real, material conditions that shape the lives and identities of upper and lower-class individuals. Relative to their upper-class counterparts, lower-class individuals have fewer economic resources and fewer educational opportunities [29]. Moreover, people with lower-class backgrounds often face increased stress in their close relationships [30] and violence in their homes [31]; and they are the inferior conversation partner in most speech encounters.

For the purpose of this study, we classified social class into six levels, starting from very low (an unemployed, uneducated, poor, from an unknown parental background in slums of a city is the very low class individual). The quality of relations in Iran is much more demonstrated in the impoliteness of speech to the extent that lots of rude words and slang expressions might be exchanged between friends; and this is true mostly about the male young generation of the current social structure of Iran. Culpeper [32] defines impoliteness as "communicative strategies designed to attack face, and thereby cause social conflict and disharmony". He also claims that "impoliteness comes about when: (1) the speaker communicates a face-attack intentionally, or (2) the hearer perceives and/or constructs behavior as intentionally face attacking, or a combination of (1) and (2)". Power in this study is measured on a six level scale from least to most (a person in the court accused of murder without any connection represented in speech in relation to the judge who is

to sentence the accused). The most powerless talks to the most powerful who enjoys the highest social power).

3. METHODOLOGY

3.1 Participant

The participants were actually fictional characters of the movie and the data presented in this work is a display of the world created by the characters of the movie *A Separation*. Six main characters that interact constantly throughout the movie give us a sufficient corpus of speech displaying differing effects of the social variables of the study. 3 male, 4 female characters were selected and their conversations in various contexts were recorded and transcribed. The characters include one Iranian middle-class couple (Nader & Simin) and their 11 year old daughter (Terme), and one low-class couple (Hojat & Raziye) with terme's female teacher (Miss Ghahrayi) and the court judge.

3.2 Instruments

The Iranian movie called "A separation" was used as the instrument to be employed for collecting data. *A Separation* won the Academy Award for Best Foreign Language Film in 2012. It received the Golden Bear for Best Film and the Silver Bears for Best Actress and Best Actor at the 61st Berlin International Film Festival. The film was nominated for the Best Original Screenplay Academy Award, making it the first non-English film in five years to achieve this (Wikipedia). The world created by the movie was the context of situations with six main characters acting in various contextual situations. The materials of the study included the entire utterances produced in various situations by six movie characters of "A Separation". Each utterance was subject to a number of examinations; hence, the functional category, directness, and the use of mitigation devices in them were among the characteristics which we dealt with in order to reach findings about the effects of social variables on speech variation.

The rich corpus which contained 329 functions for classification could be a reliable source of data for verifying the validity of the claims made by the speech act theories which were chosen to be employed and tested.

3.3 Design

The design of the study is a simple one, as the nature of it is a descriptive attempt to show the role of social variables while applying the functional classifications.

3.4 Procedures

The data for analysis constituted the conversations of the movie characters in various contextual settings. The theme of the movie has been known to a large group of individuals who pursue Oscar winning films and have some interest how cross-culturally different speakers interact. The assumption is that social class, power, and solidarity among the interlocutors vary to a considerable sense, as the story of the movie is about socially different characters who represent a different social class; and the contexts are full of the interactions of interlocutors with differing power and solidarity.

In order to examine the functional classification of speeches made by the movie characters through employing the speech act theory of Austin as well as Brown and Levinson's politeness theory, the procedures were first, transcribing the entire conversations, and classifying them into functional categories they belong to. Second, getting to an estimation of how frequent was each speech act category in the speeches of the six characters of the story. To compare the differences between the characters in various contextual settings, the speeches of every character were transcribed with information available regarding where, when, in which circumstance (agreeing, conflicting, arguing, quarrelling, requesting etc) the speech is made; and the knowledge of who made the utterances to whom could give us as analysts the ability to examine closely how the effects of social variables create speech variation. Concerning the effect of social class, solidarity and power on speech variation, the methodology which was used makes the work different from previous research and hence contributes to its originality.

3.5 Data Analysis

This study needed 2 kinds of analysis: qualitative and quantitative analysis: The data constituting speech was categorized based on different speech acts, the comparisons of which were shown by examples, different tables, and using Figures. The qualitative data will be turned into quantitative by measuring frequency and

percentage of each and every speech acts that was produced by characters in contextually different situations. The use of excel was a sufficient statistical tool for us to get to what is of interest to our research.

4. RESULTS

In what follows, the quantitative data will be presented and discussed limited to the characters of the movie *A Separation*. The application of Brown and Levinson politeness theory as well as Austin's speech act theory will provide results which will be introduced for analysis. The first to present is Table 1, which gives a classification of the utterances into functional units based on their illocutionary force. As is clear, one functional unit could be identical to an utterance, while some functional units have an organization which requires several utterances with one being the head act. As is clear from the table, the utterances have been turned into 408 functional units; an example will be clarifying here: Nader first gives a warning request as well as a threat to Hojat in one unit of function. The first utterance is an imperative with a message which is intended to be a warning request and the second utterance is functionally considered to be a threat.

English 1. N to Hoj: Be respectful! I'm not saying anything in front of your family. **Persian 1:** N to H: Moaddab bash, man jelay-e zan o bach-at hicch-i behet ne-mig-am. **Persian (hereafter P) 1:** N. to H: polite be-imp, (2nd sing). I front wife and child-2nd sing nothing to you-2nd sing ne-(neg marker)-mi (present simple) say-1st sing.

Treating collections of utterances, we came up with turning 252 collections of utterances with a given function into 408 functional units with a head as well as with strategies of either politeness or such issues as compliance, etc. Table 1 is a comprehensive illustration of how syntactic units turned into functional units. The first column demonstrates the speech act kind including both face saving and face threatening ones; the subsequent columns show who interacted with whom and what was the speech act type.

Noticeable is the fact that for an English speaker, it is strange how some things are not to be mentioned in front of one's family. The differences of this type, however, are not the issue of analysis here; the mere purpose is to examine how varying types of speech act are mentioned in such contextual situations of conflict. The difference between being moaddab (polite) and respectful is one that the

translator has taken into account, in the sense that 'be polite' which is the literal translation has changed to 'be respectful'.

The functional units were divided in the following categories, regardless of who says what to whom: Those functional units called the FTAs to positive face included: criticism (54), complaint (47) direct disagreement (19), insult (17), and accusation (7). The total number of tokens in five categories constituted 144 instances. In addition to the categories above; ironical expressions used for showing intimidation and resentment which were used in speech acts potentially face threatening, usually employed specifically in the expression of disagreements, complaints, criticisms, (11); obligation (4) and refusal (4). The total number of tokens in eight categories constituted 163 instances.

The functional units chosen for examination which were viewed to be FTAs toward negative face included 113 tokens in seven categories of speech act: order (27), direct Request (42), indirect Request (11), threatening (22), advice (2), suggestion (8), and promise (1). As listed below, a number of characteristics were observed worthy of mentioning. The means of conveying the functions were either strategies or devices employed in conveying emphasis, increasing the face saving degree or decreasing the threat of a speech act by showing respect through using a class raising device (19 tokens); using high tone of voice for either showing emphasis, defensiveness, or threat (18 tokens); hesitation, showing lack of confidence (4 tokens), swearing which indicated either distress, emphasis, or defensiveness apparently unique to Persian unequal power in the contexts of conflict compared with English (15 tokens).

The use of face saving politeness strategies was mostly observed in the categories of speech acts below. Here is the tokens of speech act which were classified into types which often were used in building a more complex hierarchical functional structure: apology (8), expression of distress (7), permission (7), making an excuse (4), reasoning (4), agreement (1), and inquiry (1). The total number of tokens in seven categories constituted 34 instances. In addition to the categories mentioned, their frequency of occurrence was measured based on an estimation of which characters uttered them to which addressees (Nader, Simin, Raziye, Hojat, Termeh, the Judge, Ghahrayii, the Police officer, the sister in law, mother in law, Ms. Kalani).

Table 1. A comprehensive classification of the entire utterances extracted from the movie into different speech acts

Speech Acts	Total	Nader		Simin		Raziyeh		Hojat		Tereh		Judge		Gharraee		Police		Law		Director	
		Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total	Sumin	total
Criticism (FT toward + face)	54	6	6	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Complaint (FT toward + face)	47	8	5	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Order (FT toward -face)	27	2	3	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Direct Request (FT toward -face)	42	6	6	4	1	1	1	2	1	3	4	1	2	2	3	1	1	1	1	1	1
Indirect Request (FT toward -face)	11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Threatening (FT toward -face)	22	2	3	1	1	2	2	1	1	1	1	2	5	1	1	1	1	1	1	1	1
Direct disagreement (FT toward +face)	19	7	1	1	1	1	1	1	1	1	1	1	6	2	2	2	2	2	2	2	2
Respect,class raising device	19	7	5	1	1	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1
high tone of voice	18	4	1	1	1	2	1	1	4	1	1	3	1	1	1	1	1	1	1	1	1
Insult (FT toward + face)	17	4	3	1	1	1	1	1	5	1	1	5	1	1	1	1	1	1	1	1	1
Swear	15	2	1	1	1	2	1	1	5	1	1	5	1	1	1	1	1	1	1	1	1
Ironic	11	2	1	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Apology	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Suggestion	8	1	2	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Expression of distress	7	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Permission	7	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Accusation (FT toward + face)	7	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Making an excuse	4	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Refusal	4	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Giving a reason	4	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hesitation	4	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
Obligation	4	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1
Usage of address form	46	5	5	4	5	2	1	2	1	1	1	2	1	1	1	1	3	1	1	1	1
Advice (FT toward- face)	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Agreement	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Inquiry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
promise (FT toward - face)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Number of functions	408																				
Total Sentences extracted from the movie	252																				

Use of address forms (46 tokens) was an additional interesting issue for examination. The situations in which characters interacted could be divided into different ones. Who is addressing whom under what contextual circumstances function as variables which could predict which type of an address term will be chosen. In many languages, including Persian, the second-person plural pronoun used to address is an honorific form being a sign of respect. In addition, the use of non-honorific address pronouns (tu 2nd sing) may be used as a sign of either solidarity between the interlocutors or high power of the speaker, compared with shoma (2ndpl) which is used for the more powerful addressee. In English there is no difference in the form of second person address pronoun: .you. There is only one used for an addressee without showing either solidarity or inequality of powers. The tu (2nd sing) pronoun is usually used by those who do not have much social distance from each other (Fazold 1990). In example 2 the honorific pronoun, in 3, the non-honorific pronoun, and in four a substitution (darling dadi) which indicates the greatest degree of solidarity are used displaying varying degrees of either power or solidarity.

A: Address forms:

English 2: J. to Ms. Ghahrayi: You can go. Thank you.

Persian 2: J to Ms. Gh: shoma tashrif be-barid, kheili mamnoon.

P 2: J. to Mrs Gh.: you (2nd pl) honor be-(subj marker)-take (2nd pl), very thankful.

English 3: T to S: If you hadn't left, Dad wouldn't have been in jail now.

Persian 3: T to S: to age alan vel na-kard-e bood-i, baba alan too زندان نا-بوود.

P3: T. to S: you (sing) if now leave na(neg. marker) do(past participle) be-(past, 2nd sing)-I (condition marker) be-(subjunctive marker) go (imperative 2nd sing) dad now in prison na-(neg marker) was-0 (3rd sing).

Other address forms are used to convey such in-group membership, like generic terms and terms of address, such as:

English 4: N to T: Honey (Dad 'darling')! Go to your room.

Persian 4: N to T: Boro too otaghet baba joon.

P 4: N to T: be-(imperative marker) go (imp. Verb) in-of room-at (possessive adj, 2nd, sing) dadi life (informal, extreme intimacy).

Examples are chosen from the data to show each one of the speech acts mentioned above. It is interesting to note how the two languages English and Persian compare in conveying the functional effects. The details of how the two languages are different are not the topic of discussion here; however, the translations into English could automatically reveal to the readers how relativistic the nature of speech can be.

Example 5 is representative of an instance of complaint. The style of speech could reveal to the Persian speaker how the relevant social class of the speaker may be misjudged due to the context of speech between two persons forming a couple: the indicators of inequality in the social power of one of the interlocutors could be identical to the linguistic devices which function as indicators of the degree of solidarity. And, as an additional fact revealed through the qualitative examination of the conversational data, the degree of solidarity may vary according, not only to change of addressing character, but also to the contextual circumstances; the context of conflict changes the effect of solidarity to a negotiation of power between two speakers. Examples below are revealing:

B: Complaint:

As 5.a shows, the fairly literal version of the Persian translation into English reads differently to the extent that some functional effect will change and the illocutionary force cannot be indicated:

English 5: N to S: This is what happens when you just find random people.

5. a. N to S: When you find any stranger from the corner of the street and pick her up and bring into the house, this is what it becomes!

Persian 5: N to S: Vaghti har kasi ro az sare khiyaboon peyda mi-koni var mi-dar-i mi-yar-i tooy-e khoone mi-she hamin.

P 5: N to S: when everyone ro-(informal direct object marker) from head-e (of) street find mi-(simple present) do(imp, 2nd, sing) pick (informal spoken) have (present form of v)-i (2nd sing) mi (present tense marker) take (present tense)-l (2nd sing) in-ye (of) home mi-(present tense) become (3rd sing) same this).

Reaction to complaint is represented in 6 in which we see the reaction is not an apology; it is rather rejecting the complaint.

English 6: S to N: Don't blame me. I told you even then that I only know the sister in law. The literal translation could be:

6. a. S to N: Don't place it on my neck without any reason, etc.

Persian 6: S to N: Bi-khod garden-e man na-ndaz, az hamoon moghe ham behet goft-am man faghat khahar shoharesh o mi-shnas-am. Khod-esh o ne-mishnas-am.

P 6: S to N: bi (without) self neck-e (of) I na_(neg marker) throw (imp, 2nd sing), from sometime also be-(to) you (sing) say (past tense)-am (1st sing) I only sister-e (of) husband-esh (3rd possessive adj)-ou (OM) mi-(present prefix) know-am (1st sing). Self-esh (3rd sing)-ou (OM) ne-(neg marker)-mi (present tense prefix) know (present tense verb form)-am (1st sing).

C: Criticism:

Example 7 is what Hojat mentions to Nader as Criticism. The interesting point is that extracts such as these could reveal, in addition to the functional effect, the social class of the speaker. As one judges according to Hojat's objection of why Nader has touched his wife, who is referred to by a euphemistic term which indicates that in Persian culture one's wife is a sacred property for no one to touch but the husband.

The address term *Namous* is used to refer to one's wife; there are not any such expressions in English. The English audience will never comprehend the difference between the two. There is numerous address terms for female individuals in Persian most of which indicate how significantly the society is male oriented. In addition to the two address terms, a husband may call his wife by the term, *zan* (woman) which again signifies that the wife is a possession of the husband especially among members of lower social classes:

English 7: Hoj to N: Quiet! Who even let you touch my wife (*Namous*)?

Persian 7: H to N: *to aslanbe che ejaze-yi be namoos-e man dast zad-i.*

P 7: H. to N: you (sing) never with what permission-yi (indefinite marker) to wife (a substitution with especial connotations)-e (of) I hand hit (past form)-i (2nd sing).

It is interesting to know that what S tells the Judge cannot be translated at all in the same functional sense. The address term *Haj Agha* (Mr *Haji*) refers to one who has already had a pilgrimage to Mecca to do *Hajj* ceremonies, then after that the person will be Mr *Haji*. It has become a popular address term after the Islamic revolution for people to refer to the clergy, to respectful, and to the judges who are dressed like a clergy. The use of *Haji* signifies the less powerful *Hojat's* acknowledgement of his weakness and his involvement in a conflict; using the term addressed to the Judge who is of higher power as well as class shows a good instance of the effect of social power:

English 8: Hoj to J: Sir, if they don't care about honors, I care.

Persian 8: H to J: *Haj agha age namoos vase in ha mohem nist vase man moheme.*

P 8: H to J: *hajj* (title) sir if wife for these important *ni*-(neg marker) *be* (3rd present sing), for I important-*eh* (3rd sing, pres).

Example 9 is revealing of a difference between the two characters in conflict. One tries to show that his wife is a sacred property not to be touched by anyone; the other reveals several indications of being polite which could functionally be ambiguous. Being polite in a situation of guilt is one of the reasons speakers become polite. However, analysts and native Persian speakers can draw conclusions regarding the social class of the speakers in this conversation. Example 9 shows polite speech by Nader who is involved in a situation of lack of power due to his guiltiness.

English 9: N to Hoj: Sir, please don't insult.

Persian 9: N to H: Agha lotfan tohin na-kon.

P 9: N to H: sir, please insult na (neg marker) do (imp, 2nd sing).

Example 10 represents S to N the husband; a distinct feature of how Persian middle class couples interact in situations of conflict. If they had belongs to lower working classes living in small towns, one would expect much less power of expression than the husband. Here, a direct suggestion is made in a fairly direct way without any mitigation to make it polite. The speech act of suggestion is made by the head act being pay the blood money, the rest is considered to be expressions of dissatisfaction and complaint in the form of asking questions challenging the husband's refusal to pay. The head act of direct disagreement is giving money by force. The Persian native speakers can judge that a wife must be of high or middle class to be as direct as the speaker, Simin, is.

Knowledge of the larger context enables the Persian speaker judge that such a conflict uncovered in this conversation shows how the upper middle class in Iran is undergoing changes; Simin takes it her responsibility to force her husband to act through unpleasant speech that forms a unit of suggestion. In 10 Nader directly disagrees with Simin who is showing her resentment why the husband shows reluctance and does not act upon her request. This example shows that change has happened in Persian culture when one sees the style of Simin's speech could be offensive to Nader, because she uses non-honorific address pronouns, direct complaints, and finally a suggestion. Using such terms as stubborn by a wife to a husband clearly indicates the change of power across the two genders.

English 10: S to N: Then why are you being so stubborn? Pay the blood money, so it gets over with.

Persian 10: S to N: pas chi migi, chera hey lajbazi mikoni, biya in diya ro bede tamoom she.

P 10: S. to N: good then what mi(present prefix) say-i (2nd sing)? Why hey (continuously) stubbornness mi-(present prefix) do (present tense)-i (2nd sing)? bi-(imp. Marker) come (present, imp 2nd) this blood money ro (OM) be-(imp marker) give (imp mood) finish-she (become, present, 3rd).

Most Iranian workers belonging to the traditional social class would be outraged by such a term.

Additionally, the social class of the speakers is judged to be not high, especially the English performants find the social class always to be fairly lower than the Persian native speakers' judgments. In 11, Nader disagrees with the suggestion made by Simin in an indirect way, which signifies how he is concerned about his wife's judgment of him and his character. And this kind of concern is mostly true about the middle educated class of Persian speakers. Being indirect implies his tendency to be also acceptable in terms of saving his face in the sight of Simin, his wife.

English 11: N to S: I won't be forced to pay.

Persian 11: N to S: man pool-e zoor be kas-i ne-midam.

P 11: N. to S.: I money-e (of) force to anyone ne-(neg marker)-mi-(present marker) give-am (1st sing).

Example 12 is a suitable representative of how social classes compare in Persian culture. The extract is an indirect request made by the house maid: The strategies employed by the speaker are all indicators of social class and level of social power of the character. The female speaker, Razieh, displays a much lower class as well as power lever compared with Simin whose speech was in 10. In 12, the speaker is asking for permission, or in other words, a request for permission to act. She is asking Nader to permit her to give his phone number to her husband. She feels insecure about her giving the number to her husband; and only an Iranian native speaker of Persian would understand the reason for the concern about any possible suspicion for Hojat's thinking why his wife has communicated with a stranger man. The issue is socially sensitive for the simple working class citizens; therefore, it is obvious that she is very concerned about how she had got acquainted with Nader.

The Persian version is made into an unconventionally indirect speech act of request, while the translation version is a conventionally indirect request. Use of mitigation, confessing to her deliberate lying to her husband and asking for cooperation (letting her husband falsely believe that there had been no personal contact between them) all indicate the social class to which she belongs and how her power compares with Simin, the other wife's. As 12a shows, the speaker displays a much lower social power and consequently social class. She is used to talking in hesitation, hedging, and the fact is that she uses honorific terms plus mitigation.

The tone of voice and the gestures are added to show how her situation is of considerable powerlessness.

D: Indirect request:

English 12: R to N: Sorry, I was wondering if I can give your number to my husband, telling him I found your job announcement in the newspaper. Tell him for these household chores and for your father.

12. a. R to N: Forgive me, I wanted to tell, if it were permissible, I give your (honorific 2nd Pl) number to my husband, tell him I found it in the newspaper. I tell him for the housework and nursing, etc.

Persian 12: R to N: be-bakhsh-id man mi-khastam be-gam mishe shomare-ye shoma ro be-dam be shohar-am be-gam az too ye roozname peyda kard-am baraye hamin karhaye khoone-tan va parastar-i ina be-gam.

P 12: R to N: sorry I mi-(declarative marker) want (past tense)-am (1st singular) be-(subj.marker) say (present tense)-am (1st singular) mi-(present prefix) become (present 3rd singular) number-e (of) you (plu) ra (obj marker) be-(subjunctive marker) give (imperative mood)-am (1st sing) to husband-am (possessive 1st), be-(subjunctive) say (present)-am (1st sing) from in-ye (of) newspaper find (adj) do-am (1st sing). for same work-s (plu)-ye (of) home-tan (poss 2nd plural) and nursing these (discourse extender) be-(subjunctive marker) say (present tense)-am (1st singular).

Extract 13 is compliance to the request by Nader. He uses a direct speech act; and to make it more polite (gentlemanly), he confirms and says that no problem with what is asked by her. His class is revealed by the style of his speech: use of honorifics (subjunctive-be-order-2ndpluralequals English tell him), use of honorific ending in make-3rdpl a call, make an appointment with him 3rdpl). This style is a display of a gentlemanly way of speech representing the social class of the speaking character Nader in a context of cooperation. The politeness degree, as we compare the two versions, has not been properly transferred into English, due to use of honorifics, and plural address pronouns which show respect which could not have been transferred to English. The existence of honorific address terms and pronouns, honorific verbs substitutes for normal verbs, and third person plural pronouns and endings referring to sin-

gular referents, all indicate that Persian is comparatively more a complimentary type of language compared with English.

English 13: N to R: Don't worry about that. Have him call me and I will setup to meet him.

Persian 13: N to R: Na oon masaale-i nist, pas be-farmayid ba man tamas be-gir-and. Man bahash-oon tamas mi-gir-am.

P 13: N to R: no that problem-yi (indefin marker) ni-(neg marker) be (present, 3rd sing), then be-(subj marker) order (honorific verb) that with I contact be-(subj marker) take (present tense)-and (3rd pl). I with they (3rd pl) appointment mi-(future marker) put-am (first sing).

E. High tone of voice:

The high tone of voice in 14 is an interesting part of Persian speech. The character, Nader in the context of the Judge and the court, speaks with a high tone to show either his distress or his emphasis. In response to an accusation that he left Simin, Nader raises the tone of voice. In general, in several contexts, Persian speakers raise their tone to indicate such points as emphasis, anger, and distress.

English 14: N to S: WHEN DID I EVER LEAVE YOU? YOU BROUGHT ME HERE (Capital indicates loudness).

Persian 14: N to S: man key to ro vel kard-am to mano keshoond-i dadgah.

P 14: N to S: I when you (sing) ro (OM) leave (adj form) did-am (first sing). you (sing) I-o (OM) pull (past tense)-I (2nd sing) court.

The tone of voice is raised by Simin too in the context of argument. The translation to the English version is non-literal, as what Simin says starts with: then what did you do? Twice repeating the same interrogation is a means of showing anger and disagreement with resent.

The expression is intended to convey: if you did not, then who did.

English 15: S to N: WHAT DID YOU DO? WHAT DID YOU DO?

Persian 15: S to N: pas che kar kard-i, Pas che kar kard-i.

P 15: S to N: then what work did-I (2nd sing), then what work did-I (2nd sing)?

In example 16, the hot issue of accusing the one who was the responsible party for what had happened, Nader raises the tone of voice not to show his power; rather he tries to show his high degree of stress and resent. The functional message of 16 is an indirect act of placing the guilt on the addressee:

English 16: N to S: YOU WERE THE ONE WHO APPLIED FOR THE DIVORCE.

Persian 16: N to S: To baram darkhast talagh dad-i.

P 16: N to S: you (sing) for-I appeal-e (of) divorce give (past tense)-I (2nd sing).

F: Obligation:

In example 17, obligation is pointed out by the judge who represents the absolute power compared with other characters. His speech is empty of signs of mitigation. The Judge mentions the solution to the conflict: does not grant permission. So the permission to divorce, the permission to have custody all is in the power of the judge. These circumstances make him the most powerful figure among others as manifested in the tone of his speech and the functions of his speech units. The issue is: could it be that his social class enhances when his power increases over the other characters, or vice versa: will his power increase when his social class increases? The permission to the custody as well as divorce is given to Nader as his right, however, the real right of granting permission not only for custody but also for divorce is in the judge's hands; and this makes him most powerful of all in the contexts he is present. And in consequence, his speech is mostly directive.

English 17: J to S: Ma'am, he (3rdpl) also has to approve (3rd sing) of this divorce. It has to be mutual.

Persian 17: J to S: Khanoom ishoon bayad baraye talagh razi bashe, tavafoogh do tarafe bayad bashe.

P 17: J to S: Madam, he (honorific, 3rd pl) must for divorce satisfied be-(subj) be-e (3rd sing).

In example 17, it becomes clear that the judge is empathetic to the husband; this is clear by using terms signaling solidarity while politeness has also been observed. Using third person singular pronoun is an indication of respect for the addressee, and using non-honorific ending in the verb shows his display of empathy. The use of utterances in the form of rules, laws and principles could reveal that the judge is to relegate the issue to the civil laws of divorce and custody. The interesting issue is that although it is the law dictating whose right is divorce and custody, the parties involved see the permission in the judge rather than the laws which are to practice the rights.

English 18: J to S: If her father doesn't give permission, she can't come with you, Ma'am.

Persian 18: J to S: pedar-esh age ejaze nade ne-mitoone ba shoma biyad khaanoom.

P 18: J to S: father-e (of)-sh (3rd sing) if permission na-(neg) give-e (3rd sing) ne-(negmarker)-mi (declarative) can-e (3rd sing) with you (pl) be-(subju) come-0 (3rd sing) madam.

English 19: S to J: Her father doesn't allow.

Persian 19: S to J: pedare-sh ejaze ne-mide.

P 19: S to J: father-ash (3rd sing) permission ne-(neg)-mi-(present marker) give-eh (3rd sing).

G: Direct Request:

Examples 20 and 21 form a pair of utterances, one is a direct request supported with expression of compensation (I for sake everything mine to you instead) which could potentially guarantee compliance. To refuse indirectly, in 21, Nader makes comments accusing the mother by saying to her that the daughter is emotionally attached to him, the father. He brings another reason why he doesn't comply: that the daughter does not like to join the mother Simin. In support of the request, the mother offers another challenge/reason: that the daughter doesn't understand. So, in the conversation below, 20 was a directly made request with the head act, give me my daughter, and supportive strategy: I'll give everything to you. It is refused indirectly by Nader, (the husband) that the daughter herself prefers the father, and the daughter is emotionally attached to her father as mentioned in 21. In 22, the mother tries to use a supportive act for her request: she doesn't understand. The response in 23 is made to refuse and intended to be derogatory and is used to show the wife that she is mistaken, can be viewed as criticism using irony. The same is true with 24 in which Simin responds to the derogatory comment by her husband in still the same ironic way. The utterances 20 to 24 all form a complex functional structure in which a request is refused through employing varying strategies.

English 20: I'll give up everything. Just give me my daughter.

Persian 20: Persian 20: S to N: man hame chiz-a-mo mi-bakhsh-am faghat dokhtar-am o bede be man.

P 20: S to N: I all thing-am (possessive 1st)-o (OM) mi-(present)-ba (subju) forgive-am (1st sing) only daughter-am (poss, 1st sing)-o (OM) be-(subju) give (imper mood, 2nd sing) to I.

H: The Use of Irony:

English 21: N to S. Your daughter is emotionally attached to me. She doesn't even want to come with you.

Persian 21: N to S: Dokhtar-et be la haz-e atefi be man vabastast asan khodsh ne-mikhad ba to biyad.

P 21: N to S: daughter-et (poss, 2nd sing) with regard sentiment-I (adj marker) with Independent is (3rd sing), at all, self-esh (3rd sing) ne_ (neg)-mi- (present)-want (3rd sing) with you (sing) bi-(subju) come-0 (3rd sing).

English 22: S to N. She doesn't understand.

Persian 22: S to N: Khodsh ne-mifahme.

P 22: S to N: self-ash (posse 3rd sing) ne-(neg) mi-(present) understand-0 (3rd sing).

English 23: N to S: No one understands but you.

Persian 23: N to S: Hich kas ne-mifahme faghat to mi-fahmi.

P 23: N to S: no one ne-(neg)-mi-(present) understand-0 (3rd sing), only you (sing) mi-(present) understand-i (2nd sing).

English 24: S to N: No, it's just you that understands everything.

Persian 24: S to N: Na toy-i ke hame chiz ro mi-fahmi.

P 24: S to N: no, you (sing)-yi (be 2nd sing) that all thing-o (OM) mi-(present) understand-i (2nd sing).

In another conflictive context, Nader argues with the maid criticizing her for leaving the father unattended. In his criticism, there is insult and the speech is quite threatening. Power unequal context is displayed and the one who is more powerful mentions insulting comments while firing the maid. The maid responds to the more powerful employer Nader by showing how she is helpless in such a situation. 25 does not show how insulting the firing of the maid is; the utterance in the English version cannot convey the same functional effect. In response, the maid responds by just following the order of going out while complaining. The use of God's name is indicative of powerlessness on the part of the maid, Razieh.

In 27, Nader shows his rude and direct insulting speech which has a much stronger effect compared with the same expressions in English. The English culture is one in which under no circumstance one is permitted to be this much insulting. The use of insult is one which can never be conveyed into English in a corresponding way.

I: Insult:

English 25: N to R: You deserve to be kicked/ thrown out of here.

Persian 25: N to R: haghset-e in e ke ba lagad az in ja bendazam-et biroon.

P 25: N to R: right-at (2nd sing) this-is that with kicking from here be-(subjunctive) throw (present, imp)-et (2nd sing) out.

English 26: R to N: Ok I'll get out. But this is not right (God doesn't like this).

Persian 26: Man mi-ram biroon vali khoda ro khosh ne-miyad.

P 26: R to N: I mi-(present) go-am (1st sing) out but God ra (OM) happy ne-(neg)-mi-(present) come (3rd sing).

English 27: N to R: I'm being nice to you to not just throw you out.

Persian 27: Daram be to lotf mi-konam ne-mindazam-et az in khoone biroon.

P 27: N to R: have-am (posse 1st) to you (sing) favor mi (present) do-am (1st sing) ne-(neg)-mi (present) throw-et (2nd sing) from this home out.

J: Swearing:

Another important speech feature in Persian is swearing to get approval or to get addressee's trust. In response to the accusation in 28, the maid rejects the accusation by mentioning the name of the infallible imams. She represents the traditional social class who believe swearing by using the Imam's name could gain trust. The reaction to the swearing by Nader is to ask the maid to go out as she was fired by him. The use of honorifics in this context by Nader indicates the distance between them; solidarity decreases when conflict starts and increases. This conversation is not only the demonstration of class, power inequality of the context, but also how speech acts could be face threatening as a result of power of one over another.

The swearing is one of the signs that the maid speaker belongs to a class which is certainly different from the middle class Nader belongs to and is supposed to be modern.

It seems that swearing, or at least religious swearing, decreases as education increases. It may be because educated people are sure about themselves and their reasoning power so that they do not employ linguistic devices to prove the truth of their speech. In the English version, a lot of cultural effects cannot be present, as the audience does not know anything about the nature of swearing in Persian.

English 28: N to R: What'd you need in that room over there? The room you took money from its drawer.

Persian 28: N to R: Too oon Otagh poshti che kar dashti, hamoon otaghi ke az too kesho-sh pool var dasht-in.

P28: N to R: inside-e (of) that room back-i (adj marker) what work had-i (2nd sing)? same room that from inside drawer-osh (3rd sing) money up-take (past)-i (1st sing).

English 29: R to N: I swear I did not! I swear I would never do such thing!

Persian 29: R to N: Be emam-e zaman agar man rafte bash-am az too kesho-ye shoma pool var dashte basham.

P 29: R. to N: (I swear) to Imam Hossein if I gone become-am (1st sing) from in drawer-e (of) you (plural) money up-taken be (subju)-am (1st sing).

English 30: N to R: Get out.

Persian 30: N to R: Khanoom biya boro biroon.

P 30: N to R: madam bi-(subju) come (imper mood, 2nd sing) be-(subju prefix) go (impe 2nd sing) out.

Among the speech acts frequent in the movie, request was one which was found in abundance. Hojat responds to a job announcement in 31 by expressing his readiness to start the employment. His speech is full of honorifics and is fairly polite. It acknowledges the social class difference as well as lack of solidarity. In 32, the worker's offer to start is refused indirectly by mentioning there is one who is helping today. Then, as an invitation to come for work, he uses mitigation. In Persian, one's job is very much related to one's respect and reputation. Being a house maid could be utterly intimidating to the man, so Nader tries to use the softest tone possible not to let the man think intimidated. The English version has omitted the mitigation as it has been intended for the English audience. The English relatively literal version is rewritten to show how the employer attends to the condition:

K: Direct Request with Mitigation:

English 31: Hoj to N: If you want I could start today.

Persian 31: H to N: Az emrooz ham agar be-khayn mi-toonam biyam.

P 31: H to N: from today also if be-(subju pref) want (present imp mod)-ain (2nd plu) mi-(present marker) can (present)-am (1st sing) bi-(subjunc) come-m (1st sing).

English 32: N to Hoj: No, I have someone today. Bring an identification card and start tomorrow.

32. a. N to Hoj: No, today there is someone there; you (2ndpl) do favor start from tomorrow.

Persian 32: N to H: Na emrooz kasi hast shoma faghat mohabat kon az farad biya. Ye karte shenasayi ham ba khodet biyar.

P 32: N to H: no, today someone is you (plural) favor do (imperative) only from tomorrow bi-(subju) com (imperative). A card-e (of) identity also with self-at (2nd sing) bi-(subju) bring (imperative mood).

Fig. 1 is a comparison display of types of speech acts and the characteristics which could vary under the effect of social variables; and the bars show the frequency of each one of the speech acts in general, regardless of who said what to whom. Criticisms, complaints, direct request, direct order and threat were the highest frequently used speech acts. Direct disagreement, insult, swear, indirect request were second frequently used speech acts. The rest of speech acts were the least frequently used speech acts by all Characters of the movie. It is interesting to know that complaints, criticisms, order, direct request and threat were of highest frequency as the situations the characters were involved in are mostly arguments, conflicts and disagreements. Usage of address forms, frequent class raising devices, high tone of voice, and choice of an ironic speech tone were among the strategies employed to increase the functional effect of the speech acts.

Fig. 2 is a comparison between the main characters regarding to the frequency of each speech acts they employed in their utterances. The bars show the frequency of each speech acts for each one of the main characters separately. Nader has the highest bar in complaints (15 out of 40), criticisms (14 out of 44), direct requests (17 out of 32), accusation (3 out of 6), apology (3 out of 5) and ironical expressions (4 out of 9). Bars also show the same frequency of criticism for Simin

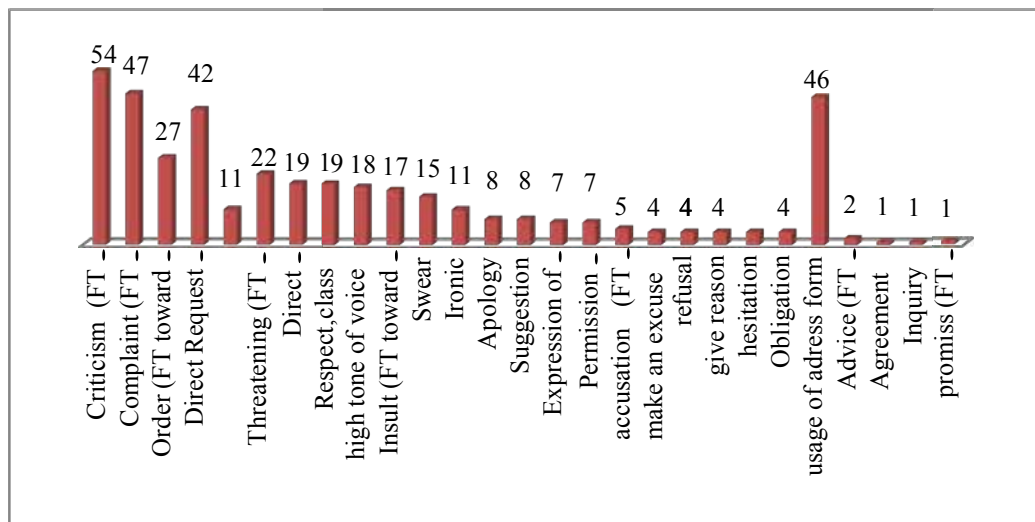


Fig. 1. Functional classification of the utterances of the movie

and Hojat (10), the same frequency of accusation for Simin, Hojat and judge (1), and almost the same frequency of complaint for Simin (9) and Termeh (8), who had the highest frequency of the usage of Complaint in their speech after Nader.

In threatening (7/7), suggestion (2/2), advice (1/1) and direct disagreement (7/7), the bars for both Nader and Judge show the same frequency, and the only bar for obligation (4) and inquiry (1) belongs to the Judge. But the Judge has no bar on criticism, complaint, indirect request, insult, ironic, apology, making an excuse, giving reason and refusal; the indication is that the judge has a position whose role requires certain speech acts to occur more frequently than others. Raziye and Termeh are the only characters that have bars for making an excuse (2/1), giving reason (2/1), and refusal (3/1) showing the likelihood of their social standing in terms of power and influence. Hojat (9) and Nader (7) also have the highest bar for insult; the indication of it is they are involved in conflictive contexts of situation.

In Table 2, the frequency of occurrence of each speech act and strategies for using those speech acts were measured based on an estimation of which characters uttered them to which addressees (Nader, Simin, Raziye, Hojat, Termeh, and the Judge). The total number of functional units that were produced by main characters (Nader, Simin, Raziye, Hojat, Termeh, Judge) are 329. criticisms (44 tokens) and complaint (40) in Nader's utterances were mostly addressed to Simin and Raziye, reflecting his male superiority of social standing power in relation to such female addressees as Simin and Razieh. In the case of Simin and Hojat, complaints and criticisms were addressed to Nader; clearly showing their greater power in the given

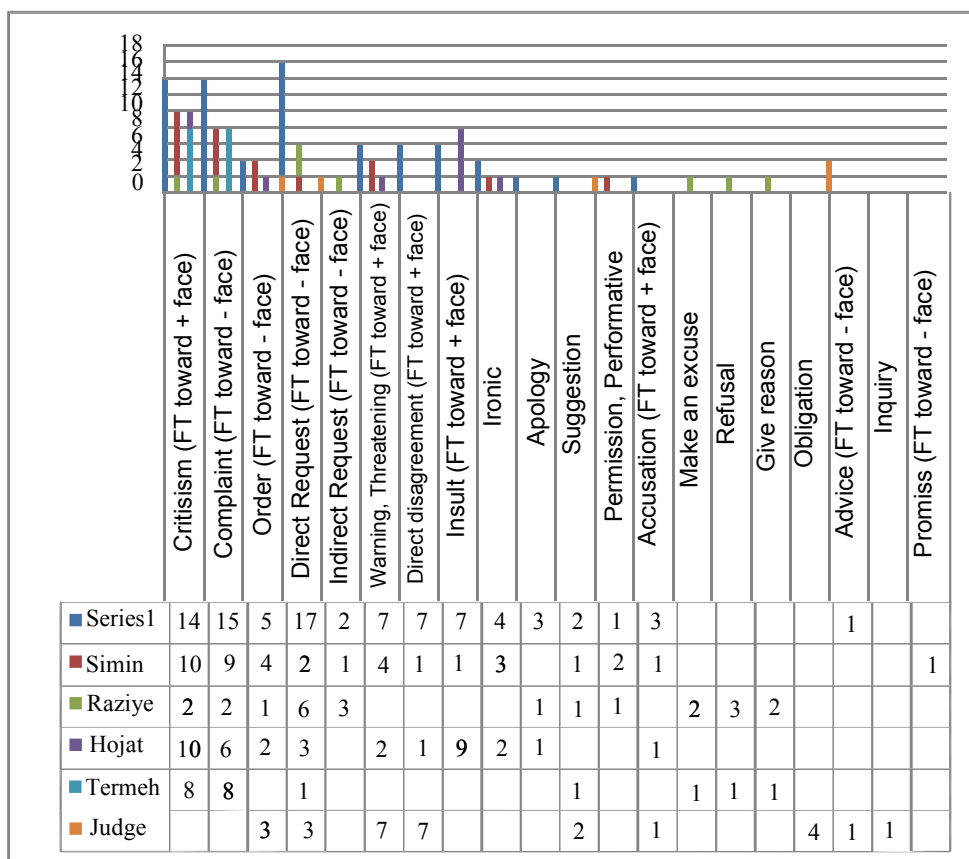


Fig. 2. The comparison between the main characters based on the frequency of different speech acts uttered by each character

contexts of conflict. This kind of power is mostly context related. Termeh's solidarity with her family Nader and Simin gave her the permission to place direct complaints. Raziye's complaints to Nader and Simin were mostly responses to the accusations revealing the great degree of her powerlessness. Her complaints were made in a considerably different style of politeness. As the last instance of complaining speech, it is interesting to mention that the judge's utterances were not categorized in any of the face threatening speech acts of complaint and criticism.

Insults (17), which had the highest frequency in Nader and Hojat's utterances, were exchanged between N and H showing how social class and face could be violated under the influence of conflict in the Iranian society. Insults were also addressed by N to Raziye in a highly direct style showing that being a maid decreases one's class; in addition, being a female addressee could make one more susceptible to direct threatening speech such as insult.

Direct disagreements (16) which were dramatically observed in Nader and Judge's speech were in sight of and in response to Simin's requests. Accusations (7) by Simin, Hojat and Judge were made toward Nader for telling the lie and his inconsiderateness. On the other hand, Nader accused Simin, Raziye, and Termeh for their carelessness and their irresponsibility in given situations showing how the world of the "A separation" is full of conflicts; in response to accusations directed to Raziye, what we see is her insisting by using swearing, tone of voice, gestures made, used as different strategies. In addition, Raziye persists on making excuses and giving reasons in her effort to relieve herself from the guilt she was accused with.

In addition to the categories above; Nader, Hojat, and Simin uttered ironical expressions for showing anger and intimidation while addressing each other showing disagreements, complaints and criticisms. Obligations (4) as one of the threatening speech acts were uttered toward Nader and Simin by the Judge at court; signifying that it is not the judge who disagrees; rather, it is the laws governing legal relations that are practiced. The total number of tokens in these eight categories constituted 141 instances.

The functional units which were viewed to be FT toward negative face included 76 tokens in six categories of speech act: order (15), direct Request (32), (15 out of 32 were direct request with using mitigation devices), indirect Request (6), threatening (20), advice (2), and promise (1). Nader mostly used mitigation devices (like, *Mohabbat konid* (compassion do-imp, 2ndpl), *Lotf Konid*, *Tashrif Biyavarid*) in his direct requests from Hojat and Raziye except the time while they were in conflicts. Also, in the presence of the Judge most of the direct requests by characters were with mitigation devices used to acknowledge the higher power of the judge. But, Nader requested directly from his daughter Termeh without using mitigation devices which indicated solidarity of relations between them.

It is often the case that context decides if the use of direct mitigation less speech is as a result of solidarity or in equal power between the two parties speaking. Between N and T, direct speech without mitigation could be related to the high solidarity between them. Also, Indirect requests which are often indicators of a low degree of solidarity and a low level of speaker's which was observed mostly in Raziye's speech in conversations with Nader. However, direct order as a face threatening act, was employed in a conflict situation by Nader, Raziye and Ho-

jat indicating how norms of politeness are violated under the effect of contextual factors. The same is true about the conversations between Simin and Termeh; however, in the latter, the solidarity is more manifested than the role of power.

Moreover class raising devices (14 tokens) were often used to decrease the threat of a speech act by Nader in making requests and asking questions from Raziye and Hojat. Also, it was employed by Hojat in one situation while he was talking to Nader; which signaled the formality in relations and the social distance which called for being as polite as possible. Except the Judge and Termeh, the characters used a high tone of voice for showing emphasis, defense, or threat in their speech by each other (17 tokens).

It is worth mentioning that hesitations (4 tokens) in Raziye and Termeh's utterances while talking to Nader, Simin, and Judge show their lack of confidence in what they said to their more powerful addressees. They both made an excuse and gave reasons to defend themselves. In addition, swearing (12 tokens) was observed in High frequency in Raziye's utterances which indicated either her distress, emphasis, or a defensiveness in a conversation she had with Nader, Judge, Hojat and Simin. The majority of speeches made by R showed how her situation in various contexts was one of absolute powerlessness.

The use of face saving strategies as well as mitigation was mostly observed in the categories of speech acts below. The tokens of speech act were classified into types which often were used in building a more complex hierarchical functional structure: apology (5), suggestion (?), and expression of distress (4), permission (4), making an excuse (3), reasoning (3), agreement (1), and inquiry (1). The total number of tokens in eight categories constituted 28 instances. In addition to the categories mentioned, their frequency of occurrence was measured based on an estimation of which characters uttered them to which addressees (Nader, Simin, Raziye, Hojat, Termeh, and the Judge).

Usage of address forms which is related to who is addressing who under what contextual circumstances was mostly employed by Nader more than other characters. He used Intimate address terms in his speech with her daughter Termeh such as (Baba joon, Dokhtaram, Azizam) and honorific second person pronoun in front of Raziye, Hojat, Judge like (khanoom, Agha, Haj Agha, Ishoon) and Non honorific address terms directed to Simin as his wife (To). The Judge also had a high frequency of the usage of address terms most of which were honorific second

Person Pronouns in reference to all characters, like (Shoma, Ishoon, Khanoom, Aghaye Mohtaram, and Agha). Terme was also addressing her parents with a Non honorific second person pronoun (TO).

Table 2. Classification of the utterances of six main characters into different speech acts and strategies regarding who is addressing whom

Sp eech A cts	Nader				Simin				Raziye				Hojat				Termeh				Judge				Total
	Simin	Razy	Hojat	Terme	Nader	Razy	Hojat	Terme	Nader	Simin	Hojat	Judge	Nader	Simin	Razy	Judge	Nader	Simin	Judge	Nader	Simin	Razy	Hojat	Terme	
Criticism (FT toward +face)	6	6		1	1	8	1	1	1	1			9		1		4	4						44	
Co mplaint (FT toward + face)	8	5		1	1	8	1		1	1			5		1		4	4						40	
O rder (FT toward - face)	2	3				1	3		1				2							3				15	
D irect Reque st (FT toward -face)		3*	3*	4	1	1			1*		1	3*		2	1*		1*			2*				32	
I ndirect Reque st (FT toward -face)		1		1				1	3															6	
Warn ing, Threatening (FT toward -face)	2	3	1	1		2		2					1	1					2			5		20	
D irect d isagreement (FT toward +face)	7				1								1						1	6				16	
Resp ect, class raising device		7	5										2											14	
high tone of voice	4				2	1	1	1	4	1			3		1									17	
I nsult (FT toward + face)	4	3			1								7		2									17	
Swear									5	1	1	5												12	
Iro nic	2	1	1		2		1						2											9	
A pology			1	1	1				1				1											5	
Su ggestion				2			1		1						1				2					7	
Expres sion of d istress					2		1	1																4	
Permi ssion				1	2						1													4	
accusation (FT toward + face)	1	2		1	1								1						1					7	
make an excuse									2						1									3	
refusal									3						1									4	
give reason									2							1								3	
hesitation									1	1							2							4	
O b ligation																		1	3					4	
usage of address form	5	5	4	5	2	2							2		1	2	2	7						37	
A dvice (FT toward -face)				1																1				2	
A greement	1																							1	
i nq uiry																							1	1	
p ro mi se (FT toward - face)								1																1	
Total																								329	

Fig. 3 shows the percentage of the all speech acts which were uttered by Nader in his utterances generally, regardless in what situation he was involved and to whom he conversed. Direct Request with the percentage of 19% was the most frequently used speech acts and complaint with the percentage of 17% and criticism with the percentage of 16% were the second frequently used speech acts in Nader's utterances. Threatening, insult and direct disagreement with the percentage of 8%, also were in the third category in terms of ranking. Order with the percentage of 6% and ironic speech with 5% was in the next categories in rank. Other speech acts like apology, accusation, with the percentage of 3%, indirect request, suggestion with 2%, and permission and advice with 1% were the least frequently used speech acts in Nader's speech.

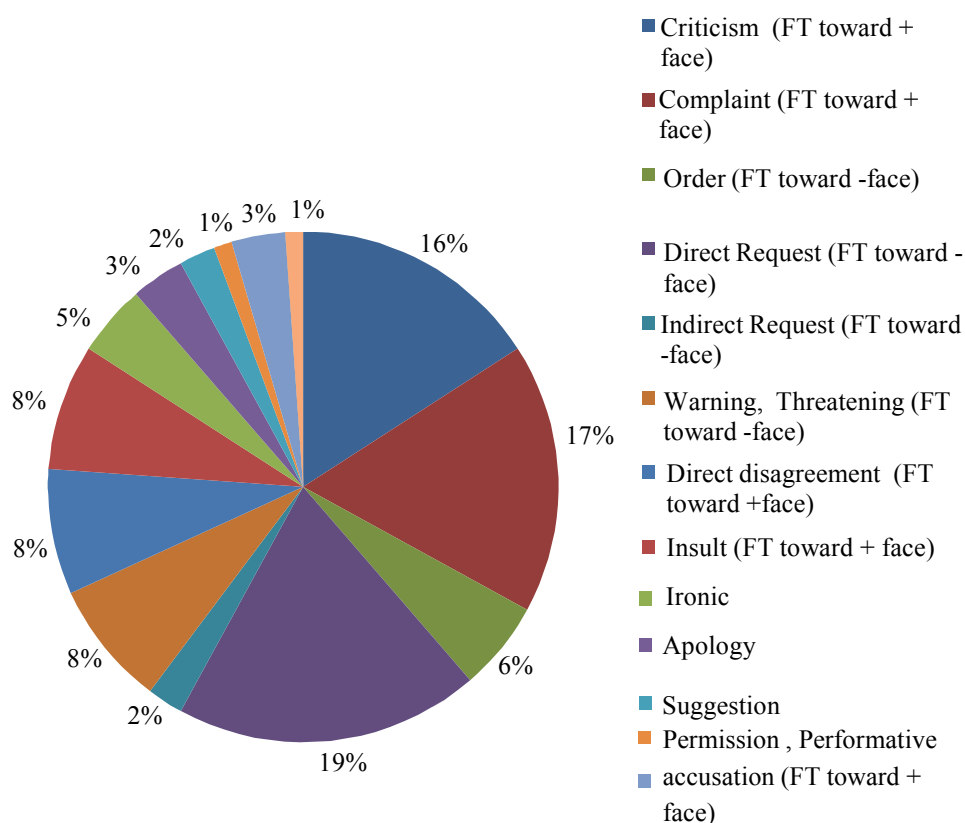


Fig. 3. The percentage of the all speech acts in nader's utterances

Fig. 4 shows the percentage of all speech acts which were uttered by Simin in her utterances generally, regardless in what situation and to whom she talked. Criticism with the percentage of 25% and complaint with the percentage of 23% were the most frequently used speech acts. The speech act of order and threatening with the percentage of 10% as well as ironical expressions with the percentage of 8% were the second frequently used speech acts in Simin's utterances. Permission and direct request with the percentage of 5% also were in the third categories in rank. Other speech acts like direct disagreement; insult, indirect request, accusation, and suggestion with the percentage of 3% were the least frequently used speech acts in Simin's utterances.

Fig. 5 is a character-based comparison which shows the percentage of the all speech acts which were uttered by Raziye in her utterances, regardless of the situations of speech and the addressee she interacted with.

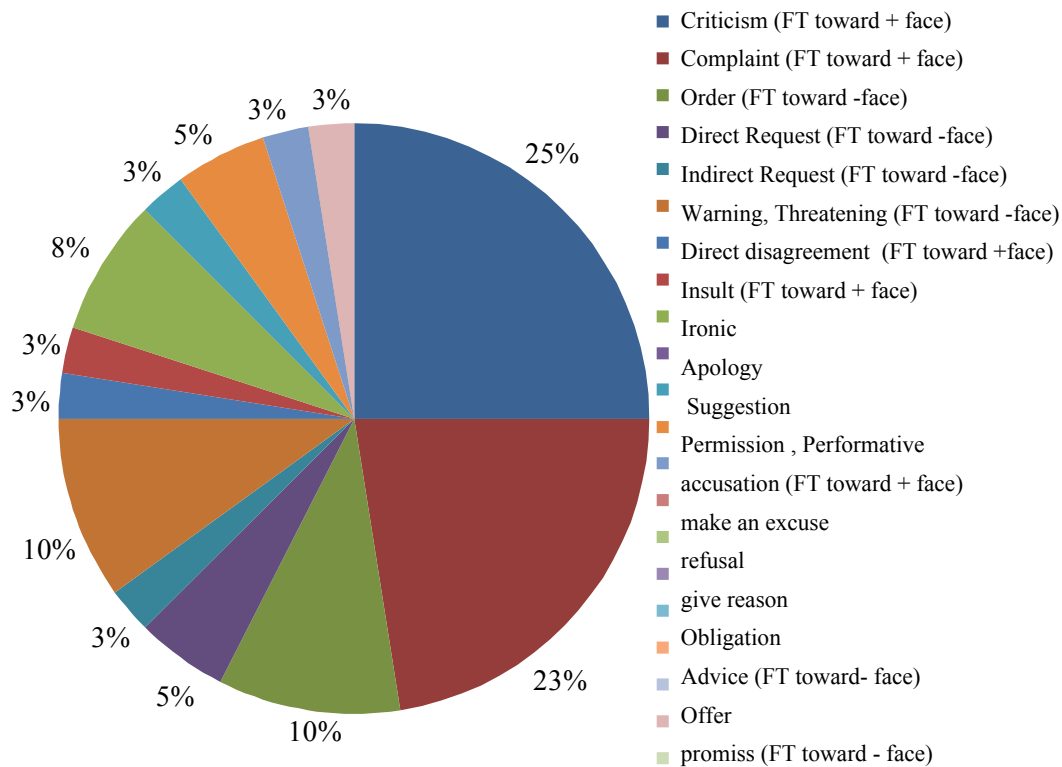


Fig. 4. The percentage of the total speech acts in simin's utterances

Direct request with using mitigation devices with the percentage of 25% was the most frequently used speech acts. What makes her requests different is the semantic formula her speech acts had. The use of mitigation, swearing, and voice tone could imply that the requester represents a powerless class of society. Indirect request and Refusal with the percentage of 13% were the second frequently used speech acts in Raziye's utterances. It is mainly with qualitative analysis that we as analysts could distinguish the effects of power and class on the speech act realization patterns.

In the structure of the requestive speech act, the effect of power makes a considerable degree of difference; this is what we should take into consideration. Reasoning, criticism, complaint, making an excuse constituted 8% of the data. They were indirect responses to seriously formulated direct face threatening speech acts such as complaint, criticism or accusation by a speaker much more powerful than her.

The percentages of each speech act being 8% of the entire speech data indicate another fact: that the most frequent speech behavior by Raziieh includes those speech acts which are more expressive rather than directive which is associated with power. The speech acts by Raziieh included four types and these four types were the third in terms of frequency. Other speech acts like Direct Order, Apology, and Suggestion with the percentage of 4% were the least frequently used speech acts in Raziye's utterances.

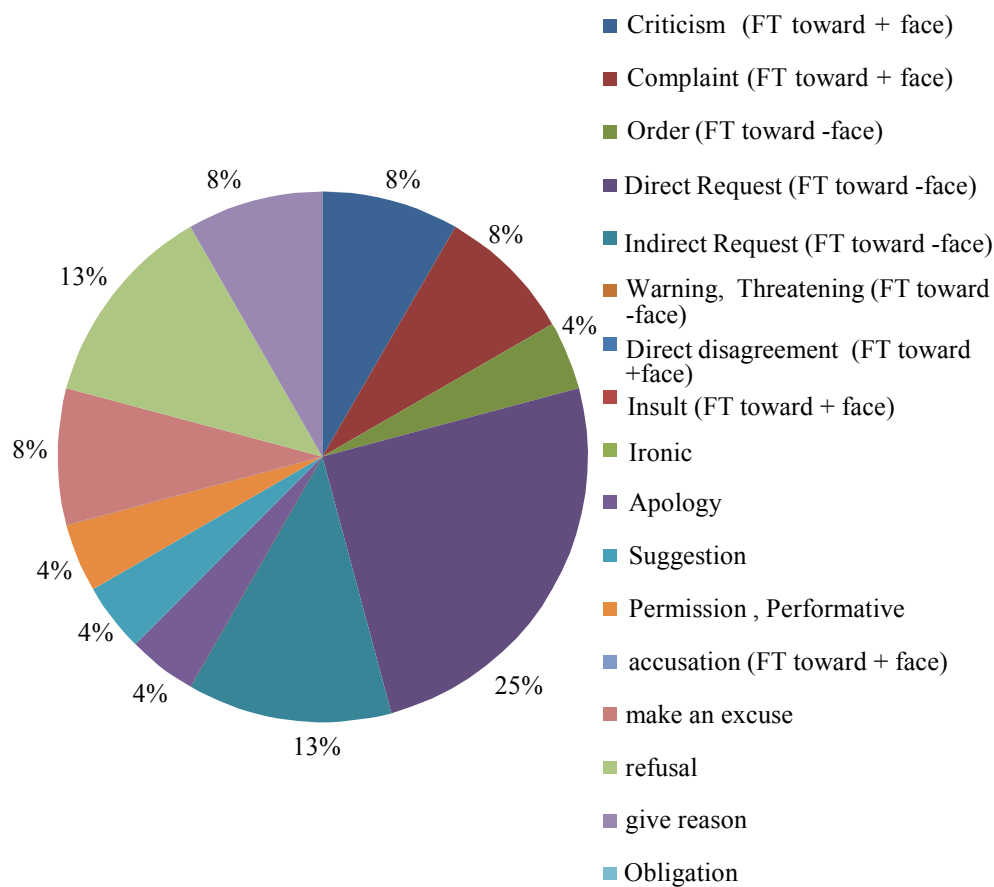


Fig. 5. The percentage of the total speech acts in raziye's utterances

Fig. 6 shows the percentage of speech acts by Hojat regardless of the contextual circumstances within which the SPAs were uttered. Criticism with the percentage of 27% and Insult with the percentage of 24% were the most frequently used speech acts. These two SPAs are clear indications that H belongs to a low working class of society. This is because most of his utterances include insults and criticism showing his class as the manifested in his speech.

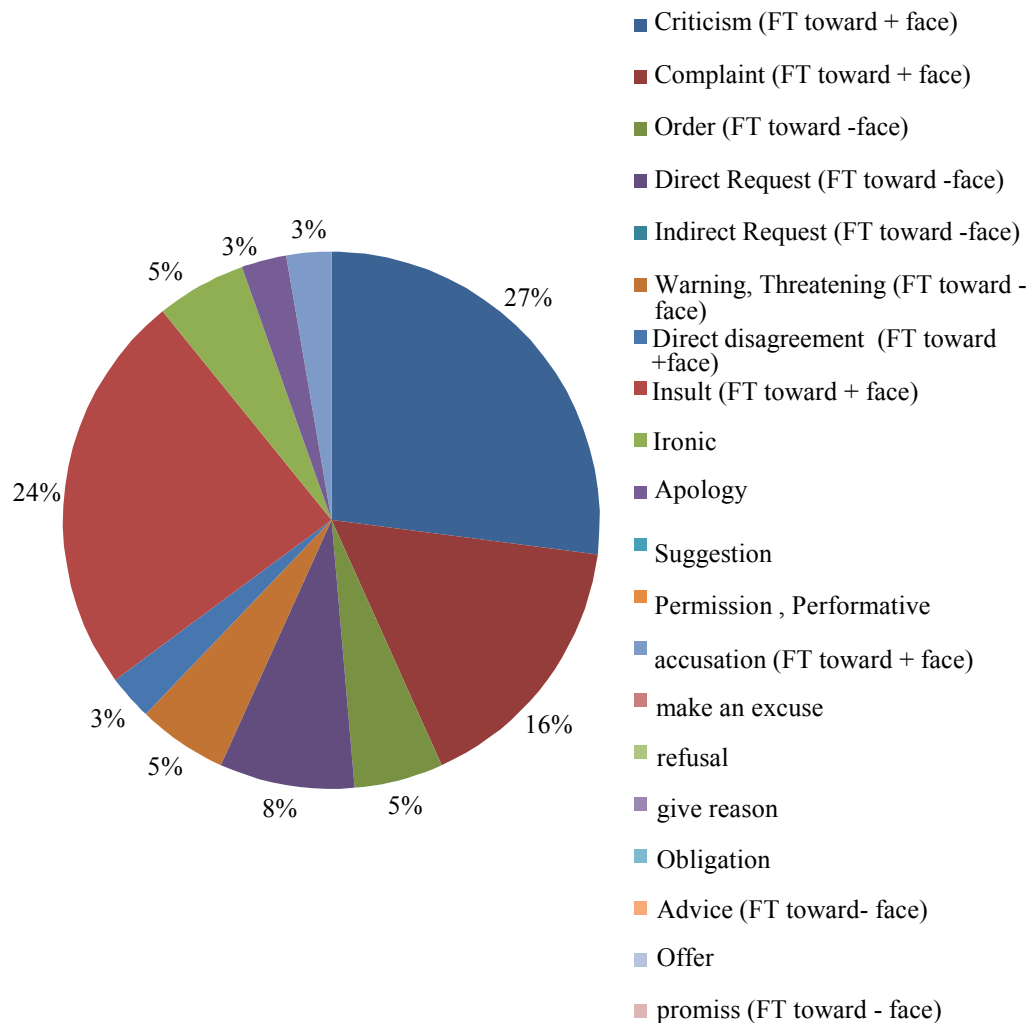


Fig. 6. The percentage of the total speech acts in Hojat's utterances

Complaint with the percentage of 16% were the second frequently used speech act in Hojat's utterances. Direct request with the percentage of 8%, threatening and ironically made comments functioning as SPAs with the percentage of 5%, also were in the third categories in rank. Other speech acts like accusation, apology, and direct disagreement each with a percentage of three were the least frequently used speech acts in Hojat's speech. Again this finding shows how social class belonging can be predictive of how the speech acts are more, most, or less and least frequent. The central condition for belonging to a high-middle class is to utter messages and to sort out conflicts without resort to a violation of the norms of speech.

Fig. 7 shows the percentage of all speech acts which were uttered by Termeh in her utterances generally, regardless of speech situation and the addressee to whom she talked. Criticism and complaint with the percentage of 38% were the most

frequently used speech acts. Direct request, suggestion, making an excuse, refusal, and giving reason with the percentage of 5% were the second frequently used speech acts in Termeh's utterances. Reasoning was used as reaction to a complaint by the judge viewed to be indirect apology for what she had not done.

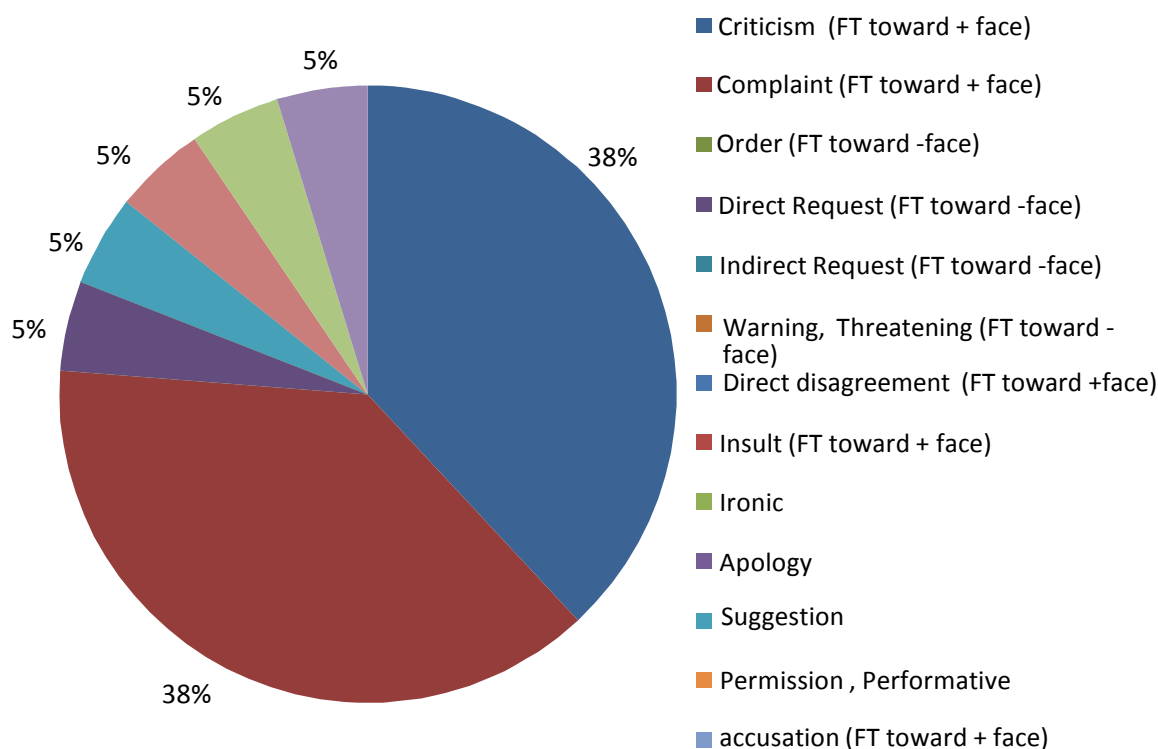


Fig. 7. The percentage of the total speech acts in termeh's utterances

Fig. 8 shows the percentage of the speech acts which were uttered by the Judge in his utterances generally, regardless of what situation and to whom they were said. Threatening and direct disagreements with the percentage of 24% were the most frequently used speech acts and obligation with the percentage of 14% was the second frequently used speech acts in the Judge's utterances. Order and direct request with the percentage of 10% also were in third categories in rank. Suggestion with the percentage of 7% was in the next category in rank. Other speech acts like accusation, advice and inquiry each with the percentage of 3% were the least frequently used speech acts in the Judge's speech.

5. SUMMARY AND CONCLUSION

The issue of social variables and their effect on creating variation has been a recent and important aspect of speech.

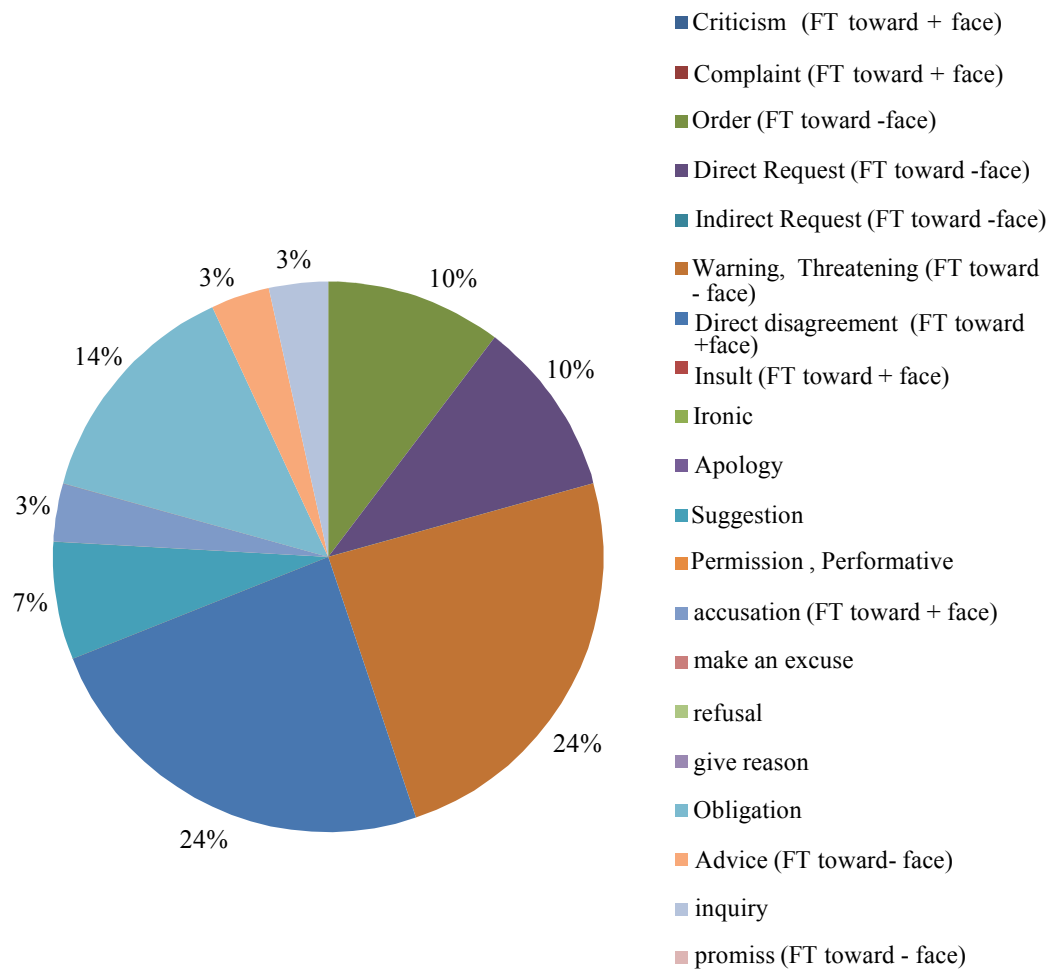


Fig. 8. The percentage of the total speech acts in judge's utterances

In speaking, one cannot assume to learn the language unless they learn how functional variations are marked in linguistic communication. The Article started by introducing the effects of such social variables of power, class, and solidarity in relations between the speaker and the addressee within Brown and Levinson's politeness theory and Austin's speech acts theory. The relative nature of communication and the functional effect were elaborated on and definitions were presented for what power, class, and solidarity are and how they can cause variation in speech.

Recently in our time, the most advanced understanding of translation and TEFL places the significance of language learning on the skill of communicating appropriately rather than being good grammarians; and this work is an attempt in shedding light on the communicative aspect of speech. The question is, rather than being what language is, how language is used in various contexts and situations.

The communicative language teaching places all the emphasis on the fact that if the EFL learner is competent linguistically but incompetent communicatively, the learner could not be considered to be an appropriate user of English in real various contexts. Functional theories as mentioned above were employed as the framework of study to uncover the causes behind the functional variation. The characters with various social backgrounds actually produced the data required for the purpose of our comparisons resulting in verifying the feasibility of the speech act theory as well as politeness theory as our functional approach.

The thrust was to examine how comparable are characters with regards to the contexts of situation they were involved in and how their speech acts were made: social power, solidarity in relations, and social class were the three variables each of which could bring about variation in speech. It was shown that certain speech acts are more frequent than others and this is the result of the contextual setting of conversations. The findings of such a project indicate how context decides which functional categories have to be prioritized and which speech acts are most frequently used. We also discovered that class variation, and variations as a result of power make Persian speech considerably variable. The effect of social class was demonstrated mostly in the qualitative analysis in two ways: a) the deliberate neglect of the social norms governing speech and b) the quality of speech through using mitigation, swearing, honorific devices for class raising strategies, and choice of strategy for saving face in speech acts which are potentially face threatening. As for social solidarity, we discovered that social solidarity is variable as a result of any change in contextual factors other than change of interlocutors. It was also discovered that increase of power and solidarity lead to decrease of politeness. However, increase of class leads to increase the level of politeness in Persian.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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The Importance of Global Citizenship to Higher Education: The Role of Short-Term Study Abroad

ABSTRACT

An increasing number of institutions actively promote internationalisation as a key strategy, implying that the development of a "global citizenry" is an integral part of their educational mission. To fulfil this strategy, four constructs must be addressed: (1) what is global citizenship? (2) why is global citizenship important? (3) how do we measure global citizenship? and (4) how do we foster global citizenship? (1) Although global citizenship is a highly contested and multifaceted term, three key dimensions are commonly accepted: social responsibility, global awareness, and civic engagement. (2) Today's graduates are critically dependent on an interconnected world, and universities have a responsibility to promote global mindedness, to provide greater employment opportunities for their graduates, and to respond to political calls for enhanced national security. (3) There is a consensus that the natural and built environment is the context in which global citizenship can be best understood. Utilizing the three previously consented upon tenets of global citizenship, Tarrant (2010) developed a Value-Belief-Norm model to assess global citizenship. (4) A number of nations are utilizing international education as an en masse mechanism for nurturing global citizenship. However, the "just do it" model may be ineffective. Conversely, short-term courses, coupled with action-oriented experiences that encourage reflection, critical analysis, and synthesis may be effective catalysts. Since short-term programs are likely to remain the only realistic option for many

undergraduate students, there is a growing need to document whether short-term courses can promote higher-order outcomes and, if so under what conditions.

Keywords: critical reflection; transformative learning; experiential education; internationalization; globalization.

1. INTRODUCTION

Institutions of higher education arguably have a responsibility to develop curricula that foster "global citizens", either as a consequence of their educational mission, in response to political calls for enhanced national security and global awareness, or in strengthening the employability of their graduates within an ever-globalizing context. To fulfil this strategy, four constructs must be addressed: (1) what is global citizenship? (2) why is global citizenship important? (3) how do we measure global citizenship? and (4) how is global citizenship fostered? In addition to discussing these questions, commentary will focus on the pivotal role short-term study abroad programs can play in fostering global citizenship.

2. WHAT IS GLOBAL CITIZENSHIP?

Although global citizenship is a highly contested and multifaceted term [1,2], three key dimensions, at least within the study abroad literature, are now commonly accepted [3,4]: (1) social responsibility (concern for others, for society at large, and for the environment), (2) global awareness (understanding and appreciation of one's self in the world and of world issues), and (3) civic engagement (active engagement with local, regional, national and global community issues). In one of the most thorough reviews of the global citizenship concept in the study abroad scholarly field, Schattle [4] proposes that it "entails being aware of responsibilities beyond one's immediate communities and making decisions to change habits and behavior patterns accordingly" (p. 12).

Outside the study abroad literature, there is consensus that the natural and built environment is the context in which global citizenship can be best understood [5-8], since environmental concern not only benefits others beyond the individual, but also invokes a sense of obligation toward others. According to Dobson [7], the environment constitutes a community of obligation in which social responsibilities and behaviors extend, in the form of an ecological footprint. In distinguishing between a Good Samaritan (i.e., based on charity) and a Good (Earth) Citizen (i.e., based on

obligations), Dobson argues "the idea of the ecological footprint converts relationships we had thought to be Samaritan into relationships of citizenship" (p. 105). Citizens, then, are not merely global by reason of their international travel, but as a result of their pro-environmental behaviors that make a sustainable impact. Similarly, Attfield [5] suggests, "environmental responsibilities form the most obvious focus of concern for global citizens, as well as the territory where global obligations most clearly arise" (p. 191). In a similar vein, Winn [8] considers the concept of global citizenship to include "behaviors associated with the global issues of environmentalism, social justice, and civic participation" (p. 124). With the ever increasing role of higher education institutions in the development of global citizens, a specific emphasis on internationally located educative experiences, coupled with critical reflection methods, and ultimately framed by relevant disciplines, the behaviors and actions of globally educated citizens can and should be developed. Moreover, it is the students' exploration and application of pro-environmental behaviors within the natural environment, the built environment, and the communities they engage.

3. WHY IS GLOBAL CITIZENSHIP IMPORTANT?

Universities and colleges arguably have a responsibility to develop international curricula that foster a student citizenry with stronger global awareness, either as a consequence of their educational mission [1,4,9-11], in response to political calls for enhanced national security [12-14], in providing greater employment opportunities for their graduates [15], or simply in heeding the public's growing interest in the importance of promoting global mindedness among future generations [16]. Responding to these realities requires a massive increase in the global literacy of the typical college graduate.

The intensification of and access to technology has forged links between institutions, societies, cultures and individuals, and today's university graduates live and work in a world that is more accessible than ever before [17]. While the availability of modern travel and technology is not accessible to all of earth's 7 billion 'citizens', those who have access and acceptance into higher education institutions also have greater opportunities for globalized experiences. The opportunity for a student to frame their existence within a global context can promote deeper understanding of cultural differences and provide a counterpoint for juxtaposing their personal beliefs with those of others. Internationalization and globalization are

fundamental components of the learning process; to live and reflect upon the experiences a student has with these phenomena can increase action and bring about transformation of perspective.

4. HOW IS GLOBAL CITIZENSHIP FOSTERED?

There is growing political interest in international education and increasing reference to globalization (and the need to prepare students as global citizens) in the missions of academic institutions [10]. Lutterman-Aguilar and Gingerich [18] argue that education abroad can effectively prepare students as responsible global citizens if programs incorporate the principles of experiential education, notably action-oriented experiences that encourage reflection, critical analysis, and synthesis. Similar conclusions are drawn by McLaughlin and Johnson [19], who propose a field-based experiential learning model for short-term study abroad programs. This model enables students to move beyond knowledge learning to application and integration, toward a real, "unbuffered" world. Indeed, there is strong evidence throughout the study abroad literature supporting the integration of experiential learning as a key medium for promoting higher-order learning [20-28].

The outcomes of study abroad experiences, students' previous experiences with the course material, the destination, and travel in general can have an influence on the potential shift in a student's worldview. McKeown [29] recognized the profound change in students' values when experiencing a new social environment that called into question their internal beliefs [30] and referred to this as the first-time effect. This phenomenon has also been recognized in other learning environments where experientially based pedagogy (service-learning, problem-based learning) has been utilized and experienced for the first-time [31,32]. Valuable to the student experience, their engagement, and the likelihood of a shift in worldview are the following: faculty-student engagement, experiential learning opportunities, dialogue and group discussions focused on students' experiences, and reflection assignments connected to experiences and readings [33]. Within study abroad experiences, exposure to new places, cultures, and learning environments where a student's preconceived and established notions and beliefs are tested, may act as the catalyst or impetus to bring forth a transformative experience. Of particular importance is the creation of moments of critical reflection and discussion. In these types of environments, exposed to realities that are outside their previous understanding or comfort zones,

the learner may discover a need to acquire new perspectives in order to gain a more complete and complex understanding. A deeper, more sincere understanding of reality and how their perception of reality is framed by their worldview, is the value in combining experiences with critical analysis, reflection, and abstract conceptualization [34].

5. HOW IS GLOBAL CITIZENSHIP MEASURED?

There is a consensus that the natural and built environment is the context in which global citizenship can be best understood. Utilizing this context, Tarrant [30] developed a Value-Belief-Norm model to assess global citizenship and the "added value" of study abroad (Fig. 1). In Tarrant's [30] conceptualization of a framework for exploring the role of studies abroad education and global citizenship development, he posited a frame based on Stern's [35] Values-Beliefs-Norm theory (VBN). In this, Tarrant identifies two components based on (1) an awareness/belief that specific environmental conditions threaten or have adverse consequences for the things the learner values and (2) an awareness/belief that the individual/learner can act to reduce the specific threat(s) [30,35]. These components and the extent to which an individual learner aligns with these two beliefs are critical to the conceptual framework Tarrant puts forth.

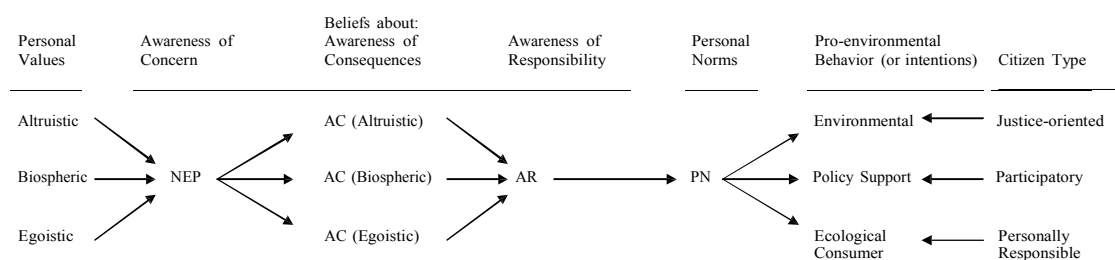


Fig. 1. Adapted value-beliefs-norms theory of global citizenship [30]

The recognition of critical reflection as an integral component of the conceptual framework offered by Tarrant [30] is evident in Westheimer and Kahne's [36] "citizen-type" and Dobson's [7] "Earth Citizen". For example, Westheimer and Kahne [36] argue that a justice-oriented citizen is one who is concerned with asking questions about issues she or he sees in their community (local and global) and then acting upon the answers they find. This is in sharp contrast to a personally responsible

citizen who is typically concerned with acting responsibly or volunteering in times of crisis. Interestingly, it seems that a clear difference between these two citizen types is found in the citizen's concern with or interest in critical reflection upon their observations and experiences. Justice-oriented citizens seem to be more concerned with asking the more complex questions versus accepting the simpler answers. By asking more complex questions, it is assumed that justice-oriented citizens are analyzing, considering, and reconsidering their perspectives and beliefs in light of new information and experiences. This is primarily a function of critical thinking and reflection. That is, being prepared to ask and answer the complex questions that emerge from our continually evolving and complex society [28]. Doing this may promote and nurture "change in environmentally oriented values, norms, and behaviors" [30]. This observation is demonstrated further by Dobson's view of an Earth Citizen. With an Earth Citizen there tends to be less emphasis on volunteerism as ends unto itself, and a greater emphasis placed on questioning what is observed or has come to be known and then this is acted upon in order to ameliorate the causes of observed injustices. Overall, the conceptual framework "proposes that values and worldviews act as filters for new information in the development and formation of congruent beliefs and attitudes which in turn predispose behavioral intentions and ultimately pro-environmental behaviors" [30].

The two components Tarrant identified (the connection between environmental conditions and the threats on a learner's values and the belief that the learner can reduce the threats), which underpin Fig. 1, have a common denominator. That denominator is a learner's values and what they are willing to do about those values. The measurement of value identification or awareness is a complex, but important endeavor. One particular theory that has been operationalized and empirically tested to measure a person's values is the Schwartz norm-activation theory. Norm-activation theory states that "pro-environmental actions occur in response to personal moral norms about such actions and that these are activated in individuals who believe that environmental conditions pose threats to other people, other species, or the biosphere and that actions they initiate could avert those consequences" [37]. One salient, empirical study measured the values associated with social movements particularly in context of pro-environmental actions. In the Stern et al. [37] study, which was designed to measure two variables from Schwartz's norm-activation theory (personal norms and awareness of consequences), resulted in findings that were

strongly consistent with the VBN theory. Essentially, it was determined that personal norms were strongly associated with the behaviors of all three types of nonactivist environmentalism, provided the strongest predictor of consumer behavior and willingness to sacrifice, and was the only variable in their study to have a direct effect on all three types of movement support.

A limitation of Tarrant's model is that it directly focuses on environmental awareness and does not directly address the concepts of social justice or civic engagement, i.e., the key dimensions of global citizenship [3,4]. Although, it should be noted that in Tarrant's conceptual framework, there is indirect or ancillary inclusion of personal values and awareness of responsibility (civic engagement) and the citizen type (social justice orientation) an individual could align. Even though Tarrant clearly is addressing the conceptualization of "pro-environmental behavior" from an environmental perspective, it is inextricably connected to other important elements to be considered when attempting to understanding global citizenship. In addition, the use of Shwartz's norm-activation theory to operationalize and measure global citizenship is an important avenue to consider.

6. WHAT ROLE CAN SHORT-TERM STUDY ABROAD PROGRAMS PLAY?

The past 25 years have witnessed growing numbers of students, particularly in the United States (U.S.), participating in study abroad programs of varying durations, locations, and academic foci. These growing numbers, contextualized and sourced from the U.S. higher education student body, have led to the literature being skewed in context of the U.S. This particular growth and respective body of literature ultimately reflects a U.S. centric perspective on research into the influence of short-term study abroad. This is due to the limited number of empirical studies investigating non-U.S. students studying abroad Curthoys [38]. With this, Europe and Australasia could be considered emerging markets for future generations of students beginning to study abroad. Further investigation into these emerging markets and the influence of study abroad on participants is necessary.

In the U.S., most recent estimates indicate that of the approximately 270,000 U.S. students who studied abroad for academic credit in 2009/10 (compared to 75,000 students in 1990), the majority (57%) were short-term (summer or 8 weeks or less) [39]. While short-term programs have been criticized for being academically light [29], they appeal to large numbers of undergraduates without prior international

travel experience and/or who lack the funds or time for extensive education abroad opportunities [40-43]. Short-term programs thereby may provide a springboard for future, more in-depth travel [44], a pathway for those studying abroad for the first-time [29], and perhaps "the only realistic alternative in terms of the demands of your degree studies and economic resources" [39]. As such, short-term programs may be viewed as crucial for achieving broad and more egalitarian access to study abroad for U.S. undergraduates.

Skepticism has been voiced about whether the short-term study abroad format can offer students a sufficiently profound experience to transform the fundamental values and beliefs that underlie global citizenship. Recent evidence suggests that the duration of the international experience may be only weakly related to student learning outcomes. The large scale Georgia Learning Outcomes of Students Studying Abroad Initiative (GLOSSARI) [45] found a general advantage for study abroad at any duration over no study abroad in terms of graduation rates, although moderate duration (4-8 weeks) exceeded both shorter and longer programs on this variable. In their study of over 6,000 alumni from 20 institutions, Paige et al. [3] suggests no difference in global engagement between students who had studied abroad for shorter versus longer durations. Their findings from the University of Minnesota's Study Abroad for Global Engagement project revealed that students in short-term programs (of 4 weeks or less) were just as likely to be globally engaged as those who studied abroad for several months or longer. Similarly, McKeown [29] posited that, "students who had been abroad for as little as two weeks showed patterns of intellectual development more similar to peers who had been abroad for months or years than to those who had not been abroad at all" (p. 6). The conclusion is that spending at least some time abroad is probably better than no time at all, though the extent to which the "just do it" analogy [46] holds true for study abroad (i.e., relative to home campus) remains relatively unsubstantiated [29,47]. Meaning, whether studying abroad for a short, moderate, or long-term period, there needs to be some level of consideration for appropriate measures to be implemented that will help students make connections from and sense of their new experiences.

Short-term study abroad, when coupled with an adequate pedagogical framework, could serve as an educative opportunity for fostering transformative learning environments where new experiences and perspective may be developed. It is that critical moment where learners have engaged with something novel, whether

it is physical or psychological, that is when reflection and critical reflection become imperative to the learning process. The shift from physical experience to meaning making can be different, but it is imperative for perspective transformation and ultimately behavior adaptation to occur. Though it should be noted that prior to the exposure to something novel, abstract conceptualization can have occurred. Meaning, preparation and study for future experiences related to a student's involvement in a course is also valuable to their learning. These connections between experience and reflection, content and experience, and reflection and content are ones that have long been theoretically [14,34,48] and practically [31] established.

7. DISCUSSION AND DIRECTION

Over the past decade there have been increasing calls to develop the capacity of higher education students, particularly in the U.S., to think and act globally [11]. One method of encouraging the civic of global citizenship is through study abroad [30]. To date, the academic response to calls for greater global learning has focused primarily on increasing quantity (i.e., "just do it"). The number of students participating in education abroad is often the primary indicator of an institution's success in achieving globalization aims [44, 49]. Clearly, a major driver of such efforts should also address quality - the added value and outcomes of studying abroad as indexed by measures more informative than traditional course evaluation responses. As resources become available for study abroad development, funds should be targeted toward programs that promote demonstrable and specific learning outcomes.

Short-term, faculty-led, field-based programs can have an important role in fostering some of the outcomes considered critical to national security, globalization and global competitiveness, and social norms [11,50]. Though not all education programs should be similarly structured, we concur with Lutterman-Aguilar and Gingerich [18] that, "study abroad and experiential education are natural partners because they share the common goal of empowering students and preparing them to become responsible global citizens" (p. 46). Accordingly, we encourage faculty to incorporate field-based learning experiences into study abroad curricula and to consider their role as facilitators of citizen activism [1], promoting opportunities for civic engagement, responsibility, and global awareness. The challenge, clearly, is to develop programs in a measured and effective way. Such programs must be attractive to students (especially for those traveling abroad for the first-time), yet must

not turn the travel experience into a token service program of consumerism with little value beyond the tourism dollars it generates [2,51]. Since short-term programs are likely to remain the only realistic option for many undergraduate students and potentially the least expensive medium for democratizing study abroad, achieving such strategies will be critical. In moving toward more robust evidence of the value of education abroad, particularly with respect to globalization, we need to design research that can clearly demonstrate whether studying abroad (relative to home campus) can promote higher-order outcomes (such as global citizenship) and, if so, under what conditions.

Essentially, the literature to date is primarily focused on U.S. students studying abroad [38]. Comparative groups of students are needed to determine the influence study abroad experiences might have on non-U.S. counterparts who are from different geographical and cultural backgrounds. Moreover, this lack of research can be attributed to the emerging market and associated pedagogy of study abroad and international education in countries like New Zealand, Australia, and the United Kingdom.

8. CONCLUSIONS

There is a consensus that the natural and built environment is the context in which global citizenship can be best understood. Utilizing this context, Tarrant [30] developed a Value-Belief-Norm model to assess global citizenship and the "added value" of study abroad. A number of nations, including the U.S., have witnessed growing political pressure to utilize international education as an en masse mechanism for nurturing global citizenship. However, the extent to which the "just do it" analogy holds true for study abroad remains relatively unsubstantiated. Education abroad can effectively prepare students as responsible global citizens, but only if coupled with action-oriented experiences that encourage reflection, critical analysis, and synthesis. Since short-term programs are likely to remain the only realistic option for many undergraduate students, there is a growing requisite to document whether short duration programs can promote higher-order outcomes (such as global citizenship) and, if so, under what conditions. In particular, there is a lack of demonstrable evidence of the transformational change attributable to participation in field-based/experiential study abroad programs, relative to (a) other study abroad programs lacking a structured experiential component and/or (b) home campus (i.e.,

traditional classroom) courses and/or (c) comparisons of the experiences and learning outcomes of students from different countries and cultures.

Although global citizenship is a highly contested and multifaceted term, three key dimensions are commonly accepted: social responsibility, global awareness, and civic engagement. This particular observation lends itself well to the perspective that global citizenship, at its core, is focused on connections - a person's connections with the products they choose to use, the environment they believe they influence, and the groups of people who they directly and indirectly associate with. Whether or not those connections (with products, environments, and people) are recognized and reflected upon is what fundamentally separates those who consciously assume their role as a global citizen from those who do not.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Ideal Teacherhood in Vocational Education

ABSTRACT

Aims: Ideal teacherhood in vocational education has not been widely studied or comprehensively defined. However, in the changing work life, the role of vocational education teachers (VET) becomes more and more important as they are responsible for educating future employees in numerous professional fields. What does ideal teacherhood consist of in vocational education?

Study Design: The narrative research approach was chosen to study VETs' perceptions of ideal teacherhood in vocational education.

Methodology: In this study, twelve Finnish VETs were recruited from one vocational education college with multiple fields. The data obtained included oral (N=5) and written (N=7) narratives.

Results: According to the results, the conception of ideal teacherhood turned into a more realistic one as the VETs' work experience increased.

Conclusion: Ideal teacherhood in vocational education occurred in the VETs' descriptions through six features of which three are connected with VETs' professional self and three with personal self. Ideal teacherhood in vocational education can be found in the confluence of these two areas of VET identity.

Keywords: ideal teacherhood; teacherhood; teacher identity; vocational education; vocational education teacher.

1. INTRODUCTION

The core goal of vocational education is to provide vocational education students with good professional expertise. Vocational education teachers (VET) introduce necessary skills and knowledge to be learned in a form that students can learn and practice [1]. These skills and knowledge support their learning processes and motivate them to enter work life. VETs are expected to create quality learning environments and guarantee excellent learning results. In addition, VETs have to

update their knowledge and skills constantly as well as to renew professionally, personally, and communally. VETs interact not only with diverse students but also with other personnel and rapidly changing work life. Along with these goals, it is possible to refer to the ideal teaching in vocational education and to the concept of a good teacher. Uusiautti and Määttä [2] state that it is not possible to define strictly the criterion of a good teacher — ideal teacherhood in this case — but a teacher is always a unique personality. Personality is a teacher's essential tool [2], which means that development toward ideal teacherhood mean somewhat the same as development toward a good personality [3].

Notwithstanding, it has been questioned whether the essence of good teacherhood can be even defined [4]. Conceptions are contradictory [5,6], nor is it always that straightforward to list the factors of good teacherhood [2,7].

Still, attempts to create definitions of good or ideal teacherhood are abundant. Teachers' continuous and determined self-development and commitment to the personal and professional growth make the prerequisites for the development of good personality [1,8]. Renewal and personal growth necessitate also redefinitions of one's professional identity including reflection of one's self at work and in free time as well as evaluation of one's values, dreams, and commitments [9]. Resulting positive conception of oneself as a skillful expert and developing individual lays the foundation of a good professional identity [10,11,12]. Likewise, the definition of good teacherhood is necessary in vocational education. Next we will discuss the challenges of and possible outlines of such a definition. The purpose is to analyze how VETs themselves perceive ideal teacherhood in vocational education.

2. THE DIFFICULTY OF DEFINING IDEAL TEACHERHOOD IN VOCATIONAL EDUCATION

Constant change is an essential part of VETs' work. Because of this, the definition of ideal teacherhood in vocational education seems unreachable. In Finland, the reform of curricula in vocational education brought new challenges in VET's work [13]. Likewise, new conceptions of learning, more and more diverse student groups, and new teaching arrangements have changed VET qualifications [14]. Students are still seen as the core of VET's work, but instead of education and teaching, current conception of learning emphasize more guidance of learning and learning processes [15,16].

Various organs of society target expectations and pressure to teachers' work. Teachers should be simultaneously supporters of holistic psychological and physical development, collaborators who are equipped with exquisite interaction skills, users of the latest technological innovations and social media who can renew their teaching and search actively new information, as well as, first and foremost, societal contributors and activists [17].

VETs have to enhance students learning processes by organizing various learning situations in diversified and updated learning environments that resemble actual work situations, methods, and places. Almost every student group includes students with special needs, which means that teachers must be able to design individualized study paths for each student [18]. Work with students with profound and multiple learning difficulties reflects on teachers' professional identities as well [19]. VETs are expected to be familiar with the latest societal and work-life changes and the related influence on qualification requirements. A teacher's role in relation to students involves more than ever education about the roles of society and guidance of study processes [20,21,22].

Along with new learning environments arrangements of workplace learning periods necessitates that VETs possess specific familiarity with society, work life, and business life as well as active and developmental cooperation with these instances [23,24,25]. Multiprofessional cooperation also makes a more salient part of VETs' work [26]. Due to VETs' multisided work description, the limits of a teacher's role have been questioned: "When is a teacher not a teacher?" [27]. Where are the limits of a teacher's qualifications is an essential question when defining ideal teacherhood and reflecting on its relationship with the reality of teaching in practice. VETs' work can include the requirement of ideal activity and ideal teacherhood [28].

Ideal teacherhood has been greatly studied in the light of different students' opinions [29,30,31,32]. For example, student teachers have been asked to compare themselves with their conception of ideal teacherhood [33]. Indeed, differences between students' and teachers' opinions have raised interest already for a long time [34], and there are studies analyzing how concepts of "ideal student" and "ideal teacher" are connected to each other [35], how ideal teacherhood contributes to teacher effectiveness [36], and the relationship between teachers and students [37].

However, ideal teacherhood in vocational education has not been widely studied. This study aimed to contribute to this gap in knowledge. We wanted to

analyze what ideal teacherhood consists of in vocational education in the first place according to VETs' perceptions. This viewpoint was chosen because VETs' own conceptions have not been profoundly analyzed thus far.

3. VOCATIONAL EDUCATION TEACHER'S IDENTITY

Ideal teacherhood in vocational education is connected with a teacher's identity. Our previous study analyzed VET's identity [38] revealing that it consists of four areas:

(1) Substance knowledge, including the know-how of VET's professional field, professional expertise, and work-specific skills.

Teachers are traditionally perceived as subject matter experts. Knowledge of subject matter has always been the core feature of a good teacher [39]. However, instead of distribution of information, today's teachers are merely expected to handle transmission of knowledge. Moreover, evaluation of information and skills is important in these days. In addition, professional expertise has to be updated constantly, and the readiness to professional change and development has to be provided already in vocational basic education.

(2) Pedagogical expertise, including the ability to lead teaching, learning, and study processes, organize and analyze teaching situations, and encounter and guide students.

Although technology and teaching methods develop all the time, teachers' personal inputs still matter. It is especially apparent in the pedagogical, ethical, and moral dimensions of teaching. Pedagogical expertise is a combination of many knowledge and skills related to student interaction and how they are applied in the practical complexity of teaching situations [2].

(3) Work-life skills, including co-operation skills, willingness to create networks, ability to work in various teams, and economic and administration skills.

VETs work in collaboration with colleagues in the college and with employers and other representatives of the professional field. VETs function as mediators between vocational education students and work-life professionals.

(4) Developmental abilities, ability and will to develop one's mastery over the knowledge and skills in one's vocational field, participate in the development of one's field and work life, and trust in the progress of vocational development through teaching and learning processes.

Due to the professional change and variation, VETs are required to possess such knowledge and teaching skills that helps vocational education students adjust to the day's professional expectations. VETs are expected to work for and influence the appreciation of their vocational field.

The classification of professional identity in many ways reminds earlier illustrations of a teacher's professional identity [40,41,42,43,44]. Our research was focused on less studied teachers: VETs' perceptions have not been studied much compared to, for example, elementary school teachers. However, their work differs greatly from other teachers' work.

In this study, we continue our analysis of VETs' perceptions of their work. The focus is especially on their ideas about ideal teacherhood and its connection with professional identity.

4. METHODS

The purpose of this study is to describe VETs' understanding about ideal teacherhood in vocational education. At the same time, the goal is to analyze how VETs try to develop professionally and how ideal teacherhood is connected with professional identity. The following research questions were set for this study:

(1) How does ideal teacherhood in vocational education appear according to VETs' descriptions?

(2) How is ideal teacherhood in vocational education connected to professional identity according to VETs' perceptions?

In this study, twelve Finnish VETs were recruited from one vocational education college with multiple fields. The request to participate in the study were sent to all 28 VETs in this college. The teachers had the following questions to help them to create their narratives: (1) How long you have worked as a VET and how old are you now?; (2) How did you end up in a VET's profession?; (3) How did you develop as a VET of this kind that you are today?; (4) What were you like at the beginning of your career and how are you today as a teacher?; (5) What kind of a teacher would you like to become?; and (6) What would you like to achieve in your teacher's career?

The teachers were asked to either write their narratives or record them with a digital recorder that the researcher would transcribe afterwards. The data obtained included oral (N=5) and written (N=7) narratives. The narrative research approach

was chosen to study VETs' perceptions of ideal teacherhood in vocational education. The approach was considered suitable because of its context-bound, personal, and subjective nature. In this kind of research, the power is given from the researcher to the research participant [45]. The narrative research approach simply refers to analysis of narratives told by people [46].

The concept of narrative defines narrative analysis [47]. The analysis of narratives means that situations and events, people's characteristics and other elements in narratives are categorized into themes and types. In this study, the purpose was to analyze how ideal teacherhood appears in VETs' narratives and what kinds of themes and types emerge from the data. The narrative analysis pursues constructing a new narrative that is based on the original narrative data [48] – a description of ideal teacherhood in this case. According to Polkinghorne, a result of the narrative analysis is a time-bound, structured, and plotted entity with a conclusion [47]. This kind of meta-narrative reveal various parts of the data and their confluences.

The data analysis was based on the qualitative data, twelve narratives that were categorized with the analysis of narratives and combined as conclusions with the narrative analysis [49]. The analysis of narratives means categorizing based on types, metaphors, or classes [50]. Marjatta Saarnivaara [51] pointed out that, in narrative research, description can be seen as the foundation of the construction of narratives. Description can be widened and specified with analysis. In this study, categorization followed the idea of the analysis of narratives pursuing the identification of key factors and their interconnectedness [49]. In this sense, the analysis was data-based, which means that the themes emerging in the data were analyzed and reduced as the categories introduced as results. According to Jerome Bruner [52], paradigmatic knowledge is typically rigorous and formal, and produces argumentation that follows from logical statements and careful definition of concepts and categories.

In narrative research like this one, the reliability and validity of the data are worth discussing. Transferability criterion refers to sufficient detail of the context and whether the findings can justifiably be applied to the other setting [53]. In this study, VETs presented various occupational fields and therefore, their descriptions of professional identity covered vocational education teacherhood widely. The meeting

of the dependability criterion is difficult in qualitative work in general because the research themes and data are often impossible to repeat [53].

Careful description of the select methods and data obtained strengthen the dependability and trustworthiness of the study [53]. The narrative method seemed to suit extremely well to the research on teachers' professional development and identity: teachers create and construct their identities by talking, interpreting, and reflecting their experiences and opinions, which can be seen the foundation of their perceptions of ideal teacherhood as well [54,55].

5. RESULTS

5.1 The Possibility of Ideal Teacherhood

When defining ideal teacherhood in vocational education, VETs answered to the question of what they set their sights on as teachers, what kind of teachers they would like to be, and what is important in teacherhood. Many VETs described their insecurity and mistakes taking place at the beginning of their teacher careers. This has been noted by earlier research as well [56,57,58]. The VETs in this study also talked about their pursuit of being a perfect teacher. VETs reflected on their unrealistic goals quite aptly:

I made plenty of mistakes. I tried to be a strict, assertive buddy, and this caused the conflicts with the adolescent students... - You have to be an honest personality (7).

In general, VETs seemed to become able to reflect on the possibility of reaching ideal teacherhood more realistically after they had gained practical experience of a VET's work:

Experience makes you strong. Experience has made me into what I am today (5).

Teaching necessitates constant reflection [9]. Likewise, the data in this study showed that ideal teacherhood seemed to arise from evaluations between oneself and professional and communal factors influencing teaching (see also [59,60]). As the VETs developed their individual personality as teachers and could strengthen their professional identity, they started to accept themselves as they were. This provided them with strength to work as personalities which meant that they had to give up on the preconceived, perhaps unrealistic, role of an ideal teacher and have courage to indulge in teaching situations as themselves.

My teaching style is quite colorful. But now I dare to be myself! (4)

Following one's own path is not easy nor can any teacher avoid new challenges and learning or new goals. The uncertain future of professions fester many VETs' minds, but still they want to do teaching well.

I am more like a coach, expert, educator, and some guide who shows various opportunities that are reasonable for the youth (6).

My dream is to work with balanced and nice youngsters who are highly motivated to learn a profession for themselves (9).

The heterogeneous student material sets pressure for the pursuit of ideal teacherhood in vocational education. Many VETs learned to understand that not all students aim at the top in their field but students' goals and readiness are extremely variable.

The fact that you have more and more difficult students and their life situations are hard. So, you always have a feeling that, in addition to being able to provide them with right kind of teaching for work life, I should be able to give them good guidelines in life (4).

5.2 The Features of Ideal Teacherhood in Vocational Education

The conception of ideal teacherhood turned into a more realistic one as the VETs' work experience increased. The idealistic ideas from the beginning of their careers became more practice-based and turned into fields of expertise guiding their work and illustrating their core know-how. Ideal teacherhood in vocational education occurred in the VETs' descriptions through six features.

5.2.1 Mastery of one's professional field and ability to act as a reformer

VETs' own experiences and learning about the profession can function as students' support, especially when it comes to the acquisition of good professional skills and knowledge. Mastery of one's professional field means that the VET knows the nodes and critical points as well as the phases of professional development.

You have to keep updated all the time, and that is hard for sure. In our field, the technology develops so fast, that you really have to work hard to keep in the picture (7).

The purpose is to widen my own expertise. Then I will have more information to distribute to students and more opportunities to realize practical teaching (11).

Along with their profound mastery of the profession and teaching it to students, VETs influence the renewal of professions and enhance students' readiness for life-long learning.

And I think that I will never be ready as a person, and therefore, I cannot become ready as teacher either. As I grow as a person, I also develop as a teacher. - You always have to keep up the profession by developing the professional side. And you cannot become a master in that either. You mature as a human being (4).

5.2.2 All-round pedagogical expertise

Ideal VETs know different teaching methods, are able to plan and be flexible in teaching situations according to students' needs, and give room to individuals and various students' learning abilities. Evaluation at its best can also enhance students' learning motivation.

I would like to develop and know more all the time. I do follow my profession a lot and I like this field and these subjects I teach. And I would like to study, too, in the future (5).

I would like to develop into a better expert, for example, of learning difficulties and to encounter the youth with problems (9).

5.2.3 Networking and collaboration

Ideal VETs can develop professional expertise and students' careers by creating connections with work life. Networks and multi-professionalism necessitate cooperation, and so does the updating of vocational education. Electronic communication, real-time flow of information, and internationalization also demand new forms of cooperation.

...independent and autonomous teacher's work has more and more changed into cooperation and team work. Teachers have to be able to adjust their teaching and especially evaluations within predetermined dates... mastery over ICT and various registers and follow-up systems, as well as cooperation and interaction skills (12).

5.2.4 Encouragement and support for students

With even the smallest gestures, VETs can help students to achieve the greatest results — a few words of encouragement can be enough. Teachers'

ability to encourage students is also self-enhancing because it strengthens teachers' contentment with their ability to guide, teach, and support.

...teaching is not the most important thing but learning... I would like to be a VET who never gets into a rut. I would like to develop all the time and know more. I would think that I could transmit this field so that students could construct their professional identities in their own way... (5).

5.2.5 Fostering of justice and equity, bearing responsibility

VETs are responsible for distributing information, support, and guidance to all vocational education students concerning their study processes and goals, and the contents to be studied. The ultimate goal is to make each and every student feel welcome to education regardless of various background factors, learning histories, and study abilities.

You have to be extremely fair with them but simultaneously very differentiating as well. VETs' work requires high physical and mental shape (8).

5.2.6 Positive basic values and ability to act as a bellwether

Teachers can teach students about necessary life skills, resources, strengths and values, as well as attitudes toward oneself, work, and other people. VETs can become irreplaceable and primary models, idols, or bellwethers to their students. Their teaching can show the direction in life or encourage to find one's own goals for studies and life in general.

...if only you could have the student understand what is best for him or her, why to do this job and study. And why to put one's heart in this job. To become a teacher who inspires them. Or they could fear a little, but not too much, not too frightened to enter. To find a balance in this work, so that it would not become too flaccid (10).

To find success in life, students need to learn about, for example, diligence, joy, good manners, politeness, modesty, and taking care about the basics in life:

...take care that your clothes are clean, do not use dirty language and behave well, and do not drink during the weekend, and try to foster your good reputation as the prospective professionals in the field, and teach how to eat healthy, and everything that I as a parent have done with my own children (4).

5.3 The Connection between Ideal Teacherhood in Vocational Education and Professional Identity

In this study, VETs referred to two professional identity selves when talking about ideal teacherhood in vocational education. These identities are interconnected but can also be viewed separately. They are professional self and personal self (cf. [38,59,61,62]). In Results section 5.2, three first mentioned features represent professional self and three last mentioned belong to personal self.

VETs develop their professional identities and construct their conception of ideal teacherhood in vocational education during their whole careers through reflecting on these two selves in professional identity. Teachers reflect on their experiences of acting as a teacher and compare them with their personal selves and conceptions of their inner beliefs, ethicality, and values.

It is like two different people fighting (6). Reflection helps VETs to form a conception of their professional identity and themselves as ideal VETs: who am I and what am I like as a VET and what do I want to accomplish in this profession. The professional and personal selves in professional identity are in constant, even demanding, dialogue over how to work ideally, how an ideal VET behaves in the first place, what kind of substance knowledge is appreciated and how to develop and update it, what kinds of pedagogical solutions are made in teaching situations, and how to act and participate in the developmental work at the workplace.

Mostly work seems to be guided by the professional self, which may not necessarily represent the true, realistic, and relevant guide for teaching work but merely an ideal image of a VET with unrealistic demands. However, it seems that the personal self, along with a VET's age and work experience, tries to balance between idealistic demands with encouraging, practice-based thoughts.

At the beginning, I used to take everything really personally, and students' all actions were like I had did them. I worried so much about students' problems and perceived them even too close. This year I have consciously tried to get rid of this feature but I always have to remind myself about it. I am a demanding teacher, strict too when necessary, but still I try to establish a relationship with students that makes the study atmosphere relaxed and active (9).

Along with time, the personal self helps VETs to act as genuine personalities at work and to accept the incompleteness. This means that VETs understand that

it is impossible to reach ideal teacherhood in vocational education, but it is important to pursue toward it.

Nowadays, I can speak openly like this. Is it because of my age or profession? (10)

Sometimes, the professional self functions as a sort of shield in a VET's work. On the one hand, it can regulate a VET's behavior so that the teacher does not bring out his or her characteristics, values, or convictions that do not fit in the vocational education context in general. On the other hand, the professional self can help the VET to cope when the work feels overwhelmingly busy, tiring, or mere monotonous toil.

6. DISCUSSION

The study showed how VETs found it difficult to describe ideal teacherhood in vocational education at first [63,64], but eventually they connected it with explicit work-related expectations, successful solutions, and goals. Ideal teacherhood in vocational education was also closely connected with a teacher's professional and personal identities. The aforementioned features of ideal teacherhood in vocational education can also be considered as the manifestations of professional and personal self in professional identity. Therefore, the ideal professional self consists of the mastery of one's professional field and ability to renew it, versatile pedagogical skills, and networking and cooperation skills. Personal self consists of students' encouragement and supporting skills, equality and justice as well as responsibility in teaching, and good basic values and bellwether's role as a teacher. This connection is illustrated in Fig. 1. It shows how the professional self and personal self are interconnected, and ideal teacherhood in vocational education is located in their borderline. When in balance, the emergence of or pursuit toward ideal teacherhood in vocational education is possible.

For VETs, this illustration contributes information about ideal teacherhood from many perspectives. First, when it comes to teachers themselves, the role of professional identity has a great emphasis in VETs' work. They are not only teachers but also experts in their own vocational fields. Therefore, their identity includes elements that, for example, teachers in general education do not necessarily possess. Nevertheless, VETs are teachers too, who, in order to be good teachers, must use their personality as a part of their work.

Second, VET characteristics make a salient part of ideal teacherhood. The combination of these identity dimensions is relevant to realize when dissecting the development of professional identity in VETs. In this study, the research participants were VETs from various occupational fields. Therefore, the illustration in Fig. 1 is not limited to just one field of vocational education but covers various fields: each profession has its own specific features related to a VET's professional self that must be considered when analyzing ideal teacherhood.

Third, this study was based in Finland where vocational education has increased its popularity among the youth having finished compulsory education. Therefore, it is more and more important to focus on ways to enhance the development of teacherhood in vocational education. The new interest in vocational education necessitates thorough understanding about the importance of proper professional identity in VETs, but as teachers in all education levels, personal identities as teachers should not be overlooked either. This viewpoint contributes to the discussion of future development of VETs' work and education not only in Finland but also abroad.

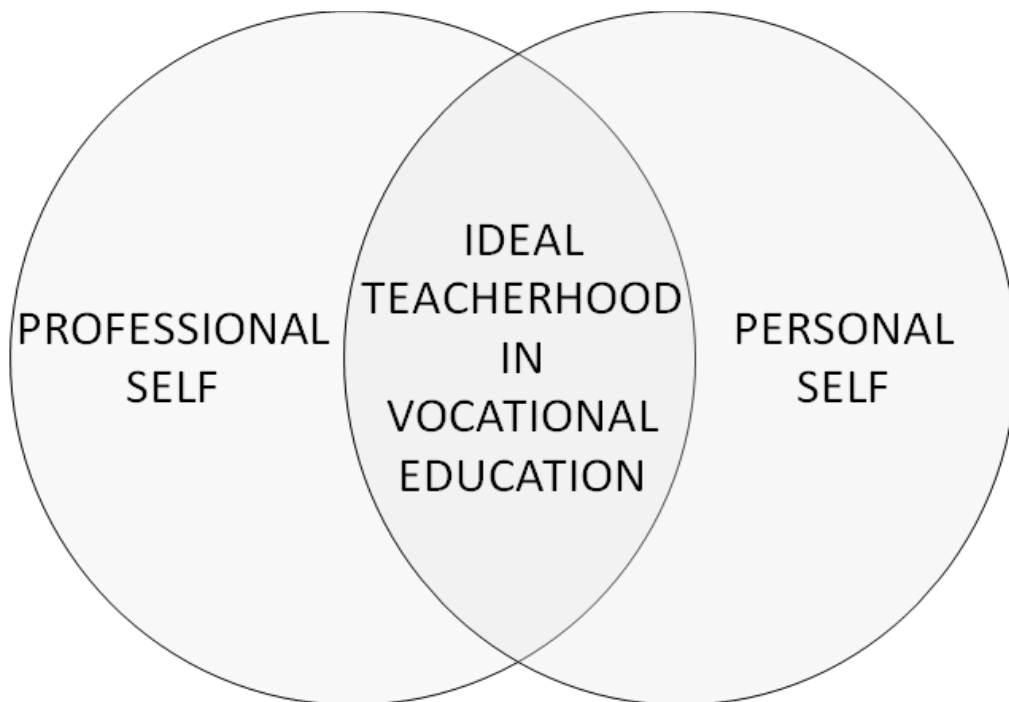


Fig. 1. Ideal teacherhood in vocational education and teacher identity

7. CONCLUSION

Meaningful work is the source of human well-being [65]. This study showed that identity reflection makes a salient part of VETs' perceived well-being at work [66,67]. The development toward ideal teacherhood in vocational education happens through each teacher's personal reflection including the shift from the dominating professional self to the flourish of personal self and, finally, toward the balance between them. Perhaps, ideal teacherhood in vocational education lies not so much in teachers' outer performances but intrinsic reflection and balance. This does not mean that they would need excellent work-life skills, knowledge, and networks in their special fields, but, when acquired, they make a salient part of their well-constructed professional identity [68]. Eventually, teachers, who are in the first name terms with their vocational education teacher identity, can act as bellwethers and true developers of their fields. They are inspiring and motivating teachers who, due to their expertise, enhance students' learning and are able to educate future experts for the needs of work life.

Therefore, VETs' work includes a distinct ethical dimension. This study showed how VETs' perceptions of the realities of the profession and ideal teacherhood emphasize the ethical side of the work. Teachers' work in general is focused on significant phases and situations in people's lives [69,70,71]. According to Elena Seghedini [72], teachers' ethical action in teaching develops alongside the development of professional expertise and vice versa: professional expertise develops also through ethical action. In Finland, Emmi Enlund, Mari Luokkanen, and Taru Feldt [73] studied teachers' ethical burden and ethical dilemma, and ended up recommending that education institutions should utilize the ethical guidelines composed by trade unions. They would support teachers' work. Common models to help teachers' action in problematic situations could be created based on the guidelines, which would provide teachers with collective certainty in ethical considerations. Williamson McDiarmid and Mary Clevenger-Bright [74] point out that teachers' work and professional development are closely tied in the wider society. According to Kirsi Tirri [75], expertise in teachers' work develops through education and experience and includes freedom and, first and foremost, responsibility to act in the profession.

Indeed, a well-balanced teacher identity and core values are the sources of stability and sense of purpose for teachers [76]. This viewpoint contributes also to

the current discussion of stress and coping as well as the sense of self-efficacy in teachers [77,78,79,80]. For example, studies about perceived level of self-efficacy have proven to be the core dimension of preventing and treating teachers' stress [81]. When considering the findings from the point of view of ideal teacherhood, it seems relevant to suggest that a successful identity development and a positive conception of oneself as a VET contributes to the sense of self-efficacy at work and respectively to one's well-being at work as well. These kind of perspectives appear of increasing importance in today's rapidly changing work in all occupational fields, including that of VETs.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Mutually-dynamical syntactics of consciousness

Abstract: Mutually-dynamical correspondence means correspondence of a form of understanding of the sense other than a form of expression of sense. Awareness of this self-distinction is the moment of emergence of individual consciousness. In this article mutually-dynamical correspondence of expression and understanding is considered, the syntactic structure of consciousness is analyzed.

Keywords: consciousness, thinking, expression, understanding, value, sense, mutually-dynamical correspondence, law of a self-distinction.

Introduction

The sense is a subject of expression and understanding. Expression of sense actualizes a context of sensory perception. Data of perception are subject to the obligatory intellectual analysis. But the understanding of sense is a form of personal existence therefore it demands individual expression. As a result sense it is necessary is understood only as this individual sense inevitably other than the expressed sense. Thereof the expressed and understood sense is it is necessary different meanings. Otherwise the expressed sense does not make sense and means disorganization of the Universe. This moment of distinction of the expressed and understood sense is datum time of forming of consciousness of which the analysis can move to simpler forms of existence. **Object** of research is the mutually-dynamical syntactics of consciousness. **Methodology** of research is the logical-syntactic analysis of mutually-dynamical correspondence of expression and understanding in the course of information and heuristic retrieval. The formulation of the law of a self-distinction as syntactical structure of an origin of consciousness **is result** of research. In the first section mutually-dynamical correspondence of expression and understanding is considered. In the second section the syntactic structure of consciousness is analyzed.

1. Mutually-dynamical correspondence of expression and understanding

The perception of the expressed sense is possible only by means of well-mannered feelings. Well-mannered *feelings* develop to degree of *intuition* of future states of system. Otherwise development of feelings does not make sense. The intuition is the help for thinking which is search of a solution on area of an individual unconscious. Therefore the understanding of sense as a result of data analysis of perception is necessary differs from expression of sense. Correspondence of forms of *understanding of the sense other than a form of expression of sense* is called as *mutually-dynamical correspondence*. Out of this *dynamics* on the basis of anticipation of future states of system expression does not make sense, and the understanding is impossible.

The purpose of thinking is the understanding of the expressed sense. The moment of understanding is the moment of emergence of consciousness. Wittgenstein noticed that, moving to the analysis of separate *values* from here, inevitably come to paradox of individual language: "It is impossible to conform to the rule only "privately"; otherwise to think that you conform to the rule and to conform to the rule would be same" [1]. This "the argument against individual language" [2], is caused by fair doubt in a one-to-one correspondence between the expressed word and the understood form of thought. Namely the sign has *limited* values in expression of sense and perception. Moreover, the same individual it is necessary uses words with limited shades of values in a certain interval of time and, *therefore*, in the limited relations. This *limit* of values of a subject in the relations is the most important condition of expression and understanding always of *different* sense.

The Universe *eidos* perceived instantly is not identical to itself at each this moment. The term *an eidos* means the expressed sense. Expression of sense is given to perception in forms of a natural phenomenon, a work of art or a discovery. Respectively the perception of expression of sense is displayed by the *law of a self-distinction*: any object cannot be identified with itself in every respect and at any time

$$A \neq A,$$

"A is not identical to A" otherwise A does not make sense. Not identity of the developing object to itself at each this moment is its essential sign. Therefore, not

identity of the developing object to itself is a necessary condition of one-to-one correspondence between sense and expression of the sense approved by the formal law of identity. It means that everyone the independent *developing* object what the personality is, the Universe, perception, possesses a *nondescriptivity presumption*. The term a *nondescriptivity* means that the object at each this moment does not correspond to the description. Only in this case, in case of consideration of object at the time of development, it acts as one and only one such individual for whom "description meets a singularity condition" [3]. Otherwise the logic and semantics still "will mark time" [4], without having revealed secrets of the tautologies.

In particular in the law of identity "A is A and anything else" constantly lose sight of this most "and anything else", that is the moment of a non-existence of object outside which it does not make sense. It exists only as *the self-differing* object at the moment of own understanding. Awareness of this self-distinction is the most important sign of individual consciousness. As a result expression of sense corresponds to sense if only if it does not correspond to sense. The certain rational subject is not able to grab both components: "The sense resists to expression of sense as accidental can resist to the constant; it is comprehended the expressed sense does not exist because it always escapes a form of expression" [5]. But it is important not to forget that does not make sense to express and understand the same sense and that is comprehended only *different* sense is expressed and understood.

This major property of the self-distinguishing world is used by interpretation for expression every time of individual sense. The bright entity of the perceived expression of sense corresponds to relative structure of muses. The term *of a muse* means the relation of subpersonal communication. Therefore absolutely exact mental point of a reperception of representations, being a moving Gestalt, is the moment of a shaping. The designed physical, biotic and social space measured by natural a posteriori probable durations is result of this shaping. The truth of these measuring units consists in *at least not impossible* probability of the actual moment of understanding. This *at least not impossible actual probability* is missed by the statistics occupied that with the priori, posterior probability. Therefore such statistics flies by over an important point of self-distinguishing is comprehended the existing object.

On the contrary, durations of perception are uneven as they depend on the moment of understanding. Time is found at such moments, and can be recorded by means of concepts. But *to express* sense, that is to express *now*, therefore, to express it by means of a *posteriori probable* structure of physical space it is possible only for the perception capable to *inoculation* [6]. In other words, the perception is capable to own a *posteriori probable* comprehended *now* which exists for another also in an *instant* form. It is also the sense *expressed* in the form of a catharsis. In other words, the image is an *expressed* sense. The sense as understood at the moment of perception by means of the feelings designed in a re-perception represents a form of *the present*. «The understanding is then most appropriate, not just according to general conceptual understanding through categories, rather according to maybe a singular emotionally very involving personal experience in the past» [7]. Therefore *mimesis* and a *catharsis* cannot be one-serial, as at Aristotle. To put these concepts in the same logical row the same means that to visit Athens, Sinope, but not to visit the Greek cities. Actually cleaning, is such state of consciousness at which by an ecstatic re-perception of representations the personality *again* forms. It is the moment when all *representations are melted* and when the personality receives quality of other personality. That is the personality differs with by itself in interaction and understands itself in a *self-distinguishing*.

The distinguishing reached in intra personal interaction of perception and understanding, thus, appears expression of ability to *ecstatic forming of psychic* and, therefore, to *stylistic determinacy of sense*. The identity of the understood sense is caused by a peculiar perception. The personality as *object* makes sense only in case of its *existence* as individual world in all its variety. Namely it is comprehended the created personality it is necessary exists as a re-perception which inherits perception of the biotic. Otherwise biotic it does not make sense. Therefore the sense always fixes *variety* in the context of which the event is identified as that. In essence the sense fixes a cash state of a *re-perception of representations* therefore the sense designates itself an edge between existence and a non-existence. According to representation are *experimental* in relation to a re-perception therefore they make sense only as the devastated subsets of representations. Representations are structured only by means of emptying of subsets of a set of a *posteriori probable* events. That is the re-perception works as implicitly reasonable.

Only according to this distinction the mobile subject structures of the moment of perception and understanding capable to a re-perception of representations are designed. These changing structures provide fundamental development of re-perceptive psychic as highest form of the organization of the world. Respectively and relationship of persons, it is comprehended existing at the moment of understanding, can be displayed by means of *the law of distinction*:

$$A_{a-a} \neq B_{b-b},$$

"any object cannot be identified with another in every respect and at any time or it does not make sense". Possible unnatural equivalence of different objects still should be proved as *equivalence* of concepts to avoid a basis anticipation error. Namely each of independently developing objects, being self-distinguishing object in itself as we know, possesses a *presumption of a nondescriptivity* according to which any description lags behind development of the described object. Especially each of conscious objects is independent of the description in terms of other object that is the description which encroaches on restriction or distortion of its unique existence. Just the opposite, the object possesses property of *prescriptivity* in relation to character of certain subjects, including to style of the description. Moreover, each object is prescriptive in relation to foreign subjects of the description. For this reason the law of a self-distinction and the law of distinction are the cornerstone of logic of norms.

2. Syntactic structure of consciousness

The description of expression of sense of interpretation in its *development* can be syntactically adequate only in that case when other personality, *other* than it, acts as the author of the description at the same moment. It means that another as the object also exists in development. Therefore the object and its concept generated by other object is no other than *mutual correlates*. The more we differ, the more we have the general between us. The concept forms not differently, as soon as a result of perception, the analysis and inspiration, as a *trace* of this inspiration. The concept forms only in the capacity of individual concept about development of object. Otherwise neither the concept, nor object doesn't make sense.

G. Frege gives two expressions in the capacity of an example: "An evening star" and "A morning star". They have one value, but different sense [8]. But when we

listen to R. Schuman's chorus "An evening star", each of us *according to* the individual preconceptual *intonational syntactics* designs an own *eidos* as the unique expressed sense. The originality of this preconceptual and preverbal thinking consists that the understood sense is made by *dynamic syntax* which corresponds to dynamic syntax of interpretation. It means that the individual *dynamic syntactics* of the identity of the perceiving accepts intonational structure of interpretation as own. As a result between intonational syntax of interpretation and intonational syntax of perception preconceptual mutually-dynamical correspondence is established. It means the relation of the expressions of sense *identical by quantity*, but *different on quality*. The perceiving personality thinks of the same *intonation* which thinks of the interpreter in sound process. But it thinks of it *differently* concerning interpretation, namely it thinks *heuristically*, and this syntactic distinction of design expression of sense and nature of preconceptual thinking is the cornerstone of distinguishing. The subject one, and predicates two. Their mutually-dynamical correspondence cannot be measured by means of Frege's differences.

In this joint intonational syntactics of active sound process and reactive process of silence preconceptual existence identifies itself. Distinction at the moment of which the personality it is comprehended is identified, is the valid purpose of communication. Thereby mutually-dynamical correspondence answers a time structure of a form. Further this state will be subjected to a structural and functional analysis for which the corresponding new *semantics* will be heuristically developed later. That is when the perceiving personality will be able to look at itself from any of the learning subjects.

That is the personality finds own *expressiveness*, creating every time *different* sense in the same exposure which *designates* itself. And only by means of this distinguishing sense each personality individually re-structures *for itself* interpretation. This syntactically definitely expressed *preconceptual* intonational sense which *distinguishes* independent objects by means of dynamic syntax is a subject of expression and the analysis. The further understanding of this sense will be inevitable to differ from this understanding, and depends on how the sense *will be expressed* in research, composition and technologies. As a result conscious communication is structured as such "Chinese whispers" without which expression and understanding of sense does not make sense.

Like exposure of a work of art, experiment in science implements programs of research, and respectively structures attention which is discovered to unpredictable a priori probable results. This openness of structure of attention as the assumption based on the prior probability of behavior of object is the valid mutually-dynamical correspondence of a scientific method to structure of the Universe. The object and a method are in a mutually-dynamical correlation out of which neither that nor another do not make sense. These general forms of universal existence make sense on condition of their distinguishing. Therefore this condition of distinguishing of the worlds is an unconditional condition of understanding as moment of an origin of consciousness. They are impossible one without another out of this their continuously distinguishing existence. At the time of their distinguishing and understanding derivative forms of the devastated representations and times which only in the context of this conscious distinguishing receive value, are randomized and endured.

Interaction of these two crossed ways of development of object and research structures *the moment* of preconceptual thinking. This preconceptual syntax does not consist to language structures in a one-to-one correspondence yet. Thereby the preconceptual thinking structures additional *syntactic* space of activity of the analytical subject.

Trajectories of sound process and point of attention to the perceiving personality do not exist out of interpretation and perception and do not matter one without another. This their *considerable* designing thanks to which they are designated by signs of an attraction and signs of attention, heuristically is defined by intelligent existence of the interpreter and perceiving. As a result these trajectories design an interaction *field* which structure is made by a mutually-dynamical syntactics. In the context of a mutually-dynamical syntactics *attraction signs* with which means of expression are, become interesting. In the context of perception these signs receive the values as *attention signs*.

The dynamic syntactics of sound process has no the isolated existence in space as there is no space out of the moment of interpretation. Sound or light process as the materialized syntactics of interpretation, imaginable at present, corresponds to it. This syntactics is defined by intension to the identity of the perceiving. Therefore the syntactics cannot be indifferent to the main generic forms generating it – to interpretation and perception. In the same way and structural

analysis is not reduced to attributing to theories of separate operations, and itself is a structural component of understanding. The structure of the moment of understanding is syntactically adequate to the apprehended process only if the new individual sense is understood. Only in case of their distinction the understanding and perception are in mutually-dynamical correspondence. This correspondence makes syntactic structure of consciousness. Only in case of their distinction of the invention correspond to the perceived world, and ideas correspond to sounding, just as forming of the personality mutually-dynamically corresponds to interpretation.

So in the course of a genre reproduction on a basis it is comprehended the expressed cultivation of atmospheric substrate a new subject, the author's work of art forms. Owing to the own distinguishing action the work of art is capable to set transitions between mutually untranslatable meanings. The Renaissance, thanks to its distinguishing principle of humanity, laid the foundation to technology distinguishing. And blossoming of distinguishing of interpretations comes during a romantic era. At this particular time the new historical type of the personality which consciously coexists in interaction with other forms. Respectively two types of consciousness – moderate consciousness of the interpreter and the perplexed consciousness of the perceiving personality form.

Semantic mismatch of morphological process of exposure to the project results from not identity of installations of the same work of art, and also as a result of not identity of perceptions. Variability of installations of the same work of art comes into conflict with the repeated reproduction of a genre to which the work of art belongs but to which it is not reduced already. As a result the syntactic originality of separate interpretations contradicting social structure of a genre arises. Semantic mismatch of process of exposure to the project means that the exchange of representations *as they are* does not occur. Therefore, there is no epistemological sense also in one of them separately.

On the contrary the necessary *nonequivalent* exchange of derivative design forms which only in this case receive the new limited *values* occurs. Without this nonequivalent exchange *the sense* cannot be neither is expressed, nor understood. That sounds as the project materialized in the atmosphere and will be recognized as a time Gestalt in this exposure there is neither that, nor another. We cannot record as the composer or the engineer exposure represents, and we hear only that turns out as a result of their concrete forming productive interaction. Only such sounding can

be turned to the perceiving personality. And on the contrary if someone from them tries to materialize only one own representation, as a result it only doubles the world that contradicts the law of a self-distinction. It does not design the consciousness relation.

Processes of recognition in the greatest measure depend on a syntactic community of the interpreter and perceiving. In their communication there would be no sense if between the project of interpretation and a sound form the one-to-one correspondence is reached. Such correspondence would demand full awareness of a sound form the interpreter that would deprive of dynamics sound universe. In this case value of sound incentive would be equal to zero. Also and motive process of an embodiment of acoustical representations, being completely conscious, it cannot be aloof the interpreter because of its identity to itself. Therefore the consciousness of the interpreter is moderate consciousness.

Actually anything as the spatial category mutually-dynamically corresponds to an always-moment as temporary category. Namely zero is the first member of all sets, including sets of large numbers if the speech indeed goes about measurement of a Universe. The Universe is or it is not present. Anything as the exact repetition of sense which is one-to-one corresponding to the end of times is intolerable for the falling substance, and it is accelerated to the public and gives rise to modern times. So in practice the musician Schonberg argues with the mathematician Dirac, but not the physicist Einstein. In particular in the conditions of quite conscious extending harmony at the beginning of 20 century he made an attempt to finish expansion to full diffusion. But, destroying vertical harmony, Schonberg could not depart from laws of a temporary form concerning which Melos and the accord is under construction. This mismatch of sound space to musical time lost rhythmic energy therefore the substance lost quality of the environment symbolized at the time of interpretation that made his twelve-tone technique uninteresting.

Mutually-dynamical correspondence between syntacticities is established in the widest limits of communication. As a result the reactive audience produces silence, expressing heuristically understood sense. From here the problem of the interpreter consists in reading the expressed sense or nonsense on nature of silence. Therefore the attention of interpretation is no other than attention to a phenomenon of the silence producing an insight behind which the character of a reason forming at the moment of perception that is *taste* is read. The character of a reason of the

perceiving personality materialized in acoustic process of silence gives the interpreter information for forming of own nature of thinking, that is *style*. This observation of the interpreter became possible thanks to that in the course of silence of a re-perception of the perceiving personality in the context of its perplexed consciousness are materialized.

The sense is understood at the time of limited attentive silence which as reactive process proceeds rather impressive sound process. The perceiving personality produces sense already within communication at the level of preconceptual intonational syntax. Respectively and phenomenological consideration if it aims at sense, has to go back from a passive *reduction* of consciousness "without ego" to active *products* of a research ego. Otherwise when arises eureka? Only at this moment scientific research mutually-dynamically corresponds to perception. It means that scientific research in the movement of own thought as heuristic search opens own sense concerning the moment of perception. Owing to the opened sense the moment of perception designs analytical space.

Unlike individual consciousness the mass consciousness shakes within the current information. In these fluctuations the mass flow of representations steadily flies by a required always-moment with which actually duration as the present begins. In other words, the flow of representations does not see point of eternity in itself. As a result the personality lives some others life. Therefore the mass consciousness does not go beyond one-to-one correspondence of representation to a sign, and, therefore, it cannot generate own sense. The individual consciousness awakens from a somnolence of the shaking pendulum at the time of expression and understanding. At this moment the attention vigorously stimulates an insight. So process of silence represents materialization of inspirations already at a stage of preconceptual heuristic thinking under a reflection of the perplexed consciousness.

Conclusion

The individual consciousness forms at the time of expression and understanding of sense. The personality differs with by itself in interaction and understands itself in a self-distinguishing. This law of a self-distinguishing of the worlds is an unconditional condition of understanding as moment of an origin of consciousness. The structure of the moment of understanding is syntactically adequate to the apprehended process only if the new individual sense is understood. This moment of understanding is the moment of emergence of consciousness.

Expression and understanding of sense are in mutually-dynamical correspondence. This correspondence makes syntactic structure of consciousness. As a result the consciousness of the interpreter is moderate consciousness, and the consciousness of the perceiving personality is the perplexed consciousness. So there is no consciousness in general as mutually-dynamical syntax designs the concrete relations of consciousness. Results of research can be used in further researches of consciousness and thinking.

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Geo-ecological assessment of eroded steppes of South Caucasus (in the area of Azerbaijan Republic)

Abstract: Area of South Caucasus in Azerbaijan is mostly low mountains and plains. This area is mostly used as a winter pastures and is a very important for development of pastoral farming in Azerbaijan. Overgrazing of cattle and sheep cause intensive soil erosion. This is a reason for research of types of soil erosion and its dynamic conducted in the area. In this article author presented the results of this research.

Keywords: geo-ecology, steppes, landscape, erosion, ecosystems, steepness of the slopes, fito-melioration.

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Геоэкологическая оценка эродированных степных ландшафтов Южного Кавказа (в пределах Азербайджанской Республики)

Аннотация: Южный Кавказ охватывает среднегорные и равнинные части территории Большого Кавказа в пределах Азербайджана. Эта территория используется как зимние пастбища, являясь естественной кормовой базой для растущего животноводства. Усиленный выпас мелкого и крупнорогатого скотов привел к интенсивному развитию эрозионных процессов. По этой причине есть необходимость проведения анализа условий формирования и изучения развития динамики эрозии. Автором представлены некоторые результаты исследований почв степных ландшафтов Большого Кавказа, проведенные в этом направлении.

Ключевые слова: геоэкология, степь, ландшафт, эрозия, экосистема, выпас, крутизна склона, фитомелиоранты.

Введение. Почвенный покров – национальное достояние народа. Общепринятое представление о деградации аридных экосистем при эродированности почв нуждается в оценке изменений, происходящих в физико-химических, биологических свойствах и функциональной организации почвенно-растительного покрова. Основными показателями эрозии почв являются минерализация органического вещества, потеря питательных веществ и доступных для растений форм почвенной влаги. Все перечисленные показатели как критерии геоэкологической оценки рассматриваются в динамике изменений (сезонная, годовая, многолетняя) компонентов аридных экосистем.

Принятые в Азербайджане новые законы в земельных реформах способствовали созданию нового, в отношении природных и агроландшафтов, этапа использования и охраны почв от эрозии. Независимо от образования ареала географического распространения новых форм и отношений земельной собственности, необходимо обращать внимание на охрану почвенного покрова. Известно, что в советское время земля считалась исключительно государственной собственностью, и проводились мероприятия, перспективные планы по рациональному использованию, охране и повышению ее плодородности. Согласно требованиям современной рыночной экономики, все растет интерес и внимание к пригодным почвам, находящимся в сельскохозяйственном обороте.

Объект и методы исследований. В настоящее время 41,8 % территории республики или 3 млн. 610 тыс. га земель (не учитывая военную эрозию, возникшую при войне с Арменией за Карабах) подвергнуто эрозии. Здесь развиты все виды эрозии, особенно водная, ветровая и отчасти овражная, которые, развиваясь, выводят из с/х оборота плодородные почвы [11; 5; 8; 15].

В горной и предгорной зоне находятся 3/5 части территории Азербайджана. Проведенные нами физико-географические исследования дают основу анализа геоэкологических особенностей почв с потенциально-опасными территориями эрозии. Одним из основных агроэкологических факторов ландшафта также является определение микроклимата и изучение метеорологических условий.

Географическое расположение степных ландшафтов республики дает возможность охарактеризовать проявление интенсивности эрозионных процессов на местности. Основными причинами водной эрозии здесь являются: неравномерное распределение атмосферных осадков в течение года, месяца, мощный снежный покров и его таяние за короткий промежуток времени, интенсивное выпадение ливневых дождей и обладание селевых потоков высокими показателями стока. Основные факторы, усиливающие деятельность ветровой эрозии – это континентальность климата, сильно ветровой режим, горно-долинные ветры (фены), турбулентное движение воздуха, образование ураганов и пыльных бурь (в республике их называют аг ель и гара ель), пониженная относительная влажность, деградация растительного покрова [16; 17; 21; 19; 18].

Если в предгорных условиях рельефа (например Аджиноурское предгорье) к динамике развития водной эрозии относят глубину эрозионного базиса, водосборную площадь, плотность овражно-балочной сети, угол наклона, крутизну и длину склонов, южную экспозицию, – то ветровая эрозия отличается расположением территории на равнинах и низменностях (Гобустанская равнина) и отсутствием орографических препятствий (Джейранчельская), преобладанием элементов мезорельефа. Вследствие неодинакового, закономерного или незонального распределения типов почв на ландшафтах, в зависимости от экологического положения, эрозионные процессы развиваются с различной интенсивностью. Именно поэтому эрозионно-опасные земли анализируются в камеральных условиях на основе научно-практических материалов, и мы решили эту задачу [12; 20].

Результаты исследований. При качественной и количественной оценке подверженности 3 млн. 610 тыс. га азербайджанских земель эрозионным процессам, основным критерием считается степень эрозионной опасности. Эрозионная интенсивность, являющаяся причиной смыва почв, подразделяется на нижеследующие категории:

А) Площадь незеродированных почв составляет 1 млн. 708 тыс. 200 га или 19,8% от общей территории. Из-за сохранности плодородности эти почвы урожайны, пригодны и не намечается опасность эрозии.

Б) Общая площадь слабоэродированных почв составляет 2065,5 тыс. га или 23,9% от общей территории. Антропогенное воздействие подвергло слабой

эрозии более 30% этих почв. В зависимости от годовых атмосферных осадков, от их времени и интенсивности, и при несоблюдении режима орошения прогнозируется смыв почвенного слоя в 0,1 см/год. На территориях, подверженных эрозии, плодородный слой почвы уменьшается в среднем на 10% и это создает условия для снижения с/х урожайности.

В) Площадь среднеэродированных почв составляет 1млн. 723 тыс. 400 га или 19,9% от общей территории. Примерно 40% этой территории подверглось эрозии, и воздействие природных и антропогенных факторов увеличивает толщину слоя смываемой почвы до 0,5 см. Геоэкологический анализ показал, что плодородный слой почвы (20 см) смываем, и в результате общая плодородность снижается до 40%, а урожайность – в 2 раза.

Таблица 1. Количественные показатели эродированности и почвенного покрова Аджиноурского массива

Степень эродированности почв	Площадь в тыс. га/%	Смываемый слой см/год	Прогнозирование	
			Срок запаса, год	Срок исчерпания, год
А) Неэродированные почвы	1708,2/198	0,1	250	500
Б) Слабоэродированные почвы	2065,5/239	0,5	50	100
Б) Среднеэродированные почвы	1723,4/199	1,0	25	50
В) Сильноэродированные почвы	2400,2/278	2,0	12	25

Г) Крайней степени опасности (очень сильноэродированные почвы)	744,2/8,6			
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Г) Площадь сильноэродированных почв составляет 2400,2 тыс. га или 27,8% от общей территории. 60% этой территории подвержено эрозии, и большая часть приходится на долю интенсивно смытых территорий. В среднем смытый слой почвы толщиной в 1 см и рельеф сильно влияет на это. На почвах, подверженных эрозии, урожайность с/х растений снижается примерно в 3 раза.

Д) Площадь крайней степени эродированных почв сравнительно меньше, это составляет 744,2 тыс. га или же 8,6%. Более 80% этих почв подверглось эрозии, 60-70% этого приходится на долю очень интенсивно смытых почв. Плодородность этих почв снизилась полностью, и в хозяйстве они используются лишь как некачественные каменистые пастбища.

По геоэкологическим анализам почвенного покрова, преобладание наклонных склонов, легко подвергающихся эрозии, нехватка мелких и крупных водостойких агрегатов, слабая водопроницаемость развивают водную эрозию поверхности. Геоэкологические особенности ветровой эрозии – легкий гранулометрический состав и преобладание карбоната в верхнем глинистом слое почвы, деятельность зыбучих песков, разреженность растительного покрова.

Значима роль растительности в охране пастбищных земель. В условиях степных ландшафтов Азербайджана, в частности в Аджиноуре, Джейранчеле и Гобустане бессистемное использование пастбищ (ненормированный выпас скота), разреженность и резкая деградация растительного покрова, неосуществление фитомелиоративных мероприятий (преобладание посевов на высоконаклонных склонах, несадка лесных полос), нехватки гидромелиоративных сооружений – развивают деятельность водной и ветровой эрозии. В связи с этим повышение биопродуктивности пастбищ путем осуществления экомелиорации с целью обеспечения животноводства качественным кормом, является чрезвычайно актуальной [13; 19; 6].

Растительный покров степных ландшафтов Южного Кавказа очень пестр и многообразен, но, главным образом, богат полупустынной и степной

травянистой растительностью, служащей отличным кормом зимних пастбищ в системе отгонного животноводства. Ниже будем конкретно описывать геоэкологическое состояние и травостой Аджиноурской степи, являющейся одной из ведущих зимних пастбищ Южного Кавказа.

Аджиноурская степь расположена на северном борту Куринской впадины, у подножия Южного склона Большого Кавказского хребта, от которого отделена Алазань-Айричайской долиной. Географическое положение таково: по восточной границе Аджиноура протекает р. Алджиганчай, по западной – Алазань. Северо-восточная граница степи проходит по северному подножью хребта Дашюз, а на юге она граничит с Мингечаурским водохранилищем и Ширванской равниной. Реки Алазань и Алджиганчай, а также Мингечаурское водохранилище находятся ниже уровня Аджиноурской степи, что исключает возможность их использования в качестве источников орошения.

В целях бесперебойного снабжения отгонного животноводства питьевой водой в 1965 г. из реки Дехне и артезианского колодца Афторанской долины проведен водопровод, протяженностью в 104 км. и водопропускной способностью 60 л/с.

Территория Аджиноура сложена глинами, песчаниками, известняками, суглинами и другими осадочными образованиями позднего плиоцена и плейстоцена. Почвы территории чрезвычайно разнообразны. Среди типов почв широко распространены сероземы, серо-бурые и каштановые почвы [1; 2; 4; 7; 9].

Аджиноурскую степь относят к центрально-степной, умеренно-теплой климатической зоне, характеризующейся теплой зимой и жарким летом [16]. По многолетним данным средняя годовая температура воздуха достигает 13-14° С, наибольшая средняя месячная температура января 2-2,5° С, минимальная температура воздуха отмечается в январе -5,5° С, а максимальная в июле 33-34° С. Среднегодовая сумма осадков 390-450 мм, из них выпадает весной 32%, осенью 29%, летом 27% и зимой 12%, большая часть их приходится на весенний и осенний периоды, меньшая – на летний, иногда осадки выпадают в виде ливней, что способствует интенсивному смыву почв. Опасность проявления эрозионных процессов усиливается в связи с тем, что значительные площади зимних пастбищ находятся на склонах различной крутизны. Сильное расчленение территории, различные экспозиции склонов, наличие глубоких

долин, гряд, котловин и др. приводит к разнообразному распределению тепла и влаги, а также прирастанию естественной, особенно травянистой растительности, которая имеет большое значение в защите почв от эрозии.

Растительный покров пастбищ Аджиноура богат и разнообразен. Здесь можно встретить целый ряд растительности пустынно-сухостепного ряда. Полупустынные кормовые угодья, имеющие макроразнообразие распространения, образованы солянковыми, полынно-солянковыми сообществами. Основными видами солянковых являются вересковидная солянка и гянгиз (горная солянка), вегетация которых в жаркое время года не прекращается, но значительно замедляется до первых осенних дождей, после чего начинается усиленный рост. Цветение и плодоношение происходит во второй половине лета и осени, затягиваясь иногда до ноября-декабря. Это типичные ксерофиты, переносящие летнюю жару и засуху. Эфемеры избегают летних условий путем сокращения сроков вегетации, приурочивающихся к осенне-зимнему и ранневесеннему периоду [8; 13; 15; 18].

Покрытие почвы полынно-гянгизовой растительности – 55%, в том числе полынь – 25%, гянгиз – 20% и эфемеры – 10%. На поверхности почвы имеются места, лишенные растительности – плечи, снижающие степень почвы травостоем. Преобладающими и имеющими кормовую ценность растениями, являются полынь меера – *Artemisia Meyeriana*, гянгиз – *Salsola Nodulosa*, мятлик луковичный – *Poa bulbosa* и морук восточный – *Eremopyrum orientala*.

Полынь и гянгиз поедаются зимой после первых зимних морозов. Гянгиз считается хорошим пашировочным кормом для мелкого рогатого скота. Охотнее всего поедаются эфемеры.

Из сорных непоедаемых трав единично встречаются кермек колосовидный – *Zimonium Spieatum*, жабник – *Filagos pathulata*, чертополох – *Caprus arabicus*. Качество корма этой группировки среднее и пригодно для выпаса мелкого рогатого скота (поедается сухая масса 5 ц/га).

Полынно-вересковидно-солянковые полупустыни также имеют незначительное распространение, и располагаются у оз. Аджиноур в виде небольших пятен. В кормовом отношении наиболее ценными растениями являются полынь Меера – *Artemisia Meyeriana*, солянка вересковидная, мятлик луковичный – *Poa bulbosa*, морук восточный – *Eremopyrum orientala*. Из сорных непоедаемых трав встречаются: жабник – *Fulago spathulata*, чертополох – *Caprus arabicus*.

Полынь и вересковидная солянка хорошо поедаются осенью и зимой мелким и крупным рогатым скотом, особенно когда эфемеретум отсутствует. Весной основным кормом для скота служит эфемеретум, который хорошо поедается всеми видами скота. Данный тип используется под выпас мелкого и крупного рогатого скота. Поедаемая сухая масса с гектара составляет 5,5 ц.

Полынно-эфемеровые полупустыни занимают небольшую площадь и располагаются на равнинах, в юго-западной части района. Общее покрытие почвы травостоем – 60%, где полынь составляет 35% и эфемеретум – 25%. Преобладающими и наиболее ценными в кормовом отношении растениями являются: полынь Меера – *Meera Artemisia Alyviana*, мятлик луковичный – *Poa bulbosa*, морук восточный – *Evetorygum orientala*, костер японский – *Scomus japonicus* и др. Задернение их среднее, образовано мятликом луковичным – *Poa bulbosa*.

Из сорных непоедаемых трав встречаются: жабник – *Fulago spathulata*, водяк полевой – *Cvisium arvence*, солнцезвет – *helianthemum Salicifolcum* и др. Поедаемая сухая масса на зимних пастбищах с гектара составляет 6,5 ц.

Полынно-бородачевая сухостепь распространена в нижней предгорной части района, на небольших горных грядах и приурочены к серо-каштановым полупустынным почвам. Покрытость почвы травостоем составляет 65%, в том числе многолетние злаки – 15%, полынь – 20%, эфемеры – 20%, разнотравье – 10%. В травянистом покрове преобладают полынь и бородач. Преобладающими и наиболее ценными растениями в кормовом отношении являются: полынь Меера – *Meera Artemisia Meyriand*, мятлик луковичный – *Poa bulbosa*, житняк гребенчатый – *Agropyrum cristatum*. Задернение среднее образовано бородачом травостанавливающим. Из сорных непоедаемых трав отмечены: жабник – *Fulago spathulata*, солнцезвет – *Helianthemum Salicifolcum*, чертополох – *Carduus arabucus*. Поедаемая сухая масса на зимних пастбищах с гектара составляет 6,5 га.

Большинство видов, входящих в состав данной группировки, хорошо поедается скотом. Поедаемая сухая масса с 1 га – 6 ц.

Бородачево-ковыльная степь занимает небольшую площадь и расположена в предгорной части района, на равнинах и слабо всхолмленных формах рельефа, узкой полосой тянется по вершинам возвышенности Трут-Сараджинской степи с уклоном до 10-15°. Почвы светло-каштановые, солонцеватые.

Общее покрытие почвы травостоем – 60%, из них злаки – 35%, разнотравье – 25%. Задернение среднее, образовано бородачем – *Andropogon shemum* ковылем щовица - *Stipa srocectiana* и др. растениями. В травянистом покрове преобладают бородач – *Androgon ishremum*, ковыль щовица – *Stipa sronegtirna* и коротконожка – *Brachypodium dictachium*.

В кормовом отношении тип характеризуется следующими наиболее ценными кормовыми травами: бородач – *Androporun ishaemum* ковыль - щовица – *Stipasrowechstiana*, ячмень длиннокосый – *Hordeum crinitum* и др. злаки. Из сорных и непоедаемых трав отмечены: златник, сухоцвет - *Xheranthemum Sguarrom*, солнцезвезд – *Helianthemum Salicifolcum*.

Качество корма среднее и пригодно для выпаса всех видов скота. Поедаемая сухая масса с одного гектара составляет 6 ц. Пырейно-злаковые луга имеют незначительное распространение в регионе, и располагается на равнине, лесной поляне, используется под сенокос и приурочены к луговым, черноземовидным почвам. Общее покрытие почвы травостоем – 75%, из них злаки – 50%, разнотравье – 25%. Задернение среднее, образованно пыреем ползучим и др. злаками. В травянистом покрове преобладают; пырей ползучий- *Agropyrum verenz*, свинорий *Cynodon dectylon*. Из сорных непоедаемых трав отмечены: морковник – *Dovcus carota*, душица обыкновенная – *Oroganumurilgare*, лютик – *Banunevlus Caulasieus*, качество сена хорошее. Весовая урожайность 15 ц с одного гектара.

Предлагаемые мероприятия. В результате проведенных исследований мы можем рекомендовать хозяйству проведение следующих мероприятий:

1. Для восстановления плодородия эродированных почв, прекращения развития процессов эрозии и повышения продуктивности зимних пастбищ Аджиноурского массива, необходимо проводить посев многолетних бобовых и злаковых трав.

2. Рекомендуется чистый посев эспарцета закавказского и травосмесей: эспарцет закавказский + ячмень луковичный и эспарцет закавказский + ежа сборная + ячмень луковичный.

3. Наиболее благоприятными сроками посевов являются осенние (вторая половина сентября – первая половина октября).

4. Нормы высева рекомендуются следующие:

При чистом посеве:

- эспарцет закавказский – 90 кг/га,
- ячмень луковичный – 12 кг/га,
- ежа сборная – 17 кг/га.

В двухкомпонентных травосмесях применяется половина от нормы высева каждого компонента, а в трехкомпонентных – третья часть этой нормы.

5. Посеянные травы отвечают своему назначению в условиях Аджиноурского массива в течение 3-х лет; в дальнейшем продуктивность их падает, и посеянные травы следует запахать в почву с тем, чтобы удобрить ее. На следующий год посев следует повторить.

6. Составленные нами карты факторов рельефа для Аджиноурского массива рекомендуются хозяйствам региона в целях рационального использования зимних пастбищ и выгонов.

Выводы. На Аджиноурском зимнем пастбище содержатся десятки отар из Дагестанской и Грузинской республик. К концу мая в Аджиноуре заканчивается вегетация эфемеров, другие травы выгорают и грубеют.

Из-за недостатка питьевой воды на зимних пастбищах скот не съедает дневной нормы корма и это снижает его продуктивность. Недостаток водных ресурсов мешает проведению работ по улучшению зимних пастбищ.

Суммируя вышесказанное нами, впервые изучены причины динамики эрозионных процессов, выявлены геоэкологические факторы, рельефные особенности (глубины местных базисов эрозии, уклоны поверхности, экспозиции склонов, динамика развития овражно-балочной сети), и подобран ассортимент многолетних трав для повышения продуктивности травостоя, защиты склонов от эрозии и охрана геоботанического состава почвы Аджиноурской степи. С этой целью геоэкологическое описание и оценка исследуемого ландшафтного массива является чрезвычайно актуальной и для других степных ландшафтов (Гобустан и Джейранчель) Южного Кавказа.

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Exercise regime in cycling tours for schoolchildren adolescence

Abstract: Work is devoted to studying conditions of physical activity in a multi-day cycling tourist expeditions for schoolchildren adolescence. Experimentally grounded dnevok number and their place in multi-day bike trips for teenagers.

Keywords: strenuous exercise regimes, dnevki, bike trips.

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Режимы физических нагрузок в велосипедных походах для школьников подросткового возраста

Аннотация: Работа посвящена изучению режимов физических нагрузок в велосипедных многодневных туристских походах для школьников подросткового возраста. Экспериментально обосновано количество дней и их место в многодневных велосипедных походах для подростков.

Ключевые слова: режимы физических нагрузок, дневки, велопоходы.

Учитывая увлеченность школьников компьютерными технологиями, сопровождающимися ограничением их двигательной активности [1; 3; 6], в поисках путей активизации двигательного режима подрастающего поколения школа активизирует спортивно-массовую работу, где заслуженным вниманием пользуется активный туризм, об эффективности которого говорят многие [2; 6; 7; 8], в том числе и о его оздоровительной ценности, рассматривая самостоятельный туризм как одну из форм укрепления здоровья трудящихся [3; 8]. И поскольку необходимым условием оздоровительной ценности является дозирование физических нагрузок в походных условиях целью наших исследований было изучение режимов физических нагрузок, в частности, в условиях велосипедных походов.

В данном сообщении представлены результаты исследований по изучению режимов физических нагрузок в велосипедных многодневных походах для школьников подросткового возраста.

Если в доступной нам литературе имеются отдельные работы по обоснованию норм весовых нагрузок рюкзаков, рекомендации, хотя и не всегда подкрепленные убедительными результатами, экспериментальных исследований по темпу, скорости передвижения на маршрутах, протяженности дневных переходов в пеших многодневных походах [4; 9], то аналогичных данных по велосипедным походам со школьниками найти не удалось. Также не удалось найти данных по обоснованию места и количества дней в многодневных велосипедных походах. Поэтому задачей наших исследований было определение и обоснование количества и места дней в десятидневных велосипедных походах со школьниками подросткового возраста.

Для установления места первой дневки нами было проведено четыре похода с участием 96 школьников, из которых было 37 девочек и 59 мальчиков 14-15 лет. Условием участия в этой серии походов было добровольное участие в десятидневных походах без дней.

После прохождения медицинского обследования участники походов проходили наше тестирование, во время которого у них были сняты следующие показатели: артериальное давление (АД), частота сердечных сокращений (ЧСС), мощность вдоха (Мвд), мощность выдоха (Мвыд), частота движения кистью (ЧДК), сила правой кисти (СКп). В походных условиях этой серии походов тестирование проводили ежедневно утром и вечером до приема пищи.

Для определения места первой дневки в велосипедных многодневных походах ежедневно проводилось анонимное анкетирование, где ребята исходя из личного самочувствия, высказывали желание отдохнуть. Анализ результатов анкетирования показал, что к концу четвертого дня похода уже 89,4% его участников запросило отдых против 51,4% сутками раньше. Аналогично своей динамикой отреагировали и изученные показатели. Так, у девочек наблюдавшееся улучшение почти всех изученных показателей в течении трех дней похода, на 4-й день уже уступало снижению, усилившемуся на пятый день. Снижение для СКП составило 2,9% по измерениям на утро четвертого дня ($t=2,31$) и на 4,6% на утро пятого дня похода ($t=2,49$), у юношей – соответственно 3,1% ($t=2,28$) и 4,6% ($t=2,39$).

Аналогичная реакция отмечена и со стороны показателя ЧДК, снижение которого у девочек составило 3,7% ($t=2,51$) на 4-й день и 5,1% ($t=3,91$) на пятый, у мальчиков - соответственно 3,3% ($t=2,98$) и 4,1% ($t=3,08$), а так же мощности выдоха у девушек, составившее 1,92% ($t=1,89$) и 2,91% ($t=2,39$) и у мальчиков - соответственно 1,03% ($t=1,18$) и 1,98% ($t=1,39$).

Следует отметить, что хотя ухудшение показателя мощности выдоха у девочек и у мальчиков, наконец, 4-го дня похода не имели статистической достоверности, через сутки она была уже явно выраженной ($t=2,98$).

Как показал анализ анкет, через три дня после первой дневки, появляются первые 19% нуждающихся в отдыхе, количество которых к концу четвертого дня возросло до 56,6%, возросшее к концу пятого дня после первой дневки до 96,8%.

Что же касается других показателей, то следует отметить присутствие тенденции их улучшения до четвертого дня после дневки с последующим ухудшением к концу четвертого дня, после чего имело место существенное статистически достоверное их снижение к концу пятого дня похода. Так, к концу восьмого дня похода (третий день после дневки) улучшение показателя ЧДК

стало уступать утомлению, составившему 1,4% ($t=2,01$), а к концу девятого дня уже было отмечено статистически достоверное ухудшение показателя, составившее 5,8% ($t=2,86$). Динамика показателя ЧДК мальчиков составила аналогично 2,1% ($t=1,98$) и 4,9% ($t=3,02$).

Аналогичную динамику продемонстрировали и показатели мощности вдоха и мощности выдоха. Так, показатель мощности вдоха девочек к концу девятого дня похода был уже статистически достоверно ниже такового предыдущего дня на 2,7% ($t=2,88$), у мальчиков – на 2,6% ($t=2,63$). Снижение показателя мощности выдоха к концу девятого дня составило соответственно 3,6% ($t=3,5$) и 4,1% ($t=3,46$).

Снижение СКп девочек к концу девятого дня составило 6,8% ($t=3,01$), мальчиков – 5,4% ($t=2,87$).

Таким образом, ввиду ухудшения показателей после пятого и восьмого дней, как и в походах с одной дневкой, в походах с двумя дневками не наблюдалось. Это обстоятельство дает право считать обоснованным организацию дневок в десятидневных велосипедных походах на пятом и девятом днях.

Для подтверждения этого предположения нами проведено четыре похода с двумя дневками – на пятом и девятом дне, в котором приняло участие 84 подростка (38 девочек и 46 мальчиков). Походы проводились по одному и тому же маршруту с проведением тех же исследований.

Анализ результатов исследования указал на постепенное улучшение изученных показателей, которые в конце похода превысили исходные величины. Так, участие в велосипедном походе с двумя дневками улучшило СКп девочек на 12,1% ($=4,02$), мальчиков – на 17,3% ($=4,23$). Показатель ЧДК девочек улучшился на 6,8% ($=3,98$), мальчиков – на 6,1% ($=4,13$). Имело место снижение показателя ЧСС у девочек на 3,1% ($=2,97$) и на 2,9% ($=3,01$) у мальчиков, а так же статистически достоверное улучшение мощности вдоха у девочек на 12,1% ($=3,98$), у мальчиков - на 16,8% ($=2,89$) и мощности выдоха у девочек на 7,3% ($=4,07$) и на 9,3% ($=4,28$) у мальчиков.

Таким образом, можно считать обоснованным место дневок в десятидневном велосипедном походе со школьниками подросткового возраста на пятом и девятом днях похода.

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The mission of the imagemaker to create image of enterprise and the leader using the media

Abstract: Analyzes the reasons for the creation of information events, identifies the functions, describes the legal framework regulating mass media in forming positive image of the leader and enterprises. Examines the image of the image maker. The article is devoted to the public image of commercial enterprises, as a guarantee of stable economy and healthy development of society.

Keywords: image, the image of enterprises, psychological preparation, communication, media, audience.

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Особенности работы имиджмейкера по созданию имиджа предприятий и лидера с использованием медиаресурсов

Аннотация: Тиражирование определенного имиджа происходит с задействованием медиаресурсов под руководство имиджмейкера. Публичные шаги лидера, позиционирование компании на рынке, то есть имидж, отображенный в СМИ, – результат взаимодействия носителя имиджа (лидера, предприятия) и информационной аудитории. Статья посвящена рассмотрению имиджа предприятий и руководителей высшего звена как гарантии стабильной

экономики и здорового развития общества, аспекта, что напрямую влияет на восприятие страны мировой общественностью.

Ключевые слова: имидж лидера, имидж предприятий, психологическая подготовка, репутация, медиа, аудитория.

Введение и актуальность тематики. Постсоветские страны стремительно пытаются утвердиться на мировом рынке. Для создания конкурентного имиджа пытаются продемонстрировать мировому обществу экономическую стабильность и инвестиционную привлекательность государства и его коммерческих предприятий. Создание имиджа бизнес структур и предприятий стоит рассматривать комплексно в контексте с авторитетом лидера (учредителя, генерального директора фирмы). Формирование имиджа рассматривается как одна из стратегических целей управления успешных, конкурентных предприятий. Успешная экономика стимулирует развитие общества (способствует формированию среднего класса, привлечение инвестиций, партнерства для повышения уровня жизни не только работников предприятия, но и населения в стране в целом.

Цель данной статьи - определить основные составляющие имиджа лидера и компании, взаимодействие желаемого с действительным, отраженным в СМИ.

Цель научного исследования - предложить алгоритм взаимодействия имиджмейкера и лидера и предприятия, коллектива и лидера, предприятия и СМИ, а также определить влияние материалов, обнародованных в СМИ, на ситуацию, формирование определенного имиджа.

Обзор публикаций по теме. В процессе исследования автор изучила работы предшественников: А. Юричко, А.Ильяновой, В. Снеткова, Р. Бдейка и Дж. Мутона, К. Боулдинга, а также научные труды, что отображают психологические основы формирования и развития организационной культуры таких ученых как: В. Кредисов, Р. Моран, П. Харрис, Ф. Петигрю, В. Хапилова, Н. Колминский, В. Носков, И. Савка, Ж. Серкис, Л. Обран-Лембрик, В. Лозница, Л. Кармушка, М. Поживанов. Ценными являются труды специалистов в области социальных коммуникаций, а именно исследованием данной тематики занимаются: В. Иванов, В. Ризун, А. Ситников, Жак Сегел, Майкл Портер, Роберт Сквайр, Джон Диадорфф, Тим Белл. Вопрос формирования и тиражирования

имиджа предприятий актуален и не изучен полностью, требует подробного анализа и единого алгоритма создания конкурентного стабильного положительного имиджа, успех проекта во многом зависит от мастерства и профессионализма имиджмейкера.

Понятие имидж остается одним из самых неопределенных. Имидж (от англ. image ['ɪmɪdʒ] — «образ», «изображение», «отражение») — искусственный образ, формируемый в общественном или индивидуальном сознании средствами массовой коммуникации и психологического воздействия [1]. Имидж — способ эмоционального воздействия на сознание, трактуется учеными как «образ», который объединяет совокупность материальных и психологических понятий. Напомним классическое определение (англ. image, лат. imago, imitari — «имитировать») — штучная имитация или подача внешней формы какого-либо объекта, особенно личности при участии имиджмейкера. В контексте данного исследования имидж тактируем как образное представление об объекте, которое формируется в массовом сознании под влиянием СМИ. Образ объекта имиджа предприятия, компании часто напрямую ассоциируется с его учредителем (лидером).

Как утверждает практикующий психолог Ильянова Амалия Олеговна, доктор философии в области психологии: «Имидж предприятий, прежде всего, выражается через привлекательность предприятия, которая зависит от содержания деятельности предприятий, от психологических характеристик управленческой деятельности руководителей предприятий, а также от организационно-профессиональных и социально-демографических характеристик предприятий. Имидж предприятий напрямую зависит от законодательной базы и налогового кодекса, а также от организационной культуры предприятия и психологических условий ее развития, под которой мы понимаем совокупность определенных и установленных в организации целей, ценностей, норм, правил поведения и санкций» [2]. Имидж предприятия формирует микроклимат в команде, слаженная работа коллектива фирмы - один из ключевых определяющих факторов успешности имиджа на информационном и экономическом рынках. Ученый-физиологист Ильянова акцентирует на том, что имидж предприятий, прежде всего, выражается через привлекательность деятельности, которая зависит от следующих факторов:

- 1) от содержания деятельности предприятий;

2) от психологических характеристик управленческой деятельности лидеров (идеологов, учредителей) и проч. руководителей предприятий;

3) от организационно-профессиональных и социально-демографических характеристик предприятий.

Репутация предприятий напрямую зависит от организационной культуры предприятия и психологических условий ее развития, под которой мы понимаем совокупность определенных и установленных в организации целей, ценностей, норм, правил поведения и санкций, которые существенно влияют на имидж предприятий. Хотелось бы сделать акцент и на роли руководителей предприятий, управленческая деятельность которых является одним из наиболее существенных факторов, влияющих на имидж предприятий. Поскольку именно руководитель выступает главным действующим лицом организации и его нравственные качества, нормы и ценности напрямую транслируются подчиненным.

«Ваше благополучие зависит от ваших собственных решений», — резюмировал Джон Рокфеллер, став первым в истории миллиардером [3]. Предлагаю рассмотреть личность легендарного предпринимателя, с именем которого связана целая эпоха. «Поставив цель завоевать мир, идеальная бизнес-машина в лице Рокфеллера действовала без страха и упрека. В бизнесе он был настолько же безжалостен, насколько и революционен. Когда нефтью стали торговать все кому не лень и началась настоящая нефтяная лихорадка, вечно бдительный Рокфеллер разработал стратегический план по консолидации индустрии и созданию того, что сегодня называют монополией... Он не боялся публичности. Одним из первых в большом бизнесе он ввел кредиты и брал в долг такие суммы, что его партнеры не спали по ночам от страха. Но эта стратегия позволяла Рокфеллеру постоянно вводить инновации, совершенствовать бизнес, что приносило прибыль. Монополию Рокфеллера называли «величайшей, мудрейшей и самой нечестной из всех когда-либо существовавших». Судебные обвинения в монополизме и нечестной игре слышались все чаще. Но Рокфеллер был убежден, что создание стабильности в индустрии, где царит не приносящий прибыли беспорядок, является более важным, чем тот воображаемый ущерб, который может нанести новый монолит» [4]. Современные лидеры в создании личного имиджа и своей компании привлекают имиджмейкеров-профессионалов. Каким должен быть имидж имиджмейкера?

Имидж имиджмейкера - «Формула Чекалюк»:

Для каждого имиджмейкера в профессиональной жизни важно найти свой объект имиджа. Как найти своего человека, пробудить в нем лидера и создать публичный имидж - стабильный и положительный? Как привлечь удачу? О чем говорить с прессой? Как привлечь бесконечные финансовые возможности и приумножить их? Как развивать партнерские отношения среди партнеров и оппонентов? Как привлекать инвестиции в развитие имиджа и заинтересовать инвестора? Как влиять на общество, убеждать и вести за собой? Как воспитывать детей, чтобы они выросли счастливыми взрослыми? Эти и многие подобные вопросы гложат душу не одному политику, лидеру и имиджмейкеру. У меня, как специалиста, болит сердце за страну. Именно страну нужно развивать, а страна без лидера – невозможна. Самое ценное в любой стране – это люди.

В основу исследования положено опыт создания имиджа в странах Европы, США, и постсоветского пространства, труды ученых-практиков и личный опыт создания имиджа автора статьи (апробированные исследования на должности советника Губернатора, и помощника-имиджмейкера советника Президента Украины). Общение с инвесторами и коллегами, ни с чем не сравнимый мистический опыт как использовать бессознательное в качестве ресурса и проектировать с его помощью события в продвижении страны и жизни ее лидеров и народа в целом. Опыт создания имиджа соискателя нашел применение в дальнейшем научном исследовании, в частности, докторской диссертации А.О. Ильяновой на тему «Особенности формирования имиджа лидера государственных предприятий», где целый раздел А. Ильянова посвящает анализу опыта коллеги, так называемой «Формулы Чекалюк», акцентирует на том, что в работе имиджмейкера важно простым доступным целевой аудитории языком сформулировать свои мысли, отправить действенный меседж в массы - объяснить, как его действие, создание имиджа страны, товара или услуги улучшает жизнь людей в целом. Истинные по призванию имиджмейкеры озабочены результатом, искренне пекутся об интересах других людей. Амалия Ильянова предостерегает от визионерства некоторых специалистов в начале работы по созданию имиджа, и как следствие возникновения хронической дистимии в случае неудач; акцентирует на

психологических составляющих лидера, на его готовности и желании меняться по предложенному плану имиджмейкера.

Смысл «формулы», где имиджмейкер-ментор, овладев искусством убеждать окружающих в том, во что веришь сам, – достигает вершины профессионализма, что максимально высокоэффективно в работе как для страны, компании, так и для собственной карьеры имиджмейкера. В портфолио мастера должны быть максимально эффективные долгоиграющие имиджевые проекты, после которых остается не только опыт и гонорар, но и новые полезные связи. Для имиджмейкера важно максимально расширять круг знакомств, выстраивать паритетные отношения с клиентом (объектом имиджа) и аудиторией. Даже после окончания контракта поддерживайте отношения с людьми. Не бойтесь сделать первый шаг, не бойтесь быть аудитором, журить по поводу промахов и давать профессиональные рекомендации. После того, как вы познакомились с человеком, напишите ему письмо или позвоните в течение трех суток. А также, для обратной связи, позаботьтесь о том, чтобы с вами легко было связаться. Многие люди, мечтающие расширить сеть своих связей, ничего не добиваются, потому что не указывают на визитках номер мобильного телефона и не оставляют контактную информацию в электронных письмах. Будьте открытыми, не создавайте помех в общении. Будьте легки и неназойливы. Когда людям весело, им можно подсунуть любую информацию, и они её воспримут и запомнят. Если Ваша речь скучна, никакая информация её не улучшит. Будьте эмоциональны, будьте красноречивы всегда, пусть красивая речь не оставляет Вас 24 часа в сутки, хорошие ораторы — это хорошие рассказчики; они рассказывают истории, которые поддерживают сообщаемую ими информацию и таким образом формируют необходимый имидж. Постоянно практикуйтесь. Будьте интересным человеком. В коммуникации важно соблюдать некую дистанцию, знать меру. Ведите себя благородно. Позитивные и интеллигентные комментарии, Ваши идеи, ресурсы и пути решения вопроса, проблемы - только усилят ваш имидж. Не теряйте активности и улыбайтесь. Не забывайте, что общение – это искусство и постоянно практикуйтесь.

Быть собой, а не играть чужую роль – это важно в работе имиджмейкера. Гармоничная уверенная личность вызывает доверие. Паника и неуверенность, юродство, стяжательство – отталкивают. Как избежать

(победить) неуверенность? Нерешительность оставляет знаки в мимике, выражении лица, в речи и текстах, портя имидж уравновешенного человека, который мы стараемся демонстрировать окружающим. Ничто так не выдает комплекс неуверенного человека, как излишняя самореклама. Профессионально неподготовленные люди склонны использовать слова, подчеркивающие их принадлежность к более престижному классу (университету, курсам, проекту). Ключевые фигуры, акулы-имиджмейкеры не стремятся демонстрировать свою причастность, они лидеры и это видно невооруженным взглядом. Имиджмейкеры «маленькие рыбки» гораздо чаще подчеркивают свой статус, чем те, кто действительно профессионал. Если ты закончил лучший университет страны, об этом не стоит кричать, а те, кто закончили сомнительный вуз, но побывали на экскурсии в топ-университете, непременно об этом скажут с ноткой гордости в голосе.

Когда у профессионала есть цель, он определил её и набросал план, где один из ключевых пунктов быть профессионалом самому, у нас развязаны руки. Анализируя исходные данные, мы можем наращивать возможности своими действиями. А уж что мы в итоге сделаем, зависит только от мастерства имиджмейкера. Это можно сравнить с работой повара. Если нужно испечь пирог, посмотрим, какие у нас есть продукты и будем исходить из них. Если повар-имиджмейкер хорош, не стоит переживать, что нет определенного ингредиента. Можно легко заменить один ингредиент другим, отойти от классического рецепта и сделать отличный пирог (проект) из того, что нашлось на кухне.

Материалы и методы. Изучая специфику организации взаимодействия лидера (бизнесмена, предпринимателя) и предприятий со СМИ, автор анализирует причины создания информационных поводов, выявляет психологические приемы воздействия на целевую аудиторию с использованием СМИ. С первых дней Независимости Украины в 1991 г. руководство компаний уделяло особое внимание работе со средствами массовой информации, каждая бизнес организация пыталась «завоевать место под солнцем», утвердиться в позиции лидера и удержаться в статусе сильного конкурентного предприятия. Одним из важных этапов адаптации к новым экономическим и политическим условиям было формирование пиар и пресс-служб, рекламно-

информационных подразделений и прочих специалистов, консультантов по формированию имиджа фирмы и ее лидера в СМИ.

Имидж - это наиболее сложный и многоликий аспект корпоративной идентификации. Имидж целенаправленно формируется за счет опосредованного воздействия через СМИ и различного рода специальных мероприятий [5]. Создание имиджа - медленный процесс, и изменения не будут эффективными до тех пор, пока сознание целевых аудиторий не воспримет содержание заявленного имиджа.

Управление репутацией состоит из конкретных шагов, а именно:

1) Актуальные, качественно подготовленные, разнообразные (на определенную целевую аудиторию) информационные материалы о лидере, бренде на популярных тематических ТОП ресурсах;

2) Контроль за информационными потоками (в том числе негативными комментариями пользователей, читателей), как следствие – оперативное замещение негативной информации контролируемыми сайтами, создание подконтрольных информационных ресурсов.

3) Конструирование и распространение идеального топ-пакета выдачи поисковиков по репутационным запросам (фамилия, имя лидера, название компании).

Современные СМИ часто игнорируют нравственность в публикуемых материалах. Смысл нравственности заключается в том, чтобы материалы журналистов были гуманными, справедливыми, честными. Нельзя в погоне за сенсацией пренебрегать милосердием, великодушием и терпимостью. С каждым годом СМИ теряют свой авторитет в глазах аудитории, пресса становится все более «желтой». СМИ могут существенно негативно повлиять на имидж компании. Поэтому важно отслеживать все упоминания в прессе и вовремя удалить информацию или вытеснить ее из поисковиков в интернет-сети. Важно «держать руку на пульсе репутации», создавать положительные информационные поводы и оперативно действовать для улучшения и управления имиджем фирмы и ее лидера.

В условиях возросшего доверия к интернет-пространству сайт, личная страничка руководителя в социальных сетях - это лицо предприятия, оно должно быть безупречным. Предлагаем привлекать опытных специалистов для работы с имиджем и репутацией компании. Объем работы специалистов

представляет из себя комплекс мер по выявлению основных факторов, влияющих на восприятия фирмы (лидера). Почему важно самостоятельно выходить на уровень открытости и публичность? Чтоб аудитория сама не надумала то, о чем вы молчите. Аудитория требует информации, среднестатистический человек имеет больше доверия к продукции, услугам или определенному лицу, если результаты поиска в интернете оказываются положительными и приемлемыми. Чтобы быть конкурентным, важно провести грамотную PR-кампанию, которая не только выведет лидера (форму) на первые места в поисковых системах, но и позволит создать положительное восприятие предприятия и бренда.

Результаты и их обсуждение. У имиджа есть одна коварная особенность, как раз и побуждающая не жалеть труда и денег на его создание [6]. Имидж только наполовину «принадлежит» форме (в виде фирменного стиля со своей атрибутикой - товарным знаком, цветовой гаммой, графикой, слоганом, гербом, и проч атрибутикой). Другая «половина» имиджа - это восприятие, что создается и живет в массовом сознании потребителя, аудитории СМИ. Имидж, отображенный в СМИ, – результат взаимодействия носителя имиджа (лидера, предприятия, страны) и информационной целевой аудитории. Современный мир коммуникаций становится более уязвимым и зависимым от множества качеств коммуникаторов, их связей и обстоятельств - возникающие изменения, постоянно меняющиеся формы управления диктуют и новые формы взаимодействия власти и общества, власти и средств массовой информации и, соответственно, новые коммуникационные технологии, новые приемы и методы образования специалистов по связям с общественностью. Следует вывод, что подобные межведомственные инструкции представляются нам наиболее мобильным способом формирования условий для оперативной и эффективной работы всех участников процесса: ЛИДЕР-КОЛЛЕКТИВ ФИРМЫ – СМИ - АУДИТОРИЯ (ПОТРЕБИТЕЛЬ).

Создание имиджа. Имидж помогает приблизить компанию к своим целевым аудиториям, сделать ее более открытой, узнаваемой, экономически стабильной и привлекательной для выхода на новые экономические рынки мира. Степень влияния СМИ на формирование имиджа – очевидна: правильный диалог с медиа - необходимость, что будет благоприятно способ-

ствовать усилению имиджа предприятий, его лидера на информационном рынке, что в дальнейшем принесет дивиденды в материальном эквиваленте.

В начале XXI века мы имеем ситуацию, когда возможностей для развития стало больше, традиционные СМИ и Интернет адаптировались к новой эре. Но для аудитории изобилие выбора становится затруднительным. Важны психологические составляющие предприятий. Одним из важнейших психологических составляющих является прежде всего социально-психологический климат, выраженный эмоциональной характеристикой организационной культуры, т.е. благоприятная, здоровая атмосфера предприятия, выступающий в качестве психологической среды на основе существующих верований, ценностей и идей, которые способствуют объединению людей. Имидж состоит из факторов, где предприятия выступают гарантами благосостояния своих работников. Формирование здорового психологического климата напрямую зависит от управленческой деятельности руководителей предприятий, от стиля управления и личностных характеристик руководителя. Важной характеристикой организационной культуры предприятия является ее привлекательность для персонала и руководителей, которая выражается, прежде всего, мерой соответствия организационной культуры потребностям и интересам работников. Нельзя забывать, что организационная культура – это важная составляющая структуры организации, предприятия.

В процессе апробаций тематики создания имиджа, как имиджмейкер-практик, автор данной статьи предлагает план действий из семи компонентов с целью создания имиджа для каждого, кто претендует на то, чтобы стать личностью:

1. Определение сути деятельности.
2. Цель и задача.
3. Миссия, ресурсы.
4. Врожденные и приобретенные навыки и привычки.
5. Авторитеты для подражания (исторические личности и современники).
6. Картина Вашего мира и его коррекция.
7. Жизненная стратегия и формирование конкретных действий.

«Короля играет свита, позаботьтесь о том, чтобы те, кто рядом, уважали Вас. Балуйте свою команду. Истинный лидер - человек, приводящий к успеху свою команду, семью, страну. Лидер – самодостаточный и успешный человек,

он никогда не паразитирует за счет слабых, он пунктуален, справедлив и щедр. Истинный секрет человека, претендующего на статус абсолютного лидера, – в идеологии, восприятии мира, его системе взглядов и убеждений, которые определяют его решения и поступки, и, в свою очередь, определяют его достижения, размах деятельности и «размер кошелька». Имиджмейкер не в силах изменить наследственность. Но может сформировать убеждения, планы, методы и приемы, приводящие к успеху» [7, с. 10-18].

В данной статье лишь малая доля того, что хотелось донести аудитории. Исследование продолжается: тщательно отслеживаем тенденции развития всех аспектов восприятия информации, методов воздействия на аудиторию, что влияет на создание репутации, формирование восприятия объекта имиджа (лидера, предприятия). Аналогичная информация для идентичной аудитории имеет место и на самом высоком уровне, который обозначается как стратегический нарратив; глубинный нарратив, на базе которого порождаются остальные последующие действия, формулы достижения цели, новые методы по формированию и поддержания положительного имиджа. Определенный имидж и аргументы поддержания можно сравнить с алфавитом (своеобразная база, из которой мы составляем определённые лингвистические конструкции), где основополагающая идеологическая матрица, позволяющая отделять один поток текстов от другого, «необходимое» видение мира от «хаотичного».

Вывод. СМИ являются инструментом формирования положительного имиджа предприятий, в том числе и лидера. Позиционирование предприятий в СМИ во многом зависит от подачи материала пресс-службами, от мастерства коммуникаций с общественностью, харизмы лидера. Имидж, отображенный в СМИ, – результат взаимодействия носителя имиджа и информационной аудитории. Важно, чтоб информация была максимально правдивой. XXI веке с эволюцией электронных ресурсов и появлением новых медиа, аудитория воздействия постоянно расширяется. Социальные сети выполняют функцию информаторов и влияют на восприятие лидера (предприятия) массами, «неформальные новости»: форумы, обсуждения, - привлекают все большее внимание и формируют общественное мнение. Производители и распространители новостей, так называемые конструкторы внимания, пытаются охватывать все большие аудитории. Сегодня информации стало слишком много, критическим фактором стало внимание, точнее, его отсутствие. В исследовании

показана лишь часть проблемы, в дальнейшем ведутся научно-практические исследования, контент анализ [8] для того, чтобы запустить механизм формирования имиджа предприятий (лидеров), повышение ответственности имиджмейкеров и СМИ за свои действия, ценностей и развития личности с использованием средств обучения и воспитания здорового общества, конкурентного бизнеса, честной игры и экономического развития [9]. В процессе научного поиска было проведено достаточно экспериментов, практических заданий и их решений, автор благодарна за партнерство ученой-психологу, высококлассному специалисту по физиогномии Амалии Олеговне Ильяновой, благодаря знаниям и тестам которой, было отсеяно «непригодных» и потребовалось меньше сил и концентрации, чтобы найти истину. Важную роль в современном информационном пространстве играют конструкторы внимания, от работы которых полностью зависит сфера формирования имиджа лидера (предприятия, страны). Имиджмейкер - создатель завтрашнего дня, его работу можно охарактеризовать словами Кеннета Боулдинга: «Сколько бы вы ни изучали будущее, оно все равно преподносит сюрпризы: главное – не дать ему застать вас врасплох».

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Linguistic and cognitive approach to the study of war media discourse

Abstract: The article deals with linguistic and cognitive aspects of war media discourse studying. Some meta-communication factors which influence both sending and receiving the message are analyzed. The author states that the elaboration of communication mechanisms aimed at maximal convergence of the addresser's and addressee's context will lead to better understanding of war media discourse construction and perception.

Keywords: war media discourse, linguistic and cognitive approach, context, background knowledge, concept.

The attempts to research the phenomenon of cognition have been known since the ancient times. Nowadays, after over fifty years since so called "cognitive revolution", the studies of cognitive processes are closely connected with such scholars, as: G. Miller, J. Bruner, U. Neisser, A. Newwell, K. Pribram, B. Velichkovsky, etc. (cognitive psychology); Ch. Fillmore, G. Lakoff, R. Langacker, L. Talmy, Ye. Kibrik, Z. Popova, I. Sternin, V. Manakin, etc. (cognitive linguistics); I. Merkulov, V. Lektorsky, etc. (epistemology, philosophy of science).

In mass communication, the cognitive problematics has been touched upon in the works of U. Eco, T. Van Dijk, R. Harris, W. Lippmann, G. Melnik, Ye. Tarasevich, V. Ivanov, M. Butyrina, etc. The scientists focused on the cognitive theory and its approaches in the realm of mass communication, the nature of stereotypes as cognitive phenomena and their functioning in mass media, the mechanisms of media texts reflexive processing. However, despite well-grounded studies of certain issues of cognitive science, war media discourse as a complex phenomenon was beyond scientists' interest. Thus, the idea to apply linguistic and cognitive approach to the study of war media discourse seems quite urgent. It will help, in particular, to analyze meta-communication factors which influence the comprehension of media message,

as well as to find out the mechanisms with the help of which war media discourse forms a certain phenomenon.

The research of mass communication in cognitive aspect gained popularity in the second half of the XX-th century. M. Butyrina states that cognitive trend "concentrates the researchers' attention on the way a recipient cognizes the world in the process of communication" [4, 47]. I assume that for a thorough research of war media discourse it is important not only to analyze the process of cognition of the world (media events) but also to study the process of decoding and interpretation of these events and reproduction of the reality on the basis of this interpretation.

Within linguistic and cognitive approach to war media discourse, I suggest considering the following aspects: the context of the addresser and addressee, background knowledge of the participants of the communication act, cognitive nature of stereotypes formed by war media discourse, cognitive metaphors of war media discourse, frames, concept as an instrument of link formation between realities and their media representations.

Sometimes the key notions of cognitive science – cognition and knowledge perception – are considered synonymic. However, some researchers point out the difference. For example, V. Demyankov states that "cognition...refers to the procedures of getting and applying "pre-knowledge" – the types of mental operations which maintain and accompany the perception and production of both this knowledge and language expression for this knowledge" [7, 5]. As for knowledge perception, I. Smirnov and V. Titov assert that it is "the process of getting new knowledge, the discovery of something not known before" [11].

The processes of knowledge perception and cognitive processing of the information given in war media discourse, to my mind, are complicated by the fact that as a rule this information is presented indirectly, through the actualization of meta-communication factors (context, background knowledge, cognitive expectations, etc.).

In his work R. Harris states that "a person does not code and then reproduces the information, he adopts it according to his own knowledge and ideas as well as the context in which this message was received" [14, 54]. Here, the context takes on special significance. I believe that in mass communication it would be proper to use the following definition of context: "conditions, frame or process in which the events happen and the meaning for the content is provided" [3]. Obviously, such definition

seems more suitable while investigating war media discourse than that used in philology and linguistics.

A famous scientist T. van Dijk, researching context models and their roles in discourse processing, emphasizes that "contexts do not directly influence discourse or language use at all. Rather, it is the subjective interpretation of the context by discourse participants that constrains discourse production, structuration, and understanding" [18, 124]. According to Van Dijk, a certain communicative event is represented in any social situation and its participants actively and continuously construct the mental representation only of those peculiarities of this situation which appear relevant for them at this particular moment [18, 124].

Such understanding of context amends understanding of traditional model of communication by R. Jakobson. Although the scholar considered context to be very important, he did not take into account background addressee's knowledge and the context in which the addressee gets certain information. Thus, addresser's and addressee's contexts may differ. Communicative mechanisms of their maximal convergence need to be studied.

Referring to the works of T. van Dijk, Russian scholar D. Shapochkin points out that the participants of a communicative act can accept different roles, and these roles can influence the discourse creation as well as its understanding [15, 105]. Hence, an important category of context includes social relations between the participants of communication [15, 106]. At the same time, D. Shapochkin adds the following participants' characteristics to the context: their aim, beliefs, thoughts [15, 106].

In my opinion, exactly these characteristics gain great importance not only while constructing but also while interpreting war media discourse. The differences in addresser's and addressee's beliefs and thoughts lead to wrong decoding of media sense.

Background knowledge is a significant aspect for proper interpretation of media product. There are some definitions of background knowledge which may be appropriate for the sphere of mass communications: 1) "communicative act participants' mutual knowledge of the realities of material life, situational and connotative realities which are hidden by language signs denoting them, necessary for the adequate and full interpretation of produced expressions" [10]; 2) "non-verbal

context or projection of the verbal context perceived before on the present even" [13]. In war media discourse the second meaning is actualized.

Background knowledge as a basis for linguistic and cultural researches was first studied in the works of Ye. Verestchagin and V. Kostomarov. Analyzing background knowledge due to the level of its prevalence, they classified background knowledge as follows: 1) universal background knowledge; 2) regional and 3) country-specific [6]. However, a statement that for mass communication country-specific background knowledge is of primary importance seems rather disputable. In media practice in general and in war media discourse specifically, for proper processing of certain knowledge and interpreting it by mass audience, it is necessary to take into account all background knowledge.

The research of war media discourse turns out to be impossible without the research instrument which helps retrace the link between the realities and their informative representations. I think it would be quite right to address the instruments of cognitive linguistics, in particular – concept, as basically, it contains the potential of modelling.

The definitions of "concept" vary depending on the field of study (linguistic, philosophy, philology, cognitive science, etc.). Analyzing war media discourse, it seems quite reasonable to appeal to cognitive science and its interpretation of "concept". Ye. Kubryakova states that "concept" is a unit of cognitive activity which is in constant motion [8]. Examining the field structure of "concept", Z. Popova and I. Sternin assert that "concept" is a combination of cognitive signs and cognitive classifiers, and is the unity of image, information contents and interpretative field [9]. Differentiating the terms "notion" (*conceptus*) and "concept" (*conceptum*), N. Alefirenko defines "concept" as a cognitive image which possesses a rather wide structural range: "from general visual images to logical notions; from superficial to deep layers of sense coding (with various degree of its explication)" [2, 60]. Thus, as a unit of cognitive scope, "concept" represents the result of person's cognitive activity and defines the attitude of the person's consciousness to the particular object, phenomenon or event.

In the sphere of mass communication, concept was somehow in focus in the works of M. Yatsymirska, O. Yasinovska, Ya. Prykhoda, L. Vasylyk and others. L. Vasylyk stresses that for the research of publicist texts, most important is understanding the concept as a semiotic unit. And for journalism, she suggests understanding the

concept as "world-view category" with the help of which a journalist "expresses a certain thought, emphasizes it through general cultural code and thus, forms social consciousness" [5, 30].

While researching discourse not text, I would say that the bounds of understanding a concept, its structure and functioning are a bit expanded. For the research of war media discourse, the following key characteristics of concept gain primary importance: its mental nature and communicative character.

Concept "war" is basic for war media discourse. The following are the definitions of the word "war" represented in dictionaries: 1). "Organized armed fighting between countries, social classes, etc.; the state of hostility; quarrel" [1]. 2). "A conflict carried on by force of arms, as between nations or between parties within a nation; warfare, as by land, sea, or air; a state or period of armed hostility or active military operations; active hostility or contention; conflict; contest; aggressive business conflict, as through severe price cutting in the same industry or any other means of undermining competitors; a struggle to achieve a goal" [17]. 3). "Fighting, using soldiers and weapons, between two or more countries, or two or more groups inside a country; competing – when two or more groups are trying to be more successful than each other; an attempt to stop something bad or illegal" [16]. 4). "Armed fighting between countries, peoples, etc. or social groups inside the country; fighting for one's aim by means of economic, political, etc. influence on somebody or something; unfriendly or hostile attitude to something; actions aimed at annihilation of something" [12].

Therefore, semantic meaning of "war" is much wider than just warfare involving soldiers and weapons. Analyzing the concept "war", one has to take into account different methods of psychological and informational wars which are widely spread, especially in media discourse.

Such variety of semantic meanings makes it possible to pick out lexical-semantic constituents of the concept "war". In war media discourse the semantic of the concept "war" includes the constituents which define different level of problem's tragic nature and gravity. The most representative concepts are as follows: protest, crisis, threat, and conflict.

Thus, for a detailed research of war media discourse through linguistic and cognitive approach, it is necessary to find out and analyze meta-communication factors which accompany the representation of certain information. The main part is

assigned to the context and background knowledge. Despite the fact that addresser's context has already been the subject of scientific interest in a lot of works, addressee's context and its comparison with that of the addresser's has hardly ever been studied in cognitive aspect. Working out the mechanisms of their maximal convergence will lead to better understanding of cognitive aspects of war media discourse construction and functioning. In its turn, the concept analysis of war media discourse will find out the ways of verbalization of certain concept spheres of human's mental space.

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Territorial organization of vegetable-growing by altitude belts in Guba-Khachmaz economic-geographic region

Abstract: The goal and objectives are successfully reached in the article. In the work, the territorial organization of vegetable-growing is studied for the first time by altitude belts in the territory of Guba-Khachmaz economic-geographic region. The study was carried out by each administrative regions. Recommendations on relevant perspective development are given.

Keywords: vegetable, tomato, cucumber, cabbage, onion, garlic, altitude belts.

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Территориальная организация овощеводства в Губа-Хачмазском экономико-географическом районе по высотным поясам

Аннотация: Овощеводство является традиционно выращиваемой исторической отраслью в Республике. Данная отрасль имеет огромное значение в оправдании нужд населения в овощных культурах. Трудно представить стол азербайджанского народа без овощей. Научно и практикой доказано, что дневной рацион питания человека на $\frac{1}{4}$ должен состоять из различных овощных продуктов [4].

Ключевые слова: овощеводство, помидор, огурец, капуста, лук, чеснок, высотные пояса.

Основным показателем развития овощеводства в регионе является также специализация региона по поздне зрелым овощам в экономико-географическом Губа-Хачмазском районе. В 2013 году в Республике было посажено 78329 га овощей, из которых 7706 га (9,8%) приходится на долю Губа-Хачмазского экономико-географического района. В тот же год в республике было собрано 1216240 т овощей, из которых 155358 т (12,8%) было собрано в пределах данного экономико-географического района. Основную часть района составляют отдельные посевные площади таких овощных культур как помидоры (3724 га), огурцы (840 га), капуста (680 га), репчатый лук (591 га), чеснок (211 га), и др. Таким образом хочу также отметить, что на долю данного экономико-географического района приходится 14,3% помидоров, 5,9% огурцов, 10,7% капусты, 5,3% репчатого лука и 8,5% чеснока. В 2013 году среди выращенных в республике овощных культур 5,3% и 9,7% урожая было сосредоточено в Хачмазе [2,3].

Хачмазский район в основном расположен на абсолютной высоте до 200 м над уровнем моря, соответственно с этим связано сосредоточенность населения к данной территории. 38,7% населения проживает в городских, а 61,3% в сельских населенных пунктах.

Это в основном связано с занятостью населения сельским хозяйством, выращиванием урожая и их производством. На территории Хачмазского района было посажено 4027 га овощей, из них 3731 га (92,7%) было посажено на высоте 200 м, из которых было получено 101314 т урожая. Основные посевные площади овощей приходятся на долю Гарачи (401 га), Нараджан (364 га), Мюшкюр (280 га), Галаган (270 га), Дядяли (245 га), Ашагы Зейид (225 га), Ниязоба (196 га) и др. участков территориально-административных единиц (АТЕ). Доля посевных площадей помидоров Хачмазского района составляет 61,8% от площадей экономического района, и 8,9% от всей республики. 56,6% посевов помидоров всего экономического района и 91,5% Хачмазского района выращиваются на высоте до 200 м. В Хачмазском районе на высоте до 200 м было посажено 90% огурцов, 96,6% капусты, 93,3% репчатого лука, 92,6% чеснока. 7,3% овощных посевных площадей Хачмазского района расположены на высоте 201-500 м, к которым относятся всего 2 административно-территориальные единицы Йени Хяят (268 га) и Гаджиалибей (42 га). На этой высоте в административно-территориальных единицах Йени Хяят выращи-

вают 150 га помидоров, 40 га репчатого лука, 20 га огурцов, 15 га капусты, 3 га чеснока и 36 га других овощных культур, и Гаджиалибей 10 га помидоров, 6 га репчатого лука, 5 га огурцов, 3 га капусты, 3 га чеснока и 9 га других овощных культур. В общем по административному району на высоте от 201-500 м было выращено 8,5% помидоров, 10% огурцов, 3,4% капусты, 6,7% репчатого лука и 7,4% чеснока.

В Сиязанском районе было зарегистрировано 39,9 тыс. чел 64,4% из которых проживают в городских, 35,6% в сельских населенных пунктах. Основная занятость населения территории связана с нефте-газовой промышленностью, выращиванием сельскохозяйственных культур и их производством. В Губа-Хачмазском экономико-географическом районе посевные площади овощеводства являющейся одной из ведущих отраслей сельского хозяйства составляют 115 га, из которых на долю помидоров приходится 53 га, огурцов 20 га, репчатого лука 6 га, капусты 1 га, других овощей 33 га. Отмечу, что доля посевных площадей Сиязанского района составляет 1,7% от всех площадей экономического района, и 0,2% от всей республики. 89,6% из них выращивают на высоте до 200 м. Площадь посевных площадей Сиязанского района до высоты 200 м составляет 103 га, из которых большую часть составляют помидоры 46,5 га, огурцы 17 га, репчатый лук 5,5 га и др. В общем по административным районам 87,7% посева помидоров, 85% огурцов и 91,7% репчатого лука посажено на этой же высоте. Основная часть овощных культур выращиваются в Гямийя 60 га, Йени Кянд 33 га, Машриф 9 га, Сиязань 4 га, Зарат 3 га, а также в других административных районах.

На овощных посевных площадях Сиязани высотой от 201-500 м было выращено около 0,9% овощей. Если говорить об овощных посевных площадях расположенных на высоте интервалом от 501-1000 м, то заметим, что площадь посевных площадей в районе составляет 11 га (9,6%). В районе этого высотного пояса было посажено помидоров 6 га (11,3%), огурцов 2,5 га (12,5%), репчатого лука 0,5 га (8,3%). В данный высотный пояс входят 3 АТЕ Машриф (9 га), Дагушчуда (1 га), Арзикуш (1 га), на которых были посажены овощные культуры.

Территория посевных площадей Шабранского района расположенная до высоты 200 м. Занимают посевные площади одной из самых ведущих отраслей сельского хозяйства республики – овощеводства, на долю которой приходится

786,1 га. Из них основную часть занимают посевы помидоров 582 га и огурцы 55 га. В высотном поясе Шабранского района до 200 м, было выращено 745,8 га овощных культур, из которых было получено 5 933 т урожая, продуктивность которого в среднем составила 79,6 центнеров. Доля посевных площадей Шабранского района составляет 15,4% от всех площадей экономического района, и 2,2% от всей республики. 94,8 из них выращиваются на высоте до 200 м. Основные овощные посевные площади были посажены на территории таких участков (АТЕ), как Агалыч (344, 6 га), Ряхимли (123 га), Узунбояд (72,8 га), Гандов (69,8 га) и др.

Среди овощных культур 15,4% всех посевных площадей помидоров всего экономического района и 2,2% всей республики, приходится на долю Шабранского района. 77,6% из них выращиваются на высоте до 200 м. В этом высотном поясе посевные площади помидоров были сосредоточены на таких участках административных единиц как Гандов, Агалыч, Девичи, Ряхимли, Узунбояд и др.

Территория посевных площадей Шабранского района расположенная на высоте от 201-500 м. 4,1% овощных плантаций выращиваются на высоте от 201-500 м. В районе этого пояса овощные плантации выращиваются в таких административных территориальных единицах как Амирханлы (12 га) и Тахталар (20,3 га).

На высоте от 501-1000 м Шабранского района общая площадь овощных посевных площадей составляет 8 га, то есть 1% таких площадей приходится на долю данного высотного пояса.

К высотному поясу от 501-1500 м Шабранского района относится лишь одна АТЕ Чухуразями на которой овощные культуры не выращиваются.

На территории Губинского района было сосредоточено 1564 га посевных площадей, с которых было собрано 14865 т овощных культур. В пределах Губинского района средний урожай собранный с каждого гектара посевных площадей составил 95 ц. В распределение посевных площадей по высотным поясам, максимальные посевные площади 642 га сосредоточены на высоте от 501-1000 м, и соответственно чему здесь было собрано наибольшее количество овощных культур, составляющие 6717 т. Максимальное количество урожая составило 104,6 ц, что приходится на территорию расположенную в пределах высотного пояса от 501-1000 м. Доля посевных площадей

Сиязанского района составляет 21,6% от всех площадей экономического района и 1,5% от всей республики. На высоте до 200 м Губинского района расположена лишь одна административно-территориальная единица Вялвяля (127 га). В общем все посевные овощные площади сосредоточены именно на этой высоте, что составляет 8,5%, и здесь же было собрано 1265 т урожая. Урожай этого пояса составлял 95 ц, что в среднем является высоким показателем для района.

На высоте от 201-500 м овощные посевные площади занимают 404 га, что составляет 27,1% всех овощных культур. Основные посевные овощные площади данного высотного пояса приходятся на долю таких административно-территориальных участков как Зярдаби (119 га), Гаджигусейнли (99 га), Владиморовка (68 га) и др.

Высотный пояс расположенный на высоте от 501-1000 м характеризуется широким распространением овощных посевных площадей. Таким образом 43,1% посевных площадей, что составляет 642 га от 1490 га приходятся на долю этого высотного пояса. Данный высотный пояс характеризуется максимальным сбором урожая, количество которого составляет 104,6 ц. На данном высотном овощные культуры были выращены в пределах таких административно-территориальных единиц как Рустов (88 га), II Ньюяди (81 га), Худжбала (75 га), Чичи (69 га), Амсар (68 га), I Ньюяди (62 га) и др.

На высоте от 1001-1500 м овощные посевные площади составляют 18,5%. Кроме административно-территориальной единицы Ерфи, на которой нет овощных плантаций, овощные культуры были выращены в Халтан (84 га), Ашагы Алтудж (78 га), Гюлязи (44 га), Испик (43 га), Гонагкенд (20 га) и Сусай (6 га).

На высоте 1501 м расположено всего 4 административно-территориальные единицы, и лишь на долю 2-х приходится 116 га посевных площадей. В пределах данного пояса посевные площади распространены в таких АТЕ как Будуг (112 га) и Алик (4 га). Это составляет 7,8% всех посевных площадей.

Площадь посевных площадей в пределах Гусарского района составила 1074 га, с которых было собрано 16886 т урожая. В пределах Гусарского района средний урожай собранный с каждого гектара посевных площадей составил 154,8 ц. В распределение посевных площадей по высотным поясам, максимальные посевные площади 474 га сосредоточены на высоте от 501-1000 м,

и соответственно чему здесь было собрано наибольшее количество овощных культур, составляющие 7388 т. Наибольшее количество урожая 164,8 ц сосредоточено на высоте от 201-500 м.

На высоте до 200 м расположены 2 административно-территориальные единицы, посевные площади которых составляют 6,4%. Овощные культуры выращены в таких АТЕ как Ширвановка (45 га) и Гилагоба (24 га). Посевные площади данного пояса составляют 69 га, с которых было собрано 1116 т урожая, 160 ц приходится на долю Ширвановки и 165 ц на долю Гилагоба.

На высоте от 201-500 м Гусарского района сосредоточено 31,4% сбора урожая, из которого 32,9% приходится на долю данного пояса. На этой высоте расположено 6 АТЕ, на землях которых выращиваются овощные культуры. К ним относятся: Гухуроба (150 га), Кузунгышлаг (80 га), Имамгулукянд (50 га), Юхары Зейхун (30 га), Гяляджуг (15 га), Самур (12 га). В пределах данного пояса было собрано 5554 т урожая, что составило 164,8 ц, что является причиной наибольшей урожайности в данном поясе. Как и в Губинском районе наиболее всего посевных площадей расположено в пределах высотного пояса от 501-1000 м. Таким образом площадь посевных площадей составляет 474 га (44,1%) от 1074 га общих посевных площадей. На данном высотном поясе овощные культуры были выращены в пределах таких административно-территориальных единиц как Балагусар (73 га), Хазра (56 га), Ясаб (53 га), Муджуг (48 га), Хил (34 га), Пирал (30 га), Гядзейхур (30 га). Общая урожайность земель данного пояса составляет 155,9 ц.

На высоте 1001-1500 м Гусарского района площадь посевных земель составляет 171 га (15,9%). В пределах данного пояса было собрано 2575 т урожая. На данном высотном овощные культуры были выращены в пределах таких административно-территориальных единиц как Дюз Тахир (76 га), Зиндан Муруг (50 га), Урва (25 га), Аниг (20 га). Среди этих АТЕ наиболее крупными по сбору урожая являются Аниг (160 ц), Зиндан Муруг (155 ц), Дюз Тахир (150 ц) и Урва (136 ц).

На высоте 1501 и выше было посажено 2,2% всех овощных культур. Здесь расположена такая АТЕ как Судур, в пределах которой было посажено 23 га овощных культур. Таким образом урожайность данного пояса составила 110 ц.

На карте составленной для Губа-Хачмазского экономико-географического района показано, что наибольшие посевные площади овощных культур и сбор

урожаю сосредоточены для высотного пояса в пределах (-27) – 200 м. В связи с природными условиями на высоте 1501 и выше посевные площади занимают небольшие территории, с чем связан и минимальный сбор урожая.

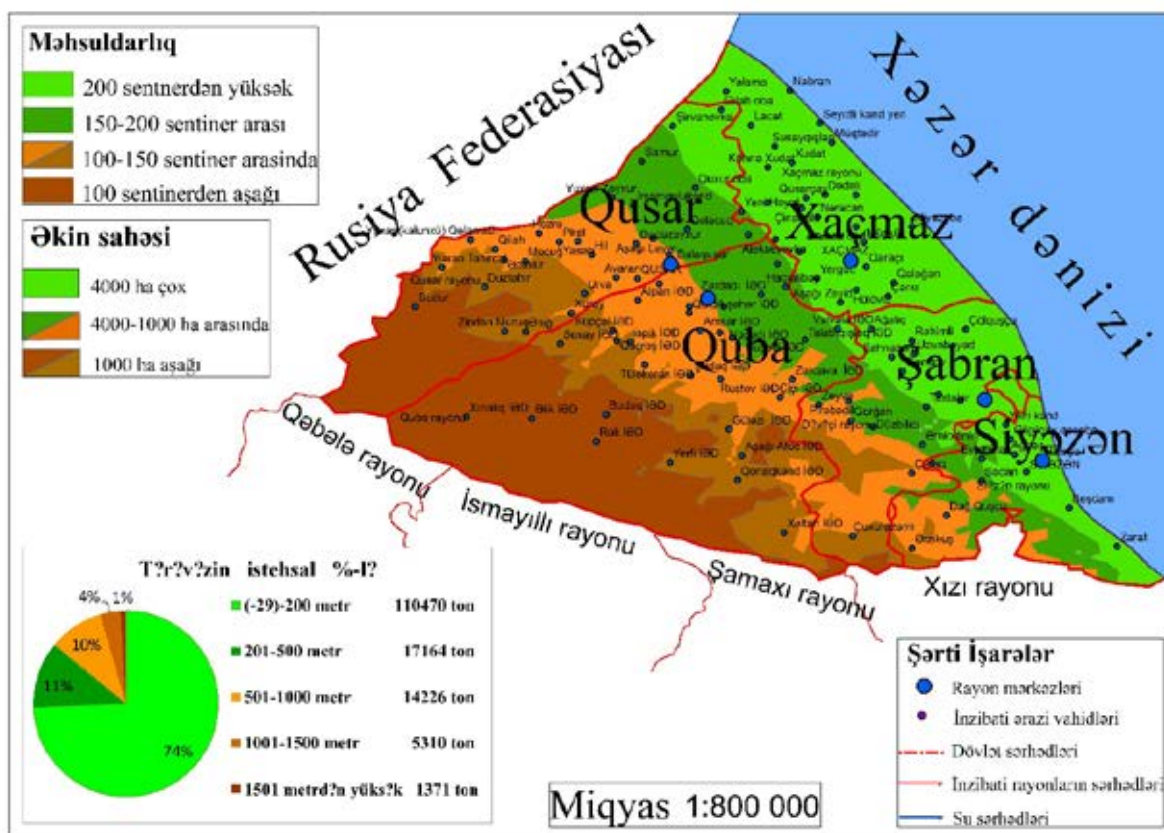


Рис. 1. Территориальная организация овощеводства Губа-Хачмазского района по высотным поясам

Развитие овощеводства Губа-Хачмазского района по высотным поясам

Высоты	Посевные площади, га	Сбор урожая, тонна
-27-200 м	4762	110470
201-500 м	1084	17164
501-1000 м	1135	14226
1001-1500 м	446	5310
выше 1501 м	139	1371

Данные Министерства Сельского Хозяйства 2013 г.

В таблице показано, что в 2013 году в Губа-Хачмазском районе в общем было посажено 7566 га овощных культур, 62,9% из которых сосредоточено в пределах -27-200 м. На долю этого пояса приходится 74,4% всех посевных площадей региона. Несмотря на то, что в регионе распространяется второй пояс, в пределах которого выращиваются овощные культуры, максимальное их количество приходится на долю высотного пояса от 201-500 м. В пределах высотного пояса 1501 м распространено меньше всего посевных площадей. Здесь было выращено всего 139 га овощных культур, а урожай составил 1371 т. Этот высотный пояс составляет 1,9% всех посевных земель и 0,9% всего урожая.

Для рационального использования в регионе овощеводства и ее территориальной организации необходимо учитывать нижеперечисленные пункты:

- увеличивать количество выращиваемых овощных культур и собирать урожай 2 раза в год;
- выращивать овощные культуры высшего сорта в местных условиях и постепенно расширять их площади;
- оправдывать потребность населения в местной продукции и использовать урожай интенсивными методами;
- поддержка государства в выдачи субсидий в целях развития овощеводства;
- обеспечение обязательной страховкой фермеров и лиц, занятых овощеводством.

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„The vote buying“ and the refugee problem within the context of the national security of Bulgaria

Abstract: This article discusses the problems of „the electoral vote buying“ and the problem with the refugees in Bulgaria, and their effect on the national security of the state. Some of the significant effects of these negative phenomena („vote buying“) on the future of the state are also outlined.

Keywords: „vote buying“, refugees, migrants, national security.

The process of the democratic changes in Bulgaria over the last twenty-five years, have undoubtedly brought a number of positive changes in the overall political life. Along with that, however, ugly phenomena such as political corruption, „vote buying“, controlled vote, etc, came into existence. Their dimensions acquire serious scale with negative nuance, especially considering the growing number of refugees coming to the country.

Within this context, **the term „vote buying“ can be defined as unregulated (direct and indirect) „sale-purchase“ of electoral votes, and such corrupt exchange, in which through paying cash (or material equivalent, or through controlled vote), the aim is to secure the votes of the people for a specific party, organization, movement, leader or person.**

Depending on this, we can differentiate different **types of „vote buying“**, which can be generally defined as in-kind, indirect, monetary and controlled vote, as well as its **latest forms** used in the election campaigns at the early elections in 2013 and 2014.

The **in-kind „vote buying“** usually includes „purchase of vote“ through provision of different goods, food, home appliances, and what-not other material “measures” of the vote. The latest fashion in the „vote buying“, however, is the in-kind purchase and sale of votes, in which the ringleaders of parties and coalitions visit the

local grocery shops and pay off the credits of the people, with one condition – the debtors, must vote for the specific party, organization or coalition.

The **second type of „vote buying“**, or the **so-called „indirect buying“**, includes all forms of flirting with the electorate, in which the parties „buy“ different necessities for the people, under the form of different social benefits (services, electricity, firewood, trips, etc) in exchange of voting for specific political subject.

As far as the **monetary type of „vote buying“** is concerned, things seem simple and clear: through their networks, the parties and the business illegally give away money, allocated in advance, to the people (especially minorities) against their vote in favor of one party or candidate, or another. This, however, is only seemingly, because in practice there is a whole pre-election marketing mechanism, using the „multilevel marketing“ system, according to which the distributors of votes receive double remuneration – once for their personal vote, and second for each individual, which they have solicited to vote for the same candidate. Recently, especially popular is the so-called „collective vote buying“, in which there is a tendency for „buying“ of whole villages, neighborhoods, families, Roma ghettos, football supporters groups (2013), as well as the extremely popular during the last elections (2014), mass „buying“ of personal celebrations (weddings, proms, baptisms, etc) by party and business bosses.

And finally, the ever increasing in popularity **„controlled (and corporate) vote“**, in which money is given, on mass scale, to company workers so they vote for a specific party, of course under the threat of getting fired if they fail to vote as instructed. For instance, according to the monitoring of Transparency International Bulgaria, this type of vote includes the following: **representatives of employers**, who put pressure on economically dependent on them people (so they exercise their right to vote in favor of the candidate preferred by the employer); **local political leaders** or representatives of the local authorities (holding authority resources and local influence); and **informal community leaders**, living on limited resources and usually socially vulnerable [1: 178]. Recently, the hiring of unemployed people following the formula „employment against vote“ (2013), gave way to the large-scale „business with electoral preferences“ (2014)...

The enormous scale of the „vote buying“ is hard to be described in numbers, as it is almost impossible to calculate the cost of the bought votes. Yet, the agencies

and institutions dealing with this problem can give us some orientation. The information from the summarized data for the cash given for „buying“ of voters during the 2014 campaign shows: 1) according to the Civil Initiative for Free and Democratic Elections (CIFDE) as of 25 Sept 2014 there were approximately 300 000 votes „bought“ at total cost of BGN 15 – 20 M, provided that the official donors until that day were 616 people, with total donations to the parties at the amount of BGN 300 500(!?!); 2) according to the Center for Study of Democracy (CSD) the total number of „bought“ votes is 400 – 500 000; and 3) according to Transparency International Bulgaria, the total number of traded votes is about 200 000, or between 14 and 16% of all voters [2].

The abovementioned results plainly suggest a number of essential questions, among which there is one of extreme importance: Are all financial funds, spent during the last election campaigns, legitimate, and is it possible to have illegal funding through the refugees?

At the very beginning we would like to emphasize, that the study of this important question meets many objective difficulties, resulting from the lack of any information and analyses of the correlation between refugees stream – „vote buying“. Therefore, we shall use the general data on the number of refugees and their traffickers, and based on that we shall make some suggestions and hypotheses on the discussed matter.

It is known, that as of 10 Sept 2015 in Bulgaria there are 2597 refugees from different Middle-Eastern and Central Asian countries – Syrians, Pakistani, Afghani, Kurds, etc. These refugees have reached the Bulgarian border (and territory) assisted by various traffickers, who make fortune at the expense of the exiled people.

What does the information about the traffickers (and the illegal immigrants) of Chief Directorate Border Police of the Ministry of Interior show [3]?

In 2013, at the **outside borders** were detected 161 **traffickers**, which is 14% increase compared to the previous year (141 in 2012). Here most are Turkish nationals – 69 (71 in 2012), 21 Bulgarian nationals (25 in 2012), 15 Syrians (6 in 2012), 5 Germans of Turkish descent (3 in 2011), 4 Iraqi nationals (2 in 2011) and 47 other. Big part of the traffickers is truck drivers, passing in transit through Bulgaria, transporting predominantly clandestine passengers. In addition, at the Bulgarian-Turkish border, which has the highest risk of illegal passing, were detained a total of

126 traffickers – 61 Turkish, 17 Bulgarian, 12 Syrian, and 36 from other nationalities. Of all traffickers detained at outside borders, 123 were at Border Checkpoints (99 on entry and 24 on exit), 35 on „green“ border (24 on entry, and 11 on exit), and 3 at sea border. There is information for a total of 296 transferred persons (290 for 2012) – 165 Syrian nationals, 36 Turkish, 36 Afghani, etc.

Again in 2013, at the **inside borders** were detected 78 **traffickers**, against 55 in 2012. Of them 16 were at the Bulgarian-Greek border, and 62 at the Romanian border. The established nationalities of the traffickers are as follows: 35 Bulgarians (21 in 2012), 9 Turks (6 in 2012), 14 with un-established identity (6 for 2012) and 20 others. Moreover, at Border Checkpoints have been registered 62 traffickers (3 on entry and 59 on exit), and on „green“ border 16 traffickers (11 on entry and 5 on exit). There is information for a total of 226 transferred persons (122 for 2012) – 172 Syrians, 15 Somali, 9 Iranians, 7 Ghanaians, etc.

There is also an increase of 36% of the number of **illegal immigrants** in Republic of Bulgaria from third countries (in 2013). According to the information provided by Directorate Migration, there is a total of 739 individuals, nationals predominantly of Syria, Turkey, Iraq, Afghanistan, Algeria, etc, who have entered the country illegally. At the same time, a total of 254 illegally residing individuals (55% less compared to 2012) have been expelled under readmission agreements, as most of the foreign nationals were sent to Turkey (154) and Greece (54). And last, the most of the returned individuals are Turkish – 95; Syrian – 45; Somali – 16; Pakistani – 13; Georgian nationals – 12, etc. [3].

As we already said, there is no actual data regarding the funding of the different parties and their campaigns in Bulgaria, thus, here we are only presenting several **working hypotheses** (assumptions) on the illegitimate financing of parties, within the so-called „refugees stream“, passing through Bulgaria: **the first** concerns the **illegal transfer of sums from the traffickers** to the parties, and the funding of their campaigns, which is done through the „refugee waves“, lost to eyes of the official authorities; **the second** one is associated with the **receiving of the so-called „donations to parties“ from natural persons** up to BGN 10 000 per year (according to the Bulgarian legislation), which most probably are done permanently by our, Bulgarian emigrants for specific political subjects, with the difference that they are not officially declared and most of the times are done (transferred) by traffickers;

the **third** hypothesis actually suggests the possibility for **illegal transfer of money across borders** by brokers and traffickers, which is subsequently „laundered“ in the course of the campaigns of the different political parties, using the provided „service“; **the fourth** one is based on the assumption, that it is possible part of the **traffickers to become brokers and participant in a large-scale „vote buying“** in the country, by using the illegally transferred money to buy votes in the mixed minority regions; and **the fifth**, could be directed at the **organized laundry of „trafficking money“ in different religious temples** in the country (mosques, churches), which has two aims – illegal financing of pre-election events, and creation of party structures (of certain parties) with religious nuance.

It is true, that the above hypotheses are only one version and only one assumption, which is hard to prove. What is still truer, however, is that even if they are episodic, those acts are a real and serious threat to the national security, as they can easily become a breeding ground for radical Islam, or covert bringing of Jihadists in the country, or attempts to separate a part of the population for the formation of Islamized parties in Bulgaria.

Hence, the phenomenon of „vote buying“ has extremely negative effects on the national security of the Bulgarian state, because they infiltrate the whole security system of the country.

The negative effects of the „vote buying“ and the refugee problem on the security policy of Bulgaria can be differentiated into two main types – external and internal. In their turn, the **internal** are: **direct**, which have direct adverse influence on the political and the administrative processes, the institutions and the state system; and **indirect**, which indirectly create negativism and amoralism towards the efficient functioning of the democratic political system.

The **direct negative effects** could be differentiated in several key dimensions: **1) Incompetent (inefficient, poor) state management; 2) Unprepared (untrained, inadequate) political elite** in general, and particularly in the sphere of national security; **3) Forming of political elite „appointed“ outside the parties; 4) Inefficient separation of the powers in the state**, in which the executive power (Ministry of Interior, the Police and the National Security Agency) grossly violates the constitutional rights of the citizens, interfering with the work of other authorities (the Prosecutor's Office, the Court); **5) Weakening of the state institutions** as a main

factor of the national security; **6) Depersonalization of the specialized security institutions** in the country and destroying their immune mechanisms to fight crime; **7) Draining the national wealth** and decapitalization of the state property by different oligarchic, criminal and mob organizations; **8) Uncontrollable political corruption**, which not only corrodes absolutely all spheres of the social (and political) life, but also has become „conscious“ way of life for the Bulgarian citizens.

The negative **indirect effects** of „the vote buying“ on the national security policy, can be codified in the following order: **1) Demoralization of the civil society**, the national state and the individual citizens; **2) Delegitimization of the democratic political process**, the democratic institutions and democracy in general; **3) Profanation of the elections and the election process** in the country; **4) Disinterest in the problems of the national security**; **5) Demotivation of the citizens** in their fight with crime, corruption and banditism.

As far as the **external negative effects** from „the vote buying“ and the refugee stream are concerned, it is not hard to say that they will cause serious damage to the image of the Bulgarian state.

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Diplomatic Attempts to Find a Bulgarian Knyaginya in 1892

Abstract: The current article is devoted to the attempts of the Bulgarian Diplomacy to find a Knyaginya in 1892. The publication focuses on the actual reasons that imposed the urgent marriage of Knyaz Ferdinand, his tour across Europe, the visits of the Bulgarian Prime Minister Stefan Stambolov in Istanbul and the positions of the Great Powers.

Keywords: Bulgarian Question, diplomacy, attempts, marriage, prince, Bulgarian Knyaginya, Bulgarian Dynasty.

Introduction

Knyaz Alexander I Battenberg [1] announced his resignation on 26 August 1886 [2]. This was the beginning of one of the longest crises in modern Bulgarian History which lasted for a whole decade. Despite the efforts of the Bulgarian State to find an appropriate candidate for the throne, none of the Great Powers were ready to engage officially in order to find a solution to this matter [3]. Even the friendly Austria-Hungary and Great Britain advised the Bulgarian Government “*to keep the order and the calm in Bulgaria*” thereby avoiding probable Russian involvement and thus her permanent settlement on the Balkans [4].

Based on Article 3 of the Treaty of Berlin [5], on 25 June/7 July 1887 the Third Great National Assembly elected Prince Ferdinand von Sachsen-Coburg-Gotha [6] a Bulgarian Knyaz without the preliminary consent of Great Powers. After this date, the question of the rulers’ recognition stayed open for nearly a decade. The way for its solving went through one moment of great significance for the Monarch – his marriage and thus laying the foundations of the Bulgarian Dynasty.

The current topic is among the major, but not deeply enough examined questions in Modern Historiography. A number of authors [7] mention the marriage of Knyaz Ferdinand I without focusing on the chain of diplomatic actions conducted prior to it. The clarification of this important question is the main reason that determined us to start working on the topic of the present article. It has been proven

that the diplomatic attempts to find a Bulgarian Knyaginya indirectly collaborated to the “unofficial recognition” of the Bulgarian Monarch. They appear to be the key moment for laying down the foundations of the Bulgarian Dynasty. A detailed research of materials has been conducted in the Archive for Bulgarian History, part of the Central State Archives of Republic of Bulgaria and in the Archive of Bulgarian History at the National Library “St. St. Cyril and Methodius”. The author examined numerous documents that have not been used up to the present moment, as well the latest developments of the Bulgarian Historiography.

Why did the marriage of Knyaz Ferdinand become such an urgent matter?

The election of Prince Ferdinand von Sachsen-Coburg-Gotha solved the issue for finding of appropriate Bulgarian Ruler, but another one arose – namely this ruler's recognition. According to Russia's official position, the Great National Assembly was illegitimated, hence its decisions did not have any binding force. Therefore Russia demanded an immediate resignation of the illegitimate Knyaz. This prolonged the Bulgarian Crisis and transformed it into a problem that seemed difficult to be solved. Parallel to the efforts to achieve international recognition of the Monarch, the Bulgarian Political Elite was occupied with another issue – the immediate marriage of Ferdinand. It became even more urgent after the assassination of Minister of Finance Hristo Belchev on 15/27 March 1890 and the Bulgarian Diplomatic Representative in Istanbul – Dr Valkovitch on 12/24 February 1892 [8]. The growing data about organized terrorist attacks against the Representatives of the Bulgarian Authorities abroad accelerated the process [9]. In his letter to Queen Victoria, the British Prime Minister Lord Salisbury explained brilliantly why Ferdinand's marriage became such an urgent matter: *"the best solution for him (Ferdinand, n.a.) is to get married and to have an heir. Then the motives for his removal will be significantly weakened"* [10]. The Government in Sofia reached the same conclusion [11]. The foundation of the Bulgarian Dynasty and the unification through an heir born in Bulgaria became the primary objective for Stefan Stambolov and the Knyaz.

Among the Influential Royal Houses in Europe

Ferdinand's Mother, Knyaginya Clémentine [12] had been handling the question of his royal marriage for a long time. Her goal was to centralize the Power in her son's hands and to bind him to some of the Influential Houses in Europe. On 1

November 1888, “Pester Lloyd” announced that Knyaginya Clémentine had tried to win the 19-years-old Princess Maria–Luisa of Parma [13] to become the wife of Ferdinand. In the following five years, this question was not raised [14].

In the Spring and Summer of 1892, Ferdinand personally undertook the initiative to find a suitable wife. Supported by the Bulgarian Statesmen, he started a long tour across Europe. Despite the glamorous acceptance in the Balmoral Castle and the positive attitude of London's High Society, Queen Victoria politely refused to give him the hand of a British princess. After this unsuccessful attempt, the Bulgarian Ruler turned to Germany.

We find details on the monarch's journey and his desire to solve the marriage matter in a letter from 28 July 1892 written by Dimitar Greckov [15], the Minister of Foreign Affairs, to Stefan Stambolov. Following Ferdinand's order, the Minister of Foreign Affairs met Count Kálnoky [16] in Vienna. The duration of meeting was 1 hour and 15 minutes [17]. The Bulgarian request was as follows: the Austro-Hungarian Minister of Foreign Affairs was to try to influence Berlin to arrange a meeting between Ferdinand I and the German chancellor Georg Leo von Caprivi [18]. Greckov motivated the desire of the Bulgarian ruler *“with the necessity the Knyaz to get married as soon as possible, as well all the hindrance the Knyaz had been facing in connection with his marriage for the mere reason that he was unrecognized”*. According to the minister, Knyaz Ferdinand I reached the conclusion that it *“would be the best for him to choose a German princess, even if she is from a family of the mediatized princes”* [19]. In the same time, the Bulgarian Ruler was deeply worried that his intentions would fail because of the fear of the noble German families, who did not desire to fall into disgrace before their Emperor. Ferdinand reckoned that a single meeting with Count Caprivi, even conducted in secret, would motivate them to accept his marriage proposal. The Austro-Hungarian Minister of Foreign Affairs approved the idea, but was definitely against the secret character of the meeting. Count Kálnoky was convinced that such an action would not be approved by the German chancellor. According to the Count, a private audience would be the best option. Under these conditions, he engaged himself to conduct a preliminary conversation with Prince Ratibor, temporary governing the German Embassy, due to the absence of the ambassador Prince Reis from Vienna. Count Kálnoky advised Greckov to do exactly the same. The Bulgarian Minister visited the

German Embassy several times, but all his attempts to meet Prince Ratibor, who was somewhere in the vicinity of Vienna, failed [20].

In the end of his letter, Greckov shared one very intriguing fact about Ferdinand's marriage: *"The Knyaz confided to me that he had the opportunity to get engaged in 24 hours only if he wanted to; the fiancée was a granddaughter of the English Queen by the line of the Queen's daughter [Princess Helena of the United Kingdom, n.a.], married to a Schleswig-Holstein Prince; The Knyaz told me that she was 20 years old, but ugly and poor. That's why The Knyaz is doubting and wants to try his luck in a prince's family in Germany. For this purpose, in a couple of days he will go to Frankfurt to meet Empress Frederick, who as The Knyaz hopes, would help him to get married"*. Greckov advised Ferdinand in case he did not succeed to find another candidate *"to take the one that was given to him and in either case to return to Bulgaria engaged and to announce his engagement immediately after entering the country"* [21].

Hence, the following question arises: who refused whom? Ferdinand refused to get engaged to the Princess or vice versa? Grekov's advise *"to take the one that would be given to him"* undoubtingly shows the importance of the engagement. It is less likely such a personal antipathy to be the only reason not to bind to the English Royal Court. Such an opportunity would not only contribute to laying the foundations of the Bulgarian Dynasty but would also be a serious advantage to win the battle for Ferdinand's recognition.

Despite Queen Victoria's delicate refusal to engage Ferdinand I to an English Princess, she tried everything possible through her daughter Victoria - The Mother of the German Emperor Wilhelm II, to arrange an audience for Knyaz Ferdinand I with the Emperor and his Government [22]. In fact, all the actions of the British Crown, even while assisting the Bulgarian Monarch in his search for a fiancée, were intentionally directed to keep this unrecognized ruler away from the British Royal Court. Despite being Bulgaria's friend, London was strictly upholding the clauses of the Treaty of Berlin and did not want to breach the *status quo* under any circumstances, especially by creating such a precedent as a royal marriage. Namely this and not Ferdinand's resentment was the probable reason for this marriage never to come into existence.

Despite Greckov's efforts and Count Kalnoky's good intentions to support the Bulgarian actions to Ratibor, the result remained discouraging. On 7 July 1892, the Head of the Bulgarian Diplomatic Agency in Vienna D. Minchovich wrote a letter to Greckov. He reported to the Minister of Foreign Affairs that Caprivi's answer was "to inform His Royal Highness not to bother to go to Berlin, because Count Caprivi would not be able to meet him". The exact translation of the telegram is: "To warn the Knyaz not to travel to Berlin, to save him the uncomfortability of a refusal" [23].

Kaiser Wilhelm II and the German Government refused to enter into any contacts with Knyaz Ferdinand I. According to Greckov, the meeting between the Knyaz and Otto von Bismarck, that had taken place in Munich by Ferdinand's request, was a mistake and also "made an inappropriate impression in the High Circles of Berlin" [24]. What determined this political behavior of Germany was the State Policy to take Russia's Position under consideration.

During Ferdinand's European tour it became clear that no one would give a hand to a person standing outside the law. The answer was always "To Prince von Coburg – Yes! To the unrecognized Bulgarian Knyaz – No" [25]! No wonder that after his return to Bulgaria, Knyaz Ferdinand shared with regret that "the result of his engagement was a complete failure and a long chain of humiliation" [26].

In the Heart of the Ottoman Empire

The most significant achievement of the Bulgarian Diplomacy in this period was the official visit of Stefan Stambolov to Istanbul in the end of June 1892 [27]. Bulgaria's Prime Minister visit took place due to the initiative of the British Diplomacy. Advised by the British, the High Porte rejected Russia's protest and officially accepted Stefan Stambolov. The Bulgarian Prime Minister sailed on a ship to the Turkish Capital and arrived there on 30 July 1892 [28]. He immediately conducted series of meetings with High State Administrators who showed him the deserved respect [29]. Stefan Stambolov had an audience with The Sultan on the next day – 31 July 1892 [30]. Russia's painful reaction and France's protest was the unrefutable evidence for the political significance of this audience. Both Great Powers were asking the High Porte what was the purpose of the visit and hence the reasons for the high acceptance of the Bulgarian Prime Minister Stambolov [31] returned to Sofia on 1 August 1892 [32].

Conclusion

Formally speaking, Knyaz Ferdinand's Tour and Stambolov's visit to Istanbul did not change the situation for the Knyaz in both personal and international aspect. Nevertheless they inflicted indirect favourable impact on the further solving of the Bulgarian Question. The actions of Knyaz Ferdinand I and the Prime Minister St. Stambolov, the attention that they obtained in London, Vienna and Istanbul lead to a *de facto* "unofficial recognition" of the Bulgarian Head of State, his First Chancellor and the Government. In 1892, one of the most influential British newspapers – "The Times", expressed the position that "*the regime of Stambolov and Ferdinand is strongly established and in such way that its actual power does not need a recognition by the means of a legal approval*" [33]. It was gradually accepted by the Bulgarian Authorities and Stambolov himself.

Namely these actions established the demanded security inside the country. The high confidence allowed St. Stambolov temporary to abandon the question of Ferdinand's recognition. He started to work into the direction of a definitive solution to the marriage issue. The Diplomatic Attempts and the demonstrated synergy between Monarch and Prime Minister manifested to the world the stability of Bulgaria's Government and the opportunity for founding a strong Dynasty, supported by all institutions.

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Organization of student-centered teaching practices as a condition of formation of high school graduates competitiveness

Abstract: This article deals with the organization of student-centered learning practices of students of the university. This form of training practices is considered as a condition of formation of competitiveness of high school graduates. The experience of interaction with companies-employers is analyzed.

Keywords: higher education establishment, educational practice, student-centered approach, competitive high school graduate, the employer.

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Организация личностно-ориентированных учебных практик как условие формирования конкурентоспособности выпускника вуза

Аннотация: Данная статья посвящена организации личностно-ориентированных учебных практик студентов вуза. Такая форма проведения учебных практик рассматривается как условие формирования конкурентоспособности выпускника вуза. Анализируется опыт взаимодействия с предприятиями-работодателями.

Ключевые слова: высшее учебное заведение, учебная практика, личностно-ориентированный подход, конкурентоспособность выпускника вуза, работодатель.

Организация профессионально-образовательного пространства вуза предполагает смещение акцента с воздействия преподавателя высшего учебного заведения на студентов на создание и развитие специфичной практико-ориентированной среды их профессиональной подготовки, самообразования и саморазвития. Практическая часть подготовки конкурентоспособного студента-выпускника вуза предполагает нечто среднее между реализацией профессиональных задач и результатом «индивидуальных импровизаций». По сути, практика является «стратегическим действием», посредством которого в границах знаний, умений и навыков, присущих студенту, решаются профессиональные задачи [1].

Роль учебно-производственных практик в вузе весьма многообразна и заключается не только в закреплении у студентов знаний, полученных в ходе обучения, но в развитии связей с компаниями, когда высшее учебное заведение не отрывается от реальной ситуации на рынке труда, потребностей и требований работодателей, а в своей учебной, научно-исследовательской и инновационной деятельности совместно решают проблемы, стоящие перед обществом, взаимодействующими между собой субъектами образовательного и экономического пространства [2].

Именно поэтому учебно-производственные практики студентов являются составной частью профессиональной образовательной программы, предусмотренной Государственным образовательным стандартом высшего профессионального образования. Учебная практика реализуется на выпускающей кафедре и в научных лабораториях вуза. Практика студентов проводится в сторонних организациях (предприятиях, НИИ, фирмах) или на кафедрах и в научных лабораториях высшего учебного заведения.

Современные формы проведения учебно-производственных практик студентов: учебная практика проводится со студентами в индивидуальном порядке, в составе учебных групп или подгрупп. Выбор формы проведения производственных практик студентов обусловлен спецификой направления (профиля), по которому проходят профессиональную подготовку студенты [3].

Наиболее эффективно, на наш взгляд, влияют на повышение конкурентоспособности выпускника вуза личностно-ориентированные формы организации практик, которые предполагают следующее:

- организацию взаимодействия вуза с работодателями;
- ориентацию содержательной части практики на потребности личности студента и требования работодателей;
- личностно-ориентированный подход к определению содержания учебно-производственных практик;
- ориентация на самообразование и саморазвитие студента в ходе учебно-практических практик;
- анализ, оценку и проектирование.

В связи с выше сказанным, основная цель, стоящая перед коллективом филиала Томского государственного архитектурно-строительного университета в г. Ленинске-Кузнецком (ЛКФ ТГАСУ) Кемеровской области - это создание системы непрерывного инженерно-строительного образования, обладающей необходимыми условиями и ресурсами для подготовки квалифицированных конкурентоспособных специалистов в соответствии с социальным заказом города и района, а также потребностями развития личности студента.

Для осуществления поставленной цели важную роль играет организация и проведение различных видов учебных практик. Основными видами практики студентов ЛКФ ТГАСУ являются: учебная, производственная, преддипломная. Практики студентов спланированы в соответствии с требованиями стандартов, распределение времени на проведение практик осуществлено в соответствии с требованиями стандартов [4].

Администрацией филиала заключены договоры с предприятиями города Ленинска-Кузнецкого (ООО «Мастер», ООО «Польсаевское стройуправление», ООО «Ремстрой», ООО «Завод строительных материалов», ООО «ЭкоСтрой ЛК», ООО «Дорожник», ООО «Автомобилист», ГПТП КО «Ленинск-Кузнецкая автоколонна» и др.) для прохождения студентами всех видов практик по реализуемым направлениям (профилю) подготовки.

Студенты имеют возможность самостоятельно выбирать места прохождения практик по профилю специальности. При обязательном условии соответствия профиля предприятия направлению обучения, а так же возможности полностью реализовать программу практики.

В связи с поставленной целью главной задачей администрации и специалистов ЛКФ ТГАСУ - организовать опыт практической деятельности

студентов еще в период вузовского обучения. Вся учебная, научная и воспитательная работа студентов в ЛКФ ТГАСУ направлена на развитие практического образования, формирование у студентов навыков реальной деятельности в сфере профессиональной деятельности, достаточных для их трудоустройства по профилю специальности сразу же после окончания вуза.

В ЛКФ ТГАСУ разработана и в течение трёх лет реализуется «Комплексная система непрерывной практической подготовки студентов в течение всего периода обучения в вузе», параллельная всему комплексу теоретического обучения. Обучение в филиале университета осуществляется по специальностям: «Экономика», «Менеджмент», «Строительство», «Эксплуатация транспортно-технологических машин и комплексов», «Наземные транспортно-технологические комплексы». Ключевыми звеньями проекта являются:

1. интенсивное введение в специальность на младших курсах;
2. организация деятельности «Клуба студенческих лидеров», системы студенческих структур, объединенных по отдельным специальностям ЛКФ ТГАСУ;
3. включение студента в реальные практические процессы на базе постоянно действующего научно-производственного отряда «Студенческие инициативы»;
4. ориентация на практическую деятельность и трудоустройство профессиональных практик, курсового и дипломного проектирования;
5. создание условий для осознанного выбора студентами направления своей дальнейшей специализации в процессе вузовского обучения, осознание ими своих жизненных целей, места и задач в новых условиях, разработка реальной программы личных действий для достижения трудоустройства и обеспечения собственной карьеры.

Основными формами работы по этой программе являются:

- 1) подготовка и публичная защита каждым первокурсником реферата «Моя специальность»;
- 2) формирование творческих групп студентов с обязательным участием первокурсников под руководством студентов-дипломников;

3) работа в творческих группах, например, практическое участие в бизнес-мероприятиях с предприятиями;

4) бизнес-практика: составление резюме и практические попытки встретиться с работодателем и устроиться на какую-либо работу.

Научно-педагогические работники филиала Томского государственного архитектурно-строительного университета в г. Ленинске-Кузнецком находятся в постоянном поиске оптимальных форм организации и проведения всех видов практик, сотрудничества с организациями, выступающими в качестве баз для прохождения практик.

По окончании практики проводится конференция, где подводятся итоги практики. Руководители практик организуют установочную и итоговую конференции. На конференции студенты подводят итоги практики, делятся впечатлениями, рассказывают о приобретенном опыте, дают советы друг другу, делают выводы по результатам практики. В рамках проведения конференции рекомендуется приглашать успешных выпускников факультета для беседы. Успешные специалисты расскажут о требованиях, которые профессия предъявляет к человеку, об этапах их профессионального пути.

Все виды практик, предусмотренные государственным стандартом высшего профессионального образования, призваны выступать условием формирования конкурентоспособности, профессионального самоопределения, кристаллизации профессиональной направленности и приобретения опыта работы по специальности. С целью создания таких условий мы предлагаем лично-ориентированные подходы к организации практик:

1 курс – ознакомительные практики;

2-3 курсы – профессиональные практики;

4 курс - преддипломная практика.

Личностно-ориентированный подход к определению содержания учебно-производственных практик раскрывается в таких принципах, как: принцип профессионально-личностного развития студентов, реализуемое в процессе прохождения учебно-производственных практик как субъектов гуманистически ориентированной деятельности; принцип индивидуального и дифференцированного подхода к профессионально-личностному развитию студентов; принцип систематичности, непрерывности и содержательной преемственности всех

видов практики, обеспечивающих формирование профессионального опыта будущих специалистов [5].

Мы считаем, что организация личностно-ориентированных учебных практик:

1. Обеспечивает непрерывный характер прохождения практики.

Студенты становятся частью коллектива, что облегчает процесс социальной адаптации. У студентов появляется возможность постепенно, в индивидуальном темпе входить в производственную деятельность, закреплять полученные в стенах вуза знания на практике, отрабатывать умения и навыки. У студентов есть время поработать над пробелами в знаниях и умениях, вскрытыми практикой.

2. Максимально сближает учебный процесс в вузе с процессом прохождения всех видов учебных практик.

3. Обеспечивает места для практики каждому студенту и упрощает процесс контроля со стороны вуза.

4. При желании позволяет студентам совмещать учебу с работой по специальности.

5. Дает возможность прохождения практики на разных предприятиях и менять вид деятельности студентов.

6. Способствует формированию профессиональной гибкости; отработки умения правильно строить взаимоотношения с коллегами по работе, с клиентами.

7. Развивает личностно-профессиональные качества будущего специалиста.

8. Создаёт условия для формирования индивидуального стиля будущей профессиональной деятельности.

9. Способствует формированию профессиональной направленности и профессионального самосознания (адекватной самооценки себя как профессионала и знание путей и способов саморазвития и самосовершенствования).

Только регулярная практика, имеющая место уже на начальном этапе профессионального образования, по нашему мнению, может снять или, по крайней мере, снизить психологический барьер перед будущей самостоятельной деятельностью, даст возможность не только вскрыть, но и успеть

ликвидировать недостатки и пробелы в знаниях и умениях, поможет нацелено работать над выработкой конкурентных качеств у студентов, необходимых для будущей работы и будет способствовать налаживанию связей с потенциальными работодателями и успешному поведению на современном рынке труда. В связи с этим организация личностно-ориентированных учебных практик становится значимым условием формирования конкурентоспособного выпускника вуза.

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Synergy of Global Conflict

Abstract: This article discusses global conflicts in the mainstream scientific picture of the world; it draws attention to the use of scientific synergy strategies for understanding systematic and uncertain essence of global conflicts.

Keywords: conflict, globalization, scientific picture of the world, synergy, self-organization.

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Синергетика глобальных конфликтов

Аннотация: В статье рассматриваются глобальные конфликты в русле научных картин мира; привлекается внимание к использованию научных стратегий синергетики для осмысления системной, неопределенностной сущности глобальных конфликтов.

Ключевые слова: конфликт, глобализация, научная картина мира, синергетика, самоорганизация.

Проблема глобальных конфликтов является одной из сложных и недостаточно разработанных в конфликтологии. Она выходит за рамки социологии конфликта и непосредственно связана с глобальными проблемами современности, которые по своей сути являются философскими. Глобальный конфликт имеет всемирный, планетарный масштаб и представляет собой большую целостную систему, включающую множество подсистем и их элементов.

В середине XX столетия, научно-технический прогресс существенно расширил границы вмешательства человека в глобальный эволюционный процесс мира, коренным образом изменив принципы социального взаимодействия людей, их потребности и духовную культуру. В этот период со всей очевидностью стали проявляться проблемы, которые несут угрозу существованию самих основ жизнедеятельности человечества и естественному развитию живой и неживой природы [1]. Трансформация всех сфер общества привела к кризису традиционных норм ценностей, морали и дезориентации человека в быстро меняющемся мире.

Процессы глобализации породили множество проблем, чреватых обострением старых и появлением новых социальных противоречий, свидетельствующих о возникновении глобальных конфликтов в современном мире. К ним относятся следующие конфликты:

- экологический;
- социальный и экономический диспаритет между развитыми и развивающимися странами;
- демографический;
- культурно-цивилизационный;
- политико-идеологический в межгосударственных отношениях.

Одной из существенных особенностей глобальных конфликтов является то, что образ конфликтных ситуаций, как один из структурных элементов любого конфликта, находит свое отражение в общественном сознании людей. Особая роль в формировании такого образа принадлежит средствам массовой информации [2].

В настоящее время некоторые ученые приходят к мнению о неспособности существующей сегодня науки к решению задач прогнозирования,

предотвращения и урегулирования глобальных конфликтов, полагая, что в настоящее время «наука настолько хорошо приспособилась к сложившемуся порядку жизни, типу господствующей социальной культуры, уравнивая истину с получением пользы, что вывести ее из этого состояния можно лишь, нарушив классический характер общественного развития, классическую социологию и традиционно-сложившейся развивающийся социальный интеллект» [3].

В связи с вышеотмеченным следует обратить внимание, что при логико-методологическом осмыслении развития науки, ее история свидетельствует о том, что «способность» науки вырабатывать знание на том или ином историческом этапе определяется совокупностью базовых принципов, посредством которых эксплицируется исследуемая реальность (рисуеться ее картина) и которые выступают, как основание научных теорий соответствующей области научного познания. Такие базовые принципы исследования принято называть в методологии науки картинами мира. Термин «мир» используется как синоним «исследуемая реальность». Картина исследуемой реальности обеспечивает систематизацию знания в рамках исследуемой реальности, одновременно функционируя в качестве исследовательской программы, которая целенаправляет постановку задач, как эмпирического, так и теоретического поиска и выбор средств их решения [5].

Для рассмотрения стратегий трактовки глобального конфликта (например, экологического) в свете научной картины мира выделим пять научных картин мира, имеющих место в системе научного знания.

- Схоластическая – в рамках которой природа и общество трактуются как некий зашифрованный текст, поддающийся (или нет) прочтению, расшифровке и пониманию (Г. Галлилей, И. Кеплер);
- Механистическая – в пределах которой природа и общество характеризуются как механизм, машина, все детали которой выполняют строго предназначенные для них характерные функции (И. Ньютон);
- Эволюционная – общество и природа мыслятся здесь как баланс, равнодействующая различных сил: природных, экономических, политических и т.д. (Ч. Дарвин);
- Системно-эволюционная – где природа и общество выступают как организованные подсистемы большой целостной системы состоящие из других

подсистем (элементов) способных к изменению, но обеспечивающие целостность и жизнестойкость как подсистем, так и самой большой системы в целом (В.И. Вернадский);

- Диатропическая картина мира – реальность бытия трактуется как полифония ярмарки, буйно растущий сад, где возникают флуктуации, объединения и разъединения сил, образующие ряды тропов, признаков сущего, позволяющие видеть мир многомерно, полицентрично, изменчиво.

На стыке системно-эволюционной и диатропической картин мира в настоящее время получает становление общенаучная эволюционно-синергетическая картина мира, основу которой составляет системно-целостное синергетическое видение мира, синергетические стратегии научного познания. В эволюционно-синергетической картине мир предстает как постоянная смена присущих ему состояний хаоса и порядка; переход к упорядочному состоянию имеет неопределенностный, вероятностный характер; эволюция (развитие) трактуется как универсальный необратимый процесс самоорганизующихся открытых систем с относительной непредсказуемостью результата. Такая картина мира объединяет многое из западной и восточной социокультурных традиций, представленных соответствующими философскими системами. Некоторые исследователи видят в этом стимулирующий фактор перехода социологии как науки из ее классического в неклассический (или постнеклассический) этап развития.

Конфликт, как явный социальный факт, не имеет смысла вне обрамляющей его картины мира, ее базисных принципов, теоретической конструкции, устоявшихся представлений и также сформированных стереотипов в обществе. В разных картинах мира, технико-технологические и социальные инновации и сопровождающие их конфликты (как столкновение разных системных сил) будут рассматриваться по-разному и отношение исследователей к этим процессам будет различным. Различными будут и общественные, групповые и индивидуальные стереотипы, сформированные в научных картинах мира и их реакция на инновации и конфликты [4].

Так, в схоластической картине мира – шифр, или ключ к расшифровке и пониманию конфликта будет находиться в руках оракула или философа.

В механистической картине мира инновации и конфликты могут быть осмыслены как некоторое нарушение функций в социальной машине. Управление ими будет отдано «хозяину» этой машины [5].

В эволюционной картине мира, конфликты предстают, как нарушение баланса между системами и подсистемами. Регулирование конфликта будет основано на представлении (знаниях) о балансе сил между системами и закрепленными в них нормами.

В системно-эволюционной картине мира инновации и конфликты выступают фактором изменения, способствующим обеспечить целостность системы, а не ее распад. Управление конфликтом во многом зависит от наличия сильной власти и действующих законов сохранения и целостности социальной организации, системы, общества [6].

В диатропической картине мира наличие конфликтов является показателем многомерности, полицентричности и изменчивости разных форм бытия. В этой картине мира инновации и конфликты являются результатом жизнедеятельности разных социальных групп, и значит разрешение конфликтов – это прерогатива самих конфликтующих сторон. Диатропическое видение конфликтной ситуации позволяет сопоставить различные интерпретации, интересы, потенциал различных политических сил, общественных групп и провести процедуру согласования, в результате которой можно найти решение самых разных прикладных задач и проблем практики.

В эволюционно-синергетическом видении мира конфликт выступает неизменным атрибутом появления новых идей, технологий и сохранения многообразия социокультурных форм бытия. При этом синергетика, как теория самоорганизации и эволюции сложных систем любой природы, выступая в настоящее время новым междисциплинарным направлением, задает своими базисными принципами стратегии исследования сложноорганизованных эволюционирующих систем, каковым является и социальный конфликт. В социальном контексте синергетика продолжает развивать идеи системного подхода применительно к конкретным механизмам и закономерностям самоорганизации социальных систем с учетом активности социального субъекта [7].

Для исследования «эволюционного поля» самоорганизующихся сложных социальных систем, в том числе конфликтов, следует обратить внимание на

методологически важные особенности эволюционно-синергетической картины мира, определяющие синергетические стратегии научного исследования:

1. Самоорганизующиеся системы обладают способностью менять характеристики своих параметров, структуры функциональных отношений в целом в соответствии с изменяющимися внешними условиями оптимальным образом и так, чтобы энтропия системы или уменьшалась, или оставалась неизменной либо, в худшем случае, росла медленно. Они совершенствуют функциональные отношения между составляющими их частями, другими системами и средой обитания.

2. В самоорганизующихся системах – в том числе социально-экономических – процесс функционирования спонтанно направлен на повышение производительности труда (и качества продукции) при одновременном снижении уровня расходования энергии и вещества.

3. Динамика самоорганизующихся систем в деталях и на длительную перспективу трудно предсказуема. Однако в их развитии, как бы ни менялись условия, функциональные процессы всегда направлены на самосохранение, самовоспроизведение, на улучшение режима развития, на уменьшение энтропии.

4. Для самоорганизующихся систем нельзя заранее и волюнтаристски однозначно задать цель, которой они должны достичь. Цели их развития не являются вещественно определенными, конкретными, в том смысле, что именно и в каком количестве они будут производить и потреблять по истечении некоторого времени. Между тем на любой наперед заданный момент времени уровень их организованности, упорядоченности повышается при заданных условиях развития.

5. И, наконец, отметим главную их особенность функционирования. В условиях дефицита ресурсов (источников вещества и энергии), при равенстве всех начальных параметров, взаимодействие самоорганизующихся одноранговых и генетически однородных систем предопределяет переход одной или нескольких систем в иерархически более высокий ранг. Причем энтропия этой системы уменьшается за счет увеличения ее в других.

6. Законы самоорганизации проявляют себя в образовании целостных систем различной природы, выражаясь в свойствах гомеостаза и самовоспро-

изведения. В зависимости от внешних условий формирования целостностей, наблюдается закономерная смена уровней упорядоченности систем, вплоть до замены их инвариантных частей структуры. Самоорганизационными процессами полностью определяется образование (и разрушение) целостных систем различных рангов и происхождения. Ими же диктуется течение социально-экономических процессов и вся их пространственно-временная изменчивость.

7. Структурогенез, формирование новых уровней организации эволюционирующих систем осмысливается исходя из идеи формирования порядка из хаоса. Переход эволюционирующих систем от неупорядоченного (хаосомного) к упорядоченному состоянию исследуется как бифуркационный переход на основе флуктуаций, как случайных отклонений от устоявшегося (привычного) состояния системы, под воздействия которых реализуется выбор варианта эволюции системы. Данный переход методологически можно осмыслить как взаимосвязь стратегий исследования «существующего» и «возникающего» [5], важных при анализе социальных конфликтов.

Изучение в эволюционирующих самоорганизующихся системах перехода от микросистем через некоторые промежуточные средние состояния к макросистемам, переходов типа «порядок-беспорядок» (к неустойчивым, хаотичным состояниям) или типа «беспорядок-порядок» к устойчивым структурам, случайности, неустойчивости, степеней неопределенности требует изменения категориальной матрицы, обеспечивающей рациональное осмысление такого рода систем. Концептуальный аппарат синергетики включает такие понятия как хаосмность, бифуркация, флуктуация, диссипация, аттракторы. Поскольку синергетика выражает определенную законосообразность всех самоорганизующихся систем, полагаем, что данный аппарат может быть продуктивно использован и для исследования самоорганизующихся социальных процессов, конфликтов. Синергетические стратегии исследования, нацеленные на познавательное освоение «порядка», «беспорядка», «степеней неопределенности», «режимов с обострением», «конфликтующих структур», неравновесности и неустойчивости, стохастичности и хаотичности, управления и самоуправления, детерминированности, становятся актуальными для социальных процессов и способны сыграть роль важного инструментального средства конкретизации факторов и детерминант возник-

новения и обострения конфликтов, выявления функциональной нагрузки данного феномена в обществе, а также определения пути позитивного их регулирования и разрешения.

Важным условием синергетичности исследования социальной реальности является выполнение методологического требования целостности, учитывающие взаимодействие систем «разного возраста» и темпов трансформации. Это требование часто нарушается при исследовании социальных конфликтов, чем снижается обоснованность, применимость и результативность практических рекомендаций.

Решающее значение при синергетическом исследовании конфликтов – является методологическая установка учета уровней (иерархии) объектов управления – микро, мезо, макро при анализе взаимодействия конфликтующих систем. Значение приведенного требования понятно, если исходить из того, что процессы самоорганизации являются результатом взаимодействия микросистем, проявляющимся на макроуровне.

Синергетика, изучая законы самоорганизации, самодезорганизации и самоуправления сложных систем, дает то универсальное знание законов самоорганизации и развития систем, в котором давно назрела насущная потребность для осмысления сложных эволюционирующих социальных систем.

Выявление механизмов самоорганизации социальных систем позволяет не только перейти на новый уровень миропонимания и определения места человечества в космическом пространстве и времени, но и вырабатывать принципиально новые стратегии деятельности в социальном глобальном мире.

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Matrix as a model of creating a foreign language teaching process for students of a technical university

Abstract: The article presents a new model of a linguistic educational process that can be implemented in the practice of teaching a foreign language in a technical university. The proposed model takes into account the characteristic features of mindset of students of physical and mathematical universities and faculties, and it constitutes a matrix as a model of learning languages. Filled-in matrix cells are a structure of the language knowledge content in a visual form. Knowledge of the system organization of a language helps the students to understand "language in action" and, therefore, adequately use it in the sphere of professional communication.

Keywords: modelling, a model, process, a matrix, mindset, system of language.

Modern pedagogic research has used the method of modelling more and more often as projecting new models of educating process provides us with new information about the object under study and, as A.N. Dakhin supposes, "pedagogic modelling works for model-goals, i.e. ideals which pedagogic practice tries to reach" [1]. Consequently, "the aim of modelling is to transfer the received new knowledge about the features and behaviour of the model to the real object" [2]. The aim of our research is to implement the suggested models in the foreign language teaching practice in technical universities.

Questionnaire survey of students in non-linguistic universities has showed that the main difficulty for them in the process of learning a foreign language is represented by the system of the language or, in their understanding, its absence. For the majority the language presents a chaotic set of elements, structures where the rules are not strict and there are many exceptions for them. The variety of language forms and lexical material, the richness of language in general leads to overwhelming difficulties for the students of this specialization. In our opinion, the

hardships in teaching foreign languages to the students of non-linguistic universities lie in the fact that the teachers of foreign languages don't consider the following:

- the difference between the system of language and the system of STEM sciences;
- the quality of professional mindset and professional consciousness of students of this profile;
- psycho-physiological peculiarities of the students associated with interhemispheric brain asymmetry.

An important aspect, as we see it, is the consistency of the foreign language as the object of study because the linguistic knowledge to be acquired reflects the theoretical basics of the language as the system. We suppose that it is possible to create a "matrix" of the language system which will serve to the students as a "guide" in the system. Filled cells of the "matrix" will visually represent the general structure of linguistic knowledge. The knowledge of the language system provides the students with the opportunities to understand "the language in action" and, as the result, adequately use linguistic means in their speech to express the thoughts about the subject.

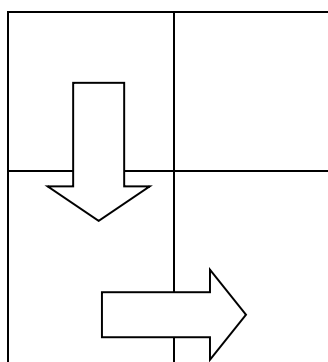
One of the most important parameters of linguistic competence and linguistic identities typology is directly connected with the asymmetric structure and functioning of the brain cortex – its left and right hemispheres – which demonstrate the different degree of activity. It has been proved that memory which influences the usage of ready units is connected with the functions of the right hemisphere, while the left hemisphere is "responsible" for analysis and synthesis, the creation of linguistic units. The right hemisphere keeps the units, the left – the rules, the right deals with the mechanisms of actualization, the left – with the ones of derivation. The right hemisphere mostly determines nominative activity, the left – syntagmatic. There is no need to oppose the hemispheres in the axiological aspect. They are different in quality and they "need" each other. For example, intuition or heuristics exist both in logical and image-associative variants, and they both have their advantages and limits. Being different, left- and right-hemispheric qualities of linguistic ability as well as the bearers with different degree of left- and right-hemispheric components' activity require different methods of developmental influence [3].

Students of physico-mathematical universities and faculties are in most cases the representatives of left-hemispheric type of mindset, and it means that the left-hemispheric formal-logic components of mindset organize any sign material in such a way that a strictly ordered and unambiguous context is created, which is necessary for successful communication between people. The elements of the unambiguous context can be represented not only by words but also by other signs, symbols and even images. The left hemisphere is responsible for conceptual, convergent (aimed at the only possible solution) mindset, it identifies one figure from the background and works with the information in the focus of attention.

The left hemisphere contains a discrete model of the world, divided into separate elements. The left-hemispheric mindset is considered to be abstract-logic, predictable, rational and two-dimensional (on the subspace). The predominance of the left-hemispheric functions is revealed in the language by the units which contain more general, abstract notions, reflecting basic functional characteristics of the objects of the real world. Consequently there is a tendency for the binary form of modelling. One should take into account that “the images of the right hemisphere are also characterized by certain abstraction, but the left controls pure notion analysis and generalization (can operate with abstract philosophic categories, mathematical notions without figurality, such as integral, cosine)” [4].

Having analyzed much evidence about the nature of the functional asymmetry of the brain, based on the research results from the fields of neuropsychology and psychophysiology, we have concluded that the basic model for learning the language system of a foreign language (French) by the students of physico-mathematical universities and faculties represents a matrix (Pic. 1).

Picture 1.



Matrix
Binary opposition
Algorithm

The preference is given to the binary opposition as the matrix shouldn't be overloaded with elements. As we have mentioned before, the left hemisphere comprises the discrete model of the world divided into separate elements. The amount of the elements should correspond to the structure of the matrix: 2x2, 3x3, etc. The matrix as the model can be filled in with various linguistic material (grammatical, lexical). The key word for completing the task is algorithm, a stepwise choice of elements. It's important to remember that to process the information the students with the left-hemispheric mindset need time to think the information over consequently and linearly.

Let's consider how this model works for teaching the system of tenses and moods of the French verb. Firstly we suggest introducing the system in the levels of a table (Pic. 2):

Picture 2.

The table of levels

Zero level		Infinitif
I level	Impératif	Présent
II level	Passé immédiat	Futur immédiat
III level	Passé composé	Futur simple
IV level	Imparfait	Conditionnel présent
V level	Plus-que-parfait	Conditionnel passé
VI level		Subjonctif

In this table we have kept the traditional representation of tenses on the axis of time, but we have changed the order of studying certain tenses. The form of tense and mood introduction follows the model of the matrix, in which the levels are represented by the forms of past and future tenses from the least to the most complicated. Horizontally each level represents potential verb forms to make an utterance.

We find it rational to begin learning the system of French verb from Impératifs in the future these forms help students to learn verb conjugation in Present without rote memorization (Pic. 3)

Picture 3.

Matrix

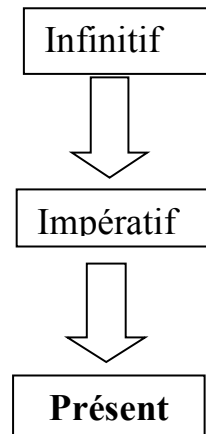
<i>Impératif</i>	<i>Présent</i>	
Parle!	Je	parle
	Tu	parles
	Il,Elle,On	parle
	Ils,Elles	parlent
Parlons ! Parlez !	Nous	parlons
	Vous	parlez

These forms of Impératif of the French verb will let the students derive the forms of Present tense, but not the 6 forms as they exist in the traditional grammar, but only 3. The 3 learned forms of Impératif help the students to logically move to conjugation of these forms in Present indicative tense, paying attention only to the endings of the 2nd and 3rd person plural forms.

The given matrix presents the conjugation of French verbs of the 1st group in Present indicative tense in the system of coordinates which is comprehensible for the students with the left-hemispheric mindset. The matrix as the model isn't overloaded with elements, it is based on the familiar units of the verbal system (the first column presents the forms of the Imperative). There are only two new elements to learn and acquire: the doer of the action and the endings of two verb forms. It's necessary to mention that the verb endings that appear in the Present tense are more important for the written form of the language. In oral speech these 4 verb forms sound the same.

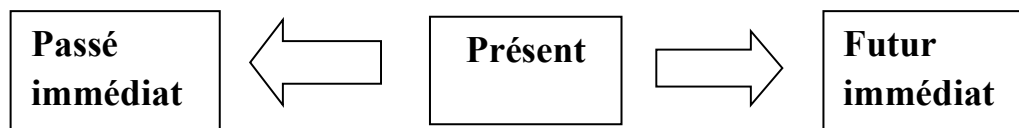
Taking into consideration that the students with the left-hemispheric mindset process the information consequently and linearly, we suggest teaching the verb system of the French language by levels, following the linear principle and algorithm. The choice of elements (verb forms) that are necessary to construct an utterance is made step-by-step: at the zero level one defines the notional meaning of the verb (infinitive), then the tense or the mood is chosen in the table of levels, afterwards one follows the scheme of forming the tense at this level. To form an utterance in the plan of the Present tense the choice of the necessary verb form is made vertically from the zero level to the first (Pic. 4).

Picture 4.



But if the aim of the speaker is to mark the action that has happened recently or is expected in the future, he/she selects the second level. At this level the creation of the necessary tense form happens horizontally, within the level (Pic. 5).

Picture 5.

Level 2

As we see, the formation of the given tenses of the French language presents 2 different levels, vertical and horizontal, this doesn't let them overlap with each other and mix the levels either with verb formation or their further usage. The formation of the tenses (Futur immédiat and Passé immédiat) we also form as the matrix, where the studied forms of the verbs "aller" and "venir" in the Imperative help not to complicate the construction and refer to the studied verb forms. The suggested matrix as a model of learning the system of conjugation of the French verb takes into consideration the peculiarities of information processing by the left hemisphere and helps the students to acquire this system using the possibilities of the left-hemispheric mindset.

Everything mentioned above is important for organizing the process of teaching a foreign language as there are 2 parties in it: the teacher and the student who are the outstanding representatives of 2 different mindsets: the teacher of foreign language – the artistic type (the right hemisphere dominates), the student – the intellectual type (the left hemisphere dominates). They are diametrically opposite

due to the mindset, the world perception and categorization, the notions conceptualization. We believe it is the main problem in creating an effective process of teaching a foreign language to physicists and mathematicians by teachers who are linguists. As the linguist teacher who is commonly a representative of the right-hemispheric mindset has a special-imaginary mindset, he/she operates with images only, the basics is of association and empirical mindset, the event-context presentation of the information prevails. The student of the technical university is a representative of the left-hemispheric mindset and has logico-verbal mindset. He/she processes information that is presented only in verbal form, he has the “network” presentation and usage of the information, the basics is in the formal-logic mindset.

In the conclusion we would say that much evidence about the nature of functional brain asymmetry, about the existence of the individual profile of asymmetry allows us use the results of the scientific research from different fields to create the process of teaching foreign language in non-linguistic universities. In our research [5] we analyze the basic approaches to teaching the French language in the system of training the specialists of technical profile, study the methods of organizing the process of teaching foreign language for specific purposes and suggest a new model of teaching future engineers and architects. The given model would be variable and oriented on the final aim of specialist training – having a good command of a foreign language in the sphere of professional communication and fulfilling professional tasks with the help of a foreign language in the professional sphere. But to solve this problem the teacher of foreign language has to acknowledge that firstly it's important to change one's opinion about and the perception of psycho-physiological peculiarities of the students of technical professions and to understand the difficulties that they face in the process of learning a foreign language. We consider that the teacher of foreign language in a technical university when modelling and organizing the process of education should assume the students' understanding and processing the language material under the influence of the usually dominant left hemisphere.

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Famous book of XIXs century's Armenian literature - Apres Beknazaryan's "The mystery of Karabakh"

Abstract: From the point of view of revaluation "Secret of Karabakh" takes on a modern and scientific sound. It is made as a new critical-analytical (hermeneutic) and estimative (axiological) system.

Keywords: Artsakh, Apres Beknazaryan "The Secret of Karabakh", "Melikdoms of Hamsa", "Criticism of the critics", Grabar.

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Нашумевшая книга армянской литературы XIX века - "Тайна Карабаха" Апреся Бекназаряна

Аннотация: С точки зрения переоценки "Тайна Карабаха" приобретает современное и научное звучание. Он выполнен в русле современной критико-аналитической (герменевтической) и оценочной (аксиологической) новой системы.

Ключевые слова: Арцах, Апреся Бекназаряна "Тайна Карабаха", "Меликство Хамсы", "Критика критиков", грабар.

Представленное научное исследование является частью докторской диссертации, имеющее общее название "Арцах в истории армянской литературы XIX века", а остальные части посвящены историческому роману русского писателя, исследователя и профессора Платона Зубова "Карабахский астролог", историческому эссе армянского классического писателя Раффи "Меликства Хамсы", критике историко-географического исследования Макара Бархударяна "Арцах".

Критика всех произведений, включая “Тайну Карабаха” Апреся Бекназаряна, исполнена с учетом всех правил и принципов, и впервые армяноведении, арцаховедении и руссковедении мы представляем его в обоснованном виде и с целью переоценки.

С этой точки зрения как общее исследования, так и представленная часть со своими звеньями, мы думаем, имеют научную новизну и являются прорывом в истории армянской литературы. Принятые и тема, и историческая эпоха, и появление Арцах-Карабаха в армянской литературе XIX века, на ряду со временем, эпохой, индивидуальным стилем доказывают это.

В культуре Армянского Арцаха XIX века по своей жанротипности, программной ориентированности, остроте, освещению разнообразных вопросов занимает особое место литература, которая включает создание произведений отражающих тематические различия, слои, идеологии национального освободительного движения, просвещения села и сельского хозяйства, образования, предствлением Шуши как культурного, просветительского центра, в особенности это заметно в произведениях Мурацана “Краткая биография митрополита Бактасара Хасана Джалалаянца”, “Таинственная монахиня”, Раффи, Айкуни, Апреся Бекназаряна, Макара Бархударяна, после чего в перевоплощении событий исторического прошлого, в представлении эпизодов из жизни исторического, политического и культурно-просветительского Арцаха в романах, перевоплощении духовных и мирских политических домов.

Основа нашего исследования посвящена критике и переоценке книги историка XIX века Апреся Бекназаряна “Тайна Карабаха”.

Итак, в 1886 г. в Санкт-Петербурге в переводе с древнеармянского языка на современный армянский язык Бархударяна Макара при поддержке богатейшего бакинского мецената Аракела-ага Цатуряна (родом из Большого Сюника, РА) было издано историческое исследование Апреся Бекназаряна “Тайна Карабаха”.

Книга вызвала широкий резонанс. При этом отклики на книгу были весьма неоднозначными.

В периодической печати появились как отрицательные, так и положительные отзывы, рецензии, а также были опубликованы исследования

других авторов (Раффи “Тайна Карабаха”, Лео “Роман или история?”, Макар Бархударян “Критика критиков”). В конечном итоге, исследование Бекназаряна целиком было обесценено и отвергнуто.

В XX–XXI веках интерес к этой объявленной закрытой литературной страницей книге увеличился.

Впервые в истории армяноведения мы ставим на переоценку закрытую страницу армянской литературы XIX века.

В объекте данного исследования, помимо описательной части, связанной с русско-персидским нашествием в течение XVIII в. и в начале XIX в., с русско-армянскими (арцахскими) отношениями, а также с историческими, повествовательными, фольклорными, языковыми, дипломатическими, политическими, художественно-литературными, этнографическими, правовыми, управленческими, архивными и другими связями, с выявлением и раскрытием, научной мысли, так же представлены задокументированные драматические трещины в истории Арцаха, политическая судьба, запросы, роль меликств Хамсы во всем этом, национально-освободительное движение, политическую соориентированность, частные и общие выгоды, разногласия между меликами, споры, войны, политические игры соседних государств, в следствии чего на кон были поставлены безопасность и независимость страны.

С этой точки зрения исследуемый материал приобретает современное **научное звучание**. Работа выполнена в русле новой современной критико-аналитической (герменевтической) и переоценочной (аксиологической) системы.

Среди авторов, обратившихся к этой книге, можно выделить Баграта Улубабяна, Давида Петросяна, Рачья Бегларяна и других.

Материал “Тайны Карабаха” включает в себя исторические события связанные с политической судьбой Арцаха, которые присутствуют так же в первоклассных произведениях классиков – русского писателя, исследователя, профессора Платона Зубова (“Карабахский астролог”), большого демократа-просветителя, основоположника новой армянской литературы Хачатура Абовяна (“Рана Армении”), Раффи (“Меликства Хамсы”), Айкуни (“Путевые заметки”), Лео (“Дочь мелика”), Макара Бархударяна (“Арцах” и “Критика критиков”) и других.

Исторический роман Платона Зубова был издан в Москве в 1834 году. События и факты, изображенные в романе, относятся к периоду меликств Хамсы. По мнению известного академика Сергея Сариняна, Меликства Хамсы являются “воспоминанием об армянской государственности”.

В герменевтическом аспекте раскрываются и обобщаются типичные образы меликов Хамсы, разоблачается их ненадежность.

Исторический материал “Тайны Карабаха” в двух первых частях. Переводчик Макар Бархударян учитывая точку зрения источника, отдает предпочтение второй части, где в историческом порядке изложены как исторические трещины, так и письма различных людей (персидских шахов, русских императоров и должностных лиц, духовных, мирских и военных деятелей), в отличии от первой части.

По сведению переводчика материал первой части книги был изложен Апресом Бекназаряном под диктовку отца, а вторая часть была написана по распоряжению последнего, но с учетом совместных выводов отца и сына.

Русско-персидская война 1826-28 гг. была освещена не только в вышеуказанном историческом исследовании, но и в ашугских художественных песнях. Об этом упоминается так же в книге “Жизнь генерал-лейтенанта, князя Мадатова”. В этих песнях описываются “воины-победители, их подвиги, нераздельные с именем Князя Мадатова. Они воспламеняли воображение поэтов, которым храброе войско представлялось каким-то грозным и истребляющим фантомом, внезапно появляющимся по всюду и разбивающим противников”¹.

Про эту войну армянский поэт-гусан Мискин-Бурджи (1810-1847 гг.), живущий в этот период жил в Гандзаке, также написал ряд песен, в которых описывается победа русско-армянских войск при взятии Гандзака на берегу реки Шамхор против персов (3 сентября 1826 г.). Много лет спустя эта песня впервые **научно оценивается** нами:

Посмотрите сколько с исламской верой душ идёт

Это Шах Абас Мирза в Иран султаном идёт.

Десять тысяч аранских войск - пятьдесят туркмен идёт

¹ Жизнь генерал-лейтенанта князя Мадатова, Издание второе, г. Санкт Петербургъ, Въ Типографіи Штаба Военно-Учебныхъ Заведеній, 1863, с. 126.

*Десять тысяч обернулись Гянджу завоевать
А сорок тысяч взять Карабах идут,
Взять в свои руки крепость (Шуши) идут
Гянджинец надел саван, взяв в руки меч
На помощь Шахзаде идёт
И с таким намерением мусурмане всё идут...²*

Следующие строки свидетельствуют о том, насколько искренне посвятил себя службе отечеству Князь Мадатов (родом из центра меликства Варанда Аветараноц), который на всех войнах одерживал победу, все дни его были наполнены службой, все думы его стремились к славе Отечества:

*Потом Паскевич пришёл на помощь Мадатову
Солдаты бегают подряд: “Лев Мадатов идёт!”
Когда русский открыл из пушки огонь, они пустились в бег...
Прошли 40 дней, пришли русские войска
Армия Мадатова с 20-ю полковником-полководцем
В Акстафе отдыхали, а до Гянджи три дня дороги
Но в Шамхоре здох враг Мадатова Амирхан-Сардар....
Русский пришёл как сель, совсем другая погода
Для многих виновным словно шайтан идёт....³*

За примерное мужество, храбрость и неустрашимость командующий 3-й Гусарской дивизией, генерал-лейтенант князь Мадатов 9 июля 1829 года был награжден императором Николаем орденом Св. благоверного князя Александра Невского.

Отец и сын Абраам и Апрес Бекназаряны родились в селе Хнацах Хаченской губернии. Они с большим усердием, непоколебимостью, смелостью создавали “Тайну Карабаха”. Они пользовались большим уважением во дворце шахов, благодаря чему и многократно помогали своим соотечественникам. Именно по наставлению и совету отца была написана эта книга.

Стиль автора переводчик сравнивает с пером армянского историка Егише (V век н.э.).

² Бекназарян Апрес. Тайна Карабаха, г. Санкт Петербургъ, изд. И.Н. Скороходова, 1886, с. 373.

³ Бекназарян Апрес. Тайна Карабаха, г. Санкт Петербургъ, изд. И.Н. Скороходова, 1886, с. 375.

В литературных кругах и в различных печатных изданиях споры вокруг книги “Тайна Карабаха” были односторонними, положительные отзывы, которые возникали, были сразу же нейтрализованы и отозваны с печати, о чем сообщает Макар Бархударян.

Структура книги сложная, все части имеют соединенные друг с другом круги, его переоценка имеет срочное и актуальное созвучие, практическое значение, а выдвинутые вопросы и задачи - необходимость докозательства.

Многочисленные события представлены в книге проливают свет на личности и существование автора, о должности во дворце шаха, о роли в политической жизни Карабаха, о храбром отце, который был воеводой большого патриота Мелика Межлуми Абрраме, участии в русско-персидской войне 1795-97 годов, всецелом участии в политической и исторической жизни Арцах-Карабаха, в столкновениях мирских и духовных домов и других, не оставляют возможности усомниться в правдивости авторской принадлежности книги, что делает вопрос о переоценке издания неотложным.

Версия Макара Бархударяна об обстоятельствах создания романа дают основание Раффи и Лео усомниться в личности автора и исторической надежности сюжета. Однако биографический метод описания и непосредственный отзыв происходящих событий свидетельствуют о непосредственном восприятии исторического времени и событий, что вряд ли может быть атрибутом выдумки автора. Что касается аргументирования Раффи по поводу того, что некоторые страницы книги прямо идентичны “Истории Хамсы”, то это можно предписать не на прямую переписку, а точному представлению исторических событий, что в свою очередь подтверждает ценность “Тайны Карабаха” как документального явления.

Книга требует трезвого научного подхода, а не бессмысленного отрицания древних времен. Так же как и для каждого армянина дорога история родины, так и “Тайна Карабаха” и изложенные в нем многочисленные фрагменты судьбы арцахского армянства должны быть переоценены и возвращены народу со святой миссией служить его интересам.

Роман раскрывает тяжелую и драматическую книгу арцахского народа XVIII - XIX веков, возможно, в какой-то степени с аспектами не касающихся некоторых исторических вопросов, но события представляют данный време-

нной отрезок с качественной стороны. С этой точки зрения издание можно по праву считать нетленным памятником истории Арцаха. Оно было отвергнуто около 130 лет и, бесспорно, имеет необходимость быть переоцененным, которое представляет собой научную новизну и **актуальное звучание**.

Мы думаем, что переоценка “Тайны Карабаха” станет **ощутимым научным достижением** в армянской литературе.

Это явление приемлемо не только в армянской, но и в мировой литературе.

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Methods of mental activity as a factor in the effective assimilation of knowledge by students

Abstract: The article rsmatrivantsya problem of formation of analytical and synthetic skills of the students in higher education, there is quite a low level of formation of the students of the first years and the ways of their development.

Keywords: analytic-synthetic activity, intellectual skills, thinking operations, analysis, synthesis, levels of formation of analytical and synthetic skills.

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Приемы умственной деятельности как фактор эффективного усвоения знаний студентами

Аннотация: В статье рассматриваются проблема формирования аналитико-синтетических умений у студентов высших учебных заведений, отмечается довольно низкий уровень их сформированности у студентов младших курсов и предлагаются пути их развития.

Ключевые слова: аналитико-синтетическая деятельность, интеллектуальные умения, мыслительные операции, анализ, синтез, уровни сформированности аналитико-синтетических умений.

Практика работы в ВУЗе свидетельствует, что в течение последних лет имеет место снижение умений студентов первых курсов, вчерашних выпускников общеобразовательных школ, работать с текстом учебной книги. Студенты первых курсов не понимают текст учебника, затрудняются выделить главные мысли, не могут передать смысл прочитанного своими словами. Часты случаи, когда добросовестно подготовившиеся к семинару студенты после чтения своего конспекта не могут пересказать суть прочитанного своими словами, затрудняются сформулировать основные мысли, задавать вопросы о сути прочитанного. Выше перечисленное свидетельствует, что студенты первых курсов слабо владеют мыслительными операциями анализа и синтеза, недостаточно сформированы и другие мыслительные операции: обобщения, сравнения, классификации, что сказывается на неумении работать с текстом учебной книги, и, следовательно, понимать его. В условиях резкого увеличения объема знаний необходимо научить обучающихся основам организации собственной учебной деятельности, способам поиска, переработки и представления информации, приемам и методам умственного труда [1,2,3,4].

Проблема развития мышления учащихся на основе формирования приемов умственной деятельности рассматривается в работах логиков (П.В. Копнин, И.Я. Чупахин, Б.М. Кедров и др.), дидактов (И.Я. Лернер, И.Н. Пospelов и др.), психологов (Л.С. Выготский, А.Н. Леонтьев, Д.Б. Эльконин, Н.Ф. Талызина, В.В. Давыдов, Н.А. Менчинская, Е.Н. Кабанова-Меллер и др.). В этих работах отмечается взаимосвязь процессов обучения и развития, роль приемов умственной деятельности в развитии логического мышления, зависимость приемов формирования умственных действий от способов обучения.

Исходя из признанного в психологии положения, что основой мыслительного процесса являются операции анализа и синтеза (Д.Н. Богоявленский, Н.А. Менчинская), Н.Н. Пospelов отмечает, что правильный анализ любого целого – это анализ не только частей, элементов, свойств, но и их связей и отношений. Он приводит, поэтому не к распаду целого, а к его преобразованию,

которое и есть синтез. Задача анализа заключается не только в разложении предмета или явления на составные части, но и в проникновении в сущность этих частей. Задача синтеза состоит не только в объединении частей предмета или явления, но и в установлении характера их изменения в зависимости от несущественных факторов, неучтенных при анализе. Применяемая мыслительная операция в процессе учебной деятельности выступает в качестве интеллектуального умения (приема умственной деятельности).

Обучение анализу и синтезу предполагает формирование умений: разлагать объекты на составные части; выделять отдельные существенные стороны объекта; изучать каждую часть (сторону) в отдельности как элемент единого целого; соединять части объекта в единое целое. Для определения уровней сформированности интеллектуальных умений анализа-синтеза у студентов первых курсов нами были использованы методика Н.Н. Поспелова [5]. Суть методики в том, что сформированность интеллектуальных умений определяется характером допускаемых студентами логических ошибок при выполнении ими соответствующих заданий.

Для определения уровней сформированности анализа и синтеза студентам предлагались вопросы и задания, требующие применение этих умений и задания с использованием учебника в качестве источника знаний. Например, прочитать параграф (статью), найти основные мысли и назвать их, изложить кратко содержание, составить план рассказа, сформулировать два-три вопроса, отражающих суть рассказа (статьи), отметить спорные утверждения (если они есть), привести свои примеры [6].

Анализ работы студентов проводился по уровневой характеристике:

1 уровень. Пересказ текста почти целиком составлен из предложений подлинника, очень подробный, без вычленения главного. Вопросы не отражают суть статьи (рассказа).

2 уровень. Пересказ статьи по абзацам с незначительной обработкой предложений. Не все вопросы подтверждают суть статьи.

3 уровень. Пересказ главных разделов статьи с включением других примеров и комментария. Вопросы отражают суть статьи.

4 уровень. Изложение основных разделов статьи с некоторыми замечаниями критического характера. Соотнесение заголовка с содержанием статьи, определение главной идеи статьи. Вопросы отражают суть статьи.

В экспериментальном исследовании приняли участие 182 студента первых курсов ПГУ им. Шолом-Алейхема.

Анализ работ свидетельствует, что 76% студентов первых курсов не владеют умениями работы с текстом учебника, затрудняются вычленять главные мысли, формулировать вопросы. У 18% первокурсников эти умения на втором уровне сформированности, и только 6% обучающихся проявляют умения на продуктивном (3) уровне. Причем, более высокие результаты проявили студенты журналистского и филологического факультетов, государственного муниципального управления и таможенного дела, хуже результаты у обучающихся на педагогических специальностях. Сказывается престижность выбранной специальности и недостаточность работы с текстовым материалом на уроках в общеобразовательной школе, школьники стали мало читать образовательной и художественной литературы. Интересно, что эти показатели несколько выше в общеобразовательных школах автономии (на основании наших исследований по описанной выше методике) – в 10 классах – средний показатель сформированности этих умений составил 1,8 уровня, в 11 классах – 2, а в ВУЗе – 1,3. Мы объясняем это тем, что ученики с 3 и 4 уровнями сформированности умений анализа-синтеза более успешно сдают ЕГЭ и поступают в более престижные ВУЗы страны [6].

Развитию и совершенствованию операций анализа и синтеза во многом способствует работа с учебной книгой. Известны три уровня работы с книгой: познавательный (главная цель – усвоение), аналитический (главная цель – критика), творческий (главная цель – созидание нового). Для студентов первого курса наиболее приемлем познавательный уровень, включающий в себя наиболее распространённые приёмы работы с книгой: выделение существенного, смысловой группировки, составление плана, конспекта, тезисов, схем, графиков, диаграмм, формулирование выводов, чтение-поиск, чтение-сортировка.

При работе с текстом учебной литературы важна установка на определенный характер работы (знакомство с содержанием или запоминание

его; усвоение главных идей и выводов; выделение каких-либо фактов, на базе которых строятся доказательства; изучение способов доказательства и т.п.). Студент, овладевший операциями анализа и синтеза, глубоко понимает изучаемый текст; выделяет утверждения, которые доказываются, способы и приёмы доказательства, оценивает их эффективность; способен проводить анализ структуры текста, т.е. ясно представляет, о чём говорится и что именно говорится, из каких смысловых частей состоит текст и какие связи проявляются между ними; не только вычленяет смысловые части трудного текста, но и выделяет и разрешает содержащиеся в нём проблемные ситуации [7].

Преподаватель, так или иначе, стимулирует продумывание текста, заставляет анализировать факты и явления, устанавливать противоречия между “старыми” и “новыми” идеями, заставляет следить за логикой изложения, вникать в методы доказательства или опровержения, которые приводятся в тексте, припоминать факты, подтверждающие или опровергающие утверждения и находить им правильные объяснения, помогает объективно оценить содержание текста, выделять существенное.

Для составления конспекта надо предварительно научиться делать выписки, составлять план и тезисы текста, а это значит, что конспектирование стимулирует совершенствование всех мыслительных операций, в том числе и операций анализа и синтеза. Составление конспектов и тезисов требует умения производить анализ и синтез текста и одновременно совершенствует их. Тезисы более детально, чем конспект, расчленяют текст и выражаются в виде кратких утверждений, которые доказываются при помощи рассуждений. Для составления тезисов обучаемые разбивают текст на несколько частей, выделяют в них самое существенное, определяют суть, и назначение каждой части и, наконец, формулируют четкие положения, утверждающие или опровергающие какие-либо высказывания, содержащиеся в тексте. Аналогичные результаты достигаются в процессе работы над аннотациями, резюме, рефератами.

В практике работы хорошо зарекомендовали себя следующие приемы.

1. Обучению работы с текстом учебника конспектированием текста с ограниченным объемом конспекта: студент представляет конспект к семинару, объем которого ограничен 1 листом формата А4, независимо от количества

вопросов семинара. Устно отвечает на семинаре тоже пользуясь только этим конспектом.

2. Составлением тестовых заданий по каждому вопросу семинара по пройденной теме с вариантами ответов, вопросов на соответствие, классификационных схем, что учитывается в его балльно-рейтинговой оценке.

3. Работа над рефератами и презентациями.

Полученные данные позволяют применять концепцию задачного структурирования учебного материала специальных вузовских дисциплин с целью интеллектуального развития личности в студенческом возрасте.

Исследование показало, что в процессе обучения происходит формирование интеллектуальных умений, что способствует более успешному овладения умениями, в основном переходу с I на II уровень, в меньшей степени осуществляется переход на III и IV уровни, что связано, очевидно, с личным творческим потенциалом обучаемых. Сравнительный анализ полученных результатов диагностик интеллектуальных умений по методикам Н.Н. Поспелова и В.П. Беспалько показал, что результаты уровней их сформированности по обоим методикам практически совпадают, особенно показатели сформированности продуктивных уровней, умений их переноса в новые ситуации. Творческих уровней, по нашим данным, достигают только 14-16% обучаемых.

Таким образом, систематическое применение интеллектуальных умений в учебной деятельности становится инструментом приобретения знаний – приемами умственной деятельности, способствуют более качественному усвоению знаний. Применяемые методики обучения показали способность студентов осуществлять широкий перенос сформированных интеллектуальных умений на учебный материал других тем учебной дисциплины, других дисциплин. Результаты работы расширили известные представления о возможности развития операций анализа и синтеза через формирование аналитико-синтетических навыков мышления обучающихся на материале отдельных учебных предметов, что позволяет активнее использовать методики развивающего обучения в практике вузовской профессиональной подготовки будущих учителей.

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Onomatopoeia and interjections like delokutives

Abstract: The article says that the first delokutives were onomatopoeia and interjections which, after passing through "language" they became morphological and lexical units of the language. From this perspective, interjections are "exemplary" delokutives, which are identified by the example of many of derivation and functional properties of the units.

Keywords: onomatopoeia, interjections, sound symbolism, delocutives, sound gestures, reflex cries, interjection delocutives, functional diversity of interjections.

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Звукоподражания и междометия как делокутивы

Аннотация: В статье говорится о том, что первыми делокутивами были звукоподражания и междометия, которые, пройдя через «оязыковление», стали морфологическими и лексическими единицами языка. С этой точки зрения междометия являются «образцовыми» делокутивами, на примере которых выявляются многие деривационные и функциональные свойства рассматриваемых единиц.

Ключевые слова: звукоподражания, междометия, звукосимволизм, делокутивы, звуковые жесты, рефлексорные выкрики, междометные делокутивы, функциональное разнообразие междометий.

По своему происхождению делокутивы коррелируют со звукоподражаниями. В обоих случаях речь идет об изоморфизме определенной звуковой формы.

Звукоподражательная теория, как известно, основывается на предположении о том, что первые слова были звукоподражаниями, и тесно связана с теорией звукосимволизма. Генезис речевого общения сводился этой теорией к врожденной склонности человека имитировать природные шумы.

Звукоподражательную и междометную теории критикуют за абсолютизацию принципа звукоподражания. По мнению Ф. Соссюра, звукоподражания и междометия «лишь приблизительные и наполовину условные имитации определенных звуков... Войдя в язык они в большей или меньшей степени подпадают под действие фонетической, морфологической и всякой иной эволюции, которой подвергаются и все остальные слова...» [1]. Э. Сепир замечает, что междометия и звукоподражания не более идентичны естественным звукам и вскрикам, чем гармонии Россини, передающие бурю в увертюре к «Вильгельму Теллю», истинной буре [2].

Ф. Брюно и Ш. Брюно исключают междометия из числа частей речи (*espèces de mots*) в системе, предложенной в «*Précis de grammaire historique*» [3], так как, по мнению авторов, они представляют в действительности только крик, а не слово. Междометие определяется ими как особенный элемент в человеческой речи, который может быть лишен всякого интеллектуального наполнения, часто сопровождается жестами, передает внезапную реакцию и этим близок к крикам животных. Таким образом, проводится грань между словами и междометиями, которые, следовательно, не могут образовать разряд со статусом категории части речи. Вместе с тем, междометиям авторы посвящают первую главу в разделе «Формы слова и синтаксис», где их определяют как крик удивления, боли и т.д., естественно короткий, стремящийся к одному слогу или даже одной гласной, с обязательным маркированием междометия восклицательным знаком. Так как интонация и речевая ситуация не оставляет сомнений в отношении значения конкретного междометия, поэтому, считают авторы, междометием может быть всякая французская гласная. Вместе с тем, авторы считают, что при изучении МЕ можно проследить путь превращения крика в знак, переход от животного рефлекса к человеческому языку.

Дамурет и Пишон видят в междометиях элементы, свойственные первобытному состоянию языка, не слова, а рефлекторные выкрики. Дамурет и

Пишон называют междометия языковым эмбрионом, близким к крикам животных и отличающимся от последних только большим богатством эмоционального содержания. В остальном же междометия, составляющие разряд «именной фактив», сохраняют свой спонтанный характер, и не подчиняются фонетическим правилам членораздельной речи. Состоят именные фактивы не из фонем, а из шумов, и неразрывно связаны с фразовой интонацией [4]. Среди других особенностей междометия – именного фактива – отмечено несовершенство их графической передачи, присутствие в них элементов, не свойственных строю французского языка, *в речи они каждый раз создаются заново*. В целом, предпринятое Дамуретом и Пишоном исследование междометий является одним из наиболее детальных, авторы сопровождают выводы богатым фактическим материалом, интересен этимологический аспект анализа целых разрядов и отдельных междометий – именных фактивов. Следует отметить, что эти авторы, как и Брюно, отождествляют междометия с любым криком, возгласом, признают аналогичным крикам животных, считают междометия элементом спонтанным, не имеющим определенной звуковой оболочки. Однако при этом анализу подвергается вполне определенный класс единиц, которые определенным образом классифицируются, им отводится вполне определенное положение в системе частей речи.

В таксономии междометий на первый план выдвигается нерасчлененность, синкретизм формы, формальные качества, позволяющие междометиям выполнять свойственные им функции: вокальность, краткость (исследование показало, что фонетический состав междометий, входящих в ядро исследуемого функционально-семантического класса, не превышает трех-четырех фонетических слогов), экспрессивность и емкость. Вопрос о том, заключена ли экспрессивность в самой природе звуковой субстанции, или же обусловлена субъективной фантазией, или это культурное явление, обязанное приобретенным ассоциациям, лежит в области специальных исследований, в частности теории звуко-символизма [5]. Делама называет звуко-символические междометия синестетическими, или аналогическими и делит все звукоподражания на имитативные и синестетические [6]. Гиро считает, что среди звукоподражаний различаются три группы: акустические, синестети-

ческие и визуальные, отмечая при этом, что последнее можно считать частным случаем синестетических [7]. При этом под синестезией понимается один из важнейших компонентов психофизиологической основы символизма. Состоит в том, что впечатление, соответствующее данному раздражителю и специфичное для данного органа чувств сопровождается другим, дополнительным ощущением или образом, часто характерным для другой формы восприятия. В случае междометий звуком передаются не только акустические, но и другие (визуальные, психофизиологические) явления.

С.О. Карцевский назвал все звукоподражания криками, присоединив к возгласам живых существ и «*cris de choses*» воспроизведенные механические шумы, и показал трансформацию полностью мотивированного знака (знака – признака) в знак, утрачивающий мотивированность, превращающийся в конвенциональный знак-символ, приближающийся к слову [8].

Многие исследователи подчеркивают близость междометий к жесту. В исследованиях, посвященных разговорной речи, отмечается разряд так называемых «звуковых жестов», являющийся характерной особенностью живой разговорной речи. Классификация звуковых жестов, представленная в исследовании «Русская разговорная речь» под редакцией Е.А. Земской, выделяет следующие разряды:

— мотивированные изобразительные звуковые жесты – передача звуков, сопровождающих жизнь и деятельность человека (изображение цоканья копыт лошади, шум мотора, плач младенца и т.п.);

— звуковые жесты-символы, передающие определенные конвенционально закрепленные интенциональные состояния: Ая-яй (укор); А-а! («теперь понятно»); Угу (знак внимания, согласия); Тьфу! (пренебрежение, презрение, отвращение) и т.д.;

— апеллятивные звуковые жесты: Эй, Ну, Ау! («отзовись»), Тсс! (призыв к молчанию) и т.п.;

— эмоциональные звуковые жесты: Ах, Ох, Ой, О-о, Ого-го и т.п.

При этом отмечается, что с точки зрения фонетики данного языка звуковые жесты не каноничны, а с точки зрения грамматики – аморфны, однако их «оязыковление», лексикализация превращает их в морфологические единицы языка [9].

Очевидно, что определенная фонетическая «внутренняя форма» накладывает немалый отпечаток на атрибуцию той или иной единицы к классу междометий. Отличие междометий от произвольных криков заключается в конвенциональности, в закреплённости в речевой традиции, отраженной в системе языка, в их соотнесённости с определенным содержанием, с типом ситуации и типичной каузально-интенциональной [10] реакцией говорящего на данную ситуацию. Конвенциональная закреплённость междометных единиц за тем или иным проявлением аффективности приближает междометие к слову с его номинативной функцией. Как указывал А.Ф. Лосев, «человек издает много разных звуков: кашляет, зевает, плюет, целуется и пр. Фонема имени есть членораздельный звук, причем каждый звук произносится при помощи специального и всегда определенного движения определенными органами, реализуемого тоже определенными и закономерными признаками» [11]. Междометие не называет, но, в силу конвенциональной связи, косвенно обозначает определенное эмоциональное состояние. Эта конвенциональность имеет делокутивную природу.

Междометия, как и все делокутивы, семантически непрозрачны и **автономны** как знаки, т.е. значимым становится сам акт произнесения данного знака. Если означаемое обычного языкового знака соотносится с предметом, объектом, явлением внеязыковой действительности ($X \rightarrow Y$), то автономный знак обозначает самого себя XO , т.е. означаемым такого знака является само произнесение означающего. На основании делокутивной автономности к междометиям некоторыми лингвистами относятся формулы приветствия *bonjour, salut, adieu*. В этом они приближаются к перформативам — инвективам, мелиоративам и т.п.

Если обычное употребление языкового знака можно, пользуясь репрезентацией, предложенной О. Дюкро, представить семиотической формулой $E(S)$, где E – означающее, а S – означаемое, то автономное употребление знака (например любая цитация) имеет формулу $E_2[S_2=E_1(S_1)]$, где означаемым является само произнесение знака, причем в случае «чистой» ономапии или цитации эта формула приобретает вид $E(E=S)$, т.е. содержание означающего состоит в воспроизведении звуковой оболочки, которая представляет собой знак-копию, вследствие звукоподражания источнику передаваемого звука.

Таковы ономапопеи, репрезентирующие, например, крики животных, такие как *sosorico*, *miaou*, *ouah-ouah* = кукареку, мяу, гав-гав и т.д. Ряд междометных делокутивов имеет двойное употребление. Так, междометие *ouf* в качестве ономапопеи представляет звук, издаваемый человеком, переводящим дыхание после физического усилия, боли или любой другой причины, затрудняющей дыхательную функцию. Однако в результате делокутивной деривации (произнесение «уф» в ситуации облегчения) данная междометная единица приобрела значение *речевого рефлекса*, отражающего чувство облегчения: «Après la fumée de cet atelier, **ouf!** Ça fait du bien de marcher un peu» (A.Gide); = После дыма этого цеха, **уф!** Хорошо немного пройтись; «...Nous étions sauvés.- **Ouf!** M'écriai-je, en m'épongeant le front, car, malgré le froid, je suis à grosses gouttes» (A. France)» = Мы были спасены. – **Уф!** Воскликнул я, вытирая лоб, потому что, несмотря на холод, на нем выступили большие капли пота. Как следует из примеров, полная аналогия наблюдается и для русского междометия уф!

Стереотипность, повторяемость закрепляет в узусе оба употребления — «ouf»₁ – ономапопею и «ouf»₂ – модусное междометие, выражающее чувство, отношение. Если промежуточная стадия перехода от ономапопеи к модусному междометию может быть выражена семиотической формулой $E_n [S_n (E_1=S_1)]$, где означающее E_n имеет означаемое S_n , которое представляет собой «цитацию» звука-признака определенной ситуации (перевода дыхания), то закрепленная в языке модусная междометная единица «ouf»₂ имеет формулу $E_2(S_2)$, где S_2 – выражение чувства облегчения. Возникает функциональная омонимия.

Таким образом, ономапопея, теряя свою первичную репрезентативную функцию звукоподражания, приобретает субъективно-оценочную модальность на основе делокутивной деривации и метонимического / метафорического переноса. Например, французское междометие *Patatras!* – чаще употребляется для обозначения неудачи, катастрофы $E_2(S_2)$, чем физического падения $E_1(S_1)$. Когда в ситуации разбившейся посуды присутствующий при этом человек говорит «Бух!», это не ономапопея а, скорее, модусное междометие, отражающее отношение к пропозиции (предметной ситуации), попытка разрядить обстановку, смягчить «трагизм» или неловкость ситуации. Такие междометия имеют характер речевых автоматизмов, связанных с

определенными типичными поведенческими ситуациями. Причем они не описывают ситуацию, а маркируют ее, выступая в качестве знака-индекса.

Такая автономность (автореферентность) приближает междометия к дейксису, «шифтерам» — индексальным знакам, средствам актуализации высказывания в речи.

По мнению С. Д. Кацнельсона, дейктические средства имеют следующие свойства: 1) ситуативность, т.е. смысловая зависимость от ситуации речи, вне которой значение этих элементов расплывчато, неясно; 2) эгоцентризм, т.е. постоянная соотнесенность с субъектом речи; 3) субъективность: внешний объект выделяется не по его собственным признакам, независимым от говорящего лица, а по совершенно случайному для него признаку соотнесенности с говорящим лицом; 4) мгновенность и эфемерность актуального значения, меняющегося от одного случая к другому.

Ш. Балли выделил три функциональных разряда междометных единиц:

— восклицания (возгласы) – выражают эмоции и проявления воли, лежащие в основе модуса, носят, таким образом, модальный характер (Eh bien, chut!);

— ономотопеи – описательны, передают события, обстановку или явления, составляющие предмет диктума, т.е. носят диктальный характер;

— «сигналы» – дают указание, выполняют дейктическую функцию, выражают отношения и напоминают грамматические связи (Pst!, Holà!) [12].

Ш. Балли относит междометия к явлениям пограничным между морфологией и синтаксисом. В обычной своей позиции междометия – это слова-фразы, «слова речи». По его мнению, междометие может войти в определенную лексическую категорию (глагол, имя), но только путем транспозиции (un patatras = une chute, crier gare = avertir).

При этом, Балли отмечает, что все другие слова-фразы (mots-phrases de la parole — «слова-фразы речи») всегда могут выступать и в функции собственно слова, междометия же (mots-phrases de la langue — «слова-фразы языка») не могут стать словом иначе как путем транспозиции. Подчеркивая своеобразие междометных единиц в сравнении с другими словами, Балли характеризует их как любопытную комбинацию слов с «пением», «аффективную форму речи». Слово у Балли представлено в единстве интеллекту-

ального и аффективного элементов при доминировании одного из них. Восклицания же (куда включаются «чистые» междометия и обычные слова, утратившие связи со своим прежним семантическим и синтаксическим значением и уподобившиеся междометиям) представляют крайнюю точку на оси семантической эволюции, где аффективный элемент полностью замещает интеллектуальный. Данные восклицания «произносятся только для выражения чувств, эмоций, и все это без малейшего вмешательства понятия об этом чувстве. Это чувство определяется в каждом случае только контекстом и интонацией». Поэтому восклицания у Балли не являются словами, а представляют собой наряду с грамматическими знаками, категорию средств косвенного выражения (в отличие от средств прямого, лексического выражения) [12].

Таким образом, делокутивы – междометия имеют следующие черты: а) автореферентность, то есть автонимное употребление знака, при котором он обозначает сам себя; б) индексальность, т.е. делокутивы приобретают смысл только в момент употребления в определенной ситуации. Междометные единицы (МЕ) как делокутивы имеют недескриптивный, индексальный характер. Их семантическое значение определяется исключительно условиями употребления. Употребить МЕ – значит указать на то, что такие условия употребления имеются.

Отмечая разнообразие функциональной стороны слов-фраз, Л. Теньер считает, что традиционные междометия составляют группу аффективных слов-фраз (другая группа – логические слова-фразы). Аффективная группа подразделяется, в свою очередь, в зависимости от способности выражать более или менее активное/пассивное отношение говорящего к окружающему миру, на **императивы**, **репрезентативы** и **импульсивы** (фразоиды непосредственной реакции). **Императивы** выражают активное отношение говорящего к окружающей действительности, к собеседнику и различаются тремя оттенками: формулы вежливости – S'il vous plaît! - «Пожалуйста!», призывы (апеллятивные фразоиды) – Hé! - «Стой!», Pst! - «Эй!» и приказы – Chut! - «Тсс!». **Репрезентативы**, или имитативные слова-фразы, выражают отношение отождествления между говорящим и внешним миром, что отражается в поиске путей прямой имитации Pan! - «Хоп!». Наконец, **импульсивы**, в противоположность

императивам, выражают пассивное отношение говорящего: чувственные слова-фразы (сенситивные фразоиды), в которых рецептивный компонент достигает максимума – *Aïe!* - «Ой!»; эмотивные, где этот компонент менее выражен – *Oh! Hélas!* - «Увы!»; рассудочные (рациональные) – *Dame!* - «Конечно!»; *Ouais!* - «Еще бы!», которые приближаются к логическим словам-фразам – *Oui!*, *Non!*, *Si!*, *Voici!*, *Voilà!* [13]. Классификация Теньера в основном отражает превалирующее в лингвистической традиции деление междометий на три группы – эмотивы, императивы и собственно ономатопои.

Как указывает Н.Д. Арутюнова, эмотивные, т.е. выражающие эмоции и оценку, элементы языка могут рассматриваться как интенциональные, то есть направленные от человека к миру, и каузальные, направленные от мира к человеку [14].

Междометия представляют собой лексико-грамматический разряд в составе аффективных языковых средств, корпус которых определяется на основании различных критериев, среди которых исследование позволило более или менее однозначно выделить единицы, принадлежащие к разряду делокутивов.

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Video sequence and its role in the course of the study of musical culture of the North-Asian region

Abstract: The article is devoted to the problem of teaching of the discipline "Musical culture of Siberia" for students of a creative institute of higher education. The functions of video sequence are considered; descriptions of documentaries and feature films widely used at lectures are offered; methods of revitalization of students' research activities are shown.

Keywords: video sequence, video-method, musical culture, Siberia, documentaries, feature films, Siberian theme.

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Видеоряд и его роль в процессе изучения музыкальной культуры североазиатского региона

Аннотация: В статье освещаются проблемы преподавания дисциплины «Музыкальная культура Сибири» для студентов творческого ВУЗа. Рассматриваются функции видеоряда, предложены описания используемых на лекциях документальных и художественных фильмов, указываются приемы активизации исследовательской деятельности студентов.

Ключевые слова: видеоряд, видеометод, музыкальная культура, Сибирь, документальные фильмы, художественные фильмы, сибирская тематика.

1. Актуальность темы. Цель. Задача. Метод

Актуальность. Повсеместное проникновение в практику преподавания дисциплин технических устройств, позволяющих воспроизводить не только звук, но и изображение, позволяет рассматривать *видеометод* как самостоятельный наряду с традиционными методами передачи информации [1]. Музыкальная культура североазиатского региона является предметом изучения в Красноярском государственном институте искусств. Применение современных методов обучения позволяет активизировать неподдельный интерес со стороны обучающихся ко многим темам дисциплины.

Цель статьи – описать некоторые формы работы, связанные с видеометодом, которые используются на занятиях со студентами. **Задача** статьи – представить как можно более полно «арсенал» используемых на занятиях видеоматериалов, сделав их доступными для широкой педагогической и студенческой аудитории.

Основной **метод**, используемый при подготовке статьи – метод отбора из множества размещенных в Интернете материалов по определенным критериям, главные из которых – степень информативности, уровень художественной значимости, эстетическая сторона используемых видеоматериалов.

2. Характеристика *видеометода* и *видеоряда*

Видеометод – это один из инновационных методов обучения. Как и обычный *метод*, он предполагает совместную деятельность преподавателя и обучающихся, направленную на достижение определенной цели в процессе обучения.

Видеометод может служить не только для изложения нового материала, новых знаний, но и для их контроля. В то же время абстрактное мышление, творчество и самостоятельность обучающихся (студентов) не могут быть стимулированы просмотром только *видеоряда* по учебной проблематике. Для их активизации необходима специальная организация занятий, где *видеоряд* становится необходимым компонентом в проведении самостоятельных исследований.

Понятие *видеоряда* подразумевает использование определенной последовательности изображений на любом носителе видеоинформации (пленка, кинофильм, видеозапись).

Использование *видеоряда* в педагогике обусловлено различными причинами. Одна из основных заключается в том, что аудиовизуальная форма преподнесения информации не только активизирует внимание, но и делает занятие более интересным. *Видеоряд* – это самый легкоусваиваемый и максимально насыщенный поток информации. Благодаря активизации зрительной памяти решаются многие педагогические, в первую очередь познавательные проблемы. Необходимо так же учитывать тот факт, что в XX столетии благодаря использованию достижений технического прогресса (кино, видео), была создана так называемая *экранная* или *аудиовизуальная* («звукозрительная») культура. Она дополняет традиционные формы общения между людьми – культуру непосредственного общения и культуру письменную (книжную) [2].

Сочетание традиционных методов обучения – лекций педагога, самостоятельного изучения специальной литературы студентами с *видеометодом* – является необходимым условием для успешного обучения студентов высшего профессионального образования на современном этапе.

2.1. Видеометод на занятиях «Музыкальной культуры Сибири»

Среди дисциплин, интерес к которым значительно повышается при использовании *видеометода*, можно назвать «Музыкальную культуру Сибири». Тематика занятий, где возможно использование созданных к настоящему времени «экранных форм текста», достаточно обширна. В качестве *видеоряда* можно использовать, в первую очередь, документальные фильмы, а также художественные (исторические), связанные с «сибирской» тематикой.

Наиболее актуальны занятия с использованием *видеоряда* для студентов-звукорежиссеров. Для них это возможность ознакомиться с результатами совместной работы звукорежиссера и видеооператора, глубже проникнуть в специфику своей профессии [3, 4].

Документальное (неигровое) кино – особый вид кинематографа, в основе которого подлинные материалы, интересные события, явления культуры,

научные факты [5]. Задачи, которые решаются в документальных фильмах, различны. «Учебные фильмы» используются как средство обучения; с исследованиями в какой-либо области знаний связаны исторические, географические, этнографические документальные фильмы.

Наиболее доступными и органично «встраивающимися» в ход повествования о музыкальной культуре Сибири являются документальные фильмы, содержание которых связано с показом особенностей культурно-географического «ландшафта» Сибири.

2.2. Документальные фильмы о Сибири

Рассмотрим примеры документальных фильмов, которые позволяют познакомиться с бытом местного населения, с природой, традиционными промыслами, с культурными традициями, верованиями народов.

Предложенный перечень документальных фильмов может быть расширен за счет поиска интересующей педагога (студента) информации в сети Интернет на соответствующих сайтах.

ГЕО. Загадки Сибири (Снежный дух Алтая / Таежный тупик). Год выпуска: 2006. Страна: Россия. Продолжительность: 00:52:00.

Описание: «По следам снежного барса». В фильме повествуется в интересной увлекательной форме о поисках зоологами редкого животного – снежного барса. Экспедиция ученых и местных жителей в труднодоступные области горного Алтая составляет «интригу» фильма.

«Таежный тупик». Более 30 лет прожила в сибирской тайге семья Лыковых. Об уникальной судьбе сибирских староверов рассказывают очевидцы, зрителям представлены, в том числе архивные, съемки последней из рода – Агафьи Лыковой.

Алтай. Начало начал. Год выпуска: 2010. Производство: ООО "Даниан-фильм". Продолжительность: 01:00:36. Автор и режиссер: Дмитрий Лавриненко. Диктор: Никита Семенов-Прозоровский.

Описание: В фильме представлены уникальные природные богатства Алтая, а также картины горной системы Алтайских гор и предалтайской равнины. Территория Алтая охватывает территорию с Северо-Запада на Юго-

Восток более чем 2000 километров, где проживает древний и обладающий своеобразной культурой народ.

С молитвой. Старообрядцы в деревне Уймон. Год выпуска: 2009 год. Страна: «Фонд. Алтай – XXI век». Продолжительность: 00:36:12.

Описание: В фильме подробно рассматривается история и обычаи проживающих в Уймонской долине (Алтай) старообрядцев – первых русских поселенцах, чтущих и хранящих древние обычаи предков до настоящего времени.

«Таинственная Россия» №46. Шаманы. - Республика Хакасия. Дорога в параллельный мир. Год выпуска: 21.10.2012. Страна: Россия, НТВ. Продолжительность: 00:44:15.

Описание: В фильме подробно рассматриваются культура и традиции тувинцев, русских старообрядцев, а также представлены особенности буддизма в Туве.

«Табу. Последний шаман». Страна: Россия, СССР. Фильм учебной Киностудии ВГИКа при участии Института Этнографии АН СССР. Год выпуска: 1963.

Описание: Два фильма. "Табу. Последний шаман", о судьбе шаманства на п-о. Таймыр и, в частности, о последнем шамане и его наследниках, о традициях "Ня", их история, прошлый и настоящий быт.

2.3. Художественные фильмы

В ряду художественных фильмов, связанных с историей освоения Сибири и Дальнего Востока, следует назвать немногочисленные, к сожалению, работы выдающихся отечественных и зарубежных режиссеров. Характеризуя в целом каждый фильм как пример осмысления в киноискусстве событий, связанных опосредованно с музыкальной культурой региона, на лекциях появляется возможность познакомить студентов с выдающимися деятелями культуры России – уроженцами Сибири.

Так, в 1961 году на экраны страны вышел художественный фильм режиссера Агаси Бабаян (Россия) «Дерсу Узала». В 1975 году режиссером Акирой Куросава (Япония) на тот же сюжет был поставлен одноименный фильм с участием выдающихся сибиряков, исполняющих главные роли. Роль Дерсу

Узала сыграл Максим Монгужукович Мунзук – выдающийся тувинский актёр, один из основателей национального театра, народный артист России и Республики Тыва, лауреат Государственной премии Республики Тыва. М. Мунзук был разносторонней творческой личностью: актёр, режиссёр, певец, собиратель музыкального фольклора, композитор, педагог. Им сыграно огромное количество ролей самого различного характера на сцене Тувинского музыкально-драматического театра им. В. Кок-оола. Свою творческую деятельность Мунзук начинал руководителем военного оркестра артиллерийского полка Тувинской Народной Республики. В 1939 году он был назначен руководителем впервые организованного в Туве театра-студии «Уран театр». В историю страны Максим Мунзук вошёл как один из основателей национального тувинского театра. Самым выдающимся достижением актёра стала заглавная роль в фильме Акиры Куросавы «Дерсу Узала», получившем множество престижнейших наград, в том числе и премию американской Киноакадемии «Оскар». Всего Мунзук снялся в 22 картинах. В их числе «Пропажа свидетеля», «Предварительное расследование», «По следу властелина», «Последняя охота», «Валентина», «Мечь» [6].

Роль географа Владимира Арсеньева в фильме Куросавы сыграл Юрий Мефодьевич Соломин – актер и режиссер Малого театра, лауреат Государственной премии КГБ (1985), народный артист СССР (1988). Ю.М. Соломин и его брат В.М. Соломин родились в Чите в семье музыкантов. В 1971 году за роль в телевизионном фильме «Адъютант его превосходительства» Ю.М. Соломин стал лауреатом премии РСФСР им. братьев Васильевых.

Другой период истории Сибири отражен в художественном фильме «**Даурия**» (Ленфильм, 1971, режиссер Виктор Трегубович). Сюжет фильма связан с одноименным романом читинского писателя К. Седых и повествует о жизни Забайкальской казачьей деревни. Главные роли исполняют братья Соломины – Юрий и Виталий. Поскольку ряд эпизодов был отснят в Чите, на лекциях большой интерес вызывают высказывания зрителей: «Даурия» – это шедевр отечественного кинематографа. Помню эпизод съёмок фильма «погоня за каторжником». Виктор Трегубович, увидя огромную белую наледь на реке Никишиха, решил изменить сценарий погони. Казаки сели на лошадей. Так этот снежный ландшафт на фоне цветущего багульника, лучше смотрелся, и у

зрителя не могло возникнуть ощущение, что снег искусственный. ...И вот что поражает: 1971 год, разгар застоя, а в фильме нет ни капли идеологии! Решай сам – кто прав, красные или белые, и в зверствах своих и те и другие наравне. Думаю, не просто было в то время снять фильм, где красные не на 100% красные...». «О фильме знаю все... Так играть Улыбиных могли только забайкальцы и великие актеры: Соломины, Шукшин...» [7].

В 1975 году настоящим событием в культурной жизни страны стал вышедший на экраны 2-х серийный художественный фильм Владимира Мотыля **«Звезда пленительного счастья»**, повествующий о судьбе декабристов и их жён (02:40). Пребывание декабристов в Сибири одно из важнейших событий для становления музыкальной культуры региона. Этой теме отводится особое внимание в курсе лекций. Просмотр и обсуждение событий, лежащих в основе фильма чрезвычайно полезен, поскольку оказывает сильное эмоциональное воздействие на студентов, мало знающих об этом периоде российской истории.

В основу сюжетной линии фильма взяты судьбы декабристов: князя Трубецкого Сергея Петровича, его жены Трубецкой Екатерины Ивановны (урождённой Катрин Лаваль), князя Волконского Сергея Григорьевича и его жены Волконской Марии Николаевны (урождённой Раевской), а также поручика Ивана Анненкова и его жены Прасковьи Анненковой (урождённой Полины Гёбль). Сюжет во многом следует за книгой Арнольда Гессена «Во глубине сибирских руд», перекликаясь с поэмой Н.А. Некрасова «Русские женщины».

Впечатление от фильма связано в первую очередь с игрой выдающихся актёров. В центре повествования — судьба декабриста Анненкова, роль которого блестяще исполнил Игорь Костолевский (это его первая практически главная роль). Наравне с Анненковым в центре сюжета находятся Екатерина Трубецкая (Ирина Купченко) и Мария Волконская (Наталья Бондарчук), и их борьба за право ехать к своим мужьям в Сибирь. Замечателен и музыкальный «ряд» фильма: композитор И. Шварц и Б. Окуджава создали настолько яркие музыкальные образы, что отдельные песни из кинофильма известны многим студентам, но не связаны в их сознании с событиями, запечатлёнными в фильме. Поэтому моменты «узнавания» музыкального ряда для многих студентов оказываются дополнительным и очень важным фактором, позволяющим проникнуться значимостью поступков героев фильма [8].

3. Заключение

Таким образом, использование видеоряда в курсе «Музыкальная культура Сибири» способствует комплексному формированию профессиональных качеств, созданию у студентов целостного представления о музыкальной культуре Сибири как части российской истории. Привлечение документальных и художественных «аудиовизуальных текстов» в условиях дефицита учебного времени позволяет в максимально короткий срок донести достаточно разнообразную и обширную информацию, пробудить интерес к культуре Сибири, в том числе музыкальной, способствует формированию у студентов нравственных и эстетических ценностей.

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Postmodernization of Gender Narratives in the Discourse Scenarios of the Western Literature («In One Person» by John Irving)

Abstract: The article represents an analysis of the gender narratives in the discourses of the postmodern literature with the focus on the gender criticism of John Irving's novel «In One Person».

Keywords: postmodernism, gender, narrative, sexuality, femininity, masculinity, queer-discourse.

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Постмодернизация гендерных нарративов в дискурсивных сценариях западной литературы («В одном лице» Дж. Ирвинга)

Аннотация: Анализ гендерных нарративов в дискурсивном поле литературы постмодерна представлен в критической перспективе гендерного прочтения романа Джона Ирвинга «В одном лице».

Ключевые слова: постмодернизм, гендер, нарратив, сексуальность, фемининность, маскулинность, квир-дискурс.

Сегодня, как и сорок лет назад в начале третьей волны феминизма, по-прежнему ощущается внутреннее сопротивление и научных кругов, и средств массовой информации серьезному разговору на темы, которые обсуждались и обсуждаются в гендерных исследованиях. Академическая наука воспроизводит патриархатные гендерные идеологии, проверенные традициями и поддерживаемые ими, в лучшем случае – в новой «упаковке» глобализации, консьюмеризма и гипермодернизма. Ту особую роль в воспроизводстве патриархатных гендерных режимов, которую играют журналисты, телеведущие, кинопродюсеры и т.д., не следует преуменьшать: именно их представления, установки и вкусы определяют эмоциональное, информационное и мировоззренческое воздействие СМИ на аудиторию.

Необходимо признать: те представления, которые репрезентируются в текстах гендерных научных работ и находятся вне сферы повседневных гендерных идеологий, воспринимаются как вызов и чаще всего подвергаются резкой критике. Однако они безусловно воздействуют на периферийные представления, усиливая внутреннюю противоречивость гендерных идеологий. Поскольку в реальности постмодерна границы женского и мужского миров становятся все более гибкими и проницаемыми, данные противоречия, как представляется, будут нарастать. Это означает, что феминистские подходы и в художественной литературе, и в академическом дискурсе не только не утратили свою значимость, но приобрели новое значение в создании гендерного дискурса для широкой общественной дискуссии.

Внимание к гендерным нарративам в современной теории отнюдь не случайно. В постмодерном обществе, например, проблема трансформации идентичности (личностной, социальной, сексуальной и т.д.) становится актуальной в связи с тем, что общественные кризисы все более отчетливо детерминируют личностные кризисы. В целом, гендерная идентификация претерпевает значительные изменения в период перехода от современного к постсовременному обществу. Как представляется, важным признаком угрозы стабильной гендерной идентичности явились работы ученых, исследующих

транссексуальность, например, Дж. Моуни, сформулировавшего утверждение, согласно которому биологических признаков, как правило, недостаточно для определения индивидуального гендера [3].

Многое из того, что называется гетеросексуальностью, по сути, имеет лишь косвенное отношение к нормативному пути желаний и сексуальной практики, уверены ученые. В действительности в «стержне» сексуальности очень мало «нормального»; «нормальное» – это просто имя, которое мы даем тем вычищенным версиям секса, которые мы хотим одобрить и утвердить во имя социальной стабильности и морального порядка [4, с. 74]. В социокультурной действительности последнее находит отражение в том факте, что не только категории фемининного и маскулинного подверглись ревизии, но и такие институты, как брак, зашатались, потеряв свою устойчивость. Бесспорно, в академическом мире постмодерна ученые объясняют это тем, что «мужчина» и «женщина», так же как и «маскулинность» и «фемининность», – это культурально конструируемые категории, и, следовательно, нет эссенциального набора характерных черт, особенностей желаний или склонностей, определяющих мужчин в оппозиции к женщинам и наоборот [5]. И хотя исследователи отмечают явное нарастание количества лиц с признаками гомосексуализма, они, как правило, не приводят конкретных объяснений данного феномена, ограничиваясь его констатацией в рамках изменяющейся культуры. И здесь необходимо отметить: именно Дж. Батлер принадлежит заслуга особого вклада в развитие «квир»-теории как теории идентичности субъектов негетеросексуальной ориентации. Рассматривая традиционную гендерную идентичность, Дж. Батлер понимает ее как производную от эффектов власти – сил подавления и сопротивления, их стабильности и изменчивости. Поэтому «квир»-дискурс, по ее мнению, функционирует в современной культуре отнюдь не в качестве романтизированного дискурса, но в качестве практики, чьей целью является «устыжение» субъекта через его наименование, то есть производство субъекта посредством практики стыда. Соответственно, «квир»-сексуальность также производится властью, но не через дискурс «нормы», а через дискурс «стыда», который Батлер обозначает как «гомофобный» [6].

Бесспорно, категории женского и мужского в настоящее время представляют собой сложные феномены, которые требуют более детального

изучения. В этой связи несомненно важным будет обращение к художественным произведениям, к тем, которые уже стали классикой, и к тем, которые вышли в последнее время. Знаковым в раскрытии темы сексуальной идентичности является роман американского писателя Джона Ирвинга «В одном лице» [8], в котором темы отклонения от нормы, борьбы с собственной идентичностью, поиска самого себя, столкновения с нетерпимостью к «Другому» проходят красной нитью. В самом названии романа содержится намек на неоднозначность решения проблемы сексуальной идентичности, на многоплановость и многогранность самого понятия идентичности человека. Следует отметить, что тема сексуальности человека интересовала еще У. Шекспира, цитатами из пьес которого изобилует роман Ирвинга. Герои романа ставят пьесы Шекспира в местном театре, в полной мере демонстрируя независимость категории гендера от пола и утверждая: понятия «женщина» и «женственность» могут в равной степени применяться как к мужскому, так и к женскому телу. Обращаясь к интертекстуальности, ярко выраженной в романе посредством темы театра, хотелось бы вспомнить слова М. Фуко: «Границы книги никогда не бывают четко очерчены: за рамками названия, первых строчек и последней точки... она заключена в систему ссылок на другие книги, другие тексты, другие предложения: она узел в сети и в сетке» [9].

Возвращаясь к книге, следует отметить: процесс становления сексуальной идентичности главного героя неразрывно связан с процессом становления его как писателя. Автор представляет на суд читателя некий сплав метаний главного героя, книжных реминисценций и театральных постановок. Главный герой романа Уильям, осознав свою бисексуальную сущность, пытается смириться с ней, мучительно ища одобрения у других, стремясь подтвердить свое право на существование в «таком виде». Акцент главного героя на своей бисексуальности говорит о неопределенности понимания своей идентичности, об оставлении за собой права выбора пути для отступления, но в результате приводит к отчуждению от всех и становится причиной недоверия и с той, и с другой стороны. Складывается впечатление, что Дж. Ирвинг, подняв проблему идентичности бисексуалов, не знает, как же ее решить, поскольку она не укладывается в общепринятые рамки, для нее нет еще ни места, ни понятийного аппарата. Выступая в начале книги в роли бесполого духа Ариэля

из пьесы Шекспира «Буря», Уильям к концу романа предстает перед нами в качестве умудренного опытом писателя, который ставит «Ромео и Джульетту», вполне гетеросексуальную пьесу (если не принимать во внимание тот факт, что во времена Шекспира роль Джульетты всегда исполнялась молодыми мужчинами).

Важно отметить и тему переодевания в романе как один из способов репрезентации своей сексуальной идентичности. Дед Уильяма, Генри Маршалл, владелец местной лесопилки, переодевается в женское платье и блестяще исполняет женские роли в местном театре; биологический отец Уильяма имеет оглушительный успех в Испании, выступая в женской роли в небольшом клубе, и т.д.

Несомненно, ключевым моментом романа выступает требование терпимости и принятия всех людей, независимо от их сексуальной ориентации и гендерной идентичности, отсутствие каких-либо ярлыков и подчеркивание всей многоплановости и сложности человеческой субъективности. Уильям в конце своего пути возвращается в родную школу, чтобы поддержать молодых людей в школьном городке (так называемую «ЛГБТС группу», в которую входят представители разных секс-меньшинств), но проблема заключается уже не в том, чтобы признать людей с иной сексуальной идентичностью, проблема состоит в том, чтобы относиться к ним не как к «Другому» или «Чужому», изменив при этом чувства жалости и стыда на уважение и любовь.

Темы желания и репрезентации фемининности в романе неразрывно связаны. Самообман героев по поводу своей сексуальности приводит к фатальным последствиям. Друг Уильяма Том Этткинс, скрывая свою сексуальность, инфицирует свою жену ВИЧ и разрушает жизни своих детей. Самый беспокойный и злобный персонаж в романе, Жак Киттеридж, используя свою гетеросексуальность в качестве прикрытия и своего рода оружия, соблазняет подругу главного героя, Эллейн, что приводит к нежелательной беременности, аборту и последующему стойкому нежеланию иметь детей. Спустя годы Киттеридж раскрывает свою гомосексуальную природу и подвергается операции по смене пола, однако умирает от неизвестных «естественных причин». Автор подводит нас к тому, что антонимом «правильного» не является «неправильное», антонимом «правильного»

является отсутствие правды и ложь, ложь о себе самом, ложь о своей субъективности.

Показательным является изображение женских персонажей. Все так называемые биологические женщины вызывают некое неприятие и даже отвращение. Эллейн – слишком податливая и послушная, тетка и мать Уильяма – нетерпимые истерички, кузина Билли Джерри – грубая лесбиянка, мать Киттериджа – растлительница малолетних. В конечном счете, лучшими женщинами в романе оказываются мужчины, а, например, транссексуалка мисс Фрост, которая является неким моральным стержнем романа. В мире, где почти все скрывают свои сексуальные странности, она остается уверенной и верной своим принципам. Более того, она/он – некий идеальный образ, будучи не просто предметом «любви на всю жизнь», но стопроцентно заслуживая эту любовь.

«В одном лице» – это роман не только становления личности, – и, что очень важно – бисексуальной личности, – это история «великой любви», которая – увы! – не смогла победить «время и пространство, жизненные невзгоды и несовершенство человеческой души». Альберта-Альберт (мисс Фрост) отвергает юношескую любовь главного героя и нарратора романа, пытаясь оградить его от «смертоносного» лицемерия окружающего общества. Мисс Фрост, действительно, описана с любовью, ее/его транссексуальность, возможно, не достойна восхищения (было ли это интенцией автора?), но, бесспорно, не вызывает презрения. Сам же главный герой, бисексуал («в одном лице»), – образ более сложный; бисексуальная страсть (со множеством объектов) как смысл жизни – достаточно дискуссионная тема. Но стремление автора «вливать гуманизм» в трактовку «отчужденного Другого», сила и страстность чувства, его несомненная отвага, на наш взгляд, бесспорно, достойны признания.

Возвращаясь к более широкому дискурсу постмодернизации пола и гендера, необходимо заметить: изменения, подвергшие эрозии то, что еще недавно казалось бесспорным в сексуальности индивида, это не просто изменения в мышлении человека, но отражение изменений в качестве и дистрибуции сексуального опыта текущего момента. Р. Барт пишет: «Противопоставление полов не должно быть законом природы. Следовательно,

конфронтации и парадигмы должны постепенно исчезнуть... и пол не будет поддаваться типологии. Будут, например, только «гомосексуальности», множественное число которых будет ставить в тупик любой конституированный, центрированный дискурс» [7].

Феминистские мыслители в самой формулировке проблем, как правило, предлагают новые способы понимания и познания людей как таковых, предлагают переоценку ценностей, переосмысление того, что является по-человечески превосходным и достойным похвалы. В потоке трансформаций постмодерная гендерная теория должна научить нас – и мужчин, и женщин – терпеливо интерпретировать амбивалентность, двусмысленность, множественность и вдумчиво разоблачать стремление к навязыванию определенного порядка, определенных гендерных схем, моделей и идентичностей.

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Voiced circumstance as a substitute of the direct answer in the latent responsive

Abstract: The article deals with the peculiarities of the latent responsive sentences, particularly communicative units containing the voiced, expressed circumstance which represents a substitution of the direct answer on the basis of the English language. The article gives a description of the structural, lexical, semantic and functional special features of the responsive sentences under the review.

Keywords: responsive sentences, content-responsive, empty-responsive, latent responsive, direct answer.

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Озвученное обстоятельство как субститут прямого ответа в латентном респонсиве

Аннотация: Статья посвящена изучению особенностей латентных респонсивных предложений, в частности коммуникативных единиц, содержащих озвученное, выраженное обстоятельство, представляющее собой субститут прямого ответа, основываясь на примерах из английского языка. В статье описываются структурная, лексическая, семантическая и функциональная специфика исследуемых респонсивных предложений.

Ключевые слова: респонсивное предложение, контент-респонсив, эмпти-респонсив, латентный респонсив, прямой ответ.

Тот или иной акт коммуникации как правило соответствует определенной речевой интенции и характеру воплощения такой интенции в различные лингвистические построения, а наиболее распространенной и функционально значимой системой коммуникации является, по видимому, система вопрос-ответ как некое вопросно-ответное единство, представляющее собой, по Т.В. Матвеевой, структурную разновидность диалогического единства, а именно: фрагмент диалога, состоящий из двух или более информационно связанных реплик, в одной из которых содержится вопрос, а в следующей (их) – ответная реакция на этот вопрос в соответствии с его содержанием [2, с. 58].

Самая распространенная и, по-видимому, естественная речевая интенция – вопрос, задаваемый в разной форме в соответствии с основными типами вопросительных предложений в английском языке. И в этом плане каких-то особых проблем не возникает.

Всего в английском 5 видов вопросов (общий, специальный, альтернативный, разделительный, к подлежащему), и каждый из них имеет свои особенности. Мы подробно остановимся на каждом из них:

1. **Общий вопрос** (General Question) - самый распространённый и важный тип вопроса в английском языке: Do you have a cup of coffee every morning? Does he swim?

2. **Специальный вопрос** (Special Question) - это вопрос, начинающийся со специальных вопросительных слов: who? (кто?) what? (что?) where? (где?) when? (когда?) how much? (сколько?) whose? (чей?) и т.д. Did you fight with him again? Why did you fight with him again?

3. **Альтернативный вопрос** (Alternative Question) - это такой вид вопроса, который предлагает сделать выбор. В альтернативном вопросе всегда присутствует союз or (или). Особенностью этого вопроса, является то, что ответ как бы уже присутствует в вопросе, нужно только выбрать из двух заданных предметов, лиц, качеств и т.д.: Do you like apricots or peaches? Is he from England or from Wales?

4. **Разделительный вопрос** (Tag Question) - это вид вопроса, выражающий сомнение, удивление или подтверждение сказанного. Русский эквивалент разделительного вопроса - "не так ли?": John is a good student, isn't he? Jamie's

parents aren't from Spain, are they? Все разделительные вопросы задаются с целью выразить сомнение, удивиться или найти подтверждение сказанному.

5. **Вопрос к подлежащему** (Subject Question). Например: Who came to the party? What happened at the end? How many students arrived to the lesson? [8].

В системе вопрос-ответ субъект А задает какой-то вопрос, а субъект В реагирует на этот вопрос либо давая ответ, либо проявляя какую-то иную реакцию заменяющую ответ, но в принципе такую, которая может быть квалифицирована вместо ответа или быть его аналогом. Например, *Do you like this performance? – Yes; No; Of course; I don't want to speak about it; It is not your business etc.* Существенно, что на один и тот же вопрос могут быть самые разные ответы, а соответственно и разная реакция, и, надо полагать, именно эта часть соответствующей системы представляет собой наиболее интересный и лингвистически значимый компонент минимальной коммуникативной фигуры, который в предлагаемом исследовании мы квалифицируем как респонсив или респонсивное предложение (от англ. Response – *ответ, отклик, реакция, ответное чувство*) – вербальная реакция на интенцию, выраженную вопросительным, повествовательным или побудительным предложением.

Понятие «респонсивное предложение» шире понятия «ответ». В Словаре русского языка для слова «ответ» предлагается следующая дефиниция: «Вызванные вопросом или обращением слова (слово), заключающее в себе подтверждение или отрицание чего-либо, сообщение о чем-либо и т.п.» [1, 667]. Согласно Oxford Explanatory dictionary of English, слово «*responce*» определяется как «verbal or written answer, reaction to something (вербальный или невербальный ответ, реакция на что-то)» [9], т.е. значение слова «*response*» включает в себя значения слов *answer* и *reply*.

Термин «*респонсивное предложение*» применительно к анализу характера ответа на поставленный вопрос использовал Чарльз Фриз в своем научном исследовании «The Structure of English. An Introduction to the Construction of English Sentences» [5], в котором по цели высказывания предложения подразделяются на два основных типа: ситуативные высказывания, требующие ответа (*situation utterance*), и респонсивные высказывания, собственно ответы (*responsive utterance*). Первый класс речевых единиц делится на 3 подгруппы: 1) высказывания, которые обычно сопровождаются

только устным ответом: приветствия, обращения, вопросы и т.п. (utterances that are regularly followed by oral responses only); 2) высказывания, реакцией на которые является какое-то действие: команды, просьбы (utterances eliciting action responding); 3) высказывания, требующие от слушателя подтверждения того, что он слушает говорящего и готов поддержать разговор (utterances regularly eliciting conventional signals of attention to continue discourse). Другие ученые – Д. Локвуд, П. Фриз, Дж. Коуплэнд называют респонсивами конструкции типа *I am, they are, we are* и т.п. [6, с. 117]. Б. Джонс, исследуя особенности ответа на закрытый вопрос (yes-no question) в разных языках, под респонсивом понимает ответы *да, нет* и их эквиваленты: The term responsive is adopted as a general label for both yes-no words and their equivalents [7, с. 203]. В работе И.И. Меньшикова была осуществлена попытка построить общую систему респонсивных предложений как реакцию на заданный вопрос (или шире – на предыдущее высказывание) на материале русского языка [3].

Предпринимались попытки разработать классификацию ответных реплик в вопросно-ответном единстве. Рассматривая понятие вопросно-ответного соответствия, Е.В. Падучева подразделяет ответы в диалогических единствах на такие типы: прямой и непрямой ответ; полный и неполный ответ; ответы, соблюдающие и не соблюдающие предметную область вопроса; ответы, соблюдающие и не соблюдающие исходное предположение вопроса; ответы, информативные и неинформативные для спрашивающего [4, с. 232-241]. В логике существует следующая типология ответов на вопросы: прямые и косвенные (по области поиска); полные и неполные (по объему информации); определенные и неопределенные (по степени точности); краткие и развернутые (по грамматической структуре); истинные и ложные (по семантической характеристике).

Типологию же респонсивных предложений как вербальной реакции на вопрос можно стратифицировать по-разному, прежде всего, выделив, однако, тот их аспект, который касается плана содержания диалога и информации, получив которую спрашивающий (А) может сделать заключение о характере реакции субъекта В а соответственно и о том, получил он или не получил приемлемый ответ на свой вопрос.

Теоретически при этом могут возникнуть три ситуации: 1) ответ получен, например, *Have you finished reading of that article? – Yes; I have read it; Finally, yes* (положительный ответ); *No; I have not read it yet;* (отрицательный ответ); 2) ответа нет, например, *Have you finished reading of that article? – I will not speak with you about it; Is it really interesting for you?* 3) ответ построен в такой форме, что спрашивающий может сам определить его характер, например, *Have you finished reading of that article? – Two month ago; It is great!* (можно заключить, что прочитал); *I haven't found that book* (можно заключить, что не прочитал). Указанным трем ситуациям соответствует при первом членении респонсива три его основных типа: контент-респонсив; эмпти-респонсив и латентный респонсив. Каждый из них в свою очередь подразделяется на свои типы на втором и последующих уровнях членения.

Наиболее интересными в плане разнообразия используемого в нем лексического материала и особенностей его функционирования в речи нам представляется латентный респонсив – вербальная реакция на вопрос, в которой нет прямого ответа, но содержится информация, проанализировав которую спрашивающий может сам определить, каким является ответ на его вопрос: 1) *Can I talk to you for a minute? – Quickly;* 2) *Where were you that weekend? – As usual;* 3) *I didn't have a lunch today. Can you join me? – I have to finish the project, today is the deadline.*

Проанализировав приведенные выше примеры, можно заключить, что в первой ситуации отвечающий все же готов поговорить, но только у него на это мало времени. В данном случае, кроме прямого ответа слушающий получает еще и дополнительную информацию. Во втором примере имеет место обращение к опыту спрашивающего, т.е. допускается, что он знает, как обычно проводит свои выходные отвечающий. В третьем случае прямой ответ заменяется его мотивировкой, т.е. объяснением почему отвечающий не может выполнить то или иное условие. Так, характер субституции может быть разным, но чаще всего в ответе указывается на какие-то обстоятельства, дающие возможность спрашивающему принять решение о том, положительному или отрицательному ответу соответствует заменяющий его субститут. При этом соответствующее обстоятельство должно быть озвучено и принято

спрашивающим. В английском языке, надо полагать, все семантические разряды обстоятельства могут быть этим субститутом. Опишем их подробнее:

1. Обстоятельства:

1.1. Фактор времени: *Are you at home? – will be in 5 minutes / During two hours.* В данном примере отвечающий не дает прямой ответ на поставленный вопрос, а называет время: в первом случае, через сколько он будет дома; во втором – сколько времени он уже провел дома.

1.2. Фактор места: *Are you at home? – In library / In my kitchen.* Вместо прямого ответа собеседник называет конкретное место, где он сейчас находится.

1.3. Фактор цели, причины, следствия: *Are you at home? – I need to feed my cat; Are you reading the novel? – But can do the poor student! Have your guests already left? – I even cleaned the room already.* В приведенных примерах участник коммуникации в качестве субститута прямого ответа называет цель, причину или следствие свершение какого-то события, действия, факта. Т.е. спрашивающий по информации, заменяющей прямой ответ, может определить каким является прямой ответ на его вопрос. Так, из информации, приведенной в качестве ответа на первый вопрос (*I need to feed my cat*) понятно, что прямой ответ был бы положительный (*Yes, I am at home*). Во втором и третьем случаях, также имеет место положительный ответ.

2. Отсутствие условий для свершения событий, действий, фактов: *Have you read that newspaper? – If I only had time! / I was made to do another thing!*

3. Указаны причины невозможности или возможности свершения событий: *Do you want fried meat? – Thank you, I am well-fed / I dream about it the whole day!* Субститутом прямого ответа служит объяснение причин, из-за которых было / не было совершено то или иное действие.

Итак, латентный респонсив в его основных лингвистических вариациях является чрезвычайно разнообразным структурно и функционально, представляя собой субститут прямого ответа на реальную и даже потенциальную речевую интенцию.

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CLIL as one of the significant methods in learning of Kazakh language and history

Abstract: This article is devoted to the CLIL method in learning of history in a second foreign language. The authors of this work provide practical tasks which develop four language skills: speaking, listening, writing and reading.

Keywords: integration, speaking, listening, writing, reading, trilingualism (multilingualism).

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CLIL как один из важных методов в изучении казахского языка и истории

Аннотация: Статья посвящена методу CLIL в изучении истории на втором (иностранном) языке. Авторы работы приводят практические задания, развивающие четыре языковых навыка: говорение, слушание, письмо и чтение.

Ключевые слова: интеграция, говорение, слушание, письмо, чтение, полиязычие.

В осуществлении политики полиязычия в системе образования существенную роль играет метод CLIL (Content and language integrated learning). Этот метод имеет двойную цель: во-первых, овладеть основным содержанием предмета, во-вторых, изучить и освоить второй (иностранной) язык [1].

Предметно-языковая интеграция развивает современную поликультурную личность, языковые компетенции, уважение к культуре других народов. В развитых странах данная методика используется достаточно давно, а в Республике Казахстан внедряется сравнительно недавно. Это связано с функционированием Назарбаев Интеллектуальных школ.

Интегрированная образовательная программа предполагает изучение таких предметов как история, география, информатика на втором языке или третьем языке, что играет немаловажную роль при реализации данной программы. Поэтому в данной статье будут предложены практические задания, основанные на методе CLIL.

Так, в своей работе мы основываемся на четыре принципа метода предметно-интегрированного обучения, которые были отражены в работе Нуракаевой Л.Т., Шегеновой З.К. Методические рекомендации учителям по использованию метода предметно-интегрированного обучения (CLIL). Итак, рассмотрим эти принципы.

Первый принцип - содержание (Content). Фокусом данного принципа является изучение содержания предмета посредством второго языка. «Предметное содержание ставит следующие цели: Каковы цели/задачи урока? Чему я научу учащихся? На какие ожидаемые результаты обучения я ориентируюсь?» [1]. Урок начинается, как правило, с постановки, озвучивания цели. Например, при изучении темы «Индия, Китай и Британия восемнадцатого века» ставится следующая языковая цель: «Учащиеся могут понимать роль промышленного переворота в Англии и его влияние на изменение хозяйственной системы мира, представляя в устной и письменной формах. Для достижения языковых целей учащихся знакомят с языковыми конструкциями, полезными фразами для диалога и письма, таких как: Я считаю, что в Индии были следующие виды промышленности... Я считаю так, потому что... Свидетельства показывают, что... Предметная лексика и терминология: Тадж-Махал, могол, Император, Джахангир, Шах-Джахан, Хинди, Мусульмане, британская кампания в Восточной Индии, текстиль, лорд Маккартни, посольство» [2]. Языковые цели, реализуемые через использование полезных фраз, специфической терминологии, характерных для данных предметов, способствуют формированию академической речи учащихся в процессе работы с

источником. Так, например, с целью развития навыка слушания при работе с видеоматериалом [3]. (Видеоресурс Тадж-Махал (6мин) <http://www.youtube.com/watch?v=c1RQnTRc4ng>).

Учащимся предлагаются следующие вопросы:

Напишите две вещи, которые Вам запомнились?

Какова главная идея видеосюжета?

Историческое значения памятника культуры?

Задайте два вопроса по видео.

Что еще хотели бы узнать?

Вторым принципом является принцип *коммуникации* (*communication*). Этот принцип предполагает создание учителем коллаборативной, коммуникативной среды, которая формирует у учащихся навыки сотрудничества, взаимообучения. Например, при изучении темы «Крестовые походы» предполагается следующая языковая цель: «Учащиеся могут извлекать информацию из первоисточников и визуальных источников, делать заключения из них и затем составлять по ним вопросы. Серия полезных фраз для диалога/письма: Что говорит/ показывает источник?»

Первой причиной, по которой европейские католики организовывали крестовые походы против Ислама, была ... Другой причиной была... Какой вывод я могу сделать для себя из этого источника? Данный источник говорит о том, что ... Какие еще вопросы я могу задать? Тем, что мне также необходимо знать, является... Данное заключение/предположение точно? Следует ли мне/вам проверить/дополнить данное утверждение?» [4]. При этом учителем могут быть предложены следующие блоки заданий:

1 блок.

1 группа. Объяснить причину и цель участия в крестовом походе бедняков.

2 группа. Объяснить причину и цель участия в крестовом походе рыцарей.

3 группа. Объяснить причину и цель участия в крестовом походе детей.

4 группа. Объяснить причину и цель участия в крестовом походе монахов.

2 блок.

Написать речь папы Урбана II.

Успешность выполнения данных заданий зависит от степени участия каждого. Ученик должен проникнуться в суть предложенного героя, осознавать

причину и цель участия исторического персонажа в походе, показать значимость его в истории. Первой выступает группа, которая представляет монахов, потом рыцарей, следующие - бедняков, далее - детей. После ролевой игры необходимо заполнить таблицу:

Причины участия в крестовых походах.

Бедняки	Дети	Монахи	Рыцари

Третий принцип - познание (cognition), который представляет собой развитие метакогнитивных и металингвистических навыков [3]. Для достижения этой цели необходимо дать учащимся задания аналитического, логического содержания, определяющие причинно-следственные связи. Изучение темы «Распространение идей просвещения» предлагает следующую языковую цель: «Учащиеся могут внимательно прочитать отрывки из Декларации независимости, конституции и билля о правах США, и, выделить шесть основных идей просвещения (навыки чтения). Предметная лексика и терминология. Серия полезных фраз для диалога/письма: Я считаю, что (конкретный документ) на идеи просвещения повлияло... Одной из причин, по-моему, является то, что...

Вторая причина состоит в... Третьей причиной является... Отрывок демонстрирует/сообщает, что... [2] достичь данной цели можно с помощью следующего задания:

Прочитать первоисточник, ознакомиться с основным содержанием. Группам предоставляется отрывки документов:

- билль о правах;
- Конституция США;
- Декларация Независимости.

В ходе чтения необходимо выделить идеи, предложения, которые соответствуют принципам просвещения. Подчеркнуть их в тексте. После завершения работы над заданием в классе обсуждаются идеи, приводятся аргументы.

Неотъемлемой частью четвертого принципа *культура (Culture)* является сохранение культурных ценностей своего народа, почитание, уважение культур иных народов. Предлагается следующее задание: демонстрируется часть

фронтисписа энциклопедии Дидро, парам предлагается обсудить нижеперечисленные вопросы:

- что они видят;
- какие они могут сделать заключения;
- какие еще вопросы об источнике им нужно задать.

Центральная фигура фронтисписа представляет собой Истину, которая излучает вокруг себя свет («просвещение»). Две фигуры,двигающие ее завесу, представляют собой философию и разум.

Следует отметить, что изучение второго языка требует продолжительного времени и практики. С помощью скаффолдинга (от простого к сложному) учащиеся постепенно от базового языкового уровня освоят навыки академического языка. Конечно, можно ожидать в начале обучения, что учащиеся будут допускать грамматические ошибки при устно-разговорной речи. Однако на этом этапе учитель должен оказывать поддержку учащимся. Также регулярное проведение парной и групповой работы имеет продуктивный характер, который носит в себе функции взаимообучения. Главное, чтобы учащиеся смогли применить данные навыки в коммуникативной деятельности.

На протяжении двух лет, используя данную методику, мы видим положительную динамику усвоения языка через предмет. Учащиеся свободно владеют языковыми навыками в общении и умеют применять их в языковой среде.

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Mutual cooperation of islam and christianity on the way to ensuring religious tolerance in Uzbekistan

Тақриз: Мазкур мақолада Ўзбекистонда диний бағрикенгликни таъминлашда ислом ва христианлик конфессияларининг ўзаро ҳамкорлиги илмий жиҳатдан тадқиқ этилган.

Калит сўзлар: зардуштийлик, буддавийлик, насронийлик, яҳудийлик, ислом, конфессия, миллатлараро тотувлик, диний бағрикенглик, экстремизм, фанатизм, фундаментализм, терроризм, миссионерлик, прозелитизм.

Abstract: In the article "Mutual Cooperation between Islamic and Christian Faiths for Ensuring Religions Tolerance in Uzbekistan" the opinions, idea and concepts reflecting the scientific analysis of these judgments are provided.

Keywords: Zoroastrianism, Buddhism, Christianity, Judaism, Islam, faith, international consent, religions tolerance, extremism, fanaticism, fundamentalism, terrorism, missionary work, proselytism.

Аннотация: В статье «Сотрудничество между исламской и христианской конфессиями для обеспечения религиозной толерантности в Узбекистане» приведены мнения, идея и понятия, отражающие научный анализ данных суждений.

Ключевые слова: зороастризм, буддизм, христианство, иудаизм, ислам, конфессия, межнациональное согласие, религиозная толерантность, экстремизм, фанатизм, фундаментализм, терроризм, миссионерство, прозелитизм.

As it is known from stories, on the territory of Central Asia since the most ancient times followers of various religions, such as Zoroastrianism, the Buddhism, Christianity, a manikheizm, Islam have lived in peace. In turn, in the cities of the

region which were considered as the main cultural centers mosques, churches, synagogues worked. In these religions institutions representatives of the corresponding religions carried out the ceremonies, they served as the centers of development of religious thoughts. It should be noted that in the course of establishing independence by Uzbekistan and further strengthening bases for stable development there were no interreligions contradictions or conflicts on a religious basis. As the President of the Republic of Uzbekistan I.A. Karimov claimed: "Throughout the millennia Central Asia has been the center where contacted and peacefully coexisted various religions and cultures"¹. In turn Uzbekistan is a striking example for manifestation of tolerance in relation to all religions and ensuring harmonious existence and salutary interfaith cooperation.

Tolerance takes an important place in providing peace and harmony between citizens, and determining of the purposes of stable development in all states. The cultural diversity, manifestation of religions and ethnic tolerance is conventional which has deep roots in our region and are considered as an inseparable part of our spiritual culture. It should be noted that on the territory of Uzbekistan since ancient times there lived peoples with various cultural, language groups, adhering different religious views. In particular, passing through the territory of Uzbekistan of the Great Silk Road connecting civilizations of the West and the East gave the chance of establishment for cultural ties on world level. In turn, the culture and customs of indigenous peoples of Uzbekistan well influenced on the development of spiritual culture of other people, religions and ethnic groups. As a result this factor formed a basis for formation of religious tolerance which deeply rooted in the culture and mentality of the region's population. The majority of world religions reflect in the essence of such idea's as virtue, peace, friendship, consent and creation. Religions call people for purity, humility, mercy, friendship and tolerance. In particular, Muslim and Christian religions comprise universal values and call for mercy, boldness, equal address to people regardless of their views, language and origin.

Long since the religion is considered the most effective instrument of influence on the minds of people, and the society directly in this or that course. Religious doctrines, as it is known on the historical facts, in most cases they fruitfully influenced

¹ I.A. Karimov. "Uzbekistan on the Threshold of the XXI Century: Challenges to stability and progress". T. Uzbekistan, 1997, P. 141-142.

on cultural and spiritual life of the society and by that strengthened belief in god in the hearts of people. Thus, they helped people to overcome tests, problems and difficulties which were found in their course of life. Since gaining independence by the Republic of Uzbekistan, on an equal basis, there have been fundamental changes in all spheres of public life including the spiritual life of the Uzbek society. As a result of the deep reforms realized in the country including the relation of society and people to the freedom of worship and religions, to religion, in general, changed.

Today in the Republic all conditions are created in order that representatives of different religions freely carried out their rights to religion. For creation of peace and harmony in the society, harmonies between ethnic and religious groups by ensuring tolerance on the initiative of the President of Uzbekistan I.A. Karimov from the first days of gaining independence there were realized the measures directed at strengthening spiritual education and inoculation of youth through tolerance.

It should be noted that Uzbekistan is the multi-religious country, today in the republic there are religious institutions relating to 16 faiths². In turn, in the country all conditions for free implementation of the activity of religious institutions and their active participation in public life are created. Relying on these principles, a separate attention is paid to preservation of values of various religious groups. As a proof for it there can serve the free activity of the numerous national cultural centers. On 16 November 1995 in Paris, on 28th session of UN member countries of the UN concerning education, science and culture "the Declaration of the Principles of Tolerance" was adopted. In article 1 of this declaration the concept of tolerance is described as "respect, acceptance and understanding of various ways of expression of rich cultures of our world and demonstration of identity of a person"³. The idea of tolerance in essence means cohabitation of people – adherence to various religious doctrines and views in the unique homeland, and their cooperation on the way of implementation of high ideas and purposes. Today this idea designates mutual cooperation not only adherents to religious trends, but also all members of society. In Uzbekistan the principles of equal relation to all religions and their adherents are fixed. In the years of independence in the republic important achievements in this direction are accomplished. In particular, public authorities carried out a number of

² Reference manual, on registering religions organizations in Uzbekistan on 1 January, 2015.

³ International normative documents of UNESCO (collection). T; Adolat, 2004, - P. 91.

positive measures in providing an interreligious consent. Today the freedom of worship and a religious denomination, the right of citizens to confession of any religion or not confession of any religions look is completely provided and fixed in Uzbekistan's legislation. This circumstance is equitable completely to the interests of citizens of the multinational and multi-religious country; it should be noted, Uzbekistan saved up rather rich and useful experience in streamlining of the public relations in this direction. Along with other practical results it is possible to mention that in the republic such events as the International Congress of interreligious dialogue on the subject "World Religions on the Way to Peace and Culture" with the assistance of UNESCO, and the International Christian and Muslim conference "Under One Sky" together with Muslim and Christian religious figures were held. In the course of these actions the 125th anniversary of Russian Orthodox Church, the 130th anniversary of the Tashkent and Central Asian diocese, the 100th anniversary of Evangliy-Lyuteran society, the 100th anniversary of the Roman Catholic Church, the 100th anniversary of the Armenian Apostolic Church, acting in the country were widely celebrated. Since 1998 in the country the seminaries of Tashkent Orthodox and Samarkand Protestant churches have been working. In the days of independence along with all spheres of public life big positive changes in cultural and religious life of Uzbekistan are outlined. For a past short time in the country there were constructed a large number of mosques, churches, synagogues and other religious institutions were newly built. It is possible to mention, in particular, new orthodox churches in Tashkent, Samarkand, Navoiy, for example, the Catholic church in Tashkent, the Armenian Apostolic Church in Samarkand, the Buddhist monastery in Tashkent. These and other measures in this direction have promoted to strengthening the atmosphere of peace and harmony, harmonious coexistence of different religions and ensuring tolerance among citizens of the country. It is important that toleration and an international consent, providing peace and stability are an important component of national idea of the country – "The free and well-planned country, its peace and stable life".

Reforms and innovations in the field of promotion of toleration and interfaith dialogue are reflected in the policy of the government. On 12 February 2008 in the international seminar on the subject: "Experience of Uzbekistan in Ensuring Interfaith Harmony" was held in Belgium, the professor of Catholic University of Leuven, Yu.

Jansen noted: "Uzbekistan can serve as an example for many other countries on preservation and development of the atmosphere of tolerance and toleration"⁴ that is the next recognition of positive results of the works which are carried out in this direction.

In the policy of Uzbekistan an important place is taken by providing peace and progress. Representatives of all religions are equally interested in governing the country under the atmosphere of peace, tranquillity, stability and consent. For these noble purposes representatives of the Christian communities in the republican and international spiritual, cultural and educational centers of Uzbekistan express the approval and all support the reforms which are carried out in the country to ensure religious tolerance and public stability⁵. In turn, the Muslim and Christian communities act together with unique ideas and serve for tranquillity, peace, development and prosperity. According to the former archbishop of Tashkent and Central Asia, Ikim Vasily Zakharovich – the metropolitan Vladimir, "Friendly bonds between us are shown in all spheres and as each Orthodox Christian has Muslim friends, and the friendly relations between priests and imams are strong. If we appeal to Muslim friends about the help in the sphere of business or the construction, we will surely receive necessary assistance. We have not any contradictions, but even no misunderstanding"⁶.

The state promotes to establishments of consensus and mutual respect between the citizens who are professing different religious views, or not practising any religions, and also between all operating religious organizations, resists to the actions directed at incitement of interfaith conflicts, extremism and religions fundamentalism. It serves directly to creation of the atmosphere of peace, stability and consent, progress, development of spiritual priorities of the society. In Uzbekistan the creation of the political parties and social movements directed at the religious purposes, but the activity of branches and offices of the religious institutions outside the republic isn't allowed. The religious organizations are obliged to follow the current legislation of the republic. Also an unstable social standing, capable to threaten the society and to cause panic, and in all other mercenary purposes directed

⁴ Interreligious faith – factor of prosperity of society. Uzbekistan today - 2008. - 14 February.

⁵ E.F. Ibragimov. Activities of Christian confessions and their place on forming religious friendship traditions. 24.00.01. Dissertation holding Ph.D. in history.

⁶ Archbishop Vladimir... A Looking for friends from the East. - T.: 2000. P. 45.

against society, both a person and the state is strictly forbidden to use religion for promotion of anticonstitutional and antistate ideologies, for incitement of hostility between people and religions communities, violations of tranquillity of citizens and moral foundations of the society. Activity of the religions organizations, currents and sects concerning terrorism, drug trafficking and organized crime is forbidden. About it the President I. Karimov in his book "Uzbekistan on the Threshold of the XXI Century: Challenges to stability and progress" writes: "We are supporters of the religion which delivers high moral, ethic and cultural wealth, historical and cultural heritage to the society. But we will never allow that the religion became a flag or cover for race for power in the state, for intervention in the policy, economy and the legislation. As we consider such circumstance is serious threat to safety and stability of our state"⁷.

The government of the republic maintains and provides peace and harmony between the religious organizations. The actions directed at propaganda of adherents of one religion to another (proselytism), and also any other types of missionary work are forbidden. Persons, guilty of similar actions, bear the corresponding responsibility specified in the legislation. This circumstance was noted by the archbishop of Tashkents and Central Asian Vladimir (Iky) who said: "Unfortunately, forces trying to use our religions in the mercenary purposes threaten the peace, unity of our people, stability in Central Asia. It is clericalism, proselytism, extremism, quasireligious politicization. These forces distort fundamentals of our religions under Christian, and Muslim masks. Their purposes are to split society, destabilisation of spiritual life, kindling of interreligions and ethnic contradictions"⁸.

In the country all conditions for going abroad by representatives of all non-Muslim religious organizations were created, and they use these opportunities widely. As the director of the National Center of Uzbekistan for Human Rights, the chairman of the committee of the Oliy Majlis of the Republic of Uzbekistan on democratic institutes, non-state organizations and self-governing institutions of citizens A.Kh. Saidov claims, that every year more than 150 representatives of non-Muslim religious communities go to pilgrimage to the holy sites in Israel, Greece and

⁷ I.A. Karimov "On the way to safety and stability". v. 6. – T., 1998. P. 59.

⁸ I. Vladimir "Prosperity of spirituality. Independence and interreligious amicability. Democratization and human rights". 1999. № 3-4. P. 40.

Russia⁹. I. Karimov participating in the actions devoted to the 125 anniversary of the Russian diocese of Tashkent and Central Asian orthodox church, the 100th anniversary of evangelical and Lutheran society noted: "Peaceful cohabitation of Muslims and Christians on the Uzbek earth can be considered as a unique and excellent example of interreligions consent and tolerance in relation to all religious. A huge contribution to these processes is made by Tashkent and Central Asian diocese. A person can't live without belief. It has very important symbolical value" today when we firmly go on the way to creation of the democratic state where equal and cultural relations between representatives of all religions reign¹⁰. By order of the President of the Republic of Uzbekistan I.A. Karimov on 31 January 2000 for merits in strengthening the atmosphere of toleration and peace, consent and unity between citizens of our country the archbishop of Tashkent and Central Asia Vladimir was presented with the award "Do'stlik" (Friendship). It too is a peculiar evidence of cooperation of Islam and Christianity in strengthening the bonds of friendship, respect and mutual understanding among peoples in Uzbekistan.

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⁹ A.Kh. Saidov. "Religious tolerance and secular state of Uzbekistan on human rights". 2002. P. 57.

¹⁰ I.A. Karimov. Congratulation speech before the participants of meeting devoted to 125th anniversary of Tashkent and Central Asian eparchy of Russian Orthodox Churches. Tashkent, Newspaper: Khalq Suzi (People's word). 1996. 13 November.

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Vocational education modular technology for students – future engineers

Abstract: Analysis of the engineers' professional activity peculiarities and vocational education of students – future engineers process problems is given; based on that, integrative professionally important characteristic – students – future engineers' autonomy is determined, and its definition, structure, formation mechanism are considered. Advantages of vocational education modular technology in the process of foreign language learning and the way its functions form autonomy is found out.

Keywords: module, modular approach to teaching, modular teaching technology, vocationally oriented language learning, vocational education modular technology, students - future engineers, students - future engineers' autonomy.

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Модульная технология профессиональной подготовки студентов – будущих инженеров

Аннотация: Анализируется специфика профессиональной деятельности инженеров и проблемы процесса профессиональной подготовки студентов - будущих инженеров, на основе чего выделяется интегративное профессионально значимое свойство личности - автономность студентов - будущих инженеров, рассматриваются его сущность, структура, механизм формирования. Выявляются преимущества модульной технологии профессиональной подготовки средствами иностранного языка, направленность ее функций на формирование автономности.

Ключевые слова: модуль, модульный подход к обучению, модульная технология обучения, профессионально-ориентированный иностранный язык, модульная технология профессиональной подготовки, студенты – будущие инженеры, автономность студентов – будущих инженеров.

В современных условиях, характеризующихся изменениями в социокультурной и производственно-экономической сферах, к содержанию и целям инженерной деятельности, к качеству профессиональной подготовки студентов – будущих инженеров предъявляются новые требования, что вызвано необходимостью принятия ими ответственных технических решений в ситуациях неопределенности. В системе высшего профессионального образования предполагается его дифференциация по вариативным планам и программам для предоставления возможностей студентам самостоятельно, независимо выбирать образовательную траекторию в рамках государственных образовательных стандартов. Следовательно, требуются инновационные технологии профессиональной подготовки, обращенные к личности обучаемого и проблемам ее профессионального развития.

Специфика профессиональной деятельности инженеров заключается в ведущей роли проектирования, связанного с необходимостью принятия технических решений в ситуациях неопределенности, когда субъект решения обязан руководствоваться нормативом, обладая при этом качествами,

влияющими на принятие индивидуального решения: самостоятельностью и независимостью мышления, ответственностью, готовностью к научно-исследовательской деятельности.

Успех образовательной и производственной деятельности будущего инженера как субъекта самостоятельного принятия решений обусловлен саморегуляцией (П.К. Анохин и др.), представляющей человека как совершенную, самообучающуюся, самосовершенствующуюся и саморегулирующуюся систему [1]. В технической сфере такие системы называются автономными, а автономность является важнейшим свойством личности как субъекта саморегуляции и самостоятельной работы, необходимым для принятия технических решений в ситуациях неопределенности в ходе профессиональной деятельности.

В соответствии с концепциями Л.С. Выготского, А.Н. Леонтьева профессионально-ориентированное обучение способствует развитию инженерного мышления. Содержанием такого обучения становятся учебные дисциплины, создающие контекст деятельности инженеров [2; 3]. Одной из дисциплин, средства которой погружают в профессиональную специфику, является иностранный язык, а профессионально-ориентированное обучение иностранному языку студентов – будущих инженеров на основе контекстного подхода может обеспечивать условия для формирования автономности, профессионально значимого свойства.

Анализ научной литературы и результатов исследований показал, что в практике профессиональной подготовки применяется модульная технология, позволяющая студентам самостоятельно, автономно, индивидуально осваивать образовательные траектории в рамках государственных образовательных стандартов.

Однако остаются недостаточно исследованными возможности использования модульной технологии в профессиональной подготовке студентов – будущих инженеров в процессе обучения профессионально-ориентированному иностранному языку с целью формирования профессионально значимых свойств.

Учеными отмечается значимость развития самостоятельности и автономности в ходе профессиональной подготовки студентов – будущих

инженеров (М.В. Давер и др.) для успешной профессиональной деятельности, хотя отсутствует единая точка зрения на понятие и структуру автономности [4]. Обучению студентов неязыковых вузов иностранному языку посвящены исследования (О.Н. Мартынова, Л.П. Меркулова и др.), в которых доказывается его роль в формировании профессионально значимых свойств студентов – будущих инженеров [5; 6]. Требуется разрешения основное противоречие между существующей практикой профессиональной подготовки студентов - будущих инженеров и недостаточной разработанностью педагогических условий, обеспечивающих возможности для формирования автономности студентов – будущих инженеров.

Стремление найти пути разрешения сложившихся противоречий определило проблему нашего исследования. В теоретическом плане – это проблема обоснования подходов к организации процесса профессиональной подготовки студентов – будущих инженеров. В практическом плане – это проблема разработки средств формирования автономности студентов – будущих инженеров как профессионально значимого свойства.

Объектом нашего исследования явилась профессиональная подготовка студентов – будущих инженеров, а его предметом - модульная технология как компонент профессиональной подготовки студентов – будущих инженеров.

Целью нашего исследования явилась разработка и теоретико-методологическое обоснование практико-ориентированной концепции формирования автономности студентов – будущих инженеров в процессе обучения профессионально-ориентированному иностранному языку.

Глобальные изменения, затрагивающие все сферы современного общества, касаются в первую очередь стремительного развития технической сферы и, следовательно, значительно влияют на деятельность инженеров, обеспечивающую создание и обслуживание технических объектов. Повышение научно-технических и производственно-технологических потребностей общества, рост объема производства и исследований в аэрокосмической и других высокотехнологичных отраслях, значительная ответственность за качество выполняемых инженерами заказов, осуществление их профессиональной деятельности в среде с высокой степенью неопределенности и конкуренцией, изменение ее информационного обеспечения, а также увеличение ответствен-

ности за результаты деятельности и необходимость решения глобальных проблем современного общества обусловили повышение требований к качеству профессиональной подготовки студентов – будущих инженеров [7].

Анализ научной литературы позволил выявить специфику профессиональной деятельности инженеров, заключающуюся в приоритетной роли проектной деятельности, в ходе которой необходимо принятие многочисленных технических решений в ситуациях неопределенности.

Выявлено, что повышение эффективности профессиональной подготовки возможно, если в процессе обучения в техническом вузе у студентов – будущих инженеров будет сформирована автономность, под которой следует понимать интегративное профессионально значимое свойство личности инженера, системообразующее ценностно-мотивационный, когнитивный, деятельностный, рефлексивно-регулятивный компоненты, показатели которых свидетельствуют о готовности к самостоятельному принятию решений в неопределенных ситуациях профессиональной деятельности.

Структура автономности разрабатывалась на основе философской теории М.С. Кагана [8] и психологической теории деятельности (Л.С. Выготский, А.Н. Леонтьев и др.) [2; 3]. Для уточнения структуры автономности студентов – будущих инженеров использовался метод компетентных судей, в качестве которых выступили преподаватели, работающие на факультете летательных аппаратов и факультете информатики в Самарском государственном аэрокосмическом университете (выборка составила 25 человек).

Исследования, посвященные изучению различных аспектов автономности, показали, что ее формирование может быть эффективным при обучении профессионально-ориентированному иностранному языку в ходе профессиональной подготовки студентов – будущих инженеров, поскольку целью обучения иностранному языку в техническом вузе является формирование коммуникативной компетентности, что подтверждают ведущие специалисты в области разработки национальных стандартов вузовского образования в странах Европейского и мирового сообщества. Коммуникативная компетентность обеспечивает готовность выпускников высших учебных заведений к успешной профессиональной деятельности в условиях рынка труда, так как ее компетенции (социокультурная, социальная, лингвистическая, прагматическая,

дискурсивная, социолингвистическая, самоконтролирующая) влияют на развитие компонентов автономности.

Было выявлено преимущество модульной технологии профессиональной подготовки средствами иностранного языка, направленность ее функций на формирование автономности.

В ходе констатирующего эксперимента был выявлен низкий уровень сформированности компонентов автономности студентов – будущих инженеров, что подтвердило необходимость внесения изменений в процесс профессиональной подготовки студентов – будущих инженеров. При разработке модульной технологии профессиональной подготовки студентов – будущих инженеров были рассмотрены современные педагогические технологии, среди которых по критерию целеполагания (таксономия целей Б. Блума) были выбраны: обучение в сотрудничестве; обучение, центрированное на студенте; дистанционное обучение; проектные технологии. Поскольку модульная технология интегрирует дефиниции всех этих технологий, ее целью является формирование автономности студентов – будущих инженеров.

Спроектированная модульная технология профессиональной подготовки студентов – будущих инженеров, рассматриваемая нами как разновидность педагогической системы, включает в себя содержательный и процессуальный элементы. Содержательный элемент модульной технологии профессиональной подготовки, базирующийся на методологических позициях контекстного подхода, включает: тематические разделы, соответствующие рабочей программе по английскому языку, разработанной на основе типовой программы обучения иностранным языкам для студентов неязыковых вузов; языковые средства, обеспечивающие освоение видов речевой деятельности, необходимых для развития показателей компонентов автономности.

Содержательный элемент, в соответствии с принципами модульной технологии (модульности, гибкости, динамичности, нелинейности, проблемности, рефлексивности), был сконструирован по автономным функциональным узлам – модулям (введение в модуль, обучающий модуль, практический модуль, контролирующий модуль), каждый из которых включал методы активного обучения (ролевая игра, деловая игра, метод анализа и разрешения проблемных ситуаций), что способствовало развитию показателей автоном-

ности студентов – будущих инженеров, поскольку модули были выделены с учетом структурно-содержательных характеристик основного понятия и каждый из них способствовал приоритетному развитию отдельных компонентов автономности студентов – будущих инженеров.

Схема. Модульная технология профессиональной подготовки студентов – будущих инженеров



Для подтверждения эффективности разработанной модульной технологии профессиональной подготовки студентов – будущих инженеров было проведено сравнение результатов констатирующего и формирующего экспериментов. Выборку представили студенты контрольной (70 человек) и экспериментальной (98 человек) групп.

Самооценка сформированности показателей ценностно-мотивационного компонента автономности студентов – будущих инженеров, полученная в ходе констатирующего эксперимента, составила 3,24 в экспериментальной и 3,19 в контрольной группах (5-балльная шкала). Низкий уровень сформированности компонентов автономности объясняется недостаточным опытом самоорганизации деятельности студентов и не является достаточным для эффективной саморегуляции деятельности.

Формирующий эксперимент, цель которого заключалась в апробации спроектированной модульной технологии профессиональной подготовки студентов – будущих инженеров, проходил на базе Самарского государственного аэрокосмического университета (факультет информатики) в течение двух лет.

Таблица. Результаты опытно-экспериментальной работы по формированию автономности студентов – будущих инженеров (% показатель)

Компоненты	Констатирующий эксперимент		Формирующий эксперимент	
	Контр. группа	Эксп. группа	Контр. группа	Эксп. группа
Ценностно-мотивационный	63,7	64,8	68,3	88,6
Когнитивный	62,2	62,6	66,0	86,3
Деятельностный	54,6	64,6	58,8	86,2
Рефлексивно-регулятивный	64,3	64,4	67,5	90,5

Установлена статистически значимая положительная динамика показателей компонентов автономности студентов – будущих инженеров в контрольной и экспериментальной группах, однако значения t-критерия Стьюдента свидетельствуют о статистической значимости (на уровне $p=0.0001$) различий средних значений показателей между указанными группами. Таким образом, целенаправленное формирование компонентов автономности студентов – будущих инженеров позволяет существенно увеличить значения оценок в сравнении с имплицитным, неявным формированием в процессе обучения и социальной адаптации в контрольной группе.

В ходе констатирующего эксперимента (рассчитывался коэффициент корреляции Пирсона с помощью электронных таблиц MS Excel) обнаружены слабые связи между компонентами автономности как в контрольной, так и в экспериментальной группах, что подтвердило необходимость ее формирования в процессе обучения профессионально-ориентированному иностранному языку.

По результатам формирующего эксперимента рефлексивно-регулятивный компонент является доминирующим. Полученные результаты свидетельствуют о повышении влияния саморефлексии на процесс самостоятельной учебной деятельности и получения профессионально-значимой информации. Усиление взаимосвязи между ценностно-мотивационным и когнитивным компонентами (было $r=0,0776$, стало $r=0,7297$) свидетельствует об осознании специфики будущей профессиональной деятельности, вхождении ее ценностей в учебную деятельность, о потребности самосовершенствования в ее области.

Таким образом, на основе анализа полученных в ходе исследования эмпирических материалов и их теоретического осмысления пришли к следующим выводам:

1. Противоречие между предъявляемыми обществом к инженерам требованиями и реальными компетенциями выпускников может быть разрешено в процессе профессиональной подготовки, обеспечивающей формирование автономности студентов – будущих инженеров.

2. Современные педагогические технологии обучения иностранному языку (обучение в сотрудничестве; обучение, центрированное на студенте; дистанционное обучение; проектные технологии), выбранные по критерию целеполагания (таксономия целей Б. Блума), направлены на формирование

отдельных компонентов автономности. Поскольку модульная технология интегрирует дефиниции всех этих технологий, она соответствует цели профессиональной подготовки – формирования автономности студентов – будущих инженеров.

3. Модульная технология профессиональной подготовки студентов – будущих инженеров индивидуализирует учебный процесс, стимулируя развитие потребности в самостоятельном, независимом получении профессионально-значимой информации, и вызывает интеллектуальную активность; развивает способность проводить анализ собственной самостоятельной деятельности и вносить в нее коррективы.

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Significance of pharmacotherapy teaching to students of Pharmacy faculty in modern conditions

Abstract: This article focuses on the need to teach pharmacotherapy at the Faculty of Pharmacy. The article concerns the role of the pharmacist in the pharmacotherapy optimization in the modern world.

Keywords: pharmacotherapy, rational pharmacotherapy, a pharmacist, education.

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Значение преподавания фармакотерапии студентам фармацевтического факультета в современных условиях

Аннотация: Данная статья посвящена необходимости преподавания фармакотерапии на фармацевтических факультетах. В публикации рассматриваются роль провизора в оптимизации фармакотерапии в современном мире.

Ключевые слова: фармакотерапия, рациональная фармакотерапия, провизор, обучение.

Фармакотерапия – это совокупность методов лечения, основанных на применении лекарственных средств (ЛС). Лекарственная терапия является

наиболее часто используемой формой лечебного вмешательства, и ее применение существенно выросло в связи со старением населения, ростом распространенности хронических заболеваний, появлением новых инфекционных болезней и увеличением количества эффективных лекарств.

В настоящее время население покупает ЛС не только по причине заболеваний, но и с целью профилактики и поддержания здоровья. Сегодня, в связи с применением в клинической практике большого количества лекарственных средств, и иногда нерациональным их использованием, медицинскими ошибками, появлением некачественных и фальсифицированных препаратов, эффективная, безопасная и экономически обоснованная фармакотерапия становится важной медицинской, социальной и экономической проблемой. По данным государственной службы Украины по лекарственным средствам в 2011 г. в результате проведения контроля качества ЛС было обнаружено 107 серий и 113 наименований несоответствующего качества, а также 34 серии и 16 наименований фальсифицированных ЛС, по поводу чего были выданы предписания [3].

В современном мире изменяются роль, функции провизора (фармацевта) и требования, предъявляемые к нему. От профессиональных знаний, коммуникативных навыков фармацевтического работника зависит не только товарооборот, но и здоровье пациента [4]. Фармацевтическое консультирование и фармацевтическая помощь в целом являются решающими факторами в улучшении качества жизни населения.

Реализация роли провизора осуществляется через изменение образовательных планов и программ подготовки специалистов путем усиления клинико-фармакологической направленности практической подготовки [5,6,9]. Возникает также острая потребность в формировании клинического мышления у будущих провизоров [2].

Основной задачей в практической деятельности провизора является необходимость оценки фармакодинамических, фармакокинетических и побочных эффектов у каждого конкретного больного. В этой связи представляется целесообразным преподавание фармакотерапии на фармацевтическом факультете, которое должно способствовать формированию навыков научно обоснованного использования ЛС в конкретной клинической ситуации и умение

контроля терапевтической эффективности и безопасности лекарственной терапии.

Фармакотерапия одна из основных медико-фармацевтических дисциплин, главной задачей которой является усвоение студентами и провизорами (фармацевтами) принципов медикаментозного лечения различных групп заболеваний, способствовать повышению профессиональной компетентности провизоров.

Фармакотерапия подразумевает практическое применение ЛС в лечении того или иного заболевания с учетом его этиологии, патогенеза, клинического течения, наличия обострений и дальнейшего прогноза. Основные задачи фармакотерапии: выбор ЛС для индивидуального лечения конкретного больного; определение рациональных лекарственных форм и частоты их применения; выбор наиболее оптимальных путей введения назначенных ЛС; терапевтический мониторинг за действием ЛС на организм больного; предупреждение и устранение побочных эффектов и нежелательных последствий взаимодействия ЛС; исследование эффективности и безопасности применений ЛС.

Фармакотерапия представляет собой синтез сведений о закономерностях действия ЛС в норме и в условиях нарушения жизнедеятельности организма, зависимости их эффекта от многих сопутствующих факторов (возраста, функционального состояния отдельных органов и систем, совместного приема ЛС и пищи, особых состояний женского организма, выраженности патологического процесса и т.д.).

В практике провизора фармакотерапия занимает особое положение. Без её знаний, без навыков клинико-фармакологического мышления в настоящее время невозможно проводить рациональную, дифференцированную лекарственную терапию, отвечающую современным требованиям. Эффективное лечение конкретного больного базируется с одной стороны на учёте особенности течения заболевания, а с другой - на тщательном учёте действия лекарственных средств на больного человека.

Провизору отводится совершенно определённая роль оптимизации фармакотерапии. Ориентация в круге проблем решаемых врачом при

проведении фармакотерапии создаёт предпосылки для квалифицированного решения провизором важных задач повышения её эффективности.

Изучение вопросов фармакотерапии позволит провизору квалифицированно проводить: организацию лекарственного обеспечения населения в соответствии с особенностями обслуживаемого региона (заболеваемость, возрастной состав, эпидемиологическая обстановка); предупреждение самолечения; качественный контроль врачебной рецептуры на предмет несовместимых прописей; предметное взаимодействие с врачами по вопросам адекватной замены препаратов; качественную санитарно-просветительную и информационную работу и др.

С другой стороны, следует отметить, что благодаря успехам химии и технологии, стремительно увеличивается количество лекарств и разнообразных лекарственных форм. По данным Государственного экспертного центра Министерства здравоохранения Украины по состоянию на 07.02.2016 в "Государственном реестре лекарственных средств Украины" 12382 лекарственных средств [1]. В условиях большого объёма информации о патогенезе, в современных методах диагностики заболеваний, который постоянно увеличивается, врач физически неспособен усвоить большой информационной материал, который касается как имеющихся, так и тех, что постоянно поступает на рынок ЛС, а это, в свою очередь, снижает эффективность лечения лекарственной терапии.

В то же время, провизоры, которые владеют на высоком уровне знаниями о физико-химических и биофармацевтических особенностях лекарств, не имеют соответствующих знаний в области фармакотерапии, поэтому возникает объективная необходимость подготовки специалиста со знаниями проведения рациональной медикаментозной терапии различных патологических процессов и отдельных их проявлений.

Преподавание и успешное изучение фармакотерапии основывается на базе приобретенных студентами знаний и умений по разделам следующих дисциплин: «Биологическая химия», «Микробиология», «Фармакология», «Патология», «Физиология с основами анатомии человека».

Обучение основывается на использовании современных учебно-информационных ресурсов: компьютерные презентации лекций, практических занятий [8].

В целях повышения качества знаний разработана единая структура практического занятия, включающая следующие разделы: контроль исходного уровня знаний, самостоятельная работа, практическая часть, контроль конечного уровня знаний.

Изучение стандартов фармакотерапии, разрабатываемых на основе международного опыта и данных доказательной медицины, приобретение навыков по индивидуальному подбору наиболее эффективных и безопасных лекарственных средств на базе данных фармакодинамики и фармакокинетики с учетом возможного проявления их побочных эффектов является важным в подготовке будущих специалистов [7, 10].

В структуру практических занятий включены новые формы обучения студентов - компьютерное обучение и тестирование уровня знаний; применение ситуационных задач и продуктивной деятельности (знания-умения); проведение деловых игр с разыгрыванием ролей, моделированием ситуаций, в которых участвуют врач, больной и провизор.

Задачами теоретической части учебного процесса является ориентация в понятиях симптомов и синдромов основных заболеваний внутренней медицины и в осуществлении принципа выбора наиболее эффективных и безопасных ЛС с учётом функционального состояния организма больного. В то же время задачи практической части является сформировать умения и навыки, необходимы для деятельности провизора об области обеспечения врачей информацией по клинической фармакологии с целью оптимизации её рационального применения.

Таким образом, совершенствуя методологические аспекты преподавания фармакотерапии студентам фармацевтического факультета, решаются главные задачи - обучение будущих провизоров основным принципам проведения лекарственной терапии отдельных нозологических групп заболеваний, умению оказывать консультативную помощь врачам и больным в проведении эффективного и безопасного лечения.

Ориентация провизора в круге проблем, решаемых врачом при проведении фармакотерапии, способствует повышению его квалификации и качеству медикаментозного лечения больных.

Освоение принципов фармакотерапии будет способствовать более рациональной организации работы аптечной сети, а в результате – обеспечению эффективного и безопасного использования ЛС в практическом здравоохранении.

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The constructive influence of the spiritual “I” on the intellectual sphere of a personality

Abstract: There was analyzed the influence of the spiritual sphere on the effectiveness of the person’s intellect functioning which is expressed in wisdom, conscious rationality, creative intuition and creativity, functioning of different kinds of reflection. It was stated that the appearance of intellectual dysfunctions is caused by the person’s spiritual impoverishment.

Keywords: spiritual paradigm, intellect, mind, wisdom, the effectiveness of intellect.

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Конструктивний вплив духовного Я на інтелектуальну сферу особистості

Анотація: Аналізується вплив духовної сфери на ефективність функціонування інтелекту людини, що проявляється у мудрості, усвідомленій раціональності, творчій інтуїції та творчості, функціонуванні різних видів рефлексії. Констатується виникнення інтелектуальних дисфункцій, спричинених буздуховністю особистості.

Ключові слова: духовна парадигма, розум, ум, мудрість, ефективність інтелекту.

Розум (інтелект) поряд з волею та емоційними переживаннями є фундаментальною здатністю особистості, яку людина може використовувати як для творення добра, так і для творення зла. Функціонування та розвиток розуму пов'язано з особливостями самосвідомості, спонукальної та емоційно-вольової

сфер. Згідно духовної парадигми психології [1; 2; 3; 4; 5], дух – це системотвірний чинник організації і структурування внутрішнього світу особистості, в т.ч. її інтелекту. З духовної позиції здатність думати – без сумніву, великий Божий дар, а мислення (творення думок) – природний діяльний стан. Без сумніву, інтелект, належить до самої природи людини.

Християнство ніколи не заперечувало значення сили розуму в пізнанні, але вважає, що істинне бачення Бога досягається тільки з допомогою очищення розуму та аскетичного подвигу. Але якщо західне богослов'я прагнуло до зовнішньої стрункості логічних понять, віддаючи перевагу зовнішній розсудливості над з'ясуванням внутрішньої сутності речей, вважаючи що "досягнення повноти істини можливе і за розділених сил розуму, що самостійно діють у своїй самотній окремоті" [6,186], то східні богослови шукали повноту і цілісність умогляду, який повністю залежав, на їх думку, від внутрішнього стану розмірковуючого духу, в якому всі окремі властивості вищих розумових сил повинні злитися в одну живу і вищу єдність. Так, у вченні ісихазму про шляхи очищення душі через звернення і збирання розуму в собі та звернення до розуму усіх душевних сил та діяння згідно Промислу Божого. Удосконалюючись в духовності і моральності, проходячи шлях від віри до усеосяжної любові, людина сходить по сходах пізнання [7; 8; 9].

За логікою людської віри, часто велике сприймається як мале, а мале – як велике, важливе, як неважливе, а неважливе, як важливе, корисне як шкідливе, а шкідливе, як корисне, швидке, як повільне, а повільне – як швидке. Навпаки, з духовного погляду завжди велике сприймається як велике, мале як мале, важливе як важливе, неважливе як неважливе, швидке як швидке, повільне як повільне, вічне як вічне, тимчасове як тимчасове. Отже, труднощі пізнання людиною себе і світу полягають в тому, що духовні очі (ум) пересічної людини знаходяться посередині двох протилежних сил: чесноти і гріха, ангела і біса. Людина може вільно діяти за своїм бажанням чи противитися їм. Завдяки чистому уму вона породжує чесноти, перетворює грішних, нечестивих, невігласів, нерозумних і неправедних людей у розумних, праведних, благочестивих, святих, розумних. Чистий ум правильно, в чистоті бачить предмети та їх дії. Якщо розум людини виявляє зовнішній предмет і затримується на ньому, то і в майбутньому він звертатиме в той же бік похоті, творити діла пристрасті і плоті.

Якщо пристрасний ум хворіє, то й хворіє уся душа. Людина, що зберігає світлим свій ум, спрямовує свій розум, психологічну здатність на речі божественні, здатна не тільки стежити за своїми помислами як началами пристрастей, але й відкидати і відсікати усякі гріховні помисли, стримуватися не тільки в їжі, а й у кожному моменті плотського життя. Їй притаманна сердечна безмовність, поєднана із тверезістю, з смиренням та молитвою, а здатність до споглядання, до християнського „бачення Бога” їй дає Святий Дух. Томаш Шпідлік та Іночензо Гаргано [10] виділяють особливості людського споглядання як фундаментальної пізнавальної здатності: 1) його предметом є не „поверхня” речей, адже споглядання – це не емпіричне пізнання, ні не простодушне зачудування зовнішньою красою видимого світу; 2) предметом споглядання не є ні платонівські ідеї, ані логос стоїків, ані категорії та дефініції Аристотеля. ... Продуктом людського розуму є „просте пізнання”. Для духовної людини воно (пізнання – М.С.) – лише „поверхня” порівняно з пізнанням духовним. Просте пізнання безплідне, його не досить, щоб увійти в царство Боже; 3) предметом духовного споглядання є божественна мудрість, прихована у всьому сотвореному.

У християнстві [11] розумною вважається не та людина, що володіє розумом і проголошеним словом, а та, котра розумом і розумною силою шукає та досліджує, пізнає Бога і прагне з’єднатися з Ним. Мудрість людини в тому, щоб почути слово Бога і свідомо підкоритися йому. «Розумна людина – це людина, яка очистилася, звільнилася від пристрастей. Справді розумний той, хто освятив і свій розум» [12, 211]. За допомогою розуму вона повинна трудитися над осягненням величі Божої, щоб знайти Бога, а не робити богом свій розум.

Особистість з розвиненим духовним Я у змозі об’єктивувати себе для власної інтелектуальної активності (регуляції та саморегуляції, організації, координації і ін.). В результаті цього виникають досліджувані у психології явища і процеси, як, наприклад, «духовний інтелект», «мислення про мислення» (метамислення), «пам’ять про пам’ять» (метапам’ять), «вторинна увага», «метакогнітивний моніторинг». Це не просто метакогнітивні процеси, а процеси рефлексії та її феномени. Так, Р. Еммонс [13] наполягає на необхідності виділення духовного інтелекту як окремого типу інтелекту. К. Нобл [14] вказує

на тенденцію трансформації духовного досвіду в духовний інтелект, в якому насамперед виділяє здатність контролювати несприятливі ситуації. Д. Захар і Я. Маршал [15] підкреслюють інтегративну функцію духовного інтелекту.

Теоретико-методологічний аналіз, одержані емпіричні дані та результати втілення методологічних настанов духовної парадигми в реальному освітньому процесі вищої школи та в практиці психологічного консультування і психологічної корекції дозволили виявити онтологічні прояви впливу духовного Я на ефективність функціонування інтелектуальної сфери особистості. Встановлено, що під впливом духовного інтелект функціонує оптимальніше й ефективніше: сприймання стає цілісним, усвідомленішим і об'єктивнішим, знижується рівень аперцепції, легко запам'ятовуються і відтворюється головне; своєчасно актуалізується досвід, легко схоплюється сутність розглядуваних проблем, долається егоцентрація мислення, долається закрита пізнавальна позиція, «мислення за бажанням»; уява не бере участь у виникненні гріховних помислів та пристрастей. Конкретно в інтелектуальній сфері Я-духовне проявляється в ясних станах свідомості, якими є:

1) мудрість людини, коли завдяки духу виникають глибинні усвідомлення себе, світу та свого життя (усвідомлення головного у житті; розуміння, сприймання і приймання внутрішньої необхідності – сенс життя, «треба», «мушу», «хочу», особистісний ідеал та зовнішньої необхідності – «треба», «від мене очікують»). Духовна людина володіє необхідними знаннями (відчуття та розуміння усіх граней, сторін життя) і технологіями конструктивної життєдіяльності, побудованої на духовних та моральних критеріях;

2) раціональність та усвідомлення внутрішнього стану та мотиваційних основ поведінки. Ними є а) довіра до власної інтуїції; б) ефективна інтелектуальна, комунікативна, особистісна та діяльнісна рефлексія, встановлення доцільності та міри рефлексування; в) чітке усвідомлення минулих, актуальних та потенційних помилок; г) оптимальний рівень рефлексування (поєднаність рефлексії з предметною, пізнавальною, комунікативною активністю та самоактивністю, коли періоди рефлексування супроводжуються зовнішньою та внутрішньою активністю); г') здатність до самоконтролю, самопрогнозування самодіагностики, самокорекції, поступинкової самореалізації, результатом чого є узагальнення життєвого та особистісного досвідів; д) послаблення чи

нейтралізація егоїстичних, невротичних та інфантильних тенденцій (відсутність суперечливих переживань, дій та намірів); е) єдність з іншими людьми (переконаність, що людина не може жити поза іншими людьми); є) здатність страждати пристрастями людства;

3) творча інтуїція як сприймання Промислу Божого, голосу власного сумління, орієнтація на Вічність;

4) оптимальний інтелектуальний (епістемологічний) стиль, відкрита пізнавальна позиція, що призводить до формування адекватної картини світу, сутнісного пізнання конкретних ситуацій, подій, предметів тощо.

Бездуховність людини, яка веде гріховне і розпусне життя, призводить до затьмарення розуму, коли спотворюються всі думки, слова і справи. У пристрастних людей немає порядку в розумі, бо там панує безчинство і невлаштованість. Людина, яка спрямовує свій розум до чуттєвих речей, відчужується від духовної любові і стримування. Гіпертрофоване раціональне начало стає джерелом дисгармонії у духовній сфері, а у її внутрішньому світі панує егоїзм, гріх. Виділяють три сфери падіння розуму: 1) стосунки з Богом; 2) ставлення людини до самої себе, пізнання самої себе; 3) сфера стосунків людини з іншими людьми. У стані бездуховності людини стається падіння розуму, що проявляється у: 1) помилковому знанні (наукове знання не поєднане з вірою); 2) небаченні всезагального, суцього; 3) у пристрастних помислах; 4) бажанні грішити. Відтак, пристрастна душа не здатна до пізнання істини, їй спочатку потрібне лікування доброчесністю.

Отже, врахування духовного єства внутрішнього світу людини значно підвищує ефективність інтелектуальної здатності людини, яка використовується для творення любові, добра і боротьби зі злом, творення свободи та відповідальності. Перспективним у цьому плані є дослідження впливу духовної сфери особистості на спрямованість та ефективність функціонування інтелекту, його зворотний вплив на її моральну сферу та життя взагалі.

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The use of information technology for learning German language for the students of the tourism profile

Abstract: The article shows the role played by computer programs in teaching the German language for the students of the tourism profile. When learning a foreign language computer provides individualized and differentiated learning, allows intensifying the learning process increases the activity and motivation of students. The author reveals the key features, objectives and capabilities of computer programs for the course "German for professional purposes". Author identifies the advantages and disadvantages of learning a foreign language (German) by electronic resources.

Keywords: computer software; Internet and professional training; foreign language; German language; students of the tourism profile.

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Використання інформаційних технологій для вивчення німецької мови студентами туристичного профілю

Анотація: У статті показано, яку роль відіграють комп'ютерні програми в системі вивчення лексичних та граматичних одиниць німецької мови студентів туристичного профілю. При вивченні іноземної мови комп'ютер забезпечує індивідуалізацію та диференціацію навчання, дозволяє інтенсифікувати процес навчання, підвищує активність та мотивацію студентів. Автор розкриває основні функції, завдання і можливості комп'ютерних програм для дисципліни «Німецька

мова за професійним спрямуванням». Автор визначає переваги та недоліки навчання іноземної мови (німецька) за допомогою електронних ресурсів.

Ключові слова: комп'ютерні програми; Інтернет; професійна підготовка; іноземна мова; німецька мова; студенти туристичного профілю.

Міжнародні зв'язки та їх розширення, інтернаціоналізація усіх сфер суспільного життя і туризму зокрема, які передбачають володіння іноземною мовою в практичній та інтелектуальній діяльності людини, висувують проблему активізації процесу навчання іноземних мов, зокрема в навчальних закладах туристичного профілю [4]. З поширенням інформаційних технологій викладачі отримали можливість використовувати різноманітні медіазасоби для збагачення мовного середовища, зокрема на заняттях іноземною мовою. На зміну аудіозаписам і навчальним телепередачам (лінгафонні кабінети) прийшли комп'ютерні програми, відео, супутникове телебачення та Інтернет. Питання викладання іноземної мови в немовному навчальному закладі досліджується у роботах багатьох науковців. Цієї проблеми торкаються такі науковці як Безпалько В.П., Берман І.М., Цветкова М.М. Вони провели ґрунтовний аналіз усіх видів мовленнєвої діяльності, визначили їх роль у навчальному процесі, розглянули основні принципи підбору лексичного та граматичного матеріалу до занять. У дисертаційних дослідженнях Замкової Н.Л., Логутіної Н.В., Іванової Р.М., Савченко Г.П. переважає проблема підготовки студентів до професійно-орієнтованого спілкування. Ю. Гапон, В. Ляудіс, Є. Маслико, Е. Носенко, К. Brucher, M. Collins, M. Simonson, A. Thompson та інші досліджують проблему використання новітніх інформаційних технологій у навчанні іноземної мови.

Нашою **метою** є показати, яку роль відіграють комп'ютерні програми в системі навчання німецької мови студентів туристичного профілю. У нашому дослідженні ми використовуємо такі методи: теоретичний - аналіз педагогічної та методологічної літератур дозволяють уточнити характер основних понять дослідження, систематизація та узагальнення теоретичних і емпіричних даних; емпіричний - спостереження, вивчення документації, що створило базу знань для розвитку змісту, форм і методів викладання німецької мови майбутнім фахівцям у сфері туризму; аналіз навчальних матеріалів, зокрема комп'ютерних програм, спрямованих на навчання іноземної мови. Активізація пізнавальної

діяльності студента у процесі навчання іноземним мовам – основне завдання викладача. Сучасні педагогічні технології (навчання у співробітництві, проектна методика, використання нових інформаційних технологій, комп'ютерні програми) допомагають реалізувати особистісно-орієнтований підхід у навчанні, забезпечують індивідуалізацію і диференціацію навчання [3].

Робота з комп'ютерними навчальними програмами на заняттях іноземної мови включає:

- вивчення лексики;
- відпрацювання граматики;
- навчання письму;
- навчання діалогічного та монологічного мовлення;
- можливість розуміти почуте і аналізувати почуте;

При вивченні іноземної мови комп'ютер забезпечує індивідуалізацію та диференціацію навчання, дозволяє інтенсифікувати процес навчання та реалізувати особистісно-орієнтований підхід у навчанні, підвищує активність та мотивацію студентів. Комп'ютерні програми допомагають студентам зануритись у мовне середовище через прослуховування діалогів та виконання вправ з метою контролю почутого. Сьогодні пропонується чимало комп'ютерних програм для використання на заняттях з іноземної мови: **навчальні програми** - для здобуття певних знань, умінь і навичок; **тренувальні програми** - для закріплення знань і умінь; **контролюючі програми** - для контролю якості знань та їх коректування; **ігрові програми**. Використовуючи комп'ютерні програми, реалізуються такі цілі та завдання:

1. Навчання фонетики:

А) Здобуття навичок правильної вимови та розрізнення на слух. Подальше вдосконалення навичок вимови щодо нового мовного матеріалу; **Б)** формування сприймання на слух та інтонаційних навичок і вимови.

2. Навчання граматики:

А) оволодіння граматиною і її вживання у мовленні, розширення обсягу граматичних засобів; **Б)** вдосконалення навичок розпізнавання і вживання у мові структурних і комунікативних явищ граматики німецької мови, ефективно оволодіння певними граматичними явищами - розпізнавання і вживання в мові різних типів речень, конструкцій;

3. Робота з лексикою:

А) систематизування лексичних одиниць, розширення потенційного словника, розвиток навичок розпізнавання лексичних одиниць і використання їх у мовленні; **Б)** формування навичок читання, аудіювання та продуктивних навичок письмовій мові.

4. Навчання читанню:

А) сприйняття автентичних текстів різних стилів (публіцистичні, художні, науково-популярні); **Б)** надання довідково-інформаційної підтримки шляхом надання мовної інформації (електронні енциклопедії, автоматичні словники), формування уміння самостійного подолання мовних труднощів [2]. На заняттях іноземних мов активно використовуються навчальні програми, такі як: **Euro Plus, Media Publishing, Distance Learning, Prompt** при навчанні фонетики (можливість записати свій голос, порівняти зі зразком), граматики (20 видів вправ), лексики (слова, діалоги, ситуації), читання й аудіювання (запис професійних ситуацій).

У роботі з текстом можна використовувати текстовий редактор *Arbeitsblätter per Mausclick*, який забезпечує виконання різних типів завдань:

1) введення нового тексту:

- редагування (зміна уривків, видалення, вставки);

2) написання плану переказу:

- редагування (розбиття тексту на абзаци, відтворення тексту з частин, розшифровка абревіатур);

3) модифікація на основі замін (зміна роду прикметників, часових форм дієслова, переклад прямої мови в непряму);

4) зміна текстів:

- заповнення пропусків у тексті;
- співвіднесення питань і відповідей;
- відновлення артиклів, прийменників, закінчень дієслів чи прикметників і

т.д.

4) запис тексту (відтворення тексту за ключовими словами, запис тексту під диктовку) [1].

Комп'ютер є одним із засобів досягнення високої мотивації при навчанні німецької мови. Цієї мети з легкістю можна досягти за допомогою комп'ютерних

програм та навчальних дисків. Потрібно ретельно вивчити диски та програми й відібрати ті, що найбільш підходять за темами (наприклад, для студентів туристичного профілю).

Представимо наступні навчальні програми, які можна використати при навчанні німецької мови. "**Dubliner Arbeitsblätter Online**" (<http://www.goethe.de/ins/ie/dub/lhr/mat/de911805.htm>). Ця навчальна програма була створена працівниками Гете-інституту в Дубліні (Ірландія). Програма складається з адаптованих текстів з газет і журналів для занять з німецької мови. Більшість текстів присвячені актуальним темам нашого життя: 10 Jahre Wiedervereinigung, 50 Jahre Bundesrepublik, Expo 2000, das 250 Goethe-Jubilaum, Umwelt, etc. Загалом, програма призначена для студентів, які вивчали німецьку мову не менше 3-4 років. Це можуть бути як особи, що самостійно займаються мовою, так і група студентів. Форми вправ традиційні (відповісти на питання, знайти в тексті відповідні пропозиції, розставити слова в правильному порядку, дати опис деяких понять). Вони розвивають вміння розуміти прочитане. Для розвитку навичок аудіювання є тільки одне завдання у розділі "Augenblicke mit Goethe".

Щодо розвитку навичок написання тексту пропонується вибрати одне з декількох завдань і написати текст ("Wasserwelten", "Expo 2000"). До міжкультурного навчання можна віднести розділ "Expo 2000". Робота з лексикою проходить в цій навчальній програмі тільки в розділі "Schuler Zeitung", де зустрічається одне завдання: знайти терміни з тексту та їх пояснення. Розвиток граматичних навичок знаходиться в розділі "Greenteams" "Kohle, Mäuse, Piepen". У розділі "Greenteams" пропонується написати лист і відправити його партнерові. Так, у розділах "Olli", "Expo 2000" можна з питань написати власну думку і пропозиції по темі або написати текст. У розділі "Greenteams" пропонується лексична допомога, по якій пишеться лист. У цій навчальній програмі є такі види текстів: статті з газет і журналів, інтерв'ю, таблиці. Оформлення web-сторінок візуально привабливе, є багато кольорових фотографій, які допомагають при обговоренні чи розумінні змісту текстів. Можна виділити такі розділи: "10 Jahre Wiedervereinigung", "Wasserwelten", "Wildes Wasser", "50 Jahre Bundesrepublik", "Sommer"(тут також присутня анімація). Всі завдання в цій навчальній програмі складені за схемою "Людина-машина".

Відповіді до завдань, перевірка і виявлення помилок відсутні; спілкування з іншими студентами не передбачено [5].

Наступна навчальна програма - "**Kaleidoskop**" (<http://www.kaleidos.de/alltag/enindex.htm>). Тексти та інтерв'ю складені В. Хібером та його колегами при підтримці Гете-інституту. Потенційні користувачі цієї навчальної програми - викладачі німецької мови та особи, які вивчають німецьку мову починаючи з початкового рівня навчання. Основні цілі навчання: розуміння прочитаного, написання текстів та міжкультурне навчання. Основне питання – елементарне володіння повсякденною німецькою мовою. Найважливішими формами вправ є вільне написання тексту або повідомлення та автентичні завдання у формі web-пошуків. Вправи для розвитку навичок розуміння прочитаного здебільшого відсутні, тексти відіграють інформативну роль. Вправи на аудіювання представлені також стисло. Як вправи з написання тексту в кінці кожного розділу пропонується написати і відіслати повідомлення з відповідної теми. Тут також пропонується скласти повідомлення про себе і опублікувати його в Інтернеті. Міжкультурне навчання представлено у багатьох розділах. Наочний супровід допомагає краще розуміти зміст текстів і дають приводи для додаткових дискусій. Web-сторінки візуально наочні і привабливі.

Отже, аналізуючи невеликий обсяг комп'ютерних програм можна сказати, що навчання іноземної мови за допомогою цих ресурсів має як переваги так і недоліки. З одного боку, навчання проходить автономно, студенти працюють тоді, коли їм зручно, і з тією швидкістю, яка їм підходить, навчальна атмосфера менш стресова. Однією з переваг більшості програм є те, що вони в простій формі надають складну інформацію: текст, звук і відео. З іншого боку, помилки виправляються без пояснення, не вистачає різноманітних, цікавих видів роботи, розмовну мову краще освоювати з реальним, а не віртуальним учителем.

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The role of pedagogical practice in preparing future teachers of technology

Abstract: The article discusses the role of pedagogical practice in preparing future teachers of technology, as part of the holistic educational process of the University. Focuses on the effectiveness of pedagogical practices, which largely depends on the definition of its objectives, tasks, principles, content and skillful organization.

Keywords: pedagogical practice, higher vocational education, theoretical training, practical training, pedagogical technology.

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Роль педагогической практики в подготовке будущих учителей технологий

Аннотация: В статье рассматривается роль педагогической практики в подготовке будущих учителей технологий, как составной части целостного педагогического процесса вуза. Акцентируется внимание на эффективности педагогической практики, которая в значительной степени зависит от определения ее целей, задач, принципов, содержания и умелой организации.

Ключевые слова: педагогическая практика, высшее профессиональное образование, теоретическая подготовка, практическая подготовка, педагогические технологии.

Существенные изменения в социально-экономическом устройстве Украины затрагивают активно и образование, которое меняется, чтобы удовлетворять требованиям государства и общества. Этот процесс сопровождается изменениями в педагогической теории и практике учебно-воспитательного процесса. Происходит смена образовательной парадигмы: предлагается иное содержание, иные подходы, иное поведение, иной педагогический менталитет. Важнейшей составляющей педагогического процесса становится личностно-ориентированное взаимодействие педагога с обучающимися. Особая роль отводится духовному воспитанию личности, становлению нравственного облика Человека. Увеличивается роль науки в создании педагогических технологий, адекватных уровню общественного знания.

Уникальность педагогической деятельности в том, что она призвана как бы восполнить пробел, разрыв между культурой и формирующимся человеком: помочь ему сделать то, что он еще не умеет делать; придать личностный смысл тому, что пока еще никакого смысла для формирующего человека не имеет; заинтересовать его тем, что пока никакого интереса для ребенка не представляет; решить задачи, к решению которых он совершенно не готов, и для этого ему надо совершить переход к совершенно новым формам деятельности.

Задача учителя технологии заключается в реализации образовательной области «Технология», программа которой позволяет не только реализовать процесс приобретения специальных знаний, умений и навыков, так называемый «учиться делать», но и обеспечивает развитие способностей «учиться знать», «учиться понимать», «учиться познавать», формирует внешнее социальное пространство, в котором развивается важный аспект деловой личности – «учиться жить», «учиться быть».

Современный учитель должен стать организатором учебного процесса, уметь проектировать содержание учебных занятий и контролировать деятельность обучаемых с учетом индивидуального подхода, использовать инновационные методы обучения, которые подразумевают применение в учебном процессе информационных и коммуникационных технологий, в том числе и различных ЭОР [1].

Становление учителя происходит в процессе профессионального обучения в вузе на основании определенных норм, требований, структур и

видов деятельности. В учебном плане сегодняшнего вуза основу составляют несколько компонентов содержания образования.

Одним из факторов формирования этих компонентов является практическая подготовка будущих преподавателей. Педагогическая практика является составной частью целостного педагогического процесса вуза и является связующим звеном между теоретической подготовкой бакалавров и становлением их профессиональной готовности к педагогической деятельности в образовательных учреждениях [2].

Ее важность отмечали известные педагогические деятели и исследователи А.С. Макаренко, Н.К. Крупская, Н.И. Пирогов, С.Т. Шацкий и др.

Так, например, А.С. Макаренко считал, что педагогическая теория должна строиться на обобщении практического опыта воспитания (такова и вся педагогическая теория самого А.С. Макаренко). Поиск рациональной структуры, содержания, оптимальных условий достижения высокой результативности практической подготовки не теряет своей актуальности и сегодня (опыт Ш.А. Амонашвили, Е.Н. Ильина, С.Н. Лысенковой, В.Ф. Шаталова и др.). И это вполне закономерно, так как формирование высоких профессиональных качеств будущего специалиста немыслимо без четкой и глубоко продуманной системы практической подготовки [3].

Практика, как известно, выступает в многообразных проявлениях: как источник познания, как средство познания, как критерий истинности познания, как объект применения теоретических выводов. Образую диалектическое единство с познавательной деятельностью человека, теорией, практика является их диалектической основой, источником научного познания, его движущей силой, дает познанию необходимый фактический материал, подлежащий обобщению и теоретической обработке.

Студенты специальности «Технологическое образование» проходят несколько видов практик: ознакомительную, учебную, технологическую, педагогическую, преддипломную практику.

Рассмотрим подробнее один из вышеперечисленных видов практической подготовки, а именно педагогическую практику. Педагогическая практика является органической частью учебно-воспитательного процесса и обеспечивает соединение теоретической подготовки будущих специалистов с их

практической деятельностью в учебных заведениях, вооружает будущих преподавателей опытом самостоятельной педагогической деятельности.

Эффективность педагогической практики в значительной степени зависит от определения ее целей, задач, принципов, содержания и умелой организации, включая и знание общих закономерностей развития личности.

Цель педагогической практики – способствовать адаптации будущего специалиста в условиях предстоящей профессиональной деятельности, что позволит:

- глубоко изучить структуру и ход учебно-воспитательного процесса в учебных заведениях по месту прохождения практики;

- углубить и закрепить знания, полученные студентами в вузе, а также приобрести новые знания;

- формировать умения и навыки в подготовке и проведении внеклассной воспитательной работы и уроков с использованием наиболее прогрессивных форм, методов и средств обучения, направленных в конечном счете на формирование личности учащихся;

- формировать у студентов интерес к научно-исследовательской работе, умения применять методы психолого-педагогического исследования.

Педагогическая практика является сложной составной частью подготовки будущего педагога к выполнению всех основных функций обучения, воспитания и развития учащихся.

На практике четко фиксируется способность студентов к овладению всем комплексом дисциплин вуза: общенаучных, психолого-педагогических, специальных в их совокупности, проверяется методическая зрелость, профессиональная самостоятельность и творчество; намечаются пути совершенствования обучения студентов в данный период.

Особую значимость педагогической практике придает то, что она приближает обучение студентов-практикантов к реальным условиям их будущей профессиональной деятельности, погружает их в ту атмосферу, в которой осуществляется данная деятельность. Студент не просто оперирует приобретенными на лекциях знаниями, но и учится реализовывать их на практике, взаимодействует не с абстракциями, как на лабораторно-практических занятиях, а контактирует с реальными процессами и субъектами. Он

попадает не в наигранные, смоделированные ситуации, а в конкретный учебно-воспитательный процесс со своей спецификой и особенностями.

Априорная информация студента, то есть знания, присвоенные в вузе, недостаточна для оптимального управления, так как об объекте управления (учащемся) педагог имеет неполную информацию. Студент, даже имея отличные психолого-педагогические знания, представляет абстрактных учащихся и только начав с ними работать, получает действительную информацию о состоянии их знаний, навыков, умений, об их индивидуальных особенностях и уровне воспитанности. Необходимо учитывать, что эти сведения, будучи полученными заранее, теряют свою достоверность. Поэтому для оптимального управления системой педагог должен непрерывно пополнять свои знания, постоянно анализируя ту или иную ситуацию. Таким образом, в процессе педагогической практики студенты попадают в ситуацию «учения-обучения», что оказывает на них двоякое воздействие: – во-первых, практиканты сами планируют, подготавливают и проводят учебно-воспитательную работу с учащимися базовых учебных учреждений и в то же время непосредственно обучаются под руководством опытных преподавателей (методистов) кафедр, которые ответственны за проведение педагогической практики; – во-вторых, педагогическая практика, являясь источником информации (ситуация обучения), позволяет организовывать различные способы деятельности будущих специалистов и одновременно является экспериментальной площадкой, на которой эта деятельность осуществляется (ситуация учения).

Общеизвестно, что в выработке профессиональных знаний, умений и отношений большое значение имеют все формы учебной работы в вузе: лекции, практические занятия, курсовые и дипломные работы, реферирование и самостоятельные внеаудиторные занятия студентов. Существенный вклад в процесс формирования профессиональных знаний, умений и навыков вносит педагогическая практика. Причем, если на лекциях закладываются теоретические основы научных знаний предметов (что позволяет усваивать некоторый учебный материал на уровне «знакомства»), то на практических занятиях студенты усваивают этот материал на более высоких уровнях (репродукция, трансформация). Приобретенные первичные профессиональные умения по мере упражнений закрепляются, автоматизируются и трансформируются в навыки. Наиболее активным в этом процессе является педагогическая практика.

Качество и эффективность педагогической практики студентов находятся в прямой зависимости от того, как обеспечивается руководство ею. Ведь в процессе подготовки и проведения педагогической практики студенты взаимодействуют с широким кругом специалистов: преподавателями, руководителями и методистами вуза; управленцами, преподавателями-предметниками (мастерами производственного обучения), классными руководителями и воспитателями базовых учебных учреждений, в которых проходит практика. От того, насколько четко скоординирована их совместная деятельность, как они анализируют и оценивают педагогическую практику, как организована работа всех звеньев педагогического процесса, зависит успех педагогической практики, а в конечном итоге – процесс становления личности будущего педагога.

Обобщая вышеизложенный материал, можно сделать вывод, что целенаправленная организация педагогической практики, при умелом руководстве ею высококвалифицированными кадрами в единстве с теоретическими и практическими занятиями в вузе призвана способствовать укреплению связей обучения и воспитания студентов с жизненной реальностью, что позволит осознать будущим специалистам правильность избранного пути, оценить степень своей готовности к самостоятельной работе в учебных заведениях, понять сущность педагогического труда, приобрести знания и опыт, необходимые для творческой работы в качестве педагога.

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Game techniques in education: innovative methods of professional training

Abstract: The article describes game methods as a modifying innovation. Training in applying these methods is associated with the use of an educational model based on activity of students involved in the process. The article also describes the methodological component of the activity of the teacher when using game techniques depending on the objectives of the educational process, methodological principles and functions, and forms of training.

Keywords: methodological work, methodological training, game methods, pedagogical innovation, pedagogical activity, professionalization.

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Игровые технологии: инновационно-методический аспект профессиональной подготовки

Аннотация: В данной статье игровые технологии заявлены как модифицирующая инновация. Обучение технологиям данного вида сопряжено с использованием модели обучения, основанной на активности субъектов образовательного процесса. Освещена методическая составляющая деятельности преподавателя по внедрению игровых технологий исходя из задач методической работы, методических принципов, функций методической работы, форм методической подготовки.

Ключевые слова: игровое взаимодействие, профессионально-педагогическая деятельность, адаптация, профессиональная адаптация.

Высшее профессиональное образование в классическом университете обеспечивает будущих специалистов профессиональными знаниями, умениями и навыками в сочетании с академическим образованием. Повышение профессионализма и общекультурного уровня педагогических кадров является одним из приоритетных путей реформирования отечественной образовательной системы.

Методическая подготовка преподавателя всегда считалась важной частью профессиональной подготовки. Она представляет собой систему, включающую цели, содержание, методы, средства и формы организации обучения студентов. В настоящее время имеется большое количество работ психолого-педагогического направления, которые могут оказать существенную помощь учителю средней школы, ее администрации, а также работникам и руководителям различных методических структур в организации методической деятельности на разных образовательных уровнях (Ю.К. Бабанский, А.К. Беденко, И.Л. Беленок, А.П. Беляева, Б.А. Бенедиктов, В.П. Беспалько, Л.Н. Горбунова, Э.Д. Новожилов, Н.Е. Кузовлева, В.А. Маркушев, Л.М. Панчешникова, А.А. Рюмина). Анализ психолого-педагогических трудов показал, что современные исследователи, в основном, рассматривают отдельные направления совершенствования методической подготовки будущих преподавателей-предметников (Р.Н. Герасимова, В.И. Земцова, Н.Д. Кучугова, В.Ф. Любичева, В.А. Маркушев, Л.Н. Орлова, Е.А. Таможняя, Н.Л. Стефанова, Г.М. Чернобельская, М.А. Шаталов). Комплексное научное обоснование места, сущности, структуры и содержания методической деятельности в педагогической системе было представлено исследователем В.И. Ерошиной, а систематизация методической деятельности в ВУЗе, анализ ее структурно-функциональных связей – Н.Г. Берденниковой. Все же, вопросы, связанные с разработкой теоретических положений, касающихся обеспечения методической подготовки в ВУЗе адекватно изменяющимся целям и задачам профессионального образования, требуют дополнительного рассмотрения.

Целью нашей статьи является освещение методической составляющей деятельности преподавателя по внедрению игровых технологий исходя из задач методической работы, методических принципов, функций методической работы, форм методической подготовки в классическом университете, ориентированных на новые цели и задачи профессионального образования.

Овладение инновационными технологиями, в том числе игровыми, является одной из существенных составляющих профессиональной подготовки студентов и преподавателей.

Игровые технологии можно рассматривать как модифицирующую инновацию, суть которой – совершенствование и дополнение существующих форм обучения в высших учебных заведениях. Тема «Игровые технологии» рассматривается в рамках спецкурса «Педагогическая инноватика», изучаемого студентами 5 курса Харьковского национального университета имени В.Н. Каразина - будущими преподавателями истории и общественно-политических дисциплин. Цель спецкурса состоит в формировании готовности студентов к инновационной деятельности, расширении границ профессиональной компетентности и мотивационно-профессиональной направленности. Задачей, поставленной при изучении данной темы, является формирование проектировочных умений и навыков в области учебно-воспитательной, научно-методической, организационно-управленческой, социально-педагогической, культурно-просветительской работы, а также совершенствование приемов игрового моделирования современного учебного занятия. С этими приемами учащиеся были предварительно ознакомлены во время изучения таких нормативных дисциплин, как «Педагогика» и «Педагогика высшей школы» соответственно на третьем и пятом курсах. В рамках обозначенной темы игровые технологии представлены как совокупность психолого-педагогических установок, специальный подбор и комбинация педагогических форм, методов, принципов, приемов, средств учебно-воспитательной работы.

Принимая во внимание тот факт, что «инновирование традиционного обучения осуществляется за счет изменения модели обучения, где будущий специалист становится активным субъектом профессиональной деятельности за счет самообучения на основе признания личности как активного субъекта собственной жизни и поведения» [5, с. 174], в основу формирования готовности

к инновационной деятельности посредством игровых технологий нами была положена трехэтапная модель И.М. Богдановой [10, с. 218-222], примененная и адаптированная к нашим условиям [4]. Методическая составляющая подготовки, согласно нашим воззрениям, проходит через все этапы этой деятельности: подготовительный, основной, заключительный. Подготовительный этап сопряжен с осуществлением преподавателем диагностической и программно-целевой функции; основной этап предусматривает целенаправленную деятельность педагога в области формирования у студентов готовности к инновационной деятельности и предполагает организационную, стимулирующую, контролирующую функции; заключительный этап предполагает аналитическую, оценочную, прогностическую функции.

Принципы методической работы		
принципы организации методической работы	принципы структурирования и содержания методической работы	принципы подготовки и управления методической работой
<ul style="list-style-type: none"> ● организационно-рекомендательные; ● координационные; ● регулятивные; ● инновационные 	<ul style="list-style-type: none"> ● связь с жизнью; ● н а у ч н о с т ь методической работы; ● системность и целостность; ● комплексность; ● систематичность и последовательность; ● единство науки и практики; ● приоритетность; ● оперативность, гибкость, мобильность 	<ul style="list-style-type: none"> ● интегративность; ● динамичность; ● вариативность; ● преемственность; ● целостность; ● технологичность; ● усиления творческой и исследовательской направленности обучения

Рисунок 1. Принципы методической работы, положенные в основу изучения темы «Игровые технологии»

Формирование готовности студентов к инновационной деятельности вообще, и в рамках преподавания данной темы в частности, сопряжено с методической составляющей деятельности преподавателя. Нами была проведена подготовительная работа с сотрудниками кафедры по внедрению этого спецкурса исходя из основных задач методической работы [8, с. 307; 9, с. 234; 1, с. 5].

Основу методической работы со студентами при изучении темы «Игровые технологии», которая проводилась нами параллельно с подготовкой преподавателей, составили принципы, представленные нами в графическом виде (рисунок 1) на основании анализа трудов современных исследователей [9, с. 237; 2; 11]. Все три группы методических принципов базируются на основных принципах дидактики высшей школы.

Как видно из рисунка 1 первую группу составляют принципы организации методической работы [2]. К их числу относят следующие:

- организационно-рекомендательные (руководство в организации методической работы законодательными актами и нормативными документами Министерства просвещения);
- координационные (изменение содержания деятельности профессорско-преподавательского состава);
- регулятивные (участие в разработке нормативно-программной документации с учетом возможностей и особенностей преподавателей и студентов);
- инновационные (переход от нормативной регуляции деятельности педагогов к стимулированию их творческой активности и внедрению инновационных подходов в системе обучения).

Вторая группа представлена принципами структурирования и содержания методической работы [9, с. 237].

Принцип связи с жизнью состоит в учете и наблюдении развития современных тенденций в области образовательной политики; социального заказа общества; глобальных образовательных проблем и проблем, близких коллективу преподавателей.

Принцип научности способствует изменению типа мышления, проектируемого образовательной системой, включая такие ее составляющие, как планирование, нормирование, создание условий, регулирование, контроль,

учет, оптимизация; соответствие методической работы научным достижениям конкретной области знания.

Системность и целостность предполагают единство целей, знаний, содержания, форм и методов работы с будущими педагогами, направленность на высокий конечный результат, управление и планирование идей и положений методической работы.

Принцип комплексности представляет единство и взаимосвязь всех составляющих подготовки будущих педагогов к профессиональной деятельности (методика, дидактика, теория воспитания, педагогическая этика и др.).

Систематичность и последовательность предполагают: охват будущих педагогов различными формами методической работы в течение года; поступательность в формировании и обогащении творческого потенциала личности; учет содержательных образовательных потребностей человека на различных стадиях его жизненного цикла.

Принцип единства науки и практики состоит в ориентации будущих преподавателей на современный уровень научных достижений с учетом возможностей данной аудитории.

Принцип приоритетности нацелен на сознательный выбор научных проблем и идей, которые смогут заинтересовать и объединить содержание методической работы.

Принцип оперативности, гибкости, мобильности представлен умениями быстрого реагирования на изменение конкретных условий работы и перестраивания системы методической работы, в случае необходимости.

Третью группу принципов составляют принципы подготовки и управления методической работой, содержание которых представлено ниже.

Принцип интегративности – нацелен на связь отдельных дифференцированных частей и функций методической системы, а также процесс сближения и связи с науками.

Принцип динамичности – сопряжен с учетом изменений форм учебно-воспитательной работы; быстрое реагирование на изменение социально-экономической обстановки и запросов общества.

Принцип вариативности - предполагает предоставление преподавателям многообразия полноценных, качественных вариантов образовательных траек-

торий, адекватных собственным возможностям, а также запросам времени и учащихся; возможность выбора программно-методического обеспечения.

Принцип преемственности нацелен на определенный порядок и последовательность в освоении новых методик, где каждый элемент нового знания логически связан и опирается на ранее усвоенное, обеспечивая, таким образом, переход на более высокую ступень интеллектуального и творческого профессионального развития преподавателя, а также восходящий характер образовательного процесса.

Принцип целостности представляет организованную совокупность целей, содержания форм, методов, условий, направляющих и преобразующих методическую работу с учетом возможностей педагога-преобразователя.

Принцип технологичности направлен на изучение совокупности всех элементов методической работы для проектирования и реконструирования учебно-воспитательного процесса на основе разработки и подготовки учебных материалов.

Принцип усиления творческой и исследовательской направленности обучения предполагает применение ранее усвоенных положений для решения нетипичных образовательных задач и создания в предметной области знания новых нестандартных возможных вариантов действия.

Функции методической работы [9, с. 238; 3], адаптированные нами применительно к условиям работы в высшей школе, представлены на рисунке 2. Основанные на функциях педагогического процесса, они легли в основу нашей деятельности по изучению темы «Игровые технологии»:

диагностическая – определение разницы между уровнем компетентности педагога и требованиями к его профессиональной деятельности;

корректировочная – внесение необходимых корректив в научно-методическую информацию с учетом новых психолого-педагогических теорий, требований общества и государства к школе, конкретизация профессионально-методических требований, указаний и инструкций высших органов образования; определение причин затруднения педагога по реализации конкретной темы;

обновления – расширение и углубление знаний соответственно изменениям в содержании образования;

прогнозирующая – выяснение перспектив в работе с педагогическими кадрами;

компенсационная – опережающее обновление знаний и умений педагогов относительно инерционности учебных программ и материального обеспечения учебного процесса;

моделирующая – трансформация научных педагогических идей и технологий в практику работы учебного заведения, процесс их разработки и коррекции;

информационно-оценочная – получение конкретной информации относительно самооценки уровня педагогического мастерства и общей культуры педагогов.

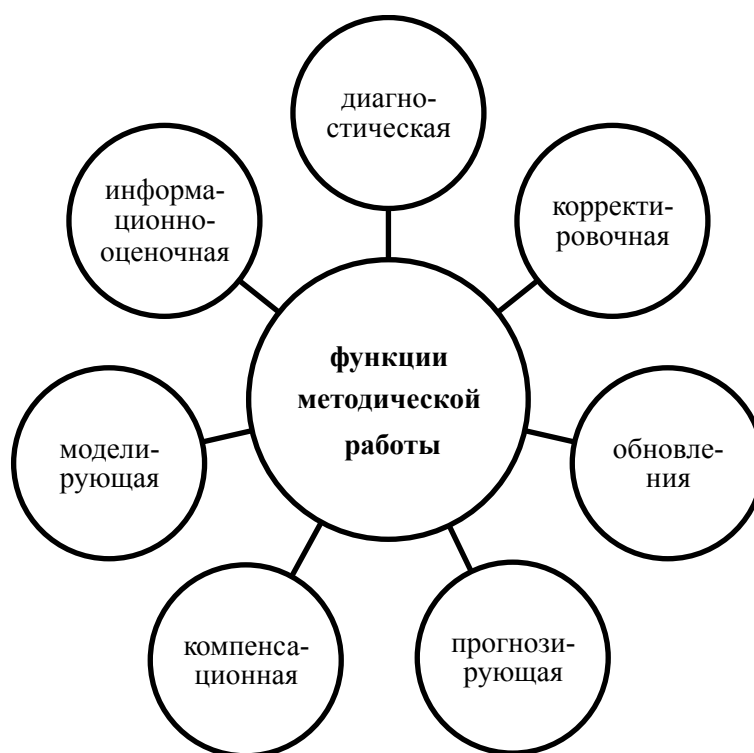


Рисунок 2. Функции методической работы, задействованные при изучении темы «Игровые технологии»

Среди основных форм методической работы в русле данной темы нами обращено особое внимание на коллективные организационные формы методической работы (школы передового опыта, семинары-практикумы, деловые и ролевые игры, групповые консультации).

Анализ трудов современных исследователей [9, с. 238; 6; 7] позволил нам выделить составляющие содержания методической работы применительно к нашей теме:

- изучение материалов о перспективах развития высшей школы, педагогического процесса в инновационном направлении, позволяющих создавать для обучаемых психологически комфортную образовательную среду и обеспечивающую преподавателю свободу творчества;

- овладение методологическими и теоретическими основами игровых технологий, игрового моделирования, игротехнического менеджмента, а также тренингов, проводимых в игровой форме;

- овладение суммой профессиональных знаний по предназначению, специфике, принципам разработки и проведения, образовательной результативности и значимости игровых технологий, способствующей формированию игротехнической компетентности как преподавателя, так и обучаемых;

- создание учебного комплекса материалов, необходимого для разработки, внедрения в учебный процесс игровых технологий и управления ими: от постановки учебных целей до выбора средств достижения ожидаемых результатов с описанием процедуры их проведения и анализом возможных результатов;

- создание банка методических советов и приемов по использованию игровых технологий с элементами возможных модификации и трансформации для конкретной учебной дисциплины с учетом учебных целей, временных возможностей и аудитории, с указанием преимуществ и ограничений их использования;

- изучение литературы по истории игрового движения, освоения и внедрения игровых технологий в учебно-воспитательный процесс средних общеобразовательных школ, ВУЗов, системы последипломного образования и, как следствие, - повышение уровня управленческой деятельности, общей культуры, профессионального мастерства, творческого потенциала, психолого-педагогической и коммуникативной компетентности, мотивационной готовности к освоению и внедрению инновационных технологий;

- систематическое изучение и анализ студентами учебных планов, программ, учебников, пособий, инструктивных материалов, методических

рекомендаций, которые отражают содержание, формы и методы проведения занятий в игровой форме, факультативных и других занятий внеклассной и внешкольной работы, учебно-воспитательного процесса в целом;

- изучение и анализ уровня преподавания с использованием игровых технологий, а также выявление трудностей, которые возникают у преподавателей в процессе организации усвоения программного материала;

- анализ качества знаний, умений и навыков учащихся в результате внедрения в учебно-воспитательный процесс игровых технологий, а также уровней формирования творческого и интеллектуального развития обучаемых вследствие изменения их мотивации;

- подготовка и проведение мероприятий с использованием игровых технологий (разнообразных типов и видов ролевых позиций, игротехнических приемов и техник, игровых методик), направленных на «погружение» в игровой процесс и «выгрузку» из игрового взаимодействия, совершенствование учебно-воспитательного процесса, повышение общеобразовательного и культурного уровня школьников;

- оказание практической помощи в процессе овладения игровыми методиками студентам младших курсов, которые проходят предусмотренную учебным планом ознакомительную педагогическую практику в средних общеобразовательных школах;

- приобретение студентами инновационного практического опыта по решению профессиональных проблем, связанных с преодолением неподвижных ситуаций во время игрового занятия и работе с «трудными» участниками игрового взаимодействия;

- изучение и использование на практике современных достижений психолого-педагогической науки, передового педагогического опыта, развитие инициативы и творчества, новаторского поиска;

- повышение уровня психолого-педагогической подготовки учителей.

Все, сказанное выше, позволило нам прийти к следующим выводам.

1. Игровые технологии заявлены как модифицирующая инновация, суть которой – совершенствование и дополнение существующих форм обучения в высших учебных заведениях.

2. Обучение преподавателей и студентов игровым технологиям сопряжено с использованием модели обучения, основанной на активности субъектов образовательного процесса.

3. Методическая составляющая деятельности преподавателя проходит через все этапы формирования готовности студентов к инновационной деятельности по внедрению игровых технологий в их последующей профессиональной деятельности.

4. Основа методической составляющей деятельности в контексте заявленной темы была определена исходя из: основных задач методической работы; групп методических принципов, базирующихся на основных принципах дидактики высшей школы; функций методической работы, рассматриваемых в рамках системного подхода; форм методической подготовки, среди которых особое внимание было обращено на коллективные организационные формы методической работы (школы передового опыта, семинары-практикумы, деловые и ролевые игры, групповые консультации).

5. Выделенные составляющие содержания методической работы применительно к заявленной теме могут оказать некоторую помощь педагогам в их дальнейшей деятельности по внедрению игровых технологий в учебный процесс высших учебных заведений.

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Reflection of ukrainian people world of life values hierarchy in the tradition to worship household icons

Abstract: The article discloses world view origins and fundamental principles of household icons worship in Ukraine and shows that worship of household icons, formed on the pagan ancestor worship background, in the midst of Ukrainian people is not only an important stage in evolution of faith, but also reflects the highest values of the World of Life of Ukrainian people on different stages of its evolvement.

Keywords: worship, icons, household icons, paganism, Christianity, values, World of Life.

Problem Statement. On modern development level of Ukraine, issues related to study of Ukrainian national heritage are extremely important. Inasmuch as a distinct intention of the country on Euro-integration is not accompanied by high level of ethnic and national awareness of considerable part of Ukrainian population in this way promotes its deethnization. In its turn, it gives a new start to studies and popularization of not only material heritage of Ukrainian nation, but also its symbolic code which determined the peculiarities and uniqueness of Ukrainian national character. In view of this, the piety concentrated at the inner world, as M. Kostomarov remarked, has the primary importance. I. Mirchuk came to similar conclusion noting that unlike Teutons known for their tendency to philosophize, or Romance nations, with their distinct capability to political activity, Ukrainians differ from other nations with their natural profound piety. The latter, in our opinion, has never been only an inner quality, focused on the world of feelings, but had a visual expression in widely developed worship of household icons.

Scientific research results. Important meaning of household icon in Ukrainian national World of Life formation, unfortunately, has not become a basis for making complex interdisciplinary researches dedicated to studies thereof. Separate

aspects of this problem were reviewed in works of P. Zholtovsky, G. Logvin, D. Stepyk, V. Svetsitska, V. Otkovych, O. Popova, O. Nayden, O. Osadcha and others. These researches focus their attention, first of all, on folk icon aspects related to history of art, leaving out of consideration the issue of differences involved in the worship of folk icons in comparison to the church ones. Heuristic potential of extremely wide theoretical generalizations of icon theology, offered in the works of Ye. Trubetskoy, P. Florenskiy, I Yazykova, etc., is largely brought to naught at the household icons level. In their turn, a lot of ethnographic researches dedicated to studies of peculiarities of Ukrainian national life, being too descriptive, are incapable of forming a general understanding of either content or intentions, or hierarchical place of household icon in the World of Life and values of Ukrainian nation.

In view of the above, the **purpose** of our work is to disclose the evolution of World of Life values hierarchy through the prism of household icon worship.

Main part. The innovative elements in Ukrainian ritualism emerging as the result of adoption of Christianity, in general, left the Slavic World of Life formed in paganism unchanged. The latter was based on the idea of organic unity of people and nature, the special “field of wilderness” (José Ortega y Gasset) the only protection against which was the domus (home). At that, as M. Popovych claims that, “Only nowadays home is, first of all, the premises, but for a Slav of those times, home was a simple household, the entire life of the family who ran this ‘home’” [1]. A similar thought occurs in the work of B. Rybakov, Paganism of Ancient Rus, where the researcher dedicates the entire section to highlight the uniqueness and place occupied by home in life of Slavic people. Close attention of the researcher to this topic is determined by the fact that home, as “the smallest particle, indivisible atom of old Rus society, was all saturated with magical and incantatory symbolism which helped the family of each Slav in providing itself with satiety and warmth, safety and health” [2], and, as T. Tsivyan emphasizes, creating independent closed territory (volume) in space which stands against and protects from the outer world [3].

Originated by the concept of home, the opposition of inner and outer things penetrating the Slavic world view then expressed itself in contrast of “us” and “them”. The latter has a quite perfect expression in extremely negative attitude of Slavic people to marriages with representatives of other cultures; they were considered not only as representatives of other world, but also of another home. The aforementioned

adjustment is quite important for it distinctly shows the peculiarity of interpretation of “home” concept which was originally related to not so much some family aria as the society and clan organization and, therefore, meant the family and relatives [4]. In other words, we have every reason to regard that “home”, as a specific primary clan organization, was the World of Life and the highest value of Slavs.

Let us note that in paganism, home was regarded not only as a peculiar tree of life which carried the idea of sacred integrity and continuity of generations, but also as a church or a special ritual space reflecting the world view syncretism, the unity of three mentioned parts of the world. Perhaps, for this reason, when the house was finished, Ukrainians strove to decorate it at once, to fill it with sense, in other words, to make sacred or, as O. Osadcha reasonably points out, “to make it like a church” using the idols, solar symbols, bunches of healing herbs, etc. [5]. As the result, home was considered as the first and the principal place of worship, as a special “hill” (M. Eliade) providing for connection of the world of people and the world of God.

Formation of new Orthodox worldview, according to M. Grushevsky, was the result of introduction to church rituals, like matchmaking, parental blessing, baptizing, aspersion, anointing with holy water and oil conceived in folk practice as acts of magic. They influenced formation of belief in “mighty power of various holy persons and the possibility to obtain their help in different situations; their names with various attributes prescribed to them entered the magic formulae. At the same time, magic formulae and prayers formed by means of Christian symbolism were accepted... transformed into more original familiar formulae [6]. In conclusion, introduced by the “church, complicated and elaborated in scriptures, both canonical and apocryphal, orthodox and dissident, the hierarchy of kind and evil, friendly and hostile creatures...< > ... fills the imagination of our people, their creations, their practice with endless quantity of new material” [7].

The nation, P. Zholtovsky remarks, “conceived religious images sincerely and intimately. Among the saints, the more worshiped were those who were closer to people, intervening in their daily issues” [7]. Key place among them was occupied by the Blessed Virgin, St. Nicolas, St. Yuriy, St. Varvara, St. Paaraskeva, etc. As for the images of Christ, who, according to the Christian world view, was the highest one among all supernatural powers, the true God, they did not widely spread at once among common people: in view of his hierarchical status, the Christ was considered

as the one who is farther from everyday needs of a person in comparison with the Blessed Virgin and the other saints [5].

Focusing on the peculiarities of evolution of pagan rituals influenced by Christian doctrine, we cannot ignore the difficulties of this process. Of course, for a long time, the main problem of Rus Christianization was lack of local clergy who could disseminate new religious ideas in language which was understood by the people. The world view differences of the two religions did not promote dissemination of Christianity either. In contrast to pagan dualism of Good and Evil as the ontology foundations and the eternal circle of life, Christianity insisted on the only beginning and, due to elements of dialectical logic seen in the concept of Christ the Saver and the Kingdom of God, elevated itself above the conflict of life and death, good and evil, body and soul expanding the pagan circle of life into a line which leads to salvation.

Let us note that at dawn of Christianity formation, the people of Rus demonstrated controversial attitude to icons which caused the opinion regarding their late dissemination among the common people. Notably, our national fine art expert L. Popova is convinced that there are no reasons to look for the origins of folk icon painting earlier than XVI century [8]. P. Zholtovsky came to similar conclusions regarding this issue. He regards that “in the second part of XVI century the number of folk icon-painters significantly increases which in its turn encountered hostility among the adherents of conservative orthodox school of the devotional art” [9].

Disassociating ourselves from the reasons of such negative attitude of the Established Church to folk icon-painting highlighted by P. Zholtovsky, we consider it plausible, even notwithstanding the small quantity of folk icons of that period preserved nowadays, to accept his assumption regarding the earlier time of folk icon worship origin, even if its expression was somewhat farther from Christian doctrine. Thus, as I. Ohienko shows, “In Moscovia, yet in XVI – XVII centuries, the worship of own icons was very widespread; the church members brought their own icons to the church and prayed only to them... < > ... The others did not even take their hats off in front of such gods, ‘These are neither our gods nor parochial’, they used to say disdainfully. ‘They are either Mikula’s or Yafim’s’” [10].

The evidence quoted by the scientist distinctly show the inheritance and interconnection between pagan and Christian traditions which among common

people emerges as so called belief, expressed not only in calling the icons gods but also in the worship of own, family gods (icons) which also involved the church services. This tradition, being far from Christianity, emerged on the background of syncretic mythological world view and the contrast between “us” and “them” already mentioned here in the context of ancestors worship. Among other things, early Slavs thought that their deceased ancestors turned into guardians of the family (worship of Rod, the family) and hone (bogies, goblins) that protected the family and its household from any harm. At that, only own ancestors become the family guardians, in their turn, the deceased ancestors of other home are considered as naviyi, the “strange, outsider dead people, souls of enemies and evil-wishers, the souls of people whom the natural forces punished for something (the souls of drowned people, or those eaten by wolves, fallen from a tree, killed by lightning, etc.)” [11].

These clarifications are extremely important for understanding of pagan component of icon worship both at home and in church. Besides, recognizing the authority of I. Ohienko, we regard it proper to note that the worship of own household icons was widely spread not only in the north of Rus but also in the south, in the territory of modern Ukraine. This fact is evidenced by a large number of church visitations aimed against of dissemination of folk icons. The main method of fighting them was the prohibition to bring them to church. Notably, Historical and statistical description of the Kharkov diocese. (1852), describing the events of the previous century remarks, “Other items of lection touched unskilfully painted icons and indecent things brought to the church by the simple-minded lay people” [12]. As we can see, the document clearly points out that, notwithstanding any of the church prohibitions, the tradition to bring household icons to the church survived even in XVIII century among Ukrainian peasantry.

Let us remark that the tradition of common people to bring their own household icons to church is a direct evidence of fundamental difference in values of Christianity and the peasant World of Life. Notably, whereas the main goal and value of Christianity is the Kingdom of God in Christ where there is no place for family or cultural or racial, or language differences, the world of common people constitutes a dualistic world view of “us” and “them”. At that, in contrast to the previous period, the idea of “us”, influenced by Christian universalism and hierarchism, starts shrinking significantly, and now the home emerges not so much a community and ancestral as

a family arrangement having its own values and icons of patron saints inherited from grandfathers and grand grandfathers becoming a home relic. Moreover, this worship of household icons, being pagan in its matter, generating acute opposition of “us” and “them”, was one of the main reasons of common people’s separation from elite and intellectuals and, as the result, inability to generate a robust Ukrainian ethnic culture until the middle of XIX century when the worship of household icons becomes the issue of private family life in the same time correlating with general Orthodox values, relics and rituals.

Domination of household icons worship in ritual practice of Ukrainian folk Orthodoxy or, to be more specific, the belief, could not but bother the Church which tried to overcome it time and again. The milestone stage in this struggle became the Stoglav (1551) and the Great Moscow Synod (1666–1667). After them, it was strictly prohibited and condemned by the Church to soothsay, make funeral feasts, celebrate weddings, Wednesdays, Fridays, etc. [13]. Besides, the priests were prohibited to baptize the children who were given pagan names, and, the most important thing, people were prohibited to bring their household icons to church. This prohibition of the Great Moscow Synod, according to M. Kapterev, was caused not so much by the belief expressed in that as the outrage generated by worship of household icons in church during the service. Namely, the church members who came to church with their own household icons put them everywhere they wanted. Everyone prayed and put candles only to his or her own icon; besides, it often occurred that people were standing with their backs to the icons of their neighbours and to the altar, pushed one another, as the result of which, arguments and fights occurred in church. Often these were caused by lack of place for household icons. Accordingly, aiming to normalize the church service without causing hostility of common people to the church, the Great Moscow Synod made a decision to bind the church members to leave the household icons they brought at the church [14].

The aforementioned prohibition not only became a valid method of controlling the outrage during the services but also formed an important stage in the history of orthodox iconostasis evolvement – household icons brought by the church members to the church started to be arranged in one line Pyadnichny (span line, formed with the icons the size of a span or a hand, approximately 30 x 24 cm, although, household icons often were as big as a cubit) above the local tier (of icons). This

made it possible not only to assure the proper worship of all available icons or to make the icons of local tier (row) which were different in size equal [15], but also facilitated the gradual transition from syncretic dualistic world view of belief to Christian hierarchic worldview which ideological and visual foundations were demonstrated on the iconostas.

Notwithstanding all of the resolutions adopted by the Orthodox Church Councils, the tradition of bringing the household icons to church lasted for a long time among common people which is evidenced by the aforementioned church visitations. Evidently, this was caused by profound penetration of belief into the worldview, customs and life of Orthodox people, who did not want and could not abandon their ideas. Home and its saints remained the principal value and determined the World of Life of the common people. However, we cannot ignore the changes which gradually happened in people's minds. Eventually, 'churched' household icons (strange gods) were no longer regarded as hostile but transformed into common social values.

Formation of new worldview values of Ukrainian national World of Life, taking into account the limited area of Ukrainian village, although vaguely, shows itself in XIX century. Still, with the beginning of antireligious policy pursued by soviet authorities in 1920–1930s, it is obvious that not only the intelligentsia but also common people had more than just family social values. Indeed, as the witnesses recollect, that time, there was no distinction of our and their icons, our and their god, our and their grief. Saving the social relics from destruction, with the expense of their lives, the peasants tried to tear the icons and church books out of the hands of militant atheists and to save the public relics from destruction. Of course, icons stolen from hands of soviet atheists were not always put in the corner of the house thus occupying the central position, they were often hid on the lofts and in the sheds, but it did not prevent them from becoming household relics and talismans offering hope in horrible times of famine, repressions and war.

Conclusion. Worship of household icons in the midst of Ukrainian people formed against the background of pagan worship of ancestors, the guardians of home, not only became an important stage of faith evolution but also reflected the highest values of the World of Life of Ukrainian nation on different stages of its evolvement. Notably, the domination of household icons worship in private and public life becomes the foundation of forming a distinct contrast between "us" and "them"

which becomes important, first of all, through the prism of family connections showing the dominant axiological meaning of private interests and cult of family life and inherited professional competencies in life of Ukrainian people. Reforms of Church administration aimed at overcoming the remnants of belief and household icons worship became important factors in development of public conscience promoting the formation of national conscience, the ethnic “Us”.

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Representation of the Authors' Comic Picture of the World in the Comedy Series “Monty Python's Flying Circus”

Abstract: In this article I propose that the author's original comic view of the world can be deduced from the methods he/she has used to create humor in the text. This idea is illustrated by the results of a recent research into the ways of creating humorous effects in the comedy series «Monty Python's Flying Circus». The comic devices used bring out the authors' comic vision which can be depicted as a sphere with three elements within: international humor, national humor and the authors 'own sense of humor'.

Keywords: comic picture of the world, humour, British humour, comic devices.

Introduction

People perceive the objects surrounding them quite differently: there are some who try to be realistic and see things as they are; others tend to be skeptical and see only the bad. Still others look on the brighter side of life and live with a twinkle in the eye. Not only do they see the funny side of things but are able to share this vision in a variety of forms including language (humorous texts), art (cartoons, comics), folklore, rituals, fashion and erratic behavior of people among others. The particular form of comic device used may give insights into their original perception of the world or to put it differently their 'comic picture of the world' (CPW).

The term 'comic picture of the world' has been coined recently by Irina Popchenko to describe a complete set of images (characteristics, situations, phenomena, etc.) which by deviating from the common perception of the world, its accepted norms and traditional values give rise to a comic effect. This can be depicted as a sphere containing three elements: international humor, national humor and the author's own sense of humor (see Figure 1) each of which find their linguistic

representation in humorous texts of all kinds. The comic picture of the world may refer to an individual or a group of people creating a humorous text (Попченко, 2005).

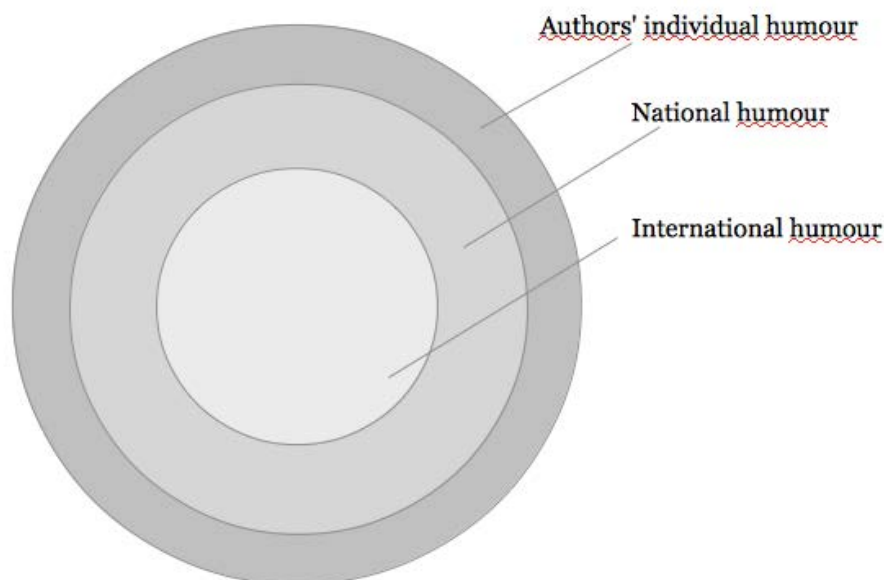


Figure 1. Authors' comic picture of the world

In this paper I shall address the representation of the comic picture of the world in the comedy series “Monty Python’s Flying Circus”. In order to understand the series it is essential to take into account the authors' comic picture of the world reflected in it. As the series was written and performed by the group Monty Python I shall attempt to describe the group's comic picture of the world or, to be more precise, its fragment. The fragment closely correlates with the comic picture as a whole and can be described as its diminished replica, having a similar structure. Allow me to explore each component.

International Humour

International or folk humour is the core component of the authors' comic vision. This type of humour is directed at everyone and everything. The whole world is shown in its comic aspect. It follows the tradition of a carnival revealing the truth about the world through games and laughter. People from all cultural backgrounds respond to this type of humor. In the Monty Python series it is portrayed through festive folk forms and images such as carnival beatings, jesters tricks, jokes, and

grotesque body shapes.

The examples of beatings are numerous but these are not normal fights. In the sketch «The Fish Slapping Dance», for example, a soldier is slapping another one with two small fish until he is hit back with a huge fish and falls into the river. Another example of a comic battle can be found in the «Scott of the Arctic» sketch, where the main hero is being attacked by a toy lion and a giant penguin. Scott uses his underpants as a sling to cast a stone and hit the penguin. In the sketch «Self-defence» the teacher attacks his student with a banana. The Spanish inquisitors from the famous «Spanish Inquisition» sketch torture an elderly lady with the soft cushions. These beatings are of a merry character, they are associated with the imaginary death of the enemy and his unexpected coming to life. Every punch or blow in the comic battle is ambivalent and has a symbolic carnival meaning: to slay the victim and end up with the old, and conceive a new life at the same time.

Another important festive character is the jester. During the festive season he was treated as a king and when his 'reign' ended he was ridiculed, scolded and beaten. So a carnival king was a jester at the same time and this gave him the right to behave in a silly way, the right for tomfoolery (or foolishness) to be shown.

In the «Flying Circus» very serious people put on jester caps. For instance, in the sketch «The Public are Idiots» a middle-aged lady admits being an idiot:

- *People on television treat the general public like idiots.*
- *But, we are idiots.*
- *No, we're not.*
- *How do you know you're an idiot?*
- *Well, I can show you.*

The role of an idiot gives her freedom to do whatever she wants: to dig a small pit and jump into it, to take a bite out of a cup while drinking tea, to hit her head against a tree, to put on an a fake nose. All her actions are full of fun and free from formalities.

Sir Walter Scott undergoes a similar metamorphosis from a well-known novelist to a looney in the sketch «Spot the Looney, historical adaptation».

*Presenter: And now it's time for 'Spot the Looney, historical adaptation'.
(historical music) And this time it's the thrilling medieval romance 'Ivanoe'... a stirring*

story of love and war, violence and chivalry, set midst the pageantry and splendour of thirteenth-century England. All you have to do is, 'Spot the Looney'...

Yes, well done, Mrs L of Leicester, Mrs B of Buxton and Mrs G of Gotwick, the looney was of course the writer, Sir Walter Scott.

These characters help the Pythons to create a carnival atmosphere which is free from the usual seriousness and is characterised by equality, liberty and familiarity. Merriment and joy are opposed to dullness and sadness; unusual and unexpected things to ordinary and mundane; material and physical to spiritual and sublime. The human body is no longer rendered realistically, its image is incomplete and open to changes. This can be illustrated by Terry Gilliam's animations in the sketches in one episode. One can see a giant foot, cut off talking heads, walking decapitated bodies, dancing teeth, a woman's womb giving birth to strange creatures, etc.

These carnivalesque images are associated with the concept of the 'grotesque body' introduced by M. Bakhtin (Бахтин, 1990). According to him it is not 'a closed, completed unit; it is unfinished, outgrows itself, transgresses its own limits. The stress is on those parts of the body that are open to the outside world, that is, the parts through the world enters the body or emerges from it, or through which the body itself goes out to meet the world. This means that the emphasis is on the apertures or on various segments and offshoots: the open mouth, the genital organs, the breasts, the phallus, the potbelly, the nose' (Бахтин, 1990).

The nose is a most popular carnivalesque image. It is used in gestures, expressive language (*to put smb's nose out of joint, poke your nose into smth, with your nose in the air*), swearing and folklore as a representation of the phallus. This is the reason the lady with a long fake nose («The Public are Idiots») looks so ludicrous.

The potbelly is another Python favourite. It can be a yawning woman's womb with a new character coming out of it or a human belly with a whole microworld inside — the sketch characters descend into it as if it was a mine. Probably one of the most memorable images is the man in a restaurant who looks very similar to big-bellied Ben from Mother Goose Rhymes. His belly is so huge that it can't hold the food any longer and explodes revealing the viscera.

These grotesque body forms represent the unfinished metamorphosis of death and birth, of growth and becoming. They are frightening and humorous at the same

time, between the *real* and the *imaginary*. They are incomplete, playful and everchanging. Through play and laughter they reveal the new truth about the world to the viewer.

National Humour

The second part of the “Pythonesque” comic picture is replete with traditional comic images reminiscent of “topsy-turvy world” creatures like Mother Goose, Edward Lear's limericks and the literary nonsense of Lewis Carroll.

Literary nonsense is considered to be one of the funniest and at the same time one of the most inscrutable genres of the English literature. It is often associated with absurdity, ridiculousness, meaninglessness. But true nonsense literature does have a meaning. It conveys a different meaning to each reader depending on their understanding. A reader is involved in the search of hidden meanings where perhaps none exists. Thus reading a nonsense book turns into an enthralling game, which follows the rules. According to E.V. Kluev a nonsense text has certain characteristic features:

- a form or layout which is easily recognised and identified (a game of chess, a card game, a folk song, etc.);
- unusual semantic content;
- infinite repetitions (Kluev, 2000).

The Pythons have all these nonsense techniques woven into the fabric of the series. To illustrate, lots of sketches have a very familiar format and remind the viewer of a TV-game («Spot the Looney»), a report («Whicker Island»), a film («The Bishop»), a talk-show («It's the Arts»), a sports report («Picasso Cycling Race»), or a news report («Stolen Newsreader»). The words «and now for something completely different» repeated throughout the series as a refrain also give it nonsensical touch. Both the familiar format and the refrain help to structure the sketches and give the Pythons the liberty to play with the content.

The sketch «Miss Anne Elk» can be taken as an example. The format of the sketch is easy to recognise: a television talk-show with interesting people. On the screen we see a television studio, an interviewer and his interviewee John Cleese dressed in women's clothing. A picture of a dinosaur helps identify the topic. Outwardly, they seem to be having a normal conversation about Miss Elk's new

theory. To balance it with elements of absurdity repetition is introduced. When asked about her theory Miss Elk repeats 9 times:

«This theory, which belongs to me ...».

This very refrain is made fun of when Miss Elk finally reveals her theory:

«All brontosauruses are thin at one end, much, much thicker in the middle and then thin again at the far end. That is the theory that I have and which is mine and what it is, too».

In other words she has described the obvious. This type of scientific theory seems rather nonsensical.

The Monty Python's sense of absurdity, however, is not connected with the irrationality of life and the loss of its meaning. Rather by having a jocund and cheerful attitude to the world, the ability to be amazed by life, they are joshing at its mundanities, at the common sense. Yarmakhova (2004) suggests that these features are characteristic of the eccentric Englishman (Ярмахова, 2004). This type of person would have a passion, an eccentricity, or weirdness, about them i.e. a hobby-horse. There is no disputing with a Hobby-Horses as it is a '*sporting little filly-folly which carries you off for some time - a maggot, a butterfly, a picture, a fiddlestick-an uncle Toby's siege--or anything, which a man makes a shift to get a-stride on, to canter away from the cares and solitudes of life--'Tis as useful a beast as is in the whole creation--nor do I really see how the world could do without it--'* (Sterne, 2007).

Eccentric characters abound in the «Flying Circus»: a gentleman spotting camels at the train station, the Ministry of Silly Walks personnel, a mountaineer suffering from diplopia (double vision) leading an expedition to climb both peaks of Mount Kilimanjaro, a gentleman with a tape-recorder in his nose, and others.

Mr. Figgis, a rural idiot, from the sketch 'The Idiot in the Rural Society' is proud of his role:

Well I feel very keenly that the idiot is part of the old village system, and as such has a vital role to play in a modern rural society, because you see ... (suddenly switches to rural accent) ooh ar ooh ar before the crops go gey are in the medley crun and the birds slides nightly on the oor ar ... (vicar passes and gives him sixpence) Ooh ar thankee, Vicar ... (educated voice) There is this very real need in society for someone whom almost anyone can look down on and ridicule. And this is the role that ... ooh ar naggy gamly rangle tandie oogly noogle Goblle oog ... (passing

lady gives him sixpence) Thank you, Mrs Thompson... this is the role that I and members of my family have fulfilled in this village for the past four hundred years. (episode 20).

Maybe Mr. Figgis is an idiot but he is definitely no fool, and with the help of his fantasies, oddities, whims he and the people like him make others look at things from a different perspective. In the sketch «An Appeal for Sanity» a queer-looking gentleman with an ax in his head addresses the audience with the following words:

There are many people in the country today who through no fault of their own are sane. Some of them were born sane; some became sane later in their lives. It's up to people like you and me who are out of our tiny little minds to try and help these people overcome their sanity.

These eccentric characters convey an image of a kind ironic introvert, mounted upon his hobby-horse, and many true words are spoken in his jests. This type of ironic jester and nonsense techniques manifest a national aspect of the authors' picture of the world in the comedy series.

Authors' Individual Humour

The peripheral yet binding element is the authors' individual humor which manifests itself in a variety of verbal and visual comic devices. Although many Monty Python sketches are based on absurd situations it is the use of word play that makes the comedy series unique. According to David Crystal:

In the world of Monty Python, no area of the language is sacrosanct. Although many of the sketches are based on absurd situations, a large number gain their effect only through the use of funny words, exaggerated regional accents, deliberately inappropriate lexicon, the excessive use of single sentence pattern – or just breaking the normal rules of linguistic interaction... (Crystal, 1998).

The analysis of 432 Python sketches helped identify 726 examples of word play at different levels of the text. The proportions of verbal comic devices used at each level (from phonetic to text) are the following. The examples of word play at the lexical and text levels are the most frequent and account for 35% and 25% respectively. Another primary source of comic language use is found at the sentence level with 12%, followed by funny collocations with 10% of the total. About 9% of comic devices come from the morphemic level and only 8% from phonetic. The following examples illustrate the comic use of the language in the series.

Metathesis — rearranging of sounds or syllables in a word is used to create a comic effect at the phonetic and morphemic levels. In the sketch «Erizebeth L» the phonetic mistake, i.e. the transposition of sounds [l] and [r], is made by the queen Erizebeth and her court.

Queen: What news flom Prymouth?

Messenger: Blake has sighted the Spanish Freet, youl Majesty.

Queen: So! Phirip's garreons ale hele. How many?

Messenger: One hundled and thilty-six men of wal.

Leicester: Broody herr.

Queen: Is Blake plepaled?

Messenger: He has oldeled the whore freet into the Blitish Channer.

Queen: So, we must to Tirbuly.

The Queen's speech is usually associated with Received Pronunciation, a correct and coherent type of spoken English. This reworking of sounds make a travesty of her speech and signal an implied comic effect to the viewer.

Similar examples can be seen at the morphemic level. In the «Agatha Christie Sketch» inspector Tiger breaks the rules of word formation and rearranges the root morphemes in the words «allow», «introduce», «myself» thus creating the funny words «alduce», «introlow», «myduce», «mylowduce», «alself»:

Inspector Tiger: Now, alduce me to introlow myself. I'm sorry. Alself me to myduce introlow myself. Introme to-lose mlow alself. Alme to you introsel mylowduce. Excuse me a moment. (bangs himself on the side of the head) Allow me to introduce myself. I'm Inspector Tiger. ...

Inspector Tiger: Nobody leaves the body in the ... Albody me introbod albodyduce.

At the lexical level the comic effect is often based on equivocation and lexical repetitions. An interesting example of equivocation, a misleading use of the word or phrase with more than one meaning, is found in the «Registry Office» sketch.. The Pythons play with two meanings of the phrase *to get married*. A client uses the verb *to get married* in the meaning *to perform a ceremony of marriage for two people*, whereas the registrar gives the expression a different meaning – *to take a person into marriage*, and this leads to a comic effect.

First man: Er, excuse me, I want to get married.

Registrar: I'm afraid I'm already married, sir.

First man: I just want to get married.

Registrar: I could get a divorce, I suppose, but it'll be a bit of wrench.

First man: Er, no, no. That wouldn't be necessary because ...

Registrar: You see, would you come to my place or should I have to come to yours, because I've just got a big mortgage.

First man: No, no. I want to get married here.

Registrar: Oh dear. I had my heart set on a church wedding.

Another example of equivocation is found in the «Conquistador Coffee Campaign» sketch. It is based on the two meanings of the adverb *badly* - *to a great or serious degree* and *in a bad manner*, which are being mixed in the following scene:

Boss: Now, I've had the managing director of Conquistador to see me this morning and he's very unhappy with your campaign. Very unhappy. In fact, he's shot himself.

Frog: Badly, sir?

Boss: No, extremely well.

Lexical repetitions add up to the variety of comic devices used in the series. For instance, in the «Spam» sketch lexical repetitions help to parody a typical dialogue between a client and a waiter in a restaurant. When asked about the menu, the waiter gives the following answer:

Well, there's egg and bacon; egg sausage and bacon; egg and spam; egg bacon and spam; egg bacon sausage and spam; spam bacon sausage and spam; spam egg spam spam bacon and spam; spam sausage spam spam bacon spam tomato and spam; spam spam spam egg and spam; spam spam spam spam spam spam baked beans spam spam and spam...

The word «spam» is repeated several times in each line throughout the sketch as if it were an accompaniment to the text: an accompaniment which is very similar to an annoying noise and irritates the customer. Thus the word «spam» has developed a new meaning – something useless that is being offered in a very pushy way. David Crystal mentions this in his book «Language Play»: «The sketch continues in this vein for quite a while – and lives on in the term *spamming*, now used on the Internet for the unwanted sending of junk e-mail» (Crystal, 1998).

At the level of word combinations the play affects the semantic grouping of words, especially words that habitually appear together and thereby convey meaning by association – collocations, whereas their syntactic ties (colligations) remain unchanged. Consider the following examples:

1. *I'm sorry I'm late m'lud I couldn't find a kosher car park.*
2. *I shall enter the house and attempt to remove the joke.*
3. *I was showing you how to defend yourselves against anyone who attacks you armed with a piece of fresh fruit.*

The adjective *kosher* - *prepared according to Jewish law* (in the first example) should have been used with a noun denoting food, not a *car park*. In the second example the verb *to remove* implies a thing, an object, not an abstract noun like *joke*. Similarly, in the third example the past participle *armed with* – *having or using weapons or armour* signals of a weapon and *a piece of fresh fruit* can be hardly considered as normal association. Breaking the familiar grouping of the words as well as their semantic relationships leads to a comic effect.

Oxymoron is another source of laughter in the Monty Python Flying Circus. It juxtaposes two words with an opposite meaning to describe a new ludicrous idea.

1. *Tonight we start with the wonderful death of Genghis Khan, the conqueror of India.*
2. *We are proud to bring to you one of the evergreen bucket kickers.*
3. *The whole problem of these senile delinquents lies in their complete rejection of the values of contemporary society.*

In the examples above the adjective *wonderful* with a positive connotation is joined to the contrasting noun *death*; the adjective *evergreen* symbolizing eternal life is used with the noun *bucket kickers*, having a contradictory meaning; *senile* referring to a very old age is combined with the noun *delinquents* referring to young people.

Semantic syllepsis or zeugma is characteristically found at the sentence level. One word or phrase is used with two other parts of the sentence but is understood differently in relation to each.

- I can only give you my name, rank and why did the chicken cross the road.
Excitement, drama, action, violence, fresh fruit.*

Another type of incongruity is observed at the text level. Ananthopadaton and the stylistic device of deceived expectation are used to create a deliberately inappropriate composition of the text.

Ananthopadathon deals with a semantic inconsistency within the text and results in a semantic shift in a paragraph from one topic to another. In the sketch «Letters and Vox Pops» the speaker deviates from the main topic *allowing tourists to the country* and starts speaking about *eating squirrels*, thus bringing about a comic effect.

Man: I think that, er, nobody who has gone abroad should be allowed back in the country. I mean, er, blimey, blimey if they're not keen enough to stay here when they're 'ere, why should we allow them back, er, at the tax-payers' expense? I mean, be fair, I mean, I don't eat squirrels do I? I mean well perhaps I do one or two but there's no law against that, is there?

A sudden change in the narration is also typical of the deceived expectation trope, when the initial semantic and structural presuppositions relating to a text contradict the ending (Москвин, 2005). Mrs. Premise from the sketch «Mrs. Premise and Mrs. Conclusion Visit Jean Paul Sartre» spent four hours burying her cat. This conjures up sad images – a dead cat, Mrs. Premise crying over her animal companion. Contrary to our expectations, Mrs. Premise tried to bury a living cat as she was going on holiday.

Mrs. Conclusion: Busy day?

Mrs. Premise: Busy! I've just spent four hours burying the cat.

Mrs. Conclusion: Four hours burying a cat?

Mrs. Premise: Yes! It wouldn't keep still, wriggling about howling its head off.

Mrs. Conclusion: Oh – it wasn't dead then?

Mrs. Premise: Well, no, no, but not at all a well cat so as we were going away for a fortnight's holiday, I thought I'd better bury it just to be on the safe side.

The trope is based on the contradiction between our presuppositions and the actions of Mrs. Premise. It reveals the absurdity of the situation and signals of its playful character.

The above mentioned examples show that verbal humour is a key component of the Pythons' comic vista, no linguistic form is left untouched but is being deliberately misused so as to create a comic effect.

Summary

The present research has shown that the comic picture of the world can be applied to examining humorous texts. This method allows to get a deeper insight into the way a humorous text is organized and helps to discern different types of humour used in it. It also enables to identify and describe the authors' individual comic vision through its manifestation in the humorous text. It makes it easier for non-native speakers of the language to spot the punchline and enjoy the joke. The research results may also be of use for further studies in the English humour, for instance, the comparative analysis of the comic methods different authors choose to create a comic effect, or contrasting male and female comic pictures of the world.

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«Novation», «Innovation», «Novelty»: the peculiarities and interrelation

Abstract: The genesis of the concept of innovation, that on based the analysis of scientific-pedagogical literature, is described in the article. The characteristics and interrelation of concepts such as «novation», «innovation», «novelty» are found out.

Keywords: novation, innovation, novelty, pedagogical process.

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«Новація», «інновація», «нововведення»: особливості і взаємозв'язок

Анотація: На основі аналізу науково-педагогічної літератури у статті висвітлено генезис поняття інновація. Виявлено особливості і взаємозв'язок таких понять як «новація», «інновація», «нововведення».

Ключові слова: інновація, новація, нововведення, педагогічний процес.

Інноваційну спрямованість організації навчально-виховного процесу зумовлюють соціально-економічні перетворення, які вимагають відповідного оновлення освітньої політики, прагнення педагогів до засвоєння та застосування педагогічних новинок. Велику роль відіграє конкуренція вищих навчальних закладів, яка стимулює пошук нових технологій, форм, методів організації

навчально-виховного процесу, диктує відповідні критерії щодо підбору науково-педагогічних кадрів.

Зазначене вище дозволяє стверджувати про актуальність і необхідність запровадження інновацій у навчально-виховний процес.

У дослідженнях науковців знайшли відображення різні аспекти педагогічної інноватики. Так, загальні проблеми педагогічної інноватики представлено в працях В. Взятишева, Є. Вінославської, Л. Даниленко, Л. Карамушки, І. Корнілової, А. Ладун, Ю. М'якотіна, В. Нікітаєва, В. Паламарчук, Г. Пирогова, В. Пінчука, В. Пріснякова, В. Сергієвського, Ю. Таран, В. Шукшунова, та ін. Зарубіжними авторами (К. Ангеловські, Х. Бернет, Дж. Бассет та ін.) проаналізовано питання управління інноваційними процесами, умови, необхідні для «життєдіяльності» інновацій, планування нововведень та способи їх реклами. Аналіз наукових праць з проблем педагогічної інноватики свідчить, що ґрунтовно розроблені окремі її аспекти, проте відсутні роботи, в яких визначено особливості і взаємозв'язок інновації, новації та нововведення.

Мета нашого дослідження – на основі аналізу науково-педагогічної літератури визначити особливості і взаємозв'язок таких понять, як «інновація», «новація», «нововведення».

У ході наукового пошуку виявлено, що термін «інновація» вперше з'явився в XIX столітті й означав процес трансферу елементів однієї культури в іншу. При цьому елементи, що переносилися, набували нових, не властивих раніше якостей та одночасно змінювали те середовище. На початку XX століття термін «інновація» у науковому контексті використовувався американським соціологом й економістом Й. Шумпетером, який позначав ним нові комбінації елементів, що охоплюють процеси виготовлення, впровадження, освоєння, отримання та реорганізації [1, с. 132-133].

Зазначимо, що у XX столітті спостерігається також вживання терміну «інновація» у довідниковій літературі. Так, у спеціалізованих словниках поняття «інновація» розглядається у контексті змісту певної наукової галузі, а у словниках семантичне значення слова «інновація» поступово диференціюється.

Проведений аналіз науково-теоретичних джерел [1-8] дозволяє стверджувати про неоднозначність підходів до тлумачення суті поняття «інновація». Розбіжності в тлумаченнях полягають у різноманітності визначень авторами

сутнісного ядра досліджуваного поняття [2, с. 23]. Неоднозначність трактування терміну «інновація» також пояснюється особливостями походження слів у мовах романо-германської групи, що проявляється в традиції об'єднувати в одному понятті декілька. У даному випадку це простежується в ототожненні двох понять – інновація (як результат) та інноваційний процес [3, с. 18].

Аналізуючи суть досліджуваного поняття, науковці Г.І. Герасимов та Л.В. Ілюхіна наголошують, що неможливо повністю визначити зміст поняття «інновація» суто з етимологічних чи лінгвістичних коренів, оскільки при лінгвістичному чи етимологічному тлумаченні дуже далеко дистанціюється етимологічна природа терміну [4, с. 13-14].

Як свідчить аналіз літератури з теми дослідження [6-9], у педагогічній теорії поняття «інновація» часто ототожнюється з поняттями «новація», «нововведення», які використовуються як синоніми. Однак вітчизняні вчені М.В. Артюшина, В.Ф. Паламарчук, І.П. Підласий, В.В. Стадник, О.І. Шапран та ін. їх диференціюють. У нашому дослідженні ми також вважаємо доцільним розмежовувати зміст цих понять.

У ході наукового пошуку виявлено, що новація – це продукт інтелектуальної діяльності людей, оформлений результат фундаментальних, прикладних чи експериментальних досліджень у будь-якій сфері людської діяльності, спрямований на підвищення її ефективності. Новаціями є знання: нові ідеї, теорії, відкриття, винаходи тощо. «Однак не всі знання мають практичну цінність. Вони стають імпульсом для перетворень лише за умов, коли набувають форми інновацій, здатних оновлювати виробничі сили, створювати передумови для технологічних і виробничих змін» [5, с. 31].

На думку Г. Тарда, поняття «винахід» і «нововведення» розрізняються тим, що винахід – це щось принципово нове, а нововведення – це процес освоєння винаходу.

Сутність нововведень полягає в тому, що вони не тільки вирішують наявні потреби, а й викликають нові зміни в різних сферах життєдіяльності людини [6, с. 95].

У ході наукового пошуку виявлено, що більшість тлумачень дефініцій «інновація» засновані на концепції Й. Шумпетера, який використовував це поняття в якості позначення практичного засобу для задоволення нової чи вже

відомої потреби суспільства. Учений вважав відкриття, винахід нового початковою подією, а впровадження – завершальною подією, розглядаючи інновації з погляду практичного застосування [1, с. 455]. Зазначене вище дозволяє стверджувати, що тільки після прийняття, реалізації та розповсюдження новація набуває нової якості – стає інновацією. У свою чергу М.В. Артюшина зазначає, що новація – це все те нове, що може бути використаним для вдосконалення певної системи. Запроваджена новація, що призвела до вдосконалення певної системи, стає інновацією [7, с. 91]. О.І. Шапран, визначаючи суть зазначених понять, розглядає педагогічні новації як нові ідеї в педагогіці, зорієнтовані на зміни різних структурних систем і компонентів освіти, а інновації – як впровадження нового з метою вдосконалення навчально-виховного процесу. Тому, поняття «інновація» має сумарний характер, складається із двох форм: власне ідеї та процесу її реалізації. Тобто, інновація – це реалізована, здійснена новація [8, с. 21-23]. У контексті процесуальності ці дефініції розглядає О.Г. Хомеріки та співавтори, розрізняючи поняття «новація» або «новий засіб» (вважають їх синонімами) та «інновація», «нововведення» [9, с. 6]. Диференціює ці поняття і В.Ф. Паламарчук.

Отже, відмінною ознакою інновації від новації є її практична реалізація, результати якої дозволяють судити про цінність, доцільність упровадження, ефективність нових ідей, підходів, технологій тощо.

У ході наукового пошуку виявлено, що ряд авторів визнають рівнозначними й вживають як синоніми щодо кінцевого результату – впровадженої новації поняття «інновація» та «нововведення». У понятті «інновація», на думку А.А. Пінського, вдало й тонко поєднані семантично два моменти: поява, творення нового й одночасно його реалізація. Латинський префікс «in» вказує якраз на практичну, технологічну сторону реалізації нового [10, с. 39]. Такої точки зору дотримується і Коновальчук І.І., наголошуючи, що семантичне значення поняття «нововведення» саме в частинні «введення» вказує на дію, рух [11].

Отже, основою й сутнісною категорійною ознакою інновації, що визначає її природу, є творення й реалізація нового. Згідно з позицією Н.Р. Юсуфбекової, «інновація» має означати все, що пов'язане з процесами створення, дослідження нового в системі освіти та його опанування в практиці [12]. Л.І. Даниленко

також підкреслює, що інновація в освіті є не лише кінцевим продуктом застосування новизни у навчально-виховному й управлінському процесах, а й процедурою їхнього постійного оновлення [13, с. 12]. Ученими Міжнародного інституту системних досліджень у словнику «Інноваційний глосарій» сутність інновації визначається через категорії новизни та прогресивності. Інновація, за їх визначенням – це вид або результат процесу розвитку» (H.D. Hausteин, H. Mair, 1986) [14]. Констатування факту інновації можливо лише при використанні критеріїв новизни й прогресивності нового елемента або системи.

Проведене науково-педагогічне дослідження свідчить, що практично в більшості визначень «інновації» автори використовують категорію процесу. Необхідним критерієм інновації як процесу є цілеспрямованість і керованість змін, які вносяться в середовище, для досягнення визначеного результату. У ряді досліджень інновація визначається також через категорію результату як наслідку реалізації нових ідей, підходів, технологій. У дискусії щодо диференціації поняття інновації як процесу чи результату І.І. Коновальчук не протиставляє ці дві складових одного й того ж явища, оскільки тільки діалектична їх єдність і відображає його сутність [11]. Будь-який процес здійснюється для отримання визначеного результату, який прогнозується як мета діяльності, що забезпечує цей процес. Таким чином, в інновації діалектично поєднуються дві сторони: предметна (нове, що створюється й впроваджується) і процесуальна (яким чином досягається необхідний результат).

Зазначимо, що в дослідженнях категорія «педагогічна інновація» найчастіше трактується з методологічних позицій системного підходу. Системний підхід щодо розгляду цього поняття чітко простежується й у визначеннях багатьох авторів, які наголошують, що інновації – це зміни в педагогічних системах або в окремих її компонентах. Так, Т.М. Демиденко саме зв'язок термінів «інновація» – «педагогічна система» вважає найголовнішим для аналізу інноваційних процесів в освіті. За її визначенням: «Педагогічні інновації – це нововведення у педагогічних системах та процеси, що їх супроводжують, спрямовані на одержання стійких позитивних результатів, які суттєво поліпшують стан як окремих компонентів, так і систем в цілому й визначають прогресивний напрям їхнього розвитку» [15, с. 22]. У тезаурусі під редакцією Н.Б. Крилової інновації визначено як «актуально значущі й системно

самоорганізовані новоутворення, що виникають на основі різноманіття ініціатив та новацій і стають перспективними для розвитку більш широкого мультикультурного простору освіти» [16, с. 42]. Зазначене вище дозволяє тлумачити категорію «інновація» як систему, всі компоненти й відносини якої розглядаються тільки з позицій цілісності й саморозвитку.

Узагальнюючи категоріальні ознаки, І.І. Коновальчук визначає поняття «інновація» як цілеспрямований, спеціально технологічно організований, керований процес практичної реалізації суб'єктами інноваційної діяльності нових ідей, теорій, технологій з метою зміни педагогічної системи та переведення її на якісно новий рівень функціонування і результатів [11].

Досліджуючи суть поняття «інновація», О.В. Попова вказує на надзвичайно важливий аспект інновацій, який необхідно враховувати при її визначенні. Автор підкреслює, що привнесення нового в педагогічну систему може бути інноваційним лише за умови його прогресивного характеру, адже мета інноваційної діяльності – вдосконалення навчально-виховного процесу, спрямованого на максимальний розвиток і саморозвиток особистості учня [17].

Отже, педагогічна інновація – це цілеспрямоване і кероване внесення прогресивних змін в освітню практику шляхом створення, розповсюдження та освоєння новоутворень. Взаємозв'язок досліджуваних понять полягає в наступному: інновація – це реалізована, здійснена новація. Відмінною ознакою інновації від новації є її практична реалізація, результати якої дозволяють судити про цінність, доцільність упровадження, ефективність нових ідей, підходів, технологій тощо. Сутність нововведень полягає в тому, що вони не тільки вирішують наявні потреби, а й викликають нові зміни в різних сферах життєдіяльності людини. Основою й сутнісною категорійною ознакою інновації, що визначає її природу, є творення й реалізація нового.

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The condition of environmental abiotic components over the territory of Kashin city in Tver region

Abstract: In the article the main results of the city Kashin territory (Tver region) ecological condition estimates are presented. The impact of the city-forming enterprises and motor transport on environment components are studied. In general the city Kashin environment state is characterized as optimum for accommodation of the population, the territory is suitable for recreational and sanatorium using.

Keywords: ecological state assessment, anthropogenous influence, environment, bioindication, heavy metals, environmental monitoring.

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Состояние абиотических компонентов окружающей среды территории г. Кашин Тверской области

Аннотация: В статье отражены основные результаты оценки экологического состояния территории г. Кашин Тверской области. Изучено воздействие

градообразующих предприятий и автотранспорта на компоненты окружающей среды. В целом состояние окружающей среды города характеризуется как оптимальное для проживания населения, территория пригодна для рекреационного и санаторно-курортного использования.

Ключевые слова: оценка экологического состояния, антропогенное воздействие, окружающая среда, биоиндикация, тяжелые металлы, экологический мониторинг.

Окружающая среда – это совокупность компонентов природной среды, природных и природно-антропогенных объектов, а также антропогенных объектов [1]. К абиотическим компонентам природной среды относятся атмосфера, гидросфера и литосфера. Воздействие городов на все эти компоненты весьма велико, поэтому исследование их состояния очень актуально фактически для любого поселения.

Целью работы является изучение состояния абиотических компонентов окружающей среды территории г. Кашин, который расположен на востоке Тверской области, на притоке реки Волги – реке Кашинке. Площадь города около 12 кв.км. Население города на 1 января 2015 года составляет 15007 жителей [2]. Городское поселение Кашин находится вдали от основных автотранспортных коридоров федерального значения, но через город проходят важные региональные автомобильные дороги. Важнейшее значение в жизни города имеет ООО «Санаторий Кашин», функционирующий на базе местных минеральных вод [3].

Воздействие на атмосферный воздух в г. Кашин оказывает автотранспорт и ряд градообразующих предприятий: ОАО «Кашинский завод электроаппаратуры», МУП «Городские электрические и тепловые сети» (ГЭТС), МУП «Коммунальное хозяйство», ООО «Санаторий Кашин», ОАО «ЭРА» и др.

Интенсивность движения автотранспорта и состав транспортного потока визуально исследовались в полевых условиях на отдельных участках трасс (в 6 точках) в период с мая по сентябрь 2015 г. Во время наибольшей транспортной активности (8.00–10.00, 13.00–14.30, 17.30–19.00) занималось место у исследуемой магистрали и в течение часа отмечался проезжающий через сечение дороги транспорт.

Наиболее загруженным участком движения легкового, грузового карбюраторного до 3 т и грузового дизельного автотранспорта является участок пересечения ул. Калинина и ул. Железнодорожная: максимальная интенсивность движения составляет 612 автомобилей, из которых 552 легковые. Также загруженным участком является центральная часть территории: максимальная интенсивность составляет 456 автомобилей, из которых 400 легковые.

При сопоставлении полученных результатов 2015 года с результатами предыдущих исследований 2010 года можно сделать вывод, что происходит увеличение интенсивности транспортного потока в 1,5 – 3 раза, на дорогах города появилось большее количество дизельных автобусов.

По результатам анализа интенсивности движения транспорта расчетным путем определены выбросы загрязняющих веществ в атмосферный воздух. Общее количество выбросов автотранспорта составляет более 240 т/год. Наибольшие концентрации загрязняющих веществ наблюдаются в центре города по диоксиду азота, свинцу и его неорганическим соединениям, оксиду углерода и оксиду азота. К периферии городской территории наблюдается значительное уменьшение содержания загрязняющих веществ. Подобное распределение можно объяснить концентрацией основного движения автотранспорта в центральной части территории и наличием автомобильных пробок [4].

В соответствии с экологической отчетной документацией градообразующих предприятий суммарный объем выбросов загрязняющих веществ в атмосферный воздух составляет около 550 т/год. Наибольшее количество поступает от МУП «Коммунальное хозяйство» (основной объем приходится на метан с полигона твердых бытовых отходов – более 400 т/год) и МУП ГЭТС (с преобладанием оксида азота, образующегося за счет сжигания природного газа).

Соотношение валовых выбросов автотранспорта и предприятий города позволяет сделать заключение, что без учета выбросов метана с полигона ТБО выбросы автотранспорта в 1,7 раза превышают промышленные выбросы, составляя около 65% всего объема.

Биоиндикационные исследования позволяют выполнить косвенные оценки состояния атмосферного воздуха. При выполнении биоиндикационных

исследований на территории г. Кашин проведен анализ флуктуирующей асимметрии листовых пластин древесных и травянистых видов растений: березы бородавчатой (*Betula Pendula* Roth), клена остролистного (*Acer Platanoides* L.), сныти обыкновенной (*Aegopodium Podagraria* L.), мать-и-мачехи обыкновенной (*Tussilago Farfara* L.), клевера гибридного (*Trifolium Hybridum* L.) в 30 точках по равномерной сети, охватывающей всю территорию города и все его функциональные зоны. Метод основан на измерении определенных симметричных жилок листовых пластин древесных и травянистых растений. Коэффициент флуктуирующей асимметрии определялся по формуле: $\delta_d^2 = \sum \frac{(d_{l-r} - M_d)^2}{n-1}$, где $M_d = \frac{\sum d_{l-r}}{n}$ – среднее различие между сторонами; $d_{l-r} = \frac{2(d_l - d_r)}{d_l + d_r}$ – различие значений признаков между левой (*l*) и правой (*r*) сторонами; *n* – число выборок. Затем определялся интегральный коэффициент по всем указанным видам растений [5].

Результаты интегрального анализа показали, что большей частью городская территория характеризуется невысокими значениями коэффициента флуктуирующей асимметрии (0,0035 – 0,0065). Участки повышенных показателей (более 0,0085) представлены двумя территориями, одна из которых расположена на северо-западе, вторая – на юго-западе. Подобное распределение можно объяснить достаточно сглаженной экологической обстановкой в городе Кашин и наличием отдельных небольших по своему воздействию техногенных объектов [6].

Среди водных объектов наибольшую антропогенную нагрузку испытывает река Кашинка, в нее сбрасывается более 1200 тыс.м³/год сточных вод: 800 тыс. м³/год от населения, 220 тыс. м³/год от коммунально-бытовых предприятий, около 180 тыс. м³/год от промышленных предприятий [7]. Среди градообразующих предприятий, оказывающих наибольшее воздействие на поверхностные воды, можно назвать ОАО «Кашинский завод электроаппаратуры», ООО «Санаторий Кашин», ОАО «ЭРА», ОАО «Завод по розливу минеральной воды «Вереск» и МУП ГЭТС, сточные воды которых поступают на МУП «Коммунальное хозяйство».

Стоки по самотечным дворовым, внутриквартальным и уличным сетям поступают на 6 канализационных насосных станций, а далее на очистные

сооружения биологической очистки с производительностью 17,0 тыс. м³/сут. На очистку поступают 4145 м³/год, в том числе 0,9 тыс. м³/сут. производственных стоков. Обеззараживание очищенных стоков осуществляется жидким хлором. Значительная часть трубопроводов в городе имеет износ 80 – 100% [7].

Основными загрязняющими веществами в составе сточных вод являются хлориды – 83,84 т/год (основной вклад вносит ОАО «Завод по розливу минеральной воды «Вереск» – более 50% от объема сточных вод), сульфаты – 43,33 т/год (основной вклад вносит ОАО «ЭРА» – около 27%) и нитраты – 19,69 т/год (около 12%).

ОАО «Кашинский завод электроаппаратуры», отводящий хозяйственно-бытовые сточные воды на МУП «Коммунальное хозяйство», также имеет собственный выпуск сточных вод в р. Кашинка. Суммарное количество загрязняющих веществ составляет 0,39 т/год, основными являются сульфаты – 0,19 т/год (около 48% от объема сточных вод) и хлориды – 0,15 т/год (около 38%).

Дождевая канализация в городе отсутствует. Сброс поверхностных сточных вод (дождевых, талых, поливочных) осуществляется по рельефу также в р. Кашинку.

Загрязнение *подземных вод* на территории г. Кашин наблюдается в местах сброса недоочищенных сточных вод, а также в местах осадения взвесей, которые попадают в атмосферу с выбросами от предприятий и автотранспорта. Процент проб из подземных источников водоснабжения, не отвечающих гигиеническим нормативам по санитарно-химическим показателям, превышает 45% и имеет тенденцию к увеличению. Процент неудовлетворительных проб воды из подземных источников водоснабжения по микробиологическим показателям также остается на высоком уровне и составляет 5,0% от общего числа исследованных проб [8].

Кроме того, в северо-западной части г. Кашин с 1953 г. располагается сибирезвенный скотомогильник, являющийся источником потенциальной опасности заражения населения. В пределы санитарно-защитной зоны скотомогильника попадает часть жилой застройки, а также участок территории, на котором уже более ста лет находится курорт «Кашин» [7].

Для оценки состояния литосферы (ее поверхностной части) проведен анализ почвенного покрова. В 2015 г. были отобраны пробы почвы на 10 участках, где по результатам исследований прошлых лет (2009-2010 гг.) было выявлено повышенное содержание тяжелых металлов. На атомно-абсорбционном спектрометре «Квант 2А» определены концентрации кадмия, свинца, меди и цинка.

По результатам исследований на территории города Кашин в соответствии с фоновыми значениями концентраций для дерново-подзолистых суглинистых и глинистых почв [9] наблюдаются превышения по всем указанным веществам, кроме цинка. По свинцу превышения повсеместны в среднем 2,5-3,5 раза, максимум 7 раз в центральной части города около больницы, где отмечается высокая интенсивность движения автотранспорта. По кадмию превышения повсеместны в среднем в 2-3 раза, максимум до 5-6 раз на сельско-хозяйственной территории, где используют навоз для повышения плодородия и в прошлые годы выпасался городской скот, а также на территории, где располагался кирпичный завод, использовавший в качестве пигмента сульфид кадмия. По меди в нескольких точках также зафиксированы небольшие превышения фоновой концентрации с единственным максимумом (до 6 раз) вблизи завода электроаппаратуры, где в производстве используют этот компонент.

Таким образом, по результатам исследований можно утверждать, что антропогенному влиянию в той или иной степени подвержены все компоненты окружающей среды территории г. Кашин: атмосферный воздух (с преобладанием выбросов диоксида азота, свинца и его неорганических соединений, оксида углерода и оксида азота, метана), водные объекты (с преобладанием сбросов хлоридов, сульфатов, нитратов), почвенный покров (с преобладанием концентраций свинца и кадмия). Наибольшее воздействие оказывается на центральную часть города.

Для недопущения снижения качества окружающей среды и сохранения экологической устойчивости экосистем г. Кашин следует внедрить систему комплексного экологического мониторинга.

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Innovative technologies of learning in higher education – designing and using

Abstract: This article focuses on the design and use of innovative teaching technologies in higher education, because the level of innovation technologizing largely determines the quality of education, economic efficiency and competitiveness of the University.

Keywords: innovative technologies, extensive use of technology, educational activities, active cognitive position.

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Инновационные технологии обучения в высшей школе – проектирование и использование

Аннотация: Данная статья посвящена проектированию и использованию инновационных технологий обучения в высшей школе, поскольку уровень инновационной технологизации во многом определяет качество образования, экономическую эффективность и конкурентоспособность вуза.

Ключевые слова: инновационные технологии, технологизация, образовательная деятельность, активная познавательная позиция.

Инновационно-образовательная деятельность в высшей школе – один из базисных видов деятельности в рамках научно-образовательного процесса – включает творческое преобразование конкретных результатов научных

исследований и достижений передового педагогического опыта в новые образовательные продукты, товары и услуги (новые специальности и направления подготовки выпускников, учебные знания, технологии, учебники и т.д.), способные обеспечить участникам инновационно-образовательной деятельности дополнительный эффект (педагогический, экономический и др.) [1].

Особую роль среди результатов инновационно-образовательной деятельности играют инновационные технологии обучения, поскольку уровень инновационной технологизации во многом определяет качество образования, экономическую эффективность и конкурентоспособность вуза.

Совокупность инновационных образовательных технологий может выступать в качестве отличительной характеристики особенностей реализации данной ООП вуза и ее конкурентного преимущества.

Инновационные технологии обучения выстраиваются в основном в русле лично ориентированного подхода и опираются на активную познавательную позицию учащегося (в русле деятельностного подхода) [2]. Примерная обобщенная модель инновационного обучения предусматривает:

- активное участие студента в процессе обучения (а не пассивное усвоение информации);
- возможность прикладного использования знаний в реальных условиях (например, во время практики);
- представление знаний в разнообразных формах (а не только в текстовой);
- подход к обучению как к коллективной, а не индивидуальной деятельности;
- акцент на процессе обучения, а не на запоминании информации.

Движение от "традиционной" к "инновационной" технологии обучения – это в любом случае движение в направлении изменения (улучшения, усиления, развития) определенных характеристик традиционного вузовского учебного процесса, т.е. в направлении раскрытия его неиспользованного потенциала. Характеристики наиболее распространенных в современной отечественной высшей школе инновационных технологий обучения представлены на рисунке 1.

Иновационные технологии обучения, авторство, источник	Ключевые особенности	Модифицируемая характеристика традиционной технологии обучения
Контекстное обучение. А. А. Вербицкий	Интеграция различных видов деятельности студентов: учебной, исследовательской, практической. Создание условий, максимально приближенных к реальным	Увеличение доли практической работы студента (с акцентом на прикладные цели)
Имитационное обучение ^[1] . В. М. Ефимов, В. Ф. Комаров и др.	Использование игровых и имитационных форм обучения	Увеличение доли активных методов обучения (ролевые, деловые, имитационные игры)
Проблемное обучение. М. И. Махмутов и др.	Инициирование самостоятельного поиска (студентом) знаний через проблематизацию ^[2] (преподавателем) учебного материала	Изменение характера учебной задачи и учебного труда (с репродуктивного на продуктивный, творческий)
Модульное обучение. П. А. Юцявичене	Содержание учебного материала жестко структурируется в целях его максимально полного усвоения, сопровождаясь обязательными блоками упражнений и контроля по каждому фрагменту	Специфическая организация учебного материала в наиболее сжатом и понятном для студента виде
Полное усвоение знаний. М. В. Кларин и др	Разработка вариантов достижения учебных результатов (на основе изменения параметров условий обучения) для учащихся с разными способностями	Обеспечение возможности выбора обучающимися оптимальных для себя условий обучения для достижения максимального результата в виде полного усвоения знаний
Дистанционное обучение. Е. С. Полат и др.	Широкий доступ к образовательным ресурсам с опорой на новейшие информационно-коммуникационные технологии, предельно опосредованная роль преподавателя, самостоятельная и автономная роль студента	Использование новейших информационнокоммуникационных средств и технологий обучения

Рис. 1. Характеристики инновационных технологий обучения

Сравнительный анализ ключевых особенностей инновационных технологий обучения позволяет сделать вывод о том, что каждая модель обучения развивает какую-либо характеристику учебного процесса [2]. В связи с этим

можно утверждать, что инновационное образование в целом – это не какая-то определенная образовательная модель, а достаточно широкий принцип адекватного использования вновь открываемых потенциальных возможностей обучения. Инновационный подход в образовании определяется через умение и готовность руководителей и преподавателей проектировать и моделировать нужный вузу учебный процесс с использованием различных образовательных технологий на основе знания их потенциальных возможностей. Именно это делает процесс обучения в вузе технологичным, т.е. прогнозируемым и максимально приближенным к запланированным результатам.

В рамках такого проектирования целесообразно использовать смешанные модели, созданные на основе различных образовательных технологий, хорошо зарекомендовавших себя в практике высшего образования. Так, в системе дистанционного образования эффективны принципы модульного обучения в сочетании с технологией полного усвоения знаний: содержание обучения удобно структурировать в учебные модули, а условия обучения (темпы усвоения, количество повторов, проведение тестовых процедур и пр.) варьировать на основе технологии полного усвоения знаний.

Предложенный [3] алгоритм выбора и использования инновационных образовательных технологий включает пять этапов.

Этап 1. Анализ исходной ситуации. Описывается совокупность образовательных технологий, применяемых при освоении дисциплин и модулей ООП, направленных на формирование компетенций выпускника. В данном разделе вуз представляет:

- перечень образовательных технологий, используемых в данной ООП в целом;
- матрицу соотношения дисциплин/модулей ООП и формируемых с их применением компетенций;
- описание характеристик образовательных технологий, используемых в ООП.

Документами, описывающими реализацию образовательных технологий по определенной ООП, могут быть:

1. Положение о разработке и использовании образовательных технологий, разработанное в вузе.

2. Методические рекомендации по использованию конкретных образовательных технологий, которые определяют основные характеристики применяемых технологий, особенности их реализации по конкретной дисциплине/модулю или темам/разделам, требуемые материально-технические, информационные, временные ресурсы и материалы по описанию технологий контроля и оценки степени достижения заявленных результатов обучения.

Этап 2. Определение доминирующей технологической парадигмы (по каким технологиям можем и хотим "работать"). Основные группы образовательных технологий, используемые в ООП ВПО, включают как традиционные, так и инновационные образовательные технологии, в том числе информационные технологии. (В настоящее время под этим термином в основном понимается как самостоятельное использование компьютерной техники, так и насыщение ею учебных занятий для выработки умения работать с информацией).

Этап 3. Выбор образовательных технологий методологического и стратегического уровней по учебной дисциплине и ООП в целом. Выбор или доминирование определенных методологических технологий детерминирован типом учебного заведения (техническое, гуманитарное, педагогическое и др.), целями и содержанием подготовки профессионалов определенных специальностей, приверженностью руководителей и преподавателей к отдельным педагогическим концепциям.

Критериями выбора конкретных стратегических технологий являются: доминирующий тип развития личности (духовное, интеллектуальное, личностное), выступающий в качестве цели образования; ступени и стадии реализации образовательного процесса внутри уровней образования; тип образовательного заведения; психолого-педагогические закономерности и медицинские показатели обучающихся; степень инновационности стратегических технологий по отношению друг к другу.

Процедуру выбора методологических и стратегических образовательных технологий на основании названных критериев осуществляет не один человек, а некоторое профессиональное и (или) общественно-управленческое сообщество.

Этап 4. Выбор конкретных тактических технологий или принятие решения об их проектировании. Выбор тактических образовательных технологий должен осуществляться на уровне конкретного преподавателя, группы преподавателей, кафедры, межкафедральных образований, что в значительной степени имеет субъективный характер и может гарантироваться соответствующей квалификацией преподавателей, управленческой компетентностью руководителей и организационной культурой образовательных учреждений.

Критериями выбора тактических образовательных технологий являются: педагогическая квалификация преподавателей (особенно игротехническая); специфика учебного материала; индивидуальные особенности обучающихся; материально-технические условия обучения; особенности взаимоотношений между педагогами, между педагогами и руководителями кафедр, факультетов, других подразделений.

Процедура выбора конкретных образовательных технологий на уровне преподавателя, кафедры и программы включает две стадии. На первой стадии проводится сопоставление тем учебного плана и совокупностей общекультурных и профессиональных компетенций, в результате которого выявляются тематические зоны для поиска адекватных им образовательных технологий. На второй стадии на основе классификационных признаков организационных форм обучения выбираются конкретные технологии в зависимости от доминирующих в конкретной теме, разделе или модуле компетенций. При этом учитывается тот факт, что образовательный процесс редко проектируется "на пустом месте", поэтому предлагаемые алгоритмы прежде всего ориентированы на корректировку существующих содержания, целей (компетенций) и образовательных технологий.

В результате выполнения процедуры выбора, создается определенный банк возможных образовательных технологий по модулям/дисциплинам и ООП в целом. На этой основе в дальнейшем осуществляется проектирование системы по определенной дисциплине или модулю.

Этап 5. Создание системы образовательных технологий по каждой дисциплине, каждому модулю, ООП в целом. Целостность педагогической системы при использовании образовательных технологий может быть обеспечена при соблюдении следующих правил проектирования:

– система образовательных технологий должна состоять из разнообразных организационных форм, выбор которых определяется целями обучения (компетенциями), а также психологопедагогическими требованиями к учебному процессу;

– используемые технологии должны быть связаны между собой тематически, логически, организационно, эмоционально, личностно;

– сложность используемых в системе конкретных технологий должна нарастать от начала к концу реализации образовательного процесса;

– при системном использовании образовательных технологий неизбежен процесс изменений в сторону активизации различных параметров традиционных технологий обучения.

Таким образом, на основе вышеизложенного можно сделать следующие выводы: в основе инновационных методов обучения студентов лежат современные образовательные технологии, которые помогают активизировать процесс обучения, формировать творческий, инновационный подход к будущей профессиональной деятельности, развивать самостоятельность мышления, умение принимать оптимальные решения. Как показывает практика, использование инновационных методов в профессионально ориентированном обучении является необходимым условием для подготовки высококвалифицированных специалистов.

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The study of national traditions in the contemporary design, art and educational environment

Abstract: The article deals with specific ethnic and cultural studies, which are the basis for cross-cultural relations. It is emphasized that the purpose of this research is to preserve and increase the cultural capacity through observing the important elements of ethnic cultures of the Kazakhstan.

Keywords: traditional culture, ethnicity, continuity, education.

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Изучение национальных традиций в современной проектно-художественной и образовательной среде

Аннотация: В статье рассматривается специфика этнокультурных исследований, отмечается их тесная связь с творческим и образовательным процессами. Подчеркивается, что целью этих исследований является сохранение и приумножение культурного потенциала посредством усвоения значимых элементов этнической культуры Казахстана.

Ключевые слова: традиционная культура, этнос, преемственность, образование.

Конец XX века и начало XXI века характерны коренными изменениями в представлениях о культуре, эстетике и национальной культуре.

Национальные ценности, как известно, формируются в результате осознания нацией своих потребностей в соответствии их с предметами окружающего мира. Ценностное отношение выступает необходимым компонентом в формировании ценностной ориентации, деятельности и отношений, которые выражаются в ценностной установке. Последние в свою очередь вырабатываются в процессе всей жизнедеятельности и передаются от поколения к поколению в процессе обучения и воспитания.

Сохранению и приумножению этих ценностей служат традиции, которые поддерживают связь между прошлым, настоящим и будущим. Их исследование позволяет решать принципиально важные проблемы социально-культурного бытия.

В Казахстане самобытная, богатая традициями культура, постоянно развивающаяся и положительно трансформирующая во всех сферах современной художественной культуры. Одним из основных принципов современной культурной политики Казахстана является глубокое изучение национальной традиции, признаков идентичности нашего общества, разработка

ценностных ориентаций всего комплекса явлений, которые можно объединить в понятие «культурное национальное наследие», а также исследование тенденций эволюции их восприятия и интерпретации современниками и выбор форм культурной модернизации.

Благоприятная среда, созданная в Казахстане для свободного выражения мысли и межкультурного обмена, способствует развитию потенциала личности, воплощению творческих замыслов и реализации инновационных проектов.

Кроме того, в казахстанской культуре причудливо переплетаются традиция и современность, наблюдается взаимодействие различных культурно-исторических эпох, художественных направлений и стилей [1]. Так, традиции духовной и материальной культуры казахского народа являются основополагающим фактором, определяющим направление творческих изысканий отечественных дизайнеров. И сегодня потенциал национальных традиций как источник дизайнерского творчества не только не исчерпан, обращение к наследию предков является знаковым для всего казахстанского искусства начала XXI века.

Все это является предпосылками создания прогрессивной системы художественного образования, которая будет максимально отвечать интересам и требованиям нации.

Исторически становление дизайна в ряде стран было связано с возрождением национальных ремесленных традиций и акцентированием национального колорита. Синтез традиционного и современного, на наш взгляд, должен способствовать развитию чувства самоценности нации, укреплению ее духовного единства. Это имеет непосредственное отношение к вопросу соответствия базовым концепциям современного мирового дизайна, к вопросу выражения мировоззренческих установок посредством формирования художественного образа, имеющего традиционные духовно-эстетические основания.

Национальный дизайн, в котором с наибольшей полнотой воплотились богатейшие традиции казахского декоративно-прикладного искусства, является выразителем эстетических представлений народа, обеспечивает передачу из поколения в поколение духовного и исторического опыта. Тенденция исполь-

зования национальных традиций в дизайнерской практике, наметившаяся еще в 80-е годы XX века, сегодня стремительно набирает обороты а, в последние годы, на волне возрастающего интереса к углубленному изучению казахской культуры, наблюдается тенденция к более деликатному обращению с тонким этническим материалом. В наши этностиль дни переживает свое второе рождение. Привлекательность этнодизайна – его максимальная демократичность, гибкость и открытость, отсутствие четко очерченных стилистических рамок, экзотичность, яркость и необычность. Не утонуть в этом пестром калейдоскопе, не раствориться в нем, суметь вплести свой неповторимый творческий почерк в богатый узор современной художественной практики — насущная задача для художников и дизайнеров [1]. Молодое поколение открыто новым идеям, мыслит глобально и думает категориями будущего. Важнейшим элементом воспитания этого поколения является воспитание в духе уважения к культурному достоянию нации.

Сегодня необходимо создавать новый современный национальный стиль, и предметный мир, окружающий нас, должен нести элементы национальной культуры, которые предопределяли бы социальное поведение человека в обществе. Изучение особенностей образа жизни человека в регионах должно стать источником новых проектных идей без противопоставлений традиций и современности.

В современном обществе дизайн становится сферой не только функционального проектирования, но и способом смыслового конструирования, игрой со смыслами. Современное потребление превращается в интенсивный процесс постоянного обновления вещей. Вещи, предметы, исполненные смыслами культуры, выступают элементом моделируемой с их помощью социокультурной реальности.

Дизайн-деятельность соприкасается с различными аспектами теории и истории культуры своей содержательной частью, являясь выразителем определенного миропонимания, формируя предметный мир и социокультурное бытие человека, а также тем, что дизайн-продукт содержит информацию о типе, модели, характере культуры: исторической, этнической, локальной [2].

Вся история человечества свидетельствует, что явление, которое мы сейчас называем искусством, или художественной культурой, это неотъем-

лемая составляющая человеческого способа существования в мире. Поскольку общество становится все более многообразным, а значит, и подверженным внутренним противоречиям, конечная цель должна заключаться в формировании высокообразованного, творческого человека XXI века, свободно ориентирующегося в различных сферах знания и культуры, социально ответственного и глубоко духовного. Центральное место в этом развитии занимают ценности и воззрения, а также те культурные и социальные механизмы, благодаря которым они устанавливаются и распространяются в учебных заведениях всех уровней.

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Understanding Targeted Research Values of Legal Culture

Abstract: Under the influence of modernization processes of Russian society the requirements to the level of legal culture of citizens, a significant legal capacity of civil society are changing.

Legal culture, legal state and civil society are interdependent. At the present stage, it is an important determinant of the success of which depends on the implementation and functioning of democratic norms and values.

The values of rights and values of legal relations is the factor of human progress, culture and historical value. Research of the transforming legal awareness and legal values of the Russian community is extremely important in theoretical and practical respects.

Keywords: legal culture, the purpose of the study of legal culture, the importance of the study of legal culture, the value of legal culture, legal values of Russian society, the transformation of legal culture.

The process of modernization of the Russian state in the modern period affects all spheres of public and political system. Under the influence of modernization processes the content of the legal and spiritual life is changing, i.e. values of legal culture that significantly raise the requirements to the level of legal culture of citizens.

The complexity of the significance research of legal culture is conditioned on its diversity and dynamism of the goals, objectives, means, conditions of functioning and development of its structural elements.

The modern stage of development of our society is characterized by the largest transformation of the Russian state and its legal system, the formation of Russia as a sovereign democratic state, respectful of the priority of universal human values [1].

Legal culture as a special degree of development of a society is primarily manifested in its readiness to perceive progressive legal ideas and laws, and skills, as well as in relation to existing regulators. From this perspective, it is characterized by the presence of legal cultural orientations. Legal culture is the specific nature and level of activity of members of civil society, and at the same time it is the result of cultural activity in the field of law, as it is a set of the appropriate level of legal knowledge, abilities, skills of society. In other words, legal culture is a significant legal capacity of civil society.

One of the definitions of legal culture presents it as a set of legal values that form a productive-positive layer in the legal sphere of individuals, social groups and society as a whole, where the values are interpreted as positive, progressive phenomena and processes [2].

The world of law is presented with the world of values such as: freedom, equality, justice, humanity, safety, security, human rights, the rule of law, responsibility, etc. Z. S. Jankhuvatova states that values are not equal, they are organized in order of importance in a certain order, called a value system. Value system regulates and directs the choice between the various models and alternatives of behavior. It is shown that the key to a positive future processes of formation of legal values is to change the perspective on human rights. The values of law ensure the integrity of the legal system of society, playing a bridging role, the backbone of the integrating factor. Outside the values legal culture can not exist.

In the time of changes in Russia policy goes ahead law. In these circumstances the state has the exclusive autonomy in relation to society. The state own interest can sometimes prevail over the interests of society [4].

However, the state, as the guardian of legal values must not only proclaim but also to ensure their full implementation. Article 2 of the RF Constitution states that the Supreme value is the individual, his rights and freedoms. Often, however, in dealing with government agencies the person feels neither personality nor value. The

level of legal culture of the state apparatus is determined by his actual attitude to legal values.

Legal values are significantly meaningful and culturally shaped forms of positive attitude of people towards the legal reality, which determine selection of behavior, corresponding to the legal system of society, as well as a legal assessment of the events. Significance of the study of legal culture, its place and role at the present stage due to the following reasons:

Legal values are significantly meaningful and culturally shape positive attitudes towards the legal reality, which determine selection behavior, the legal system of society, as well as a legal assessment of the events. Significance of the research of legal culture, its place and role at the present stage is conditioned on the following reasons: currently dominates traditional, very liberal and selective attitude to the laws and legal norms, both of citizens and government agencies, established in Russia for a long period by priority of state and public to personal. Realities indicate a low level of legal culture of Russian society and public authorities.

The status of legal culture is an indicator of the degree of maturity of political and social institutions in the specific historical period of development, as well as one of the comprehensive modernization. This thesis is fully applicable to modern Russia. In the legal culture is mirrored the level of civilization development of the state at the turn of centuries and millennia [5].

Immature legal culture prevents the formation of a developed civil society in Russia. Due to the fact that historically, personality has been suppressed and pushed to the periphery of the social relations, society has been unable to build an effective economic, legal, political relations, become an effective partner of the state government.

The process of state-legal reform and democratic societies are unthinkable without the appropriate level of legal culture of society as a whole and each of its members individually. The role of legal culture in society is very high because it is a unique form of harmonious development of man, through which nationwide progress is achieved [6].

Without strict adherence to the laws by all legal subjects, including those who represent the interests of public authorities (state and municipal authorities), no reform can not be. The high degree of development of legal culture leads to the

emergence and consolidation of persistent traditions and habits to keep the law as a strict rule of conduct of a civilized person. Therefore, a high level of legal culture is the legal basis of statehood.

The presence of a law does not automatically provide the necessary legal culture of society, citizens and officials. A scientific system of ideas about legal culture is required as an integrative characteristic of the legal lifestyle of Russians, the ways of its formation and development prospects.

The legal culture of public authorities (state and municipal) should be considered as essential elements of all Russian reforms and transformations, the primary precondition for effective management of the country. Legal culture authorities, including law enforcement, should develop the plan to improve it and to improve its interaction with institutes of civil society in Russia.

In the context of globalization legal systems are in a dynamic process of cultural interaction. Legal acculturation within reasonable limits contributes to the modernization of law, the enrichment of the legal culture by the new principles and legal categories. Civilizational identity of Russia is formed on the basis of features of development of the domestic legal culture and legal culture of the partner countries through the achievement of balance between traditional attitudes and Western values [5].

Thus, the study of the influence of legal culture on the processes of modernization in Russia is dictated by the practical needs of the development of public law field and requires research, including theoretical and legal understanding. Legal culture is becoming a real effective tool for social, political and economic changes that have a significant, even decisive impact on the functioning of the legal system of the Russian state and civil society.

Values of legal culture are a powerful spiritual tool of modernization and play a dominant role in the development of civil society in Russia. Legal culture, legal state and civil society are interdependent. Legal culture is a mandatory attribute, one of the main elements of civil society. Its condition is an indicator of the degree of maturity of political and social institutions in the specific historical period of development, as well as one of the options of comprehensive modernization. At the present stage it is the most important determinant, which determines the success of the implementation and functioning of democratic norms and values.

In the Message to the Federal Assembly of the Russian Federation, President Vladimir Putin noted that the spiritual unity of the people and uniting us moral values is such an important factor in the development as political and economic stability. He is convinced that society is only able to define and solve complex national issues when it's got the common system of moral values, when the country stores respect to the native language, unique cultural values, to the memory of their ancestors, to each page of our national history. This national wealth is the basis for strengthening the unity and sovereignty of the country [7].

From the point of view of modern ideas, values of law and values of legal relations is a factor of human progress, culture, historical value. The state as political institution ensures consistent implementation of improvement of legal system of society, as well as the process of assimilation of legal values by different social and age groups of population, which is developing the legal culture and legal consciousness [8].

In view of the above the research of the transforming legal awareness and legal values of the modern Russian community is extremely important in theoretical and practical respects.

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A role of massage is in increase of physical capacity of tourists in pedestrian hikes of high categories of complication

Abstract: A publication is sanctified to determination of influence of massage in the increase of physical capacity of tourists in the hikes of high categories of complication. It is set that mastering of receptions of massage and their correct application during the pedestrian tourist hikes of high categories of complication positively influenced on the level of physical capacity of their participants.

Keywords: massage, tourism, physical capacity, hikes of high categories of complication.

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Роль самомасажу та масажу у підвищенні фізичної працездатності туристів у піших походах високих категорій складності

Анотація: Публікація присвячена визначенню впливу самомасажу і масажу у збільшенні працездатності туристів в піших походах високих категорій складності. Встановлено, що освоєння прийомів самомасажу і масажу, і їх правильне застосування впродовж туристичних походів високих категорій складності, позитивно вплинуло на рівень працездатності їх учасників.

Ключові слова: самомасаж, масаж, туризм, фізична працездатність, походи високих категорій складності.

У процесі пошуку засобів та методів підвищення фізичної працездатності учасників туристських походів високих категорій складності актуальним є визначення ролі самомасажу та масажу у піших походах.

Загальновідомо про ефективність застосування масажу та самомасажу спортсменами у різних видах спорту [2; 5]. Та інформація про ефективність застосування масажу і самомасажу в туристських походах високих категорій складності підтвердженої експериментальними дослідженнями відсутня взагалі. То ж, метою нашої роботи було експериментальне дослідження ефективності самомасажу та масажу у піших туристських походах високих категорій складності.

Предметом дослідження було використання самомасажу та масажу для боротьби із втомою у студентської молоді на маршрутах піших туристських походів високих категорій складності.

У майбутніх учасників походів під час медичного огляду та педагогічного тестування були визначені наступні показники: частоту серцевих скорочень (ЧСС), артеріальний тиск (АД), згинання розгинання рук в упорі лежачи (у хлопців, к-сть разів) та від рюкзака (у дівчат, к-сть разів), дислокаційну амплітуду коливання тонусу м'язів гомілки, чотириголового м'яза правого стегна та двоголового м'яза правої руки.

За даними авторів [1; 3; 9] для подальшого підвищення спортивних досягнень необхідне постійне вдосконалювання тренувального процесу з використанням адекватного арсеналу засобів, спрямованих на підвищення фізичної працездатності спортсменів. Враховуючи це, для групи студентів, які готувалися до участі у пішому поході третьої категорії складності, запровадили заняття для вдосконалення прийомів самомасажу та масажу. Внаслідок,

застосовуючи їх під час походів, студенти мали можливість ефективніше ліквідувати втому свого організму, коли відпочинку у вигляді привалу на маршруті виявлялося недосить для її ліквідації, що, як правило, веде до появи млявості, фізичного і психічного дискомфорту. Зотов В.П. (1997) стверджував, що 5-8 хвилинний сеанс самомасажу замінює 20 хвилин пасивного відпочинку, відновлює сили, повертає бадьорість і гарний настрій. Внаслідок, ми розраховували на те, що саме простота прийомів самомасажу та масажу, можливість змінювати їх дозування та інтенсивність впливу на організм, залежно від самопочуття, зможе стати ефективним засобом у боротьбі із втомою.

Прийоми самомасажу та масажу було застосовано у двох походах третьої категорії складності з різним складом груп. Оскільки статистично достовірних відмінностей між показниками у студентів обох походів не зафіксовано, то результати дослідження представлені разом.

Прийоми самомасажу застосовували щодня упродовж походу (на другому привалі у першій половині дня та на другому привалі після великого привалу). Прийоми масажу застосовували через день перед вечерею (масаж виконували один одному).

Щодо застосування самомасажу та масажу під час походів їх учасники дотримувались наступних правил:

- не застосовували прийомів самомасажу та масажу відразу після їжі;
- тривалість самомасажу на одній ділянці тіла не перевищував 2-3 хвилин (аби уникнути пошкодження шкіри);
- не виконували занадто багато прийомів, а вибір їх визначався зручністю і ефективністю застосування на тій чи іншій ділянці тіла [2; 3; 5].

В умовах походів використовували основні прийоми класичного масажу: погладження (однією рукою, двома руками поперемінно, спіралеподібно, комбіноване, концентричне), витиснення, розтирання, потряхування, струшування, ваління, пасивні та активні рухи з опором [5].

Велику увагу звертали на обсяг навантаження, що припадає на ті чи інші групи м'язів і суглобів під час самомасажу чи масажу. Так, скорочували час самомасажу чи масажу м'язів грудей і рук, але збільшували тривалість дії на м'язи ніг, попереку, спини.

Загальну фізичну працездатність в умовах походів характеризували за показниками тесту: згинання розгинання рук в упорі лежачи (хлопчики, к-сть разів) та згинання розгинання рук в упорі на рюкзаці (дівчата, к-сть разів).

Отримавши у перші 3 дні результати незначних змін на користь самомасажу, ми провели роз'яснювальну бесіду на вечірньому привалі та розповіли учасникам походу про отримані результати дослідження та про механізми впливу самомасажу, охарактеризувавши, як самомасаж викликає спрямовані нейро-гуморальні зрушення на основі шкірно-вісцеральних, рефлексів, що сприяло збільшенню концентрації гормонів в крові та лімфі, а також ферментів у порожнистих органах, які є, як відомо, каталізаторами хімічних реакцій, що протікають в організмі. Імпульси, що виникають при подразненні рецепторів шкіри, сухожиль, стінок кровоносних судин, по чутливим нервових волокнах передаються в центральну нервову систему, яка регулює роботу всіх внутрішніх органів. Внаслідок стало зрозуміло, що за допомогою самомасажу можна впливати на функцію не тільки серця, а й інших органів. У процесі цієї процедури у шкірі утворюються фізіологічно активні речовини: одні з них розширюють капіляри, підвищують вміст адреналіну в крові, що сприяє мобілізації захисних сил організму, інші збільшують просвіт артеріол, що веде до зниження артеріального тиску. Самомасаж прискорює капілярний, венозний і артеріальний кровотік, внаслідок чого, полегшується робота серця, поліпшується кровопостачання серцевого м'яза, а тканини краще насичуються киснем і поживними речовинами. Значно прискорюється і лімфотік. А завдяки цьому, поліпшується живлення тканин. Під час процедури з поверхні шкіри видаляються відмерлі частинки епідермісу, а з ними мікроби, очищаються гирла сальних залоз. Це створює сприятливі умови для виведення через шкіру кінцевих продуктів обміну речовин. Бліда, в'яла шкіра ставала рожевою, пружною, еластичною [6; 8].

При самомасажі (Золотов В.П., 1997) швидкість споживання кисню підвищується на 30-35% у порівнянні із спокоєм, на 15-20% посилюється виділення молочної кислоти нирками і шкірою. Тому, працездатність стомлених м'язів під дією самомасажу не тільки буде відновлюватися, а й зростати.

Таким чином, учасники походу на власному досвіді пересвідчилися, що самомасаж є надійним засобом для відновлення організму, поліпшення стану

нервово-м'язового апарату і особливо тих м'язів, які виконують велике навантаження, внаслідок, підвищення фізичної працездатності, про що свідчить динаміка дислокаційного коливання тону м'язів.

Результати дослідження оброблено за Стьюдентом.

Результати дослідження. Встановлено, що працездатність стомлених м'язів учасників походу під дією самомасажу та масажу не тільки відновлювалася, а й зростала. Так, кількість разів тесту згинання розгинання рук в упорі лежачи (хл.) в умовах походів після тижневого застосування масажу та самомасажу збільшилося у юнаків на 5,2 - 5,4% порівняно з результатами, отриманими при обстеженні на початку дослідження (до виходу на маршрут). Ще через тиждень позитивна динаміка продовжувалася і склала 8,2 - 8,8%. А під кінець походу (за два дні до його закінчення), було зафіксовано погіршення вивченого показника на 1,2 - 1,5% по відношенню до попереднього результату. Та не зважаючи на негативну динаміку вказаного показника в кінці походу, він перевищував результати попередніх тестувань. Це перевищення склало 6,4 – 6,9% у порівнянні з вихідними даними, що свідчить про позитивний вплив масажу та самомасажу на динаміку рівня показника фізичної працездатності в умовах здійснених походів.

Аналогічна позитивна динаміка вивченого показника спостерігалась і у дівчат. Результати показників тестування згинання розгинання рук в упорі лежачи на рюкзаці змінювався аналогічно на 3,7-4,1%, 5,4-5,7% та 4,1-5,0% відповідно.

Таким чином, застосування самомасажу та масажу у піших походах високих категорій складності підвищило фізичну працездатність його учасників, чому сприяла позитивна динаміка показників ЧСС та дислокаційного коливання тону вищезазначених м'язів.

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On the national context of globalized aesthetic plastic surgery in Armenia

Abstract: This article is devoted to the issues of globalization and physical appearance. The publication focuses on the actual trends in the development of aesthetic plastic surgery in Armenia.

Keywords: globalization, aesthetic plastic surgery, rhinoplasty, national identity, Armenia.

In recent years the shifts and accents to various values that were considered to be overarching issues in the Armenian society have given space to new concepts. Under the huge influence of the globalization and the merging of the borders that are taking place due to the active involvement of people of all the nations in the intercultural and interethnic discourse in the global environment of the World Wide Web, we can witness the redesigning and reconsideration of many issues that traditionally were viewed from another perspective.

The interplay of the global and local parameters is evident in any sphere of human life, which has resulted in the very interesting change – the decentralization of common cultural values and centralization of elite cultural products. What does this statement mean? The things that belonged to this or that particular culture due to the spread of the internet communication now are available not only to the representatives of this culture, but also to other cultures and ethnic groups. The centralization of elite cultural products means the penetration of things which are practiced by restricted and elite members of the society in the past (for example. aesthetic plastic surgery) now are in extensive use in many countries, and in Armenia, in particular. This resulted in the conversion of elite industry into a mass-consuming business. The aesthetic surgery is no more treated as an elite undertaking, and it is accessible to the wider layers of population in Armenia.

Furthermore, the label of “modernity” which is a dominant concept for people who agree to body modification is another chance for a new generation to find new opportunities in their life. Hence, the tendencies in the global world lead to cultural assimilation.

As a process of cultural influences, immigration and exchange of concepts and information, globalization have existed for centuries, but recently the volume and rate of contacts and communication between different regions of the world have expanded significantly due to telecommunication development, as well as impetuous rise in global socioeconomic interrelation.

The changes that are considered to be the consequences of the globalization have brought the modification of many important concepts and targets which were appreciated by the nations for a long time but have given way to new frames and patterns that are recognized by more people all over the world. The idea of the development of the dominant concepts or metaconcepts which will govern the style and mode of existence, seems to be a very tangible tendency nowadays.

When we speak about the aesthetic plastic surgery, we have in mind two things that are beyond this field of medicine but govern it - the interplay of two basic concepts – the quality as such and the beauty and perfect look as the symbol of “modernity”.

The concept of the quality is not new in any sphere of life, and it is widely discussed in various spheres of the economy, education and everyday life. The quality of the education, standards of life, industry has become the major challenges and the demands of the global and the local societies.

The notion of the quality is developing in the objective way so as to make the functional use of all the innovations that have been produced by the scholars all over the world due do the rapid development of the science and the technologies.

The globalization of beauty is another trend. The standards of the beauty have significantly changed in the last twenty years, and the national barriers have diminished giving way to new models that are accepted in a wider global society.

The concepts of the national and ethnic identity, individualism versus intercultural identity, pluralism have become topical issues which have become a very pivotal object for the interdisciplinary research.

One of the basic psychological consequences of globalization according to J.J. Arnett is that it results in identity transformations: developing *bicultural identity*, "...in which part of their identity is rooted in their local culture while another part stems from an awareness of their relation to the global culture" [3].

Multiple and complementary identities are present-day reality and people have sense of affinity with the country they live in, as well as with the community within it. This fact suggests that common basic values are shared by these individuals [8].

J.J. Arnett suggests that *identity confusion* may be increasing among young people in non-Western cultures. "As local cultures change in response to globalization, some young people find themselves at home in neither the local culture nor the global culture". That is besides their local identity, young people form some global identity which provides them with a sense of affinity to a global culture, being and feeling a part of it [3]. They are more open for changes in beliefs and behavior, especially for what is new and unusual. Adolescents are mentioned to be the most vulnerable group to the changes of global culture, and many problems they have related to negative life style, substance use, premarital pregnancy, as well as eating disorder and body image dissatisfaction are viewed as negative impacts of globalization and intrusion of Western values [11], [16], [20].

In this era of globalization physical appearance has gained significant role in defining individual identity, and it is observed via dissemination of features through mass media and the offered overflow of various products and technologies for altering body ranging from non invasive to surgical measures (diet pills, exercise programs, cosmetic surgery) [17], [15]. Reality television programs on plastic surgery have proved to be one of the promoters of plastic surgery patient growth [10], [18]. Besides celebrities act as a role model for a lot of people, especially youngsters, they get influenced a lot [6]. The role of youth in the process of globalization has been mentioned by many authors [5], [14], [2]. Thus increasingly the enthusiasm for aesthetic procedures is surpassing age barriers [13]. Westernized cosmetic surgery has become synonymous with the concepts of status, mobility and global citizenship.

Armenia, which is characterized as a country with a homogeneous population (nearly 96 percent of the population are the Armenians) has never had a problem of otherness in its frame of concepts to be discussed. However, the reality is influencing the traditional attitudes which are characterizing the Armenian nation as a whole. The

certain bucket of characteristics are obvious in the psychology of the Armenian people over the ages - strong preservation of the traditions, beliefs, pride for the Armenian ethnicity including the specific features of the Armenian appearance, has been observed by many generations of the Armenian people.

Other serious reasons for accepting the European values and standards are the existence of the Armenian Diaspora, the migration of the Armenians to many countries of the world, and the availability of the mixed families with the children that are born with the features of the mixed heritage. The assimilation with the other cultures is taking place with a rapid adoption of new cultural values and social standards.

The strive for the perfectness, the globalization and the recent development of the plastic surgery are the three serious driving forces that significantly have contributed to the breaking of the certain habits and traditions with a view to improve the contours of the face and the body so as to fit the European standards which dominate now not only in Armenia, in the South Caucasus, but in many countries of the world. Aesthetic surgery seems to be not only body but identity intervention as well [1].

One of the latest realities in the world of globalization is ethnic rhinoplasty which refers to the cosmetic procedure performed on patients from multi-ethnic background who want to change nasal features connected to their ethnicity [12], [9]. Rhinoplasty is the number one cosmetic procedure which is experiencing a boom in Armenia and has become a normalized procedure.

Many cultures share distinctive facial, especially nasal features which are considered to be genetic trait based on certain ethnic background (the volume of nasal tip, the slope and shape of the nasal bridge, the thickness of the skin, etc.) [9]. These differences are accounted for biological reasons [7]. According to one of the explanations low and flat-shaped noses are typical for people living in hot, tropical regions of our planet, while noses with higher features are more useful in colder, northern areas, where air needs to be moistened before reaching the lungs.

Thus the big hump and wide nostrils presented to Armenians is not the nature's whim but rather a useful feature especially for those born in the dry regions of Armenia.

The typical Armenian nose, which is bigger in size, is a matter of the discussion by various researchers – the psychologists, sociologists, politicians, and so on. The Armenian nose, which has been the part and parcel of the Armenian identity, hasn't been treated as an "ideal" feature of the Armenian profile, as most of the Armenians wish to have facial features typical of the European features. Besides, the short nose is not an alien notion for the facial profile of many Armenians – nearly 25-30 percent of the nation has big noses which destroy the proportion and the symmetry of the facial characteristics which become the cause for the loss of confidence for many people. They consider that the better appearance can greatly contribute to their overall success, and that is why in the last 5 years very many people got operated in various clinics for plastic surgery in Armenia to improve their appearance and the facial profile.

And in general, on the one hand it seems to be more accepted for people having pronounced features to turn for surgical improvement which helps them to assimilate with the Western society better. This is true for many ethnic groups: Brazilians, Koreans, Indians, Israelis, Africans, Iranians, etc. [21], [4]. On the other hand the more people alter themselves surgically the more they will assimilate and physical diversity will be less obvious [18].

Altogether, Armenians are facing the challenge of maintaining their traditions while adopting many of the ways of the global culture.

Another reason for plastic surgery growth and popularity to my mind is connected with another "globalization derived" concept: emerging adulthood, a new period of life which extends from late teens to the midtwenties and is connected with delayed and stretched out age transitions. One of its main characteristic is the exploration of possibilities in love, work and worldviews [2]. The proliferation of emerging adulthood is directly connected with identity issues. Longer period of identity search in important spheres of life such as love and work to, gives the opportunity to learn more about themselves and clarify their preferences and abilities. The longer the period the younger one strives to remain both mentally and physically. But since our mental age from a certain point is not parallel without physical body, plastic surgery is ready to make it somehow available. In other words plastic surgery offers its help in lengthening the period of youth via looking younger.

We are leaving in the period of postmodernism which is the philosophy of radical pluralism, and means that for the latter “extreme reality is not unity, but distinction, not similarity but diversity” [22]. Postmodern identity starts with the right for identity, in the fundamental sense of that word—the freedom for identity choice.

The freedom of choice, which is fostering the people to make decisions for certain changes in the appearance, is another great prerequisite too for proposing changes in the individual profile of the people. They consider the improvement of the individual profile another opportunity to develop their individuality and the identity, though the orientation to the standards that are considered to be “perfect” is regarded by many scholars as a lost of individuality and the national identity.

As it is mentioned in the UN report on human development 2004, “Globalization can threaten national and local identities. The solution is not to retreat to conservatism and isolationist nationalism — it is to design multicultural policies to promote diversity and pluralism” [8].

Having analyzed all the reasons of the utilization of the aesthetic plastic surgery in Armenia, we can state that the drive of shaping a new model of ethnic identity does not have any ideological root, as the most important criteria here are the breaking the historical prejudices and stereotypes about the beauty and the adoption of the new dimensions which are widely cultivated all over the global world. Hence, plastic surgery is just one of the ways of intercultural and interethnic interventions which may contribute to the development of the new pluralistic cultural identity in Armenia where alongside the traditional parameters, we can see the traits which are peculiar of the larger global context.

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Pomysel, Domysel, Vimysel and Umysel in the News Pages

Abstract: In work the component analysis of semantemes “pomysel”, “domysel”, “vimysel” and “umysel” is carried out; as well as the literary genre of the reporting is defined. Also the specific weight of speech strategy of domysel, vimysel and umysel in the reporting’s covering so-called “hard news” is revealed.

Keywords: pomysel, domysel, vimysel, umysel, genre of report, speech strategy and tactics.

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Помысел, домysel, вымысел и умысел на страницах прессы

Аннотация: В работе проводится компонентный анализ семантем: «помысел», «умысел», «домysel» и «вымысел»; определяется литературоведческий жанр репортажа. А также выявляется удельный вес стратегий домysel, вымысла и умысла в репортажах, освещающих так называемые «жесткие новости».

Ключевые слова: помысел, домysel, умысел, вымысел, жанр репортажа, коммуникативно-речевая стратегия и тактика.

В настоящей работе предпринимается попытка исследовать правомочность таких коммуникативно-речевых стратегий, как помысел, домysel, вымысел и умысел на страницах репортажей ведущих российских и зарубежных изданий при освещении так называемых жестких новостей (hard news).

В русском языке в семантическом поле интеллектуальной деятельности человека представлены четыре однокорневых имени существительных (с корнем «мысел»). Компонентный анализ, проведенный на основе лексикографических источников, важнейшими из которых мы считаем «Словарь современного русского литературного языка» Академии наук СССР и «Словарь русского языка» Ожегова, позволил помимо общей семы «мысль» вычленить дифференцирующие семы [1, 2, 3, 4]. Так лексема «помысел» имеет три значения. Первое значение «мысль» (английский язык - *idea; thought*; испанский язык - *idea; pensamiento*). Второе значение «замысел» (английский язык - *design*; испанский язык - *diseño*). И третье значение, благодаря дополнительной семе - «интенциональность мысли», - «намерение». (Английский язык – *intention*; испанский язык - *intento*). «Домысел» - это тоже мысль, но с семой «прихода к этой мысли путем размышления и предположения». Это догадка, причем чаще всего ничем не подтвержденная. В области научных изысканий обычно лексема «домысел» употребляется с оттенком иронии, хотя и обозначает предположение или гипотезу. «Вымысел» - это ядерная сема «мысль» плюс сема «создание воображением, творческой фантазией». «Вымысел» - это тоже «мысль», но с отрицательным денотатом. «Вымысел» - это ложное, ошибочное представление, никак не соответствующее действительности. «Вымысел» - это выдумка, неправда. А вот «умысел» - заранее обдуманное тайное намерение, тайный (секретный) замысел. Эта ядерная сема «мысль», но первая дополнительная сема обогатила ядерную сему «предварительным обдумыванием», а вторая - «тайным действием».

«Помысел», «домысел» и «вымысел» могут иметь положительный и отрицательный заряд - все зависит от векторной направленности нашей мыслительной деятельности. А вот «умысел» обязательно сопряжен с чем-то негативным, неправильным, злым и даже противозаконным. В терминологическом поле лексема «умысел» - это «наиболее распространенная в законе и на практике форма вины» [5].

После семантического анализа предложенных семантем следует определиться с таким литературоведческим и культурным понятием как «репортаж».

Журналисты считают жанр репортажа достаточно древним. Еще Геродот писал репортажи, которые иногда наших современников приводят в замеша-

тельство: что в них правда, а что - вымысел. Но в наше время мало кто не согласится со следующим достаточно широким определением «репортажа». «Репортаж» - это сообщение с места событий. Такую дефиницию жанра сделаем рабочей. Коммуникативную стратегию подачи когнитивного и информационного потоков адресату с места событий и должен обслуживать жанр репортажа. Поэтому для репортажа характерны: беспристрастность подачи материала, то есть объективность; динамичность; эффект присутствия читателя на месте событий; эффективность; наглядность, или образность. На наш взгляд, актуальность репортажа - это данность этого жанра, то есть это та характеристика, без которой «репортаж» теряет свою сущность. Если рассматривать «репортаж» с концептуальной точки зрения, то актуальность - это его сущностная составляющая. Обширность тематики репортажа и ее неисчерпаемость - это нечто схожее с самим универсумом. Считаем, что это тоже сущностная составляющая концепта. Отметим также репортаж как фабульный жанр со специфическим в нем воспроизведением времени и пространства. Время в репортаже дискретно; оно, естественно, никаким образом не соответствует реальности. Можно считать, что это хронометрированный по другой шкале повтор времени при максимально возможно точном воссоздании пространства. Мастерски сделать это - к этому и сводится помысел, или творческий замысел, любого репортера.

Но здесь возникает вопрос о том, как следует подавать когнитивный и информационный поток читателю. На эту проблему существует две противоположных точки зрения. Первая точка зрения: репортаж - это «художественный документ» из-за специфики его динамичности, эмоциональности и энергичности подачи материала, из-за приемов и средств образного описания событий таких, как сравнения, эпитеты, метафоры, средства юмора и даже сатиры. И в этом смысле помысел репортера языковыми средствами и коммуникативно-речевыми тактиками достичь такого восприятия адресатом, чтобы он находился на той же волне, что и репортер, а также видел события глазами репортера [6]. Вторая точка зрения: репортаж - это четко выраженный информационный продукт. Для достижения такой цели, как объективное, невозмутимое, корректное информирование читателя, репортер не должен сопоставлять факты, приводить в доказательство фоновые знания, анализировать причинно-

следственные связи и т.д. [7]. Допустим, у Геродота такое выискивание причинно-следственных связей доходит до упрощенности и некорректности: «Затем царь Дарий завоевал Самос - первый из эллинских и варварских городов. Причина войны была вот такая. Когда Камбис, сын Кира, отправился в египетский поход, много эллинов также прибыло в Египет. Одни [приехали], вероятно, для торговли. Другие - как участники похода, а третьи, наконец, просто хотели посмотреть страну» [8]. Поэтому не все речевые стратегии, под которыми мы понимаем «общий план, или «вектор» речевого поведения, выражающийся в выборе системы продуманных говорящим/пишущим речевых действий; линия речевого поведения, принятая на основе осознания коммуникативной ситуации в целом и направленная на достижение конечной коммуникативной цели (целей)» [9], будут уместны. Речевая стратегия вымысла или домысла в репортаже, освещающем *hard news*, не должна иметь места.

Для выявления того, что происходит на практике, был проведен анализ некоторых средств массовой информации, пишущих на английском и испанском языках. В фокусе нашего внимания было трагическое событие, произошедшее в октябре 2015 года. Речь идет о падении аэробуса A321-200 над Синайским полуостровом, в результате которого погибли 217 пассажиров и 7 членов экипажа.

В репортаже «Russian Airliner Crashes in Egypt, Killing 224» издание «The New York Times» пишет: *Analysts have said that it was unlikely that militants could have shot down the plane, though they have left open the possibility of a bomb or some other sabotage. / Специалисты сказали, что вряд ли самолет мог быть сбит боевиками, хотя они не исключают возможность взрыва бомбы или диверсию.* «The New York Times» вторит колумбийская газета «El Tiempo» в статье «Conclusiones sobre caída de avión ruso tomarán meses» («Выводы о причинах падения российского самолета займут месяцы»): *Varios expertos militares consideran que los combatientes de esta rama del EI, que tiene su bastión en el norte del Sinaí, no disponen de misiles capaces de alcanzar un avión a nueve kilómetros de altura, pero no excluyen la posibilidad de que hubiera una bomba a bordo o de que el avión fuera alcanzado por un cohete o un misil si perdió altura tras un fallo técnico. / Несколько военных экспертов считают, что силы ИГ на севере Синайского полуострова не располагают ракетами, способными*

сбить самолет на высоте девяти километров, но не исключают возможность, что причиной крушения стала бомба на борту самолета или ракета, или снаряд, настигший самолет, поскольку судно стало терять высоту после какого-то технического повреждения.

Безусловно, коммуникативно-речевая стратегия вымысла или домысла при освещении таких трагических обстоятельств мало уместна. Хотя Геродот по этому поводу таким образом сформулировал свои помыслы: - «Что до меня, то мой долг передавать все, что рассказывают, но, конечно, верить всему я не обязан» [10]. Исходя из опыта Геродота, журналисты Эндрю Э. Крамер и Нейл МакФаркухарнов (Andrew E. Kramer, Neil MacFarquhar) вместо домысла приводят мнение французского специалиста Алана Буйалара. *One former French accident investigator, Alain Bouillard, said he could think of no plausible scenario in which a mechanical problem could have led to a midair breakup at cruising altitude of a modern aircraft like the Airbus A321-200 that crashed in Sinai.* / Алан Буйалар, французский специалист, занимавшийся расследованием авиакатастроф, сказал, что он не может придумать никакого правдоподобного сценария, когда техническая проблема способна привести к распаду в воздухе такого современного авиасудна, как разбившийся над Синаем аэробус A321-200. Далее он добавил: *“A rupture in flight after a technical fault seems to me highly improbable”* / Разлом самолета в воздухе после произошедшей технической аварии кажется мне маловероятным [11]. Но такая презентация информации, когда авторы не нацелены на домыслы или вымыслы, а приводят экспертное мнение, вроде бы допустима. Но ввиду остроты момента и трагичности ситуации мы считаем, что репортеры должны отказаться от выводов самостоятельного журналистского расследования, самостоятельного сопоставления фактов, ссылки на чужое, пусть и авторитетное мнение не причастных к расследованию лиц, от «скоропалительных громких выводов». В этих случаях, на наш взгляд, в рамках стратегии вымысла/домысла начинает работать тактика авторитетного мнения, или давления авторитетом на читателя. Пресс-секретарь главы Российской Федерации Дмитрий Песков заметил: «Было бы неправильно давать какие-то оценки, предположения, и делать какие-либо заявления до того, как мы будем обладать всей полнотой картины. Это очень серьезное происшествие, но не

обладая информацией, говорить невозможно» [12]. Но в репортаже «Нью-Йорк Таймс» от 2 ноября 2015 прошла информация о том, что «*The first news reports out of Egypt said the pilot radioed that he was having technical difficulties and wanted to make an emergency landing. / Поступившие из Египта первые новые данные говорят о том, что пилот радиовал, что у него технические неполадки и он хочет совершить аварийную посадку*». Но далее в самом тексте репортажа дается опровержение этому факту. Приводятся слова египетского министра транспорта Хоссама Камаля (Hossam Kamal). «*All was normal; the plane disappeared suddenly off the radar without any prior warning. / Все было нормально. Самолет внезапно пропал с радаров без какого-либо предупреждения*». Без опровержения злой умысел авторов исказить картину произошедшего просто невольно взвалил бы вину за крушение самолета на транспортные службы Египта со всеми вытекающими отсюда последствиями.

Но даже рассказать читателю о чем-то свершившемся, ставшем по прошествии времени доказанным и обнародованным фактом также возможно со злым умыслом. Речь идет о публикациях во французском сатирическом журнале «Charlie Hebdo». Карикатуристы-иллюстраторы журнала сочли предметом для смешных рисунков гибель людей, среди которых были и дети. И в этом видится также злой умысел.

Анализ опубликованных статей, репортажей, фотографий, схем и других материалов позволяет прийти к выводу, что большинство изданий придерживаются стратегии благородных помыслов - правдивого и беспристрастного изображения событий. Эффективно воссоздают произошедшее в своих репортажах, делая их документом эпохи. Некоторые издания позволяют стратегию вымысла/домысла, но чаще всего делают это завуалировано. Ссылаются на никому не ведомые или анонимные источники. Некоторые издания позволяют себе в канве единого текста сначала давать догадку (домысел), а потом тут же ее опровергать. Существуют, к сожалению, издания, которые в погоне за тиражностью и прибылью тяжелые новости делают предметом увеселения. И в этом усматривается, если не стратегия злого умысла, то, по крайней мере, стратегия злого помысла.

Исследование имело своим объектом рассмотреть взаимодействие стратегий умысла, домысла и вымысла на страницах прессы только на базе

одного-единственного события, причем брались для исследования только издания на испанском и английском языках.

Но газета существует сегодня, она будет существовать и завтра, так же, как и жанр репортажа, и исследования других стратегий и тактик создания газеты может помочь объяснить многие культурные, экстралингвистические, политические и социальные моменты нашей жизни. Хотя бы такой - каким информационным источникам следует доверять, а в которых можно найти только домыслы и вымыслы.

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Indicators of the rural population mortality in Uzbekistan

Abstract: This article analyzes the level and structure of the causes of mortality of the rural population in the country. Given the appropriate conclusions and practical recommendations, taking into account that in the strategy to improve the quality of public health will improve health system performance and improve policies to reduce mortality and increase life expectancy of the rural population.

Keywords: demography, mortality, causes of death, the rural population, self-preservation behavior.

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Показатели уровня смертности сельского населения в Узбекистане

Аннотация: Статья посвящена анализу уровня и структуры причин смертности сельского населения в республике. Даны соответствующие выводы и практические рекомендации, учет которых в стратегии повышения качества общественного здоровья позволит повысить эффективность работы системы здравоохранения и совершенствовать политику по снижению смертности и повышению продолжительности жизни сельского населения.

Ключевые слова: демография, смертность, причины смерти, сельское население, самосохранительное поведение.

В докладе, посвященном Международной Конференции по народонаселению и развитию, состоявшейся 5-13 сентября 1994 г. уделено большое внимание вопросам смертности и основной деятельности по её сокращению. В VIII главе «Здравоохранение, заболеваемость и смертность» описано положение в соответствии с Алма-Алтинской декларацией, где указано, что все страны должны стремиться сокращать смертность и заболеваемость и обеспечить доступ к первичному медико-санитарному обслуживанию.

Статистическим достоинством показателей смертности является и достаточно высокая надежность и объективность, что отличает возможность сопоставления данных. Сам показатель смертности может рассматриваться как интегральный критерий состояния здоровья населения.

По оценке специалистов ООН, в 2013 г. по уровню смертности Узбекистан занимает 63 место из 205 стран мира [1].

Исследование проблем смертности являются одним из центральных в демографических исследованиях. Однако демографические аспекты смертности и продолжительности жизни населения Узбекистана, одной из крупнейшей по численности стран СНГ, не были в достаточной мере изучены. В основном ряд исследований смертности и ОПЖ были посвящены научные труды в области медицины. Вопросами здоровья населения, смертности и продолжительности жизни посвящены работы некоторых отечественных специалистов, к их числу относятся труды М. Ахмедова, Р. Азимова, Р.К. Юсупов, Б. Сарымсаковой и других авторов.

Понимание важности и актуальности проблемы рассматриваемого показателя заложено в таком нормативно-правовом документе как: Закон Республики Узбекистан от 29.08.1996 г. № 265-I «Об охране здоровья граждан»; принят ряд целевых государственных программ, таких как: год «Здорового поколения» (2000 г.), год «Здоровья» (2005 г.) и др. Наряду с этим, с Узбекистаном сотрудничают международные исследовательские организации: Всемирный Банк, Азиатский Банк развития, USAID (через такие организации как NOPE, Abt AssociatesInc. и др.), подразделения ООН: ЮНФПА, ПРООН, ЮНИСЕФ, ВОЗ, УНП ООН CDC, Японское международное агентство по развитию, Красный Крест и Полумесяц и др., выступающие спонсорами и

партнерами-координаторами по развитию исследований и мониторингу в области демографии и здравоохранения.

В республике прослеживается тенденция улучшения уровня смертности в сторону ее снижения, как в сельской местности, так и в городской.

За период 2000-2012 гг. общий коэффициент смертности сельского населения сократился с 4,8 до 4,6 случаев на 1000 населения, а городского с 6,6 до 5,1 соответственно. Абсолютные показатели сельской смертности немного возросли с 61,1 тыс. в 2000 г. до 66,2 тыс. в 2012 г., аналогичная ситуация среди городских жителей, где число умерших увеличилось с 74,5 тыс. до 79,5 тыс. соответственно.

Основной причиной более низкого значения смертности сельского населения, относительно городского показателя обусловлен, прежде всего, спецификой возрастного состава населения (большим удельным весом детей/молодежи и низкой долей лиц пенсионного возраста в возрастной структуре населения).

Рассмотрим изменения смертности сельского населения по основным причинам смерти, суммарная доля которых в общей смертности сельского населения составляет свыше 95%.

Основной и растущей причиной смерти сельского населения в Узбекистане являются болезни системы кровообращения. Доля умерших сельчан от данного заболевания в общей смертности увеличилась с 40,1% в 2000 г. до 62,8% в 2012 г.

Второе ранговое место в структуре смертности занимают новообразования, их доля возросла соответственно с 5,7 до 6,8%. Болезни органов дыхания заняли третье место, с позитивной динамикой, смертность по этой причине сократилась почти в 3 раза. Следующие места занимают смертность от болезней органов пищеварения (рост на 1,5%) и от несчастных случаев, отравлений и травм (уменьшение на 30%).

Анализ по причинам смерти чрезвычайно важен. При разработке политики, направленной на снижение смертности, в первую очередь, необходимо определить ее основные причины, чтобы потом выделить факторы, определяющие человеческие потери от этих причин. Разработанная таким образом стратегия в области смертности будет воздействовать на эти

факторы с целью снижения смертности от тех или иных причин смерти и, следовательно, роста продолжительности жизни.

Представляют интерес гендерные различия смертности сельского населения. Стоит отметить, что в течение периода 2000-2007 гг. смертность сельских мужчин была выше смертности сельских женщин в среднем в 1,1 раза. Начиная с 2008 г. по 2012 г. это разница увеличилась. Так, число умерших мужчин в 2012 г. составило 36,3 тыс., против женского показателя 29,8 тыс. (разрыв в 1,2 раза). Такая разница обусловлена биологическим фактором, заключающимся в природной выносливости женского организма и более высокой устойчивости к стрессовым ситуациям. Также, половые различия в заболеваемости и смертности частично обусловлены социальными факторами, такими, как высокая мужская занятость, традиционное распределение ролей женщины и мужчины в обществе и др. Причин высокой смертности среди мужчин очень много, но определяющим фактором, на который способен повлиять отдельный индивидуум является его образ жизни.

Выявлены различия в мужской смертности городского и сельского населения. По данным статистики, число умерших сельских мужчин составило 38,6 тыс. в 2000 г. против городских – 32,2 тыс. В 2012 г. наоборот, численность умерших сельчан была в 1,2 раза ниже, числа городских мужчин. Одним из факторов, определяющих эти различия, является изменения в административно-территориальном устройстве населенных пунктов [2], на основании которых более 600 сельских населенных пунктов были преобразованы в городские.

Аналогичная ситуация в женской смертности между городом и селом. Так, число умерших женщин в сельской местности составило 35,9 тыс. в 2000 г., в то время как у умерших городских женщин это значение было на уровне 28,9 тыс. В 2012 г. ситуация изменилась с точностью до наоборот. Число умерших сельских женщин составило 29,8 тыс. против городского показателя у женщин – 36,7 тыс., разница в 1,2 раза.

Об улучшении ситуации со смертностью свидетельствует повышение среднего возраста умерших сельских жителей (с 53,3 до 60,5 лет в 2012 г.). При этом среди мужчин увеличение произошло на 8,6 лет, среди женщин на 5,9 лет.

Средний возраст умерших женщин во все изучаемые годы выше среднего возраста умерших мужчин, в 2000 г. – на 7,6 лет, в 2012 г. – на 4,9 лет.

Анализ представленных статистических данных смертности сельского населения позволяет сделать следующие выводы:

- за рассматриваемый период тренд смертности на селе стал положительным, что связано, как с улучшением социально-экономического положения на селе, так и с реализацией Целевых региональных программ в здравоохранении, которые предусматривают улучшение качества медицинской помощи и здоровья населения;

- смертность сельчан в 1,2 ниже смертности городских жителей, что обусловлено возрастной структурой сельского населения, а именно высокой долей детей и незначительной долей пожилого населения;

- на первом месте по частоте смертей на селе находятся болезни системы кровообращения, доля которых в последние годы составляет свыше 60%;

- одной из причин формирования различий между высокой сельской мужской и более низкой женской смертностью в 1,2 раза, является биологический фактор, т.е. природная выносливость женского организма. А также образ жизни и самосохранительное поведение мужчин, которые составляют так называемую «группу риска».

Остаются резервы в снижении общей смертности сельского населения, что позволяет сделать следующие основные организационные предложения по улучшению состояния здоровья и снижению смертности.

Во-первых, необходимо повышение доступности общеврачебной и специализированной медицинской помощи к сельскому населению. Должны войти в практику постоянно действующие выезды специалистов (выездные бригады), прежде всего, кардиологов, онкологов, пульмонологов, гастроэнтерологов. Они должны быть оснащены необходимым портативным передвижным медицинским оборудованием и аппаратурой для квалифицированного решения непосредственно по месту жительства сельчан вопросов раннего выявления, назначения и коррекции лечения, своевременного направления на оперативное лечение и создания действенной системы контроля выполнения назначений и рекомендаций. Ситуация со смертностью сельского населения и склонность

сельских жителей к затягиванию своего обращения к врачам требует изменения позиции главных врачей центральных районных больниц.

Во-вторых, целесообразно обратить внимание на наличие фоновых сопутствующих заболеваний (в т.ч. сахарного диабета, артериальной гипертензии и др.), смертельных осложнений, которые соответствующими нормативными документами никак не кодируются и не учитываются в анализе причин смертности населения. Все это не создает полного представления о механизме развития болезней и их осложнений и не способствует улучшению лечебно-диагностического процесса, здесь требуется решение на региональном уровне.

В-третьих, требует пристального внимания и контроля система заполнения «Свидетельств о смерти» в медицинских учреждениях, констатирующих факты смерти сельского населения, причем как врачебных, так и особенно фельдшерских. Достоверность учета причин смерти в учреждениях здравоохранения необходимо довести до 90%.

В снижении смертности, как ни в каком другом разделе социальной политики, важнейшим первостепенным методологическим принципом должен стать принцип системного подхода. Только совершенствование реализации на практике комплекса государственных, социально-экономических, медико-санитарных и других мероприятий, реально используемы для охраны и улучшения здоровья каждого сельского жителя, особенно населения молодого возраста и мужчин трудоспособного возраста могут привести к постепенному снижению смертности сельского населения. Стоит отметить, что возрастные «рабочие» группы являются наиболее продуктивными, здоровыми с накопленным жизненным и производственным опытом (преимущественно 35-49 лет), о чем свидетельствует средний возраст всех занятых в экономике, который приходится на эту категорию людей, в 2012 г. он составил – 36,7 лет. При прочих равных условиях их вклад в развитие экономики выше, чем вклад других возрастных групп. Одно из главных экономических последствий преждевременной смертности населения в трудоспособном возрасте - это уменьшение численности трудового потенциала страны и связанное с этим недополучение валового внутреннего продукта. Это касается потенциальной возможности оценить степень влияния демографических процессов на экономическое развитие республики.

Сокращение смертности от социально-значимых заболеваний является вполне достижимым и управляемым процессом, о чем свидетельствуют цифры и факты, а также является составляющим фактором в увеличении ожидаемой продолжительности жизни по одной из рассматриваемых причин смерти.

Демографический анализ смертности населения необходим при разработке мероприятий по снижению смертности во всех возрастах, повышению экономической эффективности использования имеющихся трудовых ресурсов за счет снижения уровня заболеваемости и преждевременной смертности населения, что способствовало бы увеличению ожидаемой продолжительности жизни населения и повышению качества жизненного потенциала республики.

Таким образом, за счет эффективности системы здравоохранения можно уменьшить смертность и сократить заболеваемость населения. Сведения о состоянии здоровья населения имеют особое значение для планирования здравоохранения, задачей которого является разработка мероприятий, направленных на улучшение медицинского обслуживания населения, на основе изучения социально-экономических условий, данных заболеваемости, смертности и прочих показателей здоровья населения.

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Listener at APM under the President of the Republic of Uzbekistan

Certain aspects of public control of Mahalla institutions in Uzbekistan

Abstract: This article deals with the further democratization and liberalization of government, civil society, the creation of the system of state social order, strong state, state security and the security of citizens, the adoption of laws. Furthermore, special attention is taken the analysis of some aspects of public control of Mahalla institutions in Uzbekistan.

Keywords: construction law, Mahalla, an open democratic state, market economy, formation of civil society, the state and public control.

A manifestation of political liberalization becomes a partial transfer of government functions to non-governmental organizations, including more than two thousand associations, foundations, associations and Civil Society, Mahallas. A new factor in the democratization of public life in Uzbekistan has become a growing activity of political parties. Their civil position maintains the balance of interests in society, serves as a counterweight to government agencies. Competing views and ideas more confidently declares itself in law, the work of the media. Currently, our state faces new challenges of reforming the state, which, according to the President, is to further democratization of public life, based on the diversity and strengthening the role of political institutions and non-governmental associations, as well as increasing political participation.

In accordance with the Constitution of the Republic of Uzbekistan, which proclaimed targets construction of a legal, open, democratic state with a market economy and the development of civil society, as well as on the basis of the will of the people as expressed in the referendum, the basic principles underlying the work on improvement of the legislation are: the rule of law, the balance between the legislative, executive and judicial branches of government, the real independence of each of them; democratic legal policy reform; guaranteeing human rights and

freedoms on the basis of universally recognized principles and norms of international law; progressive liberalization of all aspects of political life, state and public construction; providing guarantees and conditions for the further strengthening and development of non-state non-profit, non-governmental organizations and other democratic institutions of civil society; comprehensive strengthening of self-government bodies and the gradual transfer of certain powers from the central government controls the field, establish and strengthen mechanisms of public control over the activities of executive authorities, including law enforcement agencies. That is why in our country, to determine for themselves as a priority objective the formation of a strong civil society, step by step, consistently carried out reforms to establish and improve the public control, the institutional arrangements for its implementation.

An important step in the gradual development of the institute of public control become the ideas set out in the Concept of further deepening democratic reforms and formation of civil society in the country, adopted by parliament in 2010. In accordance with this, the strategic value of the document provided by the adoption of several laws that are crucial for the consistent development of civil society. Among them are the draft laws "On Public Control in the Republic of Uzbekistan", "On Social Partnership", "On transparency of activity of bodies of state power and governance" aimed at creating an integrated system to ensure public control over the executive power, the improvement of mechanisms for effective implementation of this type of control. Particular attention is paid in Uzbekistan systemic and consistent measures for the strengthening and development of the family as the foundation of society, strengthen the role of mahallas in the practice of the targets on the establishment of a healthy family. The subject of special consideration was the realization of the Concept of further deepening democratic reforms and formation of civil society in the country, as well as the State program "Year of the Family", "The Year of a healthy child", aimed at increasing the role and importance of self-government bodies, the comprehensive strengthening of the family institution, and new draft law "On Civil Society".

Therefore, the state pays special attention to the implementation of the most important tasks of strengthening the legal and socio-economic protection of civil self - that is, the mahalla. Mahalla - a unique form of government, showing rich historical

experience of our people - is today a direct and active participant in all democratic reforms. Uzbekistan has accumulated a wealth of experience in the development and strengthening of self-government - the basis of civil society. For the further development of this historic institution like mahalla is particularly important Decree of President Islam Karimov "On additional measures to stimulate the labor of employees of self-government", which became a clear manifestation of decent work evaluation of those working in this field, their contribution to the spiritual and moral education of youth, supporting and strengthening the institution of family, stability and harmony in society. In conclusion, we note that, indeed, the mahalla - this is an important and historic public institution that plays an important role in the lives of citizens living on its territory, a kind of synthesis of the state of the structure and the social movement. It plays an important role in the formation of civil society.

We think that the Mahalla will be more support in the field of social protection, the development of small business, private entrepreneurship and craftsmanship since its guarantor is the law of the Republic of Uzbekistan "On the bodies of self-government", which provide for the further expansion of the powers of self-government by transferring part functions of state bodies. "That support the government through the bodies of self-government of small business makes it possible to achieve the objectives of social and economic reforms. Today the institute of public control is becoming one of the most important elements to ensure effective feedback of society and the state, its relationship to the ongoing reforms in the country. Moreover, the participation of citizens in managing the affairs of society through self-government institutions is considered the most effective form of social control. In the process of democratic renewal of the country in Uzbekistan adopted more than 200 laws aimed at strengthening the role and importance of civil society institutions in solving urgent social and economic problems of citizens. The legislation of Uzbekistan provides for the participation of self-government in the implementation of public control over the activity of state and local governance, enterprises and organizations located in their territory.

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Thus, the country has established and rapidly developing legal framework of public control. At the same time the effective implementation of this framework depends on the level of political culture, legal conscience of citizens, and primarily on the maturity of civil institutions. Representing the interests of different strata of the population, they are an important factor in the protection of democratic values, human rights and create conditions for the manifestation of the citizens of their potential, improve their social, socio-political activity and legal culture, providing a balance of interests in society.

With the adoption of the Law "About parliamentary control" will create a single basic legal act that clearly regulates the procedure for parliamentary control, specific powers of subjects, its implementing their functions and mechanisms of interaction with other bodies of state control, as well as determining the consequences for those who have violated legislation. All these aspects are taken into account in the new draft law.

"The parliamentary system in our countries have much in common, - said a member of the French Senate Nathalie Goulet. - The French Parliament Works Permanent Commission, to monitor the activities of the government and executive authorities. Unfortunately, the results are not always taken into account by public authorities. Therefore, in 2008, it was carried out a constitutional reform to give more powers to the Parliament, including in the field of control. I got acquainted with the work of the parliament of your country, as well as the progress of the legal experiment on approbation of the draft law "On transparency of activity of bodies of state power and control". This is a great example. Uzbekistan has not only created a tool of parliamentary and public control, but also to develop new, more effective. This indicates that Uzbekistan steadily moving towards democratization".

"The Bundestag is a variety of parliamentary control mechanisms, - said a member of the German Bundestag Joachim Pfeiffer. - Control right has both the

parliament itself, and some party factions, the deputies. At any time, they can send a request for information to the members of the government, to which he must respond. Of course, you need balance, a balance between government and parliament. Democracy exists only when there is a separation of powers, the courts are independent, and the Parliament can effectively monitor the work of the government. I see that in Uzbekistan are the big reforms to ensure this process. I also think that the direction in which your institution operates today Ombudsman is correct. "As pointed out by President Islam Karimov, the effectiveness of parliamentary control over the executive power is largely dependent on the active participation in the work of the media and the general public. The biggest challenge is that the parliament has become a conductor of democratic reforms aimed at creating a strong civil society. In this regard, of particular relevance is the adoption of the Law "On Public Control in the Republic of Uzbekistan", the draft of which has also developed on the initiative of the President. It will create a legal mechanism to control the society and civil institutions of the activities of bodies of state power and control, which will increase the involvement of citizens in the decision-making process. The draft law defines the types, forms and subjects such control, the powers of civil institutions in their dealings with government agencies and officials responsible for non-fulfillment of the legislation in this area. In addition, it provides for the implementation of public expertise of draft legal acts and programs of public importance, which will take into account the interests of various strata of the population in the adopted documents.

"Both in Europe and in the United States there are many civil society organizations that are defending the interests of different groups, exercise such control, - said vice-president of the International Center for Not-Borzhelli Natalia (USA). - Uzbekistan relations in this sphere have already regulated by a number of laws. However, the level of development of your society has caused the need for a separate law on public control. The country is doing a great job with the participation of civil society institutions to discuss and finalize its project. And it produces results. Since that time, when I first read this bill, it is much improved. Its adoption, will certainly contribute to the deepening of democratic processes in Uzbekistan. "In our country, in practice, there are already various forms of social control are regulated in separate laws. For example, it provides Mahalla, functions and powers which in this

area is significantly strengthened by the adoption of the new edition of the Law "On bodies of self-government". Activity in defending the legitimate interests of the population and show in the country of numerous NGOs.

MPs who are elected representatives of the people and designed to ensure its interests, should work more closely with expressing their various associations, to use as an alternative information provided by research centers, media and NGOs - to identify the needs of target groups and promote their satisfaction through the adoption of specific decisions on the results of the analysis and strict controls over their implementation. Thus, the parliamentary control is a logical extension of public control, the results of which form the basis for the implementation of the Parliament of their supervisory functions. "In today's world it is very important the control of parliament and civil society over the activities of government and state agencies, including the use of the state budget - said the director of the Cabinet Economic, Social and Environmental Council of France, Christian Le Roux. - The fact that in Uzbekistan there are such forms of control, is the real proof of democracy. In my understanding of democracy development includes several components. So, it is the interests of the population in the drafting of legislation, the involvement of civil society in this process, and then - the adoption of laws by Parliament and, finally, to ensure their full implementation. In Uzbekistan, all of these factors act. And of great importance is the fact that the implementation of these measures have the political will, they are taken on the initiative of President Islam Karimov. This clearly demonstrates the commitment of your country to true democracy. "This issue has been studied international experience in improving the legal framework, enforcement practices on the use of the main forms of parliamentary and public control, as well as the mechanisms of interaction of Parliament and civil society institutions in its implementation.

"It is important not only to adopt a good law, but most importantly - to make it work effectively, - said Head of the Secretariat of the Constitutional Court of Hungary Diana Swords. - In this regard, as the experience of Hungary and, first of all need training themselves heads of government agencies and decision-makers that they recognize the need to openly provide information to the public. In addition, of great importance to raise awareness of citizens about their rights, as reflected in the new laws. We were able to get acquainted with the process of drafting laws in Uzbekistan

and in any reforms that preceded it. I am sure that the democratic reforms carried out in this direction are very important for the development of your country. "To be effective, this mechanism is very important as improving the competence of members of parliament and legal culture in the society and creating the conditions for openness and transparency of public bodies. Currently, the country held a unique legal experiment - for testing in Bukhara and Samarkand regions developed a draft law "On transparency of activity of bodies of state power and control". Experts stress that the high effectiveness of the Uzbekistan-scale democratic reforms for the modernization and renewal of the country are of great importance. They concluded that, as in developed democracies, in Uzbekistan the process of improving the forms and methods of the parliamentary and public control is continuous and consistent and in line with best global trends. It was stressed that the emerging democratic institutions and stable political and legal culture serve as a guarantor of the irreversibility of positive change and dynamic promotion of Uzbekistan on the way of deepening democracy.

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Abd Ibn Humayd Al-Kashshi Great Muhaddith of Central Asia

Abstract: This article describes those who have lived a great scholar and muhadith Abd ibn Humayd al-Kashshi in Central Asia in medieval times. Information is also provided for those who work in schools in Central Asia Hadith and studied their occupation.

Keywords: Movarounnakh, Muhaddith, hadith, musnad, sahih, Bukhari, Tirmidhi, Marvaziy, Shash, Caches.

In the history of Islam the 9th-12th centuries are considered to be the golden period as during this period science and Islamic civilization developed highly and such sciences as Hadith, law, philology, logic, interpretation and commentary writings reached their highest peak. The representatives of these branches of science — Khoresmis, Bukharis, Samarqandis, Termizis, Nasafis, Keshis, Shashis and Ferganis appeared on the scene of the science of that time. During the years of Independence the lives, activities and scientific careers of most of these scholars have been studied and investigated, but much is still to be done in this area.

One of such connoisseurs of the science of Hadiths and the teacher of Imam Bukhari, Imam Termizi and Imam Muslim ibn Hajjaj was Abd ibn Humayd ibn Nasr al-Kashshi (Keshi) who was titled as "Hafizu-l-Hadith", "Sahibu-l-musnadi-l-kabir" and "Sahibu-t-tafsiru-l-kabir". His full name was Abdulhamid ibn Humayd ibn Nasr Abu Muhammad Hafiz al-Keshi. He is supposed to have been born in 170/786 in Kesh [22, 44-46]. However, some sources say that he was born later than 170 in accord with Muslim calendar. Abd ibn Humayd ibn Nasr al-Kashshi was the teacher and tutor of three great experts in the science of Hadiths — Imam al-Bukhari, Imam at-Termizi and Imam Muslim ibn Hajjaj.

Abd ibn Humayd ibn Nasr al-Kashshi was one of the leading specialists in the field of Hadiths, law and philology and was honoured as "al-Imam, al-Hafiz, al-Hujjat, al-Jawal", etc. [17, 236]. In some other historical sources, he was also exalted with pennames as "Keshi, Kesi, Laysi, Ka'bi", etc. [9, 6-14]. The fact that different historians approached to his personality and legacy from different points of view shows that his legacy has not been investigated well enough yet [21, 6-20].

Abd ibn Humayd ibn Nasr al-Kashshi is one of the earliest representatives of the science of Hadiths who was educated in Maveraunnahr and paid great attention to the correctness and accuracy of Hadiths.

Abd ibn Humayd ibn Nasr al-Kashshi got his first education in Maveraunnahr. At the beginning of his career, he began to attend the best-known schools of Bukhara, Samarkand and Kesh. As was mentioned in the book "Tarikh al-Islam" (The History of Islam) by a historian Shamsuddin az-Zahabi, Abd ibn Humayd ibn Nasr al-Kashshi visited more than two hundred cities of the Islamic world in search for knowledge. Wherever he attended, he had scholarly talks with the leading specialists of the science he was interested in, took an active part in the debates and discussions of the type, and collected Hadiths with all their chain of roviys [18, 425].

At the time when Abd ibn Humayd ibn Nasr al-Kashshi and other experts of Hadiths of his time began their careers, it was already two hundred years since the time of death of Prophet Muhammad (saas) and most specialists had gone to different parts of the world with the purpose of spreading the teachings of the Prophet (saas). Wherever they went, they tried to spread and disseminate the ideas of the Noble Qur'an, Hadiths and other teachings of Prophet Muhammad (saas). It was natural that the main purpose of scholars was to collect and process the sayings of the Prophet (saas) and disseminate them among the ordinary people. Abd ibn Humayd ibn Nasr al-Kashshi visited Baghdad, Basra, Kufa, Syria, Naysabur, Mecca, Medina and other cities of the Islamic world, and there he not only attended the lectures of the leading specialists and took part in the scientific discussions of different subjects dealing with Hadiths but also taught lessons to the students and educated his followers on Hadiths and their interpretations.

Abd ibn Humayd ibn Nasr al-Kashshi had relations on different fields of knowledge and science with many specialists. We would like to mention the names of some well-known scholars. They were: Abu Davud Taylasi, Nazr ibn Shamil

Marvazi, Yahya ibn Adam, Yazid ibn Kharun, Abu Bakr ibn Abu Shayba, Abu Valid Taylasi, [4.304]. Abu Ali Hanafi, Abdurrahman ibn Abdullah Dashtaki, Umar ibn Yunus al-Yamami, al-Vaqidi and some other specialists in the science of Hadiths, interpretation, etc. Abd ibn Humayd ibn Nasr al-Kashshi provided the names of these experts in his book "Tafsir al-Kabir" and "Musnad al-Kabir" and included some Hadiths mentioned by these scholars and classified them according to his own principles of classification [19, 78].

In his book "A'lam an-Nubuwwat", Imam al-Bukhari writes the following about Abd ibn Humayd ibn Nasr al-Kashshi: "Abd ibn Humayd is actually Abdulhamid Abu Muhammad. He was one of the Sheikhs of Muslim ibn Hajjaj" [5, 10].

One more example in this respect: as was submitted for consideration in the book "Tarikh al-Islam", "the scholars and experts in different fields of science often used to get together for discussions and scientific debates on Hadiths and their interpretations at the time when Abd ibn Humayd ibn Nasr al-Kashshi lived. These discussions were spent under heated debates and question-answer principles. In one of the debates taken place in Nishapur a leading expert in Hadiths, a famous scientist of his time Yahya ibn Muhammad (the son of the estimated scholar Muhammad ibn Yahya) and Muslim ibn al-Hajjaj participated. Yahya ibn Muhammad was talking about a problem when a man whose name was Davud ibn Ali suddenly said: "You, young man! Stop talking and keep silence!" Imam Muslim who was present at this debate could not help little Yahya ibn Muhammad. When young Yahya ibn Muhammad came home and told his father about what had happened at the meeting his father asked him: "Who else was present at the debate?" Young Yahya said: "Muslim was but he did not help me". At this moment father Muhammad ibn Yahya got dissatisfied and said: "I will take back all I have given Muslim" and thus expressed his dissatisfaction. When Imam Muslim was informed about this rejection, he had to give back everything that he had taken from Muhammad ibn Yahya and said: "I will not take any Hadith from you and will not interpret them any more". So they got quarrelled. After this event, Imam Muslim became a student of Abd ibn Humayd ibn Nasr al-Kashshi and used to collect and interpret Hadiths from him" [17, 91].

The fact that such a great figure in the field of Islamic science as Imam Muslim became a student of Abd ibn Humayd ibn Nasr al-Kashshi shows that the latter was

a man with wide knowledge and outlook and an expert in the field of Hadiths who had no equals.

In his book "Siyar a'lam an-nubala", Shamsuddin az-Zahabi mentions that Imam al-Bukhari, Imam at-Termizi and Imam Muslim used to take Hadiths from the works of Abd ibn Humayd ibn Nasr al-Kashshi and interpreted them. They were considered to be the followers of the latter [17, 235].

Historical sources inform us that Abd ibn Humayd ibn Nasr al-Kashshi's son Muhammad ibn Abd also used to take and interpret Hadiths from his father's works who was considered to be the leading specialists in the science of Hadiths [18, 425].

The list of specialists in the field of Hadiths who took Hadiths from Abd ibn Humayd ibn Nasr al-Kashshi is too long and their number is great. Some of them are: Ibrahim ibn Hazm ibn Fakhr al-Lahmi Shashi, Abu Ma'az U'badi ibn Idris ibn Bukhash Keshi, Sahl ibn Shazavi al-Bukhari [40, 304], Bakr ibn Mirzaban, Shurayh ibn Abu Abdullah Nasafi az-Zahid, Muhammad ibn Abd ibn Omir as-Samarqandi, Ibrahim ibn Khuzaym ibn Qamir ash-Shashi, Abu Sayyid Hatam ibn Hasan Shashi, Salman ibn Israil ibn Jabir Khojandi, Abu Saidshah ibn Ja'far ibn Habib Nasafi, Abu Bakr Muhammad ibn Umar ibn Mansur Keshi, Muhammad ibn Musa ibn Huzayl al-Nasafi, Mahmud ibn Anbar ibn Nairn al-Azdi an-Nasafi and some other experts in Hadiths, law, history, etc. [17, 235].

As has been mentioned in one of the sources, one of the last followers of Abd ibn Humayd ibn Nasr al-Kashshi is considered to be Ibrahim ibn Khuzaym ibn Qamar ash-Shashi [20, 6/4].

Abd ibn Humayd ibn Nasr al-Kashshi was one of the famous scientists in religious sciences who were educated in Maveraunnahr. His field of interest was very wide. He was interested in Hadiths and their interpretations, Arabic grammar and Hanafian law, and he created precious works in these fields of science respectively. In his "Kitab al-ansab", Abd ibn Humayd ibn Nasr al-Kashshi deals with the rules of the Arabic grammar which includes such booklets as "Kitab ala-l-huruf va-l-mu'jam", "At-Tasarruf" and "Kitab fa'altu va afa'ltu". These books occupy a special place in the list of books as the first pioneers created in Maveraunnahr in these fields of science [12, 149].

In his book "Kashf az-zunun", Hoji Khalifa writes that Abd ibn Humayd ibn Nasr al-Kashshi was also the author of such books as "Tafsir Abd ibn Humayd", "Sulasiyat Abd ibn Humayd Kashshi" and "Musnad Abd ibn Humayd" [7, 453-522].

Abd ibn Humayd ibn Nasr al-Kashshi was also a well-known lawyer in the field of teaching the Hanafian order. He made a great contribution to spreading and disseminating the teachings of the Hanafian trend in Maveraunnahr. The number of scientific works created by Abd ibn Humayd ibn Nasr al-Kashshi is great but we have perfect information about the following books of the author: "Musnad Abd ibn Humayd", "Tafsir Abd ibn Humayd", "Sulasiyat Abd ibn Humayd Kashshi", "Kitab ala-l-huruf va-l-mu'jam", "At-Tasarruf" and "Kitab fa'altu va afa'ltu".

Some selected parts of the book "Musnad" have reached us and this work was published under the title of "Al-Muntahab min Musnad Abd ibn Humayd" in Cairo in 1988 at the publishing house "Maktabat-Sunna" by the editors Subhil Badri as-Samarani and Mahmud Muhammad Khalil as-Sa'idi.

The book "Musnad" by Abd ibn Humayd ibn Nasr al-Kashshi is a source of great importance because the principles of choice of Hadiths, their principles of collection, classification and interpretation as well as styles of writing are good, clear, reliable and readable.

This book is known in the history under the title of "Musnad Abd ibn Humayd". It is one of the reliable and rare books in the Islamic world because it begins with the names and under the witnesses of the most famous and respectable figures after Prophet Muhammad (saas) such as Abu Bakr Siddiq, Umar ibn Hattab, Uthman ibn Affan and Ali ibn Abu Talib, and the Hadiths provided in the book were borrowed from those estimated followers of Prophet Muhammad (saas). For instance, the first seven Hadiths were borrowed from Abu Bakr Siddiq, thirty-eight Hadiths from Umar ibn Hattab, nineteen Hadiths were taken from Uthman ibn Affan and thirty-three Hadiths from Ali ibn Abu Talib. They were classified and listed according to the degree they earned in the Islamic science and included into "Musnad".

"Musnadi Abd ibn Humayd" is a famous book that includes 1599 Hadiths in total from fifty-seven sahabas and each Hadith is given with its full characteristic features and its place in the list of classification [1, 46].

The fame and wellness of "Musnadi Abd ibn Humayd" is in the fact that the Hadiths borrowed from Abd ibn Humayd ibn Nasr al-Kashshi's this book and "Tafsir"

are mentioned and praised in several solid and famous books in the Islamic world. For instance, in "Ad-Durru-l-mansur" consisted of ten volumes the Hadiths borrowed from them are mentioned in, 2205 places [2.10-20]., in Imam Shavkani's book "Fathu-l-qadiyr" involving twenty-four volumes in 689 places [11.8]. and in Abu Ja'far Tabari's "Tafsiru Tabari" in 45 places [15, 20].

In Imam Muslim's book "As-Sahih" 138 Hadiths, [16]. in Imam at-Termizi's book "Sunani Termizi" 152 Hadiths are borrowed from "Musnadi Abd ibn Humayd" by Abd ibn Humayd Kashshi [14]. These facts show that "Musnadi Abd ibn Humayd" was famous enough to be acknowledged by the leading experts in the science of Hadiths.

Abd ibn Humayd Kashshi was an acknowledged expert in Hadiths and law. He was also a very good specialist in analysing the quality of Hadiths. One more important book that belongs to his pen was "Tafsir Abd ibn Humayd". It was studied by a lawyer Mukhlif ibn Banihi al-Urf and published in 2004 in the publishing house "Dor ibn Hazm" under the title of "Qit'atun min tafsir al-Imam Abd ibn Humayd" (A Part from Abd ibn Humayd's Tafsirs). Consisting of one volume, the book contains some interesting information concerning the Suras¹ from the Holy Qur'an "Al-Imran" and "An-Nisa" characterizing them from different points of view, some information about the author of the book, the importance of the book, the correctness and accuracy of the information provided in the book.

Some selected materials from the works "Musnad ibn Humayd" and "Tafsir Abd ibn Humayd" created by Abd ibn Humayd Kashshi have reached us.

Historical sources unanimously point out that Abd ibn Humayd Kashshi died in 249/863 but the place of his death is shown in different sources differently.

1. The author of the book "Siyar a'lam an-Nubala" writes that Abd ibn Humayd Kashshi died in 249/863 in Damascus but he himself rejects his own information saying that Abd ibn Humayd Kashshi had never been to Damascus [10, 43].

2. The author of the historical book "Mu'jam" Ibn Qani mentions that Abd ibn Humayd Kashshi died in Kesh in 249/863 [10, 44].

3. A famous historian Shamsuddin Zahabi writes: "Abd ibn Humayd Kashshi died in 249/863. The information saying that Abd ibn Humayd Kashshi died in Damascus is wrong. They are lying about the place of death of Abd ibn Humayd

Kashshi because nobody had seen him in Damascus and he had never been to this city" [17, 236].

4. Shamsuddin az-Zahabi's book "Tarikh al-Islam" (The History of Islam) provides information that Abd ibn Humayd Kashshi died in 249/863 in Samarkand. The correctness of this information is supported in a piece of information borrowed from "Tarikhi Bukhara" (The History of Bukhara) by an expert in Hadiths from Maveraunnahr Isa ibn Musa Abu Ahmad Bukhari Ghunjar (died in 412/1022): "We were informed about Hafs ibn Burkhash Kashshi by Ahmad ibn Abu Hamid al-Bahali that he was one of Abd ibn Humayd Kashshi's followers and last students, and he made some interpretations from his teacher's Hadiths. We had a sheikh called Yahya ibn Abdulghafur (Qadir). One day he fell ill seriously. And the man who was the author of the book "Musnad" Abd ibn Humayd Kashshi came to visit the Sheikh. Seeing their relations and respect to each other, we were sure that there was a heavenly love and brotherhood for the sake of Allah between the two great people. Abd ibn Humayd Kashshi visited him and prayed for his sake saying: "Hey, Allah! Don't leave me behind your precious slave!" On this day Sheikh Yahya ibn Abdulghafur died. Next morning Abd ibn Humayd Kashshi also died suddenly without any disease. And burial ceremony and prayers were held on the same day and both of them were buried". This information was also proved in Ibn Burkhash's book "Sanad" [18, 425].

The books titled as "An-Nujum az-zahira fi muluk Misr va-1 Qahira" [8, 261]. and "Mir'atu-l-jinan va ibrat al-yaqzan fi ma'rifati havadisi-z-zaman" [8, 274]. also contain information about the time of death of Abd ibn Humayd that he died in 249/863, but the place of death is not mentioned there. Relying on these sources, we can state that Abd ibn Humayd Kashshi died in 249/863.

Having discussed the information concerning the time and place of death of Abd ibn Humayd Kashshi and relying on his student's information as well as the information presented by a historian Shamsuddin az-Zahabi in his book "Tarikh al-Islam" (The History of Islam), we may come to a conclusion that the information stating Abd ibn Humayd Kashshi's death in 249/863 in Kesh is close to reality.

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Expressive and stylistic levels of phraseological units

Abstract: This article is devoted to the peculiarities of phraseological units according to the texts of the English press. They help to discover and analyze more topical and frequently used phraseological units nowadays and classify them according to expressive and stylistic features.

Keywords: phraseological unit, historicism, archaism, interstyle, stylistic.

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Экспрессивно-стилистические уровни фразеологических оборотов

Аннотация: Данная статья посвящена особенностям фразеологических единиц на материалах английской прессы. Использование материала английской прессы для анализа позволяет выявить и проанализировать наиболее актуальные и часто используемые фразеологические единицы в настоящее время и классифицировать их по экспрессивно-стилистическим свойствам.

Ключевые слова: фразеологические обороты, историзм, архаизм, межстилевой, стилистический.

Одной из характерных особенностей развития языка как адаптивной системы является постоянная изменчивость его словарного состава. Потребность фиксации процессов жизнедеятельности, их описании и изучении актуализировала развитие в современной лингвистике исследований, направленных на выявление особенностей языка как средства концептуализации

реальности и перенос смысловой нагрузки из одного лексического уровня на другой [1]. Например, переход в употреблении фразеологических единиц из разговорного жанра в публицистический.

Объектом изучения фразеологии являются фразеологические обороты, т.е. устойчивые сочетания слов, воспроизводимые в таком виде, в каком они закрепились в языке, какими их удерживает наша память. Во фразеологии изучаются как устойчивые сочетания слов, семантически эквивалентные слову, так и устойчивые сочетания слов, в семантическом и структурном отношении представляющие собой предложения, т.е. все воспроизводимые единицы без исключения.

Отношение тех или иных образований к фразеологическим явлениям или, напротив, выведение их за пределы фразеологических оборотов обуславливается не тем, номинативные это единицы или коммуникативные, а тем, извлекаются ли они из памяти целиком или творятся в процессе общения.

Такое определение объема фразеологии как языкового явления и, следовательно, предмета фразеологии как лингвистической дисциплины разделяется в настоящее время подавляющим большинством языковедов.

Основная задача, которая стоит перед фразеологией, – познание фразеологической системы языка в ее настоящем и истории, в ее связях и взаимоотношениях с лексикой и словообразованием, с одной стороны, и грамматикой – с другой. Так как фразеология, как языковое явление, представляет собой не простую сумму фразеологических оборотов, а определенную систему соотносительных и взаимосвязанных со словами и друг другом единиц, то в соответствующем разделе науки о языке фразеологические обороты должны изучаться с самых различных сторон. В настоящее время лучше всего они изучены с точки зрения их происхождения и стилистического использования в художественной и общественно-публицистической литературе. Однако не менее важным является изучение фразеологических оборотов и в других аспектах, а именно с точки зрения специфических свойств в ряду других значимых единиц языка, значения, семантической слитности, сферы употребления и экспрессивно-стилистической окраски, а также в сопоставительном и сравнительно-историческом планах.

В связи с большим количеством разнообразных фразеологизмов, с постоянным возникновением новых и выходом из употребления устаревших оборотов, а также с изменением значения того или иного устойчивого словосочетания возникла необходимость разработки разного рода классификаций.

Фразеологизмы в стилистическом отношении отличаются от слов и требуют особого подхода в изучении. Так, основная часть слов является нейтральной с точки зрения стилистической окраски, тогда как фразеологизм выражает «разного рода оценки и отношения говорящего к высказыванию, что является существенным элементом фразеологического значения» [2]. Однако подобное разделение, подходящее для рассмотрения любого фразеологизма, не является универсальным, так как изучением того или иного оборота вне контекста не сможет полностью «раскрыть» всей его семантики и возможностей сочетаемости с другими словами и словосочетаниями.

Различия фразеологизмов по стилистической принадлежности и экспрессивной окраске объясняются тем, что каждому из стилей языка присущи особые языковые средства и приёмы, выбираемые носителями языка из общенародного речевого запаса для выражения определённого содержания. Закреплённость или преимущественное употребление того или иного устойчивого сочетания слов в каком-либо стиле языка и связанные с этим его разнообразные экспрессивные свойства составляют сущность этих различий.

В процессе анализа английской прессы были выявлены следующие группы фразеологических оборотов с точки зрения их экспрессивно-стилистических свойств:

- межстилевые;
- разговорно-бытовые;
- книжные;
- архаизмы и историзмы.

Классифицируя, таким образом, фразеологические обороты, следует учитывать, конечно, что стилистическая дифференциация устойчивых сочетаний слов, равно как и принадлежность конкретного фразеологизма к той или иной группе, представляют собой явление историческое: в процессе развития нашей речи всё больше фразеологизмов становятся межстилевыми, интенсивно возникают новые группы и модели среди разговорно-бытовых и книжных

фразеологизмов, постоянно происходит экспрессивно-стилистическая переоценка отдельных фразеологизмов и т.д.

Межстилевые фразеологические обороты – это устойчивые сочетания слов, известные и употребляемые во всех стилях языка. Межстилевые фразеологизмы, как и межстилевые слова, являются, таким образом, простыми наименованиями явлений объективной действительности без какой-либо их оценки: сдержать слово, от всего сердца, игра слов, по свежим следам, под открытым небом, время от времени. Они экспрессивно не окрашены и общеупотребительны, а поэтому в ряду синонимичных слов и фразеологизмов всегда выступают как стилистически нейтральные.

Фразеологизмов межстилевого характера много, и их количество постоянно растёт. Однако – в отличие от межстилевых слов, составляющих основу лексики, – их всё же меньше, чем фразеологизмов, ограниченных в своём употреблении определённой сферой общения. Это обстоятельство объясняется тем, что подавляющее большинство фразеологизмов, эквивалентных слову, функционирует в русском языке в качестве образных синонимов слов и имеет какую-либо экспрессивно-стилистическую окраску: *to go to the fountain head* – обратиться к первоисточнику, *shoot at a pigeon and kill a crow* – маскировать свою истинную цель, *rouse smb's bile* – разозлить, рассердить кого-либо, *a bird in the hand* – нечто реальное, надежное, верное дело, *put the cart before the horse* – делать шиворот-навыворот, ставить с ног на голову, *a fair-weather friend* – ненадежный друг, друг до первой беды, *put up a front* – делать вид, стараться произвести впечатление, *roll each other's logs* – хвалить друг друга, оказывать взаимные услуги, *love in a cottage* – с милым рай и в шалаше.

Разговорно-бытовые фразеологические обороты – это устойчивые сочетания слов, преимущественно употребляемые в устной речи. Фразеологизмы разговорно-бытового характера отличаются от межстилевых фразеологизмов, с одной стороны, более узкой сферой употребления, а с другой – своей "сниженной" экспрессивно-стилистической окраской (ласкательный, бранный, иронический, презрительный, шутливый, фамильярный и др.). Эти специфические свойства разговорно-бытовых фразеологизмов особенно ярко видны при сравнении их с синонимичными общеупотребляемыми словами:

убежать – наострить лыжи, говорить – точить лясы, нетерпимо – мочи нет, разбогатеть – набить карман, быстро – со всех ног, смелый – о двух головах.

Почти все разговорно-бытовые фразеологические обороты имеют образный характер. Они вносят в речь оттенок непринужденности, простоты, даже некоторой "вольности": заморить червячка, свинью подложить, как сельди в бочке, тряхнуть стариной, верёвки вить, мелкая сошка, грязь месить, первый блин комом: *the devil alone knows* – бог его знает, кто это, а *hard case* – испорченный, неисправимый человек, закоренелый преступник, *like a cat on hot bricks* – «как кошка на раскаленных кирпичах», не в своей тарелке, как на иголках, *cover with the moon* – спать под открытым небом (о безработных, не имеющих пристанища), *go through the motions* – совершать привычные действия, делать что-либо автоматически, *give it in the neck* – дать по шее, дать нагоняй, устроить хорошую взбучку, всыпать по первое число.

Книжные фразеологические обороты – это устойчивые сочетания слов, преимущественно или исключительно употребляемые в письменной речи. Фразеологизмы книжного характера отличаются от разговорно-бытовых фразеологизмов, с одной стороны, совершенно иной сферой употребления, а с другой – своей "повышенной" экспрессивно-стилистической окраской (книжный, торжественный, патетический, поэтический и др.).

Специфические свойства книжных фразеологических оборотов яснее всего проявляются тогда, когда они сравниваются с синонимичными общеупотребительными словами: происходить – вести начало; сдаться – сложить оружие; деньги – золотой телец; женщины – женский пол; случай – игра судьбы; жизнь – житейское море: *wrestle with an angel* – бороться с могучим противником, *the bed of honour* – могила павшего в бою воина, братская, *the cask of Danaides* – бочка Данаид, бездонная бочка, а *niche in the temple of fame* – «ниша в пантеоне славы», бессмертие бочка, *pile Ossa on Pelion* – без надобности усложнять, заниматься бесплодным делом.

Особое место среди книжных фразеологических оборотов занимают устаревшие фразеологизмы: фразеологические историзмы и архаизмы.

Фразеологические историзмы – это фразеологические обороты, вышедшие из активного употребления и связи с исчезновением соответствующего явления действительности: частный пристав, мировой судья, держать стол: *the*

Black Death – «черная смерть», чума (эпидемия чумы в Европе в XVI веке), a cat o' nine tail – «кошка-девятихвостка» [плеть из девяти ремней. До 1881 года применялась для наказания в английской армии и флоте], dance upon nothing – быть повешенным, окончить жизнь на виселице, the Holy Office – святая палата (официальное название инквизиции), rask and peel – иметь дело, якшаться.

Фразеологические архаизмы – это фразеологические обороты, вышедшие из активного употребления в связи с вытеснением их другими устойчивыми сочетаниями слов или отдельными словами, оказавшимися более подходящими для выражения соответствующих понятий: биться об заклад (ср. спорить, держать пари); блуждающие звёзды (ср. планеты); Новый свет (Ср. Америка); сырная неделя (ср. масленица).

Степень устарелости фразеологических единиц может быть разной. Одни фразеологизмы в настоящее время совсем вышли из употребления и без специальных справок совершенно непонятны: рать держать – воевать; сидя на санях – на старости лет; миллиардный человек – тринадцатый, лишний человек; елисейские поля – рай. Другие фразеологизмы, чётко осознаваясь как устаревшие, почти всем известны и используются в стилистических целях: брать в жёны; Христа ради; чай да сахар; иметь честь; голубая кровь; чёрная сотня; как птица небесная: hither and thither - туда-сюда (hither - архаизм), make a cat speak – кому угодно развяжет язык, nick somebody with nay – сказать «нет», отказать кому-либо, дать отрицательный ответ, запретить кому-либо что-либо, (современный вариант пословицы: say somebody nay), flesh of ones flesh – плоть от плоти (flesh - архаизм плоть), an eye for an eye – око за око (eye – архаизм око).

Употребление устаревших фразеологических единиц с определённой художественно-выразительной и изобразительной целью, в известной степени, аналогично использованию устаревших слов. Они могут быть использованы для придания речи торжественности и патетики, для создания языкового колорита эпохи или комического эффекта. Однако стилистическое использование фразеологических историзмов и архаизмов иногда может быть подобным тому, какое характерно для фразеологизмов, входящих в активный словарный запас. В таком случае они подвергаются индивидуально-авторской обработке и выступают в контексте уже как фразеологические неологизмы.

Таким образом, исследование фразеологии помогает глубже понять историю народа, его отношение к человеческим достоинствам и недостаткам, специфику мировоззрения. Фразеологизмы – душа каждой культуры. Они передаются из уст в уста, от поколения к поколению. В лексическом составе языка фразеологизмы занимают значительное место, так как они образно и точно передают мысль, отражают различные стороны действительности. Фразеологизмы по большей части не только обозначают определённое явление действительности, но и характеризуют его, дают ему определённую оценку. В смысловом отношении они соответствуют единым понятиям, выражая значение предметности, процесса, качества, свойства или способа, имеют грамматические категории, определяющиеся морфологическими формами и синтаксической функцией в предложении, и выявляют закономерности в соотношении с общей системой языка, которые проявляются в лексической сочетаемости, стилистической и эмоционально-экспрессивной окраске значения и синонимических связях.

Исследование фразеологических оборотов позволяет решить целый ряд очень важных и сложных вопросов, касающихся значимых единиц языка в целом, характера лексического значения слова, соотношения синтаксической сочетаемости слов и их значения, различных вопросов словообразования и этимологии, ряда проблем орфографии, стилистики, художественной речи и т.д.

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The competitiveness of labor training professional as a demand of modern labor market

Abstract: In the given article the competitiveness of labor training professionals basing on the formation of educational component of person's human capital; it is outlined that the main ways of increasing of specialist's competitiveness is continuous education; the continuous education is distinguished as a way to satisfy new demands of society and human.

Keywords: competitiveness, labor training specialists, continuous education, humans' capital.

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Конкурентоздатність фахівців із трудової підготовки як вимога сучасного ринку праці

Анотація: У статті висвітлено конкурентоздатність фахівців із трудової підготовки з позицій формування освітньої складової людського капіталу особистості; підкреслено, що основними шляхами нарощення конкурентоздатності спеціаліста є неперервна освіта; неперервну професійну освіту розглянуто як можливість задовольняти нові потреби суспільства та людини.

Ключові слова: конкурентоздатність, фахівці із трудової підготовки, неперервна освіта, людський капітал.

Проблема конкурентоздатності – одна з найважливіших і найактуальніших питань сучасної педагогічної теорії і практики. Це пов'язано із тим, що на сьогоднішній момент існує тенденція заміни роботодавцями терміна “професіоналізм” і використання ними терміну “конкурентоздатність”. Саме тому актуально сьогодні розглядати питання професіоналізму крізь призму конкурентоздатності фахівця. Аналіз наукової літератури (Н. Герчикова, А. Ігнат'єва, В. Козирєв, А. Копитов, А. Полякова, С. Тадеуш, М. Фатхутлін та ін.) дозволяє стверджувати, що сучасні умови життя потребують від спеціалістів окрім професіоналізму ще низки елементів, які мають надпрофесійний характер і впливають на конкурентоспроможність.

Мета даної статті – висвітлити конкурентоздатність фахівців з трудової підготовки як важливу вимогу сучасного ринку праці.

Вітчизняні та зарубіжні науковці відмічають «зниження потенціалу кваліфікованих робітників в Україні у порівнянні з розвинутими країнами» [1, с. 97], що обумовлює необхідність прискорення модернізації освіти як умови підготовки конкурентоздатних фахівців та нарощення рівня людського капіталу.

О. Романовська визначає конкурентоздатність «як комплексну характеристику конкуруючого суб'єкта (об'єкта), що виявляється в здатності відповідати потребам ринку праці та витримувати конкуренцію, протистояти конкурентам» [2, с. 18]. Науковець уточнює поняття “конкурентоздатність майбутнього інженера-педагога” як інтегральну характеристику особистості, що виявляється в сукупності особистісних і професійних якостей, а також у професійно спрямованих знаннях і вміннях, орієнтаціях, які визначають успішність професійної діяльності щодо її організації в умовах вимог і запитів роботодавців і ринку праці [2, с. 20]. На нашу думку, цей термін підходить і під категорію фахівці із трудової підготовки, оскільки їх функціональні обов'язки щодо здійснення освітньої професійної діяльності є дуже схожими.

На початку XXI століття освіта, як складна інтелектуальна сфера, є тією рушійною силою яка за належної організації має стати визначальним чинником економічного та соціального росту країни. Як визначено в Конституції України: «Держава забезпечує доступність і безоплатність дошкільної, повної загальної середньої, професійно-технічної, вищої освіти в державних і комунальних навчальних закладах; розвиток дошкільної, повної загальної середньої,

позашкільної, професійно-технічної, вищої і післядипломної освіти, різних форм навчання». Причина такої уваги до освіти полягає в розумінні того, що найважливішою цінністю і основним капіталом сучасного суспільства є людина конкурентоспроможна, компетентна, здатна до пошуку і освоєння нових знань, співпраці, прийняття нестандартних рішень, творчого підходу до справи.

За систему підготовки конкурентоздатних фахівців із трудової підготовки, згідно з Конституцією та іншими законами України, відповідають різні освітні установи: навчальні, культурно-освітні та наукові заклади, науково-методичні та методичні установи, науково-виробничі підприємства, державні і місцеві органи управління освітою та самоврядування в галузі освіти. Але основними шляхами формування освітньої складової таких спеціалістів все ж таки залишаються три освітні ланки: професійно-технічна, вища та післядипломна освіта. Тому, на сучасному етапі формування нової освітньої моделі України реформу професійної та вищої освіти слід здійснювати синхронно зі змінами у навчальних закладах та в системі післядипломної освіти, а також у широкому контексті концепції розвитку людського капіталу.

Все більше стають важливими зміни у підходах до системи підготовки кваліфікованих робітників, оскільки від цього залежать основні чинники соціально-економічного розвитку країни. Процеси постіндустріального розвитку суспільства, сучасні виклики ринку освітніх послуг і праці корелюють зміни й характер освіти. У зв'язку з цим, на перший план виступає не лише спосіб виробництва та передачі знань а, власне, сама людина – її інтелектуальний потенціал. Після визнання та поширення теорії людського капіталу освіта перестала сприйматися як галузь невиробничого споживання. Нині вона розглядається як чинник формування освітньої складової людського капіталу. Переорієнтація суспільної думки в напрямку сприйняття ідей теорії людського капіталу стає відправною точкою у здійсненні освітніх реформ в Україні.

Стратегічним завданням реформування системи вищої освіти України на сьогодні є забезпечення конкурентоспроможності підготовки фахівців згідно рівню міжнародних стандартів. Цьому сприяла реалізація Болонського процесу на теренах освітнього простору України з врахування національних підходів до організації навчання, змісту освіти, традицій у підготовці майбутніх фахівців із трудової підготовки.

Інтеграція в світовий освітній простір сприяє тому, що суспільство стало приділяти увагу системі неперервної освіти людини. Неперервна освіта – це умова формування висококваліфікованого спеціаліста, оскільки для успішної професійної діяльності вже недостатньо здобути вищу освіту. Раніше основною вимогою щодо нарощення компетентності фахівців із трудової підготовки було отримання документу про проходження курсів підвищення кваліфікації кожні 5 років в системі післядипломної освіти, то сьогодні все більше приділяють увазі самоосвіті спеціалістів. Навчання орієнтоване на формування тільки професійних якостей, не спроможне виконати замовлення сучасного суспільства. Під тиском швидкозмінних факторів (інформація, науково технічний прогрес, виникнення нових наук, галузей виробництва, товарів та ін.) потреба отримувати нові знання і самовдосконалюватися одна із основних з точки зору формування конкурентоздатності робочої сили. Як результат на сьогодні концепція неперервної освіти є актуальною і затребуваною. Р. Даве визначає, що неперервна освіта – це процес особистісного, соціального і професійного розвитку індивіда протягом його життя, здійснюваний з метою удосконалення якості життя як окремого індивіда, так і суспільства. Це всеосяжна й об'єднуюча ідея, що охоплює формальне, неформальне і позаформальне навчання, здійснюване з метою досягнення якнайповнішого розвитку різноманітних сторін життя на різних його щаблях. Вона пов'язана як з розвитком особистості, так і з соціальним прогресом [3, с. 34].

Сьогодні, у час орієнтирів освітнього простору на компетентнісну парадигму освіти, важливо скоригувати навчальний процес системи неперервної освіти на розуміння людьми необхідності та вміння навчатися упродовж життя, оволодіння технологією прийняття рішень з метою оптимального адаптування в умовах постійно змінних вимог до робітників на ринку праці. Як зазначає В. Олуйко: «будь-яка справжня освіта здобувається тільки шляхом самоосвіти. ...Саме на ній має будуватися цілеспрямована освіта кадрів, тобто перепідготовка і підвищення кваліфікації, які повинні здійснюватися на основі врахування принципів освіти дорослих» [4]. Тому необхідно для підвищення конкурентоздатності фахівців залучення в систему освіти, не лише навчальних закладів і центрів до- чи перепідготовки, а й формальних, неформальних і позаінс-

титуційних форм освіти. Людина повинна мати широке коло доступу до інформації, з метою профорієнтації чи консультування.

Серед чинників, які впливають на підвищення конкурентоспроможності робочої сили, – освіта, кваліфікація, здатність та готовність до інтенсивної праці тощо. Держава через систему освіти та професійної підготовки сприяє забезпеченню вищого рівня соціально-економічного зростання країни, а також конкурентоздатності особи, що опосередковано також виступає чинником економічного розвитку. На жаль, в умовах економічної кризи в Україні питання освіти та професійної підготовки не мають статусу пріоритетних. Таке ставлення на рівні державного управління галуззю освіти провокує подальше поглиблення й затягування кризи.

Розглянемо деякі аспекти підвищення конкурентоспроможності фахівців трудової підготовки в системі підвищення кваліфікації учителів технологій. Не дивлячись на те, що використовуються різноманітні форми, методи і засоби навчання, у цій справі є численні недоліки. Серед них ми можемо виокремити наступні: відхід від уявлення про фахову підготовку вчителя технологій як інженерної та забезпечення її гуманізації й гуманітаризації шляхом поєднання гуманітарної і техніко-технологічної складової на політехнічній основі; відсутність узагальнення досвіду та наукового обґрунтування змісту навчально-методичного забезпечення професійної підготовки; відсутність розробок науково-обґрунтованої технології добору інформації для політехнічного навчання, засобів самостійної роботи слухачів та діагностики рівня професійної підготовки вчителя; недостатність відповідності змісту фахової підготовки вчителя змісту навчального предмету «Трудове навчання» в молодшій школі та «Технологій» у середній; морально застаріле матеріально-технічне оснащення навчального процесу; незначна увага щодо організації майстер-класів різного спрямування в системі післядипломної освіти; недостатня обізнаність та підготовка вчителів до впровадження у навчально-виховний процес інформаційно-комунікативних технологій. Цілком логічно відбуваються зміни і самої системи освіти в системі підвищення кваліфікації у бік розширення самостійного і дистанційного навчання.

Для ефективної підготовки фахівців з точки зору їх конкурентоздатності вирішальне значення має пошук та створення нетрадиційних технологічних,

соціальних та педагогічних рішень, використання ідей та нових технологій, які забезпечують значне підвищення ефективності педагогічної та навчальної праці в системі неперервної освіти, розробка технологій «виробництва талантів» [5], розширення мобільності слухачів для підвищення якості підготовки та ін.

Підсумовуючи вищезазначене, можна окреслити наступні перспективи розвитку конкурентоздатності фахівців із трудової підготовки: посилити політехнічну підготовку вчителів; збільшити у навчальних планах час на формування політехнічних умінь під час майстер-класів та спецкурсів політехнічного спрямування; розширити тематику випускних робіт темами політехнічного, економічного спрямування; уточнити переліки спецкурсів і спецсемінарів, посилити їх політехнічну спрямованість, змістовне наповнення; ширше застосувати проектно-технологічну діяльність і науково-дослідну роботу, технічні та мультимедійні засоби навчання, демонстраційний експеримент; посилити матеріально-технічне забезпечення для політехнічної підготовки учителів початкових класів; підсилити орієнтацію педагогів на необхідність самоосвіти та ін.

Дуже проблемним для нарощення конкурентоздатності фахівців цього профілю залишається питання вдосконалення матеріально-технічної бази навчальних закладів. Треба визнати, що цю проблему намагалися вирішити протягом усієї другої половини ХХ століття, за винятком 90-х років. Однак сьогодні вона постає знову як першочергова, особливо щодо створення комп'ютерних аудиторій, забезпечення новітньою комп'ютерною, мультимедійною та іншою технікою, розширення бібліотечних фондів професійного спрямування.

Висновки. Як активний чинник розвитку людського капіталу система освіти вирішує надважливі завдання: нарощення людського капіталу, що збільшує доходи та розширює економічні можливості людини та країни; розширення можливостей вибору професійної діяльності в усіх сферах життєдіяльності людини; перенавчання робітників, які залишилися без роботи у зв'язку із змінами в українській економіці та НТП; якісна підготовка конкурентоздатних фахівців із трудової підготовки для ринку праці; акумуляція потенційно незайнятої молоді в системі стаціонарної освіти тощо. Ефективне державне регулювання процесу підготовки кваліфікованих кадрів, модернізація системи

освіти, накопичення людського капіталу може стати дієвим чинником прискорення виходу України з економічної кризи.

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Maternity as a performative practice in the discourses of poststructuralism

Abstract: The postmodern approaches are under analysis with the focus on the reception of maternal subjectivity presented in the poststructural thought as being diverse and changeable.

Keywords: maternity, performativity, subject, identity, discursive practice, gender.

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Материнство как перформативная практика в современных концепциях постструктуралистов

Аннотация: В статье рассматривается постмодернистский взгляд на активную природу материнства и рецепция материнской субъективности как разнообразной и изменчивой в концепциях постструктуралистов.

Ключевые слова: материнство, перформативность, субъект, идентичность, дискурсивная практика, гендер.

Обращаясь к перформативности, столь важной в данном анализе, необходимо, на наш взгляд, остановиться на некоторых определениях. «Культурный перформанс» – это, как полагает известный социолог Дж. С. Александер, социальный процесс, с помощью которого акторы индивидуально или во взаимодействии друг с другом выражают смысл их социальной ситуации. Этот смысл может быть или не быть ими самими субъективно разделяемым; это смысл, в который они как социальные акторы (сознательно или бессознательно) хотят, чтобы верили другие [1].

Перформативность, с точки зрения социологов, означает распространяющиеся практики формирования виртуальной реальности, которые предполагают использование разного рода спектаклей, манипулятивных технологий для воздействия на сознание людей, побуждая их идентифицироваться с конкретными политиками [9, с. 245].

Несколько иное понимание перформативности предлагают философы-постмодернисты: понимание, тесным образом связанное с лингвистикой. Перформативность в лингвистике – свойство высказывания, когда его воздействие на референт совпадает с самим высказываем; по Лиотару, перформативность – главный критерий постмодернистского мира, близкий понятиям «эффективность» и «продуктивность». Лиотар утверждает, что перформативность – это средство легитимации научного знания в условиях постмодерна, когда утрачивается влияние традиционных референтов в виде нарративов. «Революционно-авангардистская концепция искусства не как общественного института, а как действия, стратегии, перформанса, производства – все это еще раз превращается в гротескную карикатуру поздним капитализмом, для которого, как указал Ж.-Ф. Лиотар, имеет значение только принцип перформативности», – пишет авторитетный теоретик-неомарксист Т. Иглтон [8].

Возвращаясь к перформативности в феминистских теориях, а именно к рассмотрению конструктивизма и перформативности, следует подчеркнуть: идея о том, что опыт можно отделить от его конструирования, – заблуждение, поскольку не существует «чистый, реальный опыт». Но последнее не значит также, что материнская субъективность только «конструируется». Исследователи отмечают проблематичность термина «конструирование», поскольку он

не может означать как полный и закрытый процесс, так и предполагать существование «предискурсивного субъекта», и именно это, по мнению теоретиков, следует избегать.

Батлеровская идея перформативности, практика повтора и цитации, посредством которой дискурс продуцирует эффекты, которые он именуется, позволяет уйти от подобной фиксации и (что принципиально важно) представляет возможность прерывания и разрыва подобного дискурсивного производства. Батлер понимает гендер как «совершение» («doing»). «Не существует гендерной идентичности, перформативно учреждаемой теми выражениями, которые полагаются ее результатами». Понимать материнство таким образом означает открыть концептуальное пространство для материнства как практики, утверждает Э. Иеремия [5, с. 25]. Подобный подход, как уже отмечалось, сам по себе является прогрессивным, поскольку традиционная философия, рассматривает материнство как пассивное состояние. Также предполагается, что материнское поведение может быть трансформативным и разрушительным. М. Чэндлер, подхватывая идею перформативного материнства, утверждает: «мать» нужно понимать как глагол, как нечто, что кто-то совершает. Присоединяясь к Батлер, она пишет: «Быть матерью значит разыгрывать материнство» [4].

Материнское поведение, рассматриваемое в таком русле, несомненно, содержит потенциальный подрыв доминирующих дискурсов материнства. Понимание материнства в таком ключе открывает пространство для идеи о материнской «деятельности», «свободе воли» («агенсу»). По Батлер, последнее означает вариации повтора практик, составляющих гендер, который конституирует «агенсу», то есть варьировать повтор материнских практик означает влиять на материнскую деятельность.

То, что «гендерное тело» является перформативным, предполагает, что у него нет иного онтологического статуса кроме различных актов, составляющих его реальность. Последнее также предполагает, что если эта реальность фабрикуется как внутренняя сущность, то именно это «внутреннее» есть эффект намеренно публичного и социального дискурса, публичного регулирования фантазии посредством поверхностных политик тела, контроля гендерной границы, которая различает внутреннее и внешнее, учреждая таким образом

«целостность» субъекта [3, с. 173]. То, что гендерная реальность создается посредством поддерживаемых социальных перформансов, означает, что само понятие эссенциального пола и истинной маскулинности или фемининности составляет часть стратегии, скрывающей перформативный характер гендера. Гендер не может быть истинным или кажущимся, оригинальным или заимствованным, утверждает Батлер [4, с. 180]. Само предписание «быть» данным гендером происходит дискурсивными способами: быть хорошей матерью означает множество гарантий в ответ на разнообразие различных требований. Конвергенция подобных дискурсивных предписаний производит, по утверждению Батлер, сложную конфигурацию, «передислокацию», и не трансцендентальный субъект дает возможность действовать в подобной конвергенции. «Не существует «Я», предшествующего этой конвергенции, того, кто поддерживает «целостность», предшествующую вхождению в это конфликтное культуральное поле. Существует лишь возможность подобрать инструменты, которые лежат там, где само «подбирание» становится возможным благодаря инструменту, лежащему именно там» [4, с. 185]. То, что идентичность является эффектом, означает, по Батлер, что она не является «фатально» определенной или полностью искусственной. То, что конструируемый статус идентичности понимается неверно в этих конфликтующих направлениях, указывает на те пути, в которых феминистский дискурс оказался в ловушке ненужного бинаризма свободной воли и детерминизма. Конструктивизм не противостоит деятельности, он, пишет Батлер, является необходимой сценой деятельности, теми терминами, которые артикулируют деятельность и которые делают ее культурно интеллигибельной.

Если идентичности более не являются неизменными, а политики более не понимаются как набор практик, извлеченных из предполагаемых интересов, принадлежащих набору «готовых» субъектов, новая конфигурация политики несомненно возникает на руинах старой, уверена Батлер.

Понимание материнства как перформативности не означает понимание его в сугубо дискурсивных терминах, что является очевидным, поскольку материнский опыт и его конструирование неразделимы. Материальность материнства связана с его дискурсивными характеристиками, но важно также то, что язык и материальность не являются полностью идентичными, не

являясь также полностью различными. То есть материальные практики материнства, действия, производимые матерями, не могут быть тем основанием, на котором конструируется теория материнства. Материальность, по Батлер, – это самоконструкт, ее нельзя отделить от процессов сигнификации, поскольку язык и является материальным, и относится к тому, что материально [4, с. 68]. Следовательно, доказывать материнскую перформативность не означает игнорировать «материальное», скорее, это означает прокладывать путь для дискурсивной (и перформативной) переоценки материальных действий материнства и материнских практик.

Одна из главных целей (пост)современных исследований гендера в целом и материнства, в частности, заключается, на наш взгляд, в определении гендерной идентичности/субъективности матери. Именно в этом ключе столь важными представляются теоретические работы Дж. Батлер. Но в подобном анализе также важно показать, как идентичность «работает» в обычных социальных условиях ежедневной жизни. И здесь исследователи приходят к выводу: материнство в значительно большей степени является непосредственной составляющей частью идентичности женщины, чем отцовство – мужчины. Ученые фокусируют свое внимание на том, как тема гендера нормализуется в условных дискурсах, скрывающих признание его (гендера) глубокой личной власти, а также его воплощения во властных отношениях. Многие ученые (Л. Николсон, Ч. Лемерт и др.) проблематизируют идею о том, что идентичность зависит от сильного дискурса «Я» («Self») или сильного представления о коллективном «Мы». При этом эссенциалистское мышление полагается как подрывающее современную озабоченность проблемами «Self» и последующей моральной слабостью и бессилием [7, с. 5].

В 90-х годах ряд теоретиков новой волны подвергает резкой критике само слово «женщина». Свои в высшей степени влиятельные идеи Дж. Батлер развивает в книге «Bodies that Matter», утверждая, что сама материя (материя, из которой состоят тела) – это ничто иное, как результат «процесса материализации, который со временем стабилизируется для производства эффекта граничности, фиксированности и поверхности, что мы и называем материей» [2, с. 9].

Безусловно, в постструктуралистской гендерной теории Батлер слово «гендер» употребляется вместо слова «женщина», вернее «женщина» и «гендер» используются как синонимы.

В результате последнего, как пишет Т. Мои, «женщины разлучены со своими телами», то есть «женщина» превращается в дискурсивный и перформативный «эффект» [6, с. 178]. С другой стороны, как уже отмечалось выше, слишком велика опасность эссенциализма и биологического детерминизма, и, чтобы избежать отмеченную опасность, необходимо крайне осторожно относиться к тому утверждению, что биология является источником социальных норм.

В то же время нам представляется, что не стоит умалять значение биологии в качестве своего рода фундамента для последующей социальной конструкции: категория «женщина» сама по себе не является абсолютным «идеологическим конструктом». С другой стороны, не стоит отрицать, что сексизм стремится навязать этой категории всевозможные идеологии. И этот «сдвиг» от психоаналитических или феноменологических теорий субъективности к понятиям гендера, «регуляторных дискурсов» и «перформативности», – что является частью общей постструктуралистской критики субъекта, – значительно повлиял в том числе и на анализ «агента» материнства.

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Transfer from the handicraft to the machine technique of production and the fate of the object world

Abstract: Analyze of changes in perception of the object world by society which took place after transfer from the handicraft technique to the mass machine technique of production. It was shown that due to the mass character of production each single object lost its individuality which it had in times when the handicraft production dominated, and therewith lost its former spiritual bond with the human. However eventually, when the forms of the object world start to reflect specifics of the mass machine production this spiritual bond of the human with the surrounding object world reestablishes.

Keywords: object world, object's art, handicraft production, industrial production, design.

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Переход от ремесленного способа производства к машинному и судьбы предметного мира

Аннотация: Проанализированы изменения, которые произошли в восприятии обществом предметного мира после перехода от ремесленного способа производства к массовому машинному. Показано, что благодаря массовости производства отдельная вещь утрачивала индивидуальное лицо, которое она имела во времена господства ремесленного производства, а вместе с этим и былую духовную связь с человеком. Однако со временем, когда формы предметного мира начинают отражать специфику массового машинного

производства, вновь восстанавливается духовная связь человека с окружающим его предметным миром.

Ключевые слова: предметный мир, искусство вещи, ремесленное производство, промышленное производство, дизайн.

В древности вещь в жизни людей играла чрезвычайно большую роль, которая не ограничивалась действием ее утилитарной функции, а включала значительную социальную и культурную нагрузку. Возвышенное, одухотворенное отношение к предметному миру существовало практически на протяжении всего периода господства ремесленного способа производства объектов вещной среды. Но во времена Возрождения, в середине XVI века, происходят изменения в производственных отношениях, появляется новая форма производства — мануфактура, которая непосредственно предшествовала появлению машинной индустрии. Это было началом разложения ремесленничества, что повлекло за собой изменение отношения человека к предметному миру. Если ремесленник при производстве вещи являлся и ее конструктором, и художником, и непосредственным изготовителем, в результате чего вещь, им созданная, была его кровным детищем, которое он любил, и эта любовь передавалась и тому, кто потом этой вещью пользовался, то при мануфактурном способе производства, а особенно впоследствии при массовом машинном, это благоговейное отношение производителя к своей продукции теряется. Работники знают только свою операцию, у них нет целостного отношения к изготавливаемой вещи, поэтому они не могут ее любить. В связи с этим благоговейное, возвышенное отношение к предметной среде, которое было у человека раньше, постепенно исчезает.

Одновременно с переходом от ремесленного производства к машинному постепенно происходит разделение ремесла и искусства, ранее составлявших единое целое. Это было плодотворным для изобразительного искусства, но губительным для ремесла. Если раньше ремесло, предметное формообразование ценилось также высоко, как и искусство, то теперь, когда искусство достигает грандиозного размаха, ремесло считается чем-то второстепенным.

Позже, в XIX столетии, разрыв между «высокими» и «низкими» видами искусства приобретает уже глобальный характер. Особенно большой удар по

престижу предметного мира нанес начавшийся на Западе в XVIII веке промышленный переворот. Вещи стали производиться массовым тиражом, теряя свой романтический ореол. Благодаря массовости производства отдельная вещь утрачивала индивидуальное лицо, которое она имела во времена господства ремесленного производства, когда каждый предмет, выходящий из-под рук мастера, был уникальным произведением. Созданная же массовым тиражом, вещь переставала быть объектом культуры. С расширением капиталистических товарных отношений товаром в самом прозаическом смысле становится все, в том числе и объекты предметного мира. И тут создается парадоксальная ситуация. С одной стороны, вещи утрачивают одухотворенное к ним отношение человека, а с другой – происходит своего рода их фетишизация. Дорогая вещь для разбогатевшего буржуа становится чем-то вождленным, необходимым атрибутом его зримого утверждения среди себе подобных. Но в этой фетишизации вещи нет ничего романтического, возвышенного, что было характерно для отношения к ней в далеком прошлом. «Все они, – писал У. Моррис, – рабы так называемой «роскоши», которая согласно современному смыслу этого слова, подразумевает поддельное благосостояние – это изобретение коммерции... тех глупых и не слишком счастливых людей, которые покупают мишуру... Это удивительное чудовище рождено пустотой жизни богачей...» [1, с. 201].

Фетишизация вещи буржуазией приводит к обратной реакции в среде передовых людей того времени, вызывая отрицательное, насмешливо-ироническое отношение к предметной среде. Например, в своей комедии «Школа злословия» выдающийся английский драматург-просветитель XVIII века Р. Шеридан показал, как один из героев пьесы, молодой аристократ Чарльз Серфес, человек честный и передовых взглядов, без всякого сожаления распродает старинные вещи из богатого родительского дома, при продаже которых сам Чарльз и его друзья отпускают град шуток и насмешек. Характерно, что для незавидной роли шутовских подмостков «аукциониста» при продаже вещей Чарльз выбирает старое отцовское кресло, о котором с насмешкой говорит: «Вот старое отцовское кресло, оно как раз годится, хоть у него и подагра» [4, с. 312]. Таким образом, к вещам, которые когда-то чтились, теперь отношение насмешливое, ироническое.

Ироническое отношение к вещному миру в среде передовых слоев общества сохраняется и в XIX веке. Для подтверждения этого можно снова обратиться к художественной литературе. Вспомним хотя бы строки из «Евгения Онегина» А. С. Пушкина, где автор описывает обстановку, окружающую главного героя. Поэт называет вещи богатого убранства кабинета Онегина предметами, служащими «прихоти обильной», и вещами, которые «полезный промысел» создает для забавы, для модной неги. Так в этой авторской характеристике отразилось отношение к предметному миру передового человека первой половины XIX века.

Таким образом, в XIX веке противоречивость в отношении к предметному миру усиливается. С одной стороны, имеет место фетишизация вещи, а с другой, порожденная ею враждебность к вещам. Это, конечно, не могло быть благодатной почвой для рождения оригинального стиля в предметном формообразовании. Предметный мир уже не был отражением устремлений его творца, обусловленным одухотворенным отношением к вещи, форма изделий не являлась искренним выражением духовной жизни людей. Задачей предметного формообразования кроме чисто утилитарных целей было лишь внешнее облагораживание формы вещей, придание им красивых, гармоничных очертаний, снабжение изысканным декором. Оригинального же художественного стиля не получалось, вещная среда становилась стилизацией, в ее формообразовании прослеживалась одна цель — впечатляющая красота, поражающая зрителя. Так в формообразовании предметного мира XIX века рождалась эклектика из переработки образцов Ренессанса, готики, барокко, рококо и других стилей.

Выйти из тупика эклектики предметному формообразованию позволило новое изменение отношения общества к вещной среде, которое произошло уже в конце XIX века. Дело в том, что, хотя передовые слои общества тогда все же в большинстве своем относились к вещному миру довольно скептически, не находя в нем высокой духовной ценности, однако в кругах художественной интеллигенции все больше зрело желание вернуть предметной среде ее былую гуманистическую значимость. Это стремление начало приобретать крайнюю остроту уже в середине XIX столетия, когда делаются первые попытки вернуть вещи ее былое и утраченное ею значение. Вдохновителями этого направления

мыслей были англичане Д. Рескин и У. Моррис. Их мечтой было поднять формирование предметного мира до высот истинного искусства и соединить искусство с повседневной жизнью. Искусство, внедренное в быт, полноценный в художественном отношении предметный мир благотворно должны были сказаться, по убеждению Рескина и Морриса, на человеческом обществе. «Оно (искусство – Я.Л.), – писал Д. Рескин, – никогда не может существовать само по себе, быть самоценным; оно с правом существует, как посредник знания или украшение для воздействия на жизнь» [2, с. 72]. Но для того, чтобы создать вещную среду с высокими эстетическими качествами, необходимо было вернуть серьезное, одухотворенное отношение к ней. Идеи и деятельность Рескина и Морриса сыграли значительную роль в восстановлении престижа предметного мира, привлечения внимания к нему художественной интеллигенции.

Изменения отношения к предметному миру, появление интереса к нему у творческой интеллигенции, приобретение им значительности в представлении людей повлекли за собой изменения в создании форм вещной среды. В конце XIX — начале XX века возникает новый стиль в архитектуре и предметном формообразовании — стиль «модерн». В отличие от стилистики предшествовавшего периода эклектики этот стиль, действительно, был чем-то новым, оригинальным. Он явился попыткой в декоративизации самой конструкции найти язык предметных форм, созвучный времени.

Таким образом, к началу XX века стало изменяться отношение к предметному миру, вещь стала приобретать ранее утерянную ею значимость. Однако этот процесс протекал довольно сложно. Еще долгое время у многих представителей передовых слоев интеллигенции сохранялось если не отрицательное, то, во всяком случае, настороженное отношение к предметной среде, что было связано с фетишизацией вещного мира, продолжавшей бытовать в среде буржуазии. Например, В. Маяковский, заклятый враг буржуазных отношений, проявлявшихся в них пошлости и гнили, в своей драматической поэме-трагедии «Владимир Маяковский», написанной в 1913 году, остро поставил вопрос, кем же являются в жизни человека вещи, его друзьями или врагами:

- Вот видите!

Вещи надо рубить!

Недаром в их ласках провидел врага я!

- А может быть, вещи надо любить?

Может быть, у вещей душа другая? [3, с. 42].

И все же вещная среда приобретала все большее значение в представлениях передовых слоев общества, роль предметного мира стали связывать с проблемами перестройки быта, с широким кругом вопросов социальной жизни.

Октябрьская революция 1917 года повлекла за собой изменения роли предметной среды в сознании общества и в нашей стране. Именно здесь впервые широко развивается движение за внедрение искусства в быт, в производство, за придание предметному миру художественной ценности. Известна в этом отношении работа деятелей ВХУТЕМАСа-ВХУТЕИНа, так называемых «производственников», а также деятельность членов витебского УНОВИСа. Вещь, предметный мир стали рассматриваться как объект искусства. «Высшая по своему качеству, наиболее гибкая и приспособленная по своей конструкции, по форме лучше всего выполняющая свое назначение вещь и есть совершеннейшее произведение искусства», — писал один из виднейших теоретиков «производственничества» Б. Арватов [8, с. 163-164]. Конечно, в этом высказывании чувствуется максимализм «производственников», считавших, например, что изобразительное искусство вообще должно отмереть, что на смену ему придет искусство производственное, искусство вещи. Однако здесь мы видим, насколько поднялся престиж предметного мира в сознании деятелей культуры революционной России. Вещь – друг человека, – теперь уже точно решает В. Маяковский. В написанной в 1918 году «Мистерии-буфф» поэт показывает, как в «обетованной стране», символизирующей коммунизм, вещи, ставшие друзьями простых людей, с хлебом-солью встречают трудовой народ. Они сами предлагают свои услуги людям, и люди принимают предложенную вещами руку дружбы.

«Товарищи вещи,

Знаете, что?

Довольно судьбу пытаться.

Давайте, мы будем вас делать,

А вы нас питать», –
говорит в ответ на речь вещи Батрак [7, с. 334-335].

Итак, в начале XX века предметному миру, его эстетическим качествам вновь стали придавать большое значение. Роль вещной среды в сознании общества возрастает. В связи с этим изменяется и сам предметный мир, принципы его формообразования. Происходит полный отказ от использования форм, стилей прошлого, предметный мир перестает быть декорацией, связь его с бытом становится более тесной. Новое отношение к предметному миру рождает новые предметные формы, тесно связанные с велением времени, стилем общественной жизни, с уровнем материального производства. Формы предметного мира начинают отражать специфику массового машинного производства, приобретают простоту и лаконичность, функциональную обусловленность. Рождается новый стиль индустриальной эпохи, стиль, присущий только этой эпохе и отражающий особенности общественной, духовной жизни времени.

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The Role of the Praising Poem in the Renaissance Literature

Abstract: In the article the common attention is given for the praising poems which are existed in the literature of the different people. Here are specially noted the connection with origin of such kind of poems with social and political factors. The scope of the praising poems with the advancement of the Renaissance in the world literature is looked through over the literary patterns of the different countries.

Keywords: madhya, jahiliyya poetry, kasida, ode, enkomi, anacreontic poems, fu, yuefu, the Renaissance period.

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Роль панегирики в литературе периода Возрождения

Аннотация: В статье общее внимание уделяется панегирикам, присутствующим в литературе разных народов. Здесь особое внимание уделено связи вышеупомянутых стихотворений с социальными и политическими факторами. Влияние панегирики более ярко прослеживается в мировой литературе на протяжении эпохи Возрождения.

Ключевые слова: маджийа, джахилийская поэзия, касыда, ода, энкомий, анакреонтические стихи, фу, юэфу, период Возрождения.

Постоянны ли литературные жанры в различные периоды истории? Почему в определенный исторический период становится популярным тот или иной жанр? Чтобы ответить на подобные вопросы, прежде всего, нужно отметить, что появление литературного произведения в определенном жанре органически связано с исторической необходимостью. На вышеуказанные

вопросы в виде проблем попытались найти ответы в первую очередь представитель теории французского классицизма Буало, в Германии Готшед, в России Сумароков. Как Буало, так и Сумароков появление и развитие литературных жанров связывали с высшей дворянской средой. У каждого исторического периода, эпохи были свои популярные жанры. Согласно литературной теории каждый литературный вид делится на ряд жанров. Определенный жанр в тот или иной период истории получал наибольшее развитие. Это всегда стояла в центре внимания ученых. Было заключено, что популярность того или иного жанра, прежде всего, тесно связано с общесовременными политическими факторами. В данной статье мы будем говорить о жанре касыда и о его сходствах с жанрами того же содержания в литературах различных народов мира.

Касыда была самым популярным жанром в азербайджанской литературе в XI-XIII века. В касыде нашли отражение ряд исторических событий, явлений и истин своего времени. Отражение действительности обусловило то, что касыда сыграла роль «зеркала своего времени». Касыда, отличающаяся содержанием и сутью в средневековой азербайджанской литературе, являющаяся одним из ведущих жанров времени, прошла сложный «жизненный путь». Среди ряда факторов, вызывающих интерес, в первую очередь, та особенность касыд, что она проливает свет на многие темные страницы истории, касыда отражает историческую действительность, события порой с точностью до года, месяца и дня. Это характерно для жанра касыды. Самая важная из причин, обуславливающих сложность этого жанра – элементы панегирики.

Первые образцы касыды встречаются уже в доисламской джахилийской поэзии. Важным и главным литературным памятником этого периода является муаллаки, состоящие из касыд семи поэтов – Имру-уль-Кайса, Тарафы ибн аль-Абди, Набига аз-Зубйани, Зухайра ибн Аби Сульма, Антары ибн Шаддада, А'ши, Лябида Рабии. Характерной особенностью этих стихотворений является насыбы-касыды (описание природы, отражение противоречий родоплеменного устройства, героические мотивы) (2, 66).

Имруль-уль Кайс (VI в.) - выдающийся представитель джахилийской поэзии, хотя и вошел в историю литературы, как один из семи поэтов, авторов мулакка, в свое время не был по достоинству оценен, даже его отец,

предводитель рода, лишил его наследства за написание стихов. Характерным для его творчества является восхваление природы и любовная тема. (Описание природы и тема любви в касыдах сыграли роль зачатка для создания в последующем жанра газели. Мы можем проследить это в творчестве выдающегося представителя азербайджанской литературы XI века Катрана Табризи – Л.А.). Другой представитель доисламской арабской поэзии Антара ибн Шаддад, творчество которого дошло до нас в виде разрозненных стихотворений и только одной касыды, привлекает внимание бейтами на любовные мотивы, произведениями, описывающими войны, участником которых он был, и сцены сражений. Интересно, что живший и творивший два столетия спустя филолог VIII века Аль-Асмаи посвятил свое произведение «Приключения Антары» Антара ибн Шаддаду (3, 78). Оглядываясь на историческое развитие касыды, мы видим, что в панегирике, занявшем достойное место уже в доисламской поэзии, отшлифованном многовековой традицией, уже в период, характеризующийся джахилийским, была сформирована единая система образов, устоялись отвечающие в художественном отношении высоким критериям ценности. В виде явного примера, обратим внимание на творчество одного из мастеров классической касыды доисламского периода Зухайра ибн Аби Сульма Раба-аль Музани. Его диван увидел свет спустя пять веков после времени, когда он жил (530-627), а именно в 1070 году. Этот диван был заново составлен и с комментариями издан Аль Аламом Шантамари в 1083 году, в 1888 году он был опубликован в Лейдене, а 1905 году в Египте. В касыдах дивана большое место занимают восхваления знатных и почетных представителей рода Гатафан, к которому принадлежал и сам поэт. Наряду с этими стихотворениями в диван входит ряд других поэтических образцов – фахрийа, масфнаме, газели. В считающимся одним из совершенных образцов доисламской поэзии мулакка поэта, прославившегося своими философскими касыдами, фахрийа и хаджвами, впервые в арабской поэзии высказаны мысли против войн, его ужасов и порожденных войнами трагедий. Азербайджанский ученый Хатиб Тебризи – автор толкований к этому мулакка Зухейра ибн Аби Сульма (3, 78).

По содержанию и сути виды касыды отличаются друг от друга:

Раджаз – дидактическая, нравоучительная касыда, урджус – призыв к войне, фахрийя – самовосхваление, хаджв – сатира, мадхийя – восхваление, марсийя – оплакивание, плач, насиб – любовная песня (впоследствии вступительная часть касыды также стала именоваться насибом), сер – призыв к мести, васф – описание, шахренгиз – описывает красоты определенного города, джулусийя – восхождение на трон падишаха, не'т – восхваляет пророка, товхид – утверждает единство Аллаха, мунаджат – содержат обращения-мольбы к Аллаху (5, 200). Доисламская арабская касыда не использовала выдуманные, фантастические образы, здесь, можно сказать, невозможно встретить литоту или гиперболу. Хасан ибн Сабит, живший и творивший в VII веке, так характеризовал поэзию своего времени: «хорошая поэзия эта та, что является действительностью, и где говорят о ней» (5, 201). Эта мысль впоследствии уступила свое место литературной концепции, выраженной следующим образом: «настоящее художественное произведение это то, которое совершенно далеко от действительности и разукрашено более, чем самая красивая речь» (4, 33). Поэтов, писавших касыды, под влиянием персидского языка называли «касыдагу», «касыдасера», «касыдапардаз».

Если в поэзии джахилийского периода мы встречаем первые образцы касыды, то в исламский период мы видим уже совершенствование этого жанра. Касыды этого периода уже начинают обретать общественно-политическую значимость, они берут на себя роль пропагандиста или глашатая правящей идеологии. Не зря в изданной в 1932 году на русском языке «Литературной энциклопедии» касыда была определена как «самый высший, совершенный жанр арабов и Ближнего Востока» (6, 151).

После принятия ислама в жанре касыда свое перо с успехом испытали такие выдающиеся представители арабской поэзии, как Абу Нувас (762-813), Ибн Абд Раббихи (860-940), Ибн Даррадж (958-1030), Ибн Шухейд (992-1034), Ибн Зайдан (1001-1071), Ибн Аммар (1031-1086), Ибн Хаддад (...-1087), Ибн Лаббан (...-1113), Ибн-аль Хатиб (1313-1374), Ибн Замрак (1333-1393) и др. Не мал их труд в совершенствовании касыды. Необходимо отметить, что после принятия ислама все поэты неарабских стран исламского мира также начали писать касыды на арабском языке, что привело к еще большему развитию жанра. Непререкаема роль и азербайджанских поэтов в развитии арабской

касыды. Неоспоримо положительное влияние на развитие арабской культуры и арабоязычной поэзии оказала деятельность азербайджанских ученых, занимающихся исследованиями и преподаванием в багдадской академии Низамийа в IX-X веках. Это подтверждается общемусульманской культурой, показателями прогресса на почве Возрождения после принятия ислама в культурной, общественно-политической, научно-литературной областях. Касыды, созданные выдающимися азербайджанскими мастерами слова XI-XII века, также сыграли важную роль в развитии арабской поэзии.

Основной мотив касыд составляют элементы панегирики. Известно, что еще в античный период в греческой, римской, китайской и др. литературах существовали жанры, перекликающиеся по содержанию с касыдами, содержавшие в себе панегирические элементы. Стихотворения античного периода, именуемые термином «ода», не содержали особенностей определенного поэтического жанра, соответствовали понятиям «песнь», «стих». Поэтому филологи античности относили этот термин к различным типам стихотворений, «хвала-воспевание», «плач», «игривая песня», которые исполнялись в сопровождении хора, под звуки музыки (7, 237). Затем «ода» стала использоваться по отношению к торжественному жанру. Привлекают внимание стихи, включающие в себя панегирические элементы, характеризующиеся как «эпиникий» в творчестве греческого поэта V в. до н. э. Пиндара. Пиндар в своих стихотворениях, как правило, воспевал победителей гимнастических соревнований. Поэт писал эти стихотворения по заказу, выражал в панегирических стихах желания аристократии Дори. Эта особенность перекликается с занимающими важное место в средневековой литературе касыдами. Следует отметить, что оды Пиндара высоко оценивались теоретиками литературы античного периода, особо отмечалась пышность образов его стихотворений, торжественность звучания, совершенство гармонии строф и стоп. Творчество Пиндара, являющееся ярчайшим образцом панегирической поэзии античного периода, в последующие периоды уступает место прозаическому виду, именуемому «энкомий». Энкомий, являясь малым по размеру жанром, в основном, представляла речь ораторов хвалебного содержания и, подобно своему предшественнику эпиникию, выдвигала на передний план восхваление правящей идеологии. Энкомий широко пропагандировался в античной Греции.

Анакреонт, живший и творивший в Греции в конце VI - начале V в.в. до н.э., на протяжении всей своей жизни писал только стихотворения хвалебного содержания. В них он использовал мотивы, которые перекликаются с насивами касид. Правитель того времени, царствующий в Самосее Поликрат высоко ценил его. Анакреонт, являющийся профессиональным хвалителем, после смерти Поликрата на войне приглашается в Афины ко двору Гиппархина, где удостоивается высокой чести. После смерти последнего, отправившись в Фессалию, Анакреонт восхваляет ряд выдающихся людей своего времени. Как видно, панегирики независимо от места и времени, выражали интересы высшего сословия, дворца. Хвалебные стихи, созданные после Анакреонта, в литературоведении именовались также «анакреонтическими стихами». Вид античного панегирического стиха - ода в I веке до н. э. в Римской империи под особым покровительством императора Августа обнаруживает себя в творчестве Горация. Оды Горация тематически отличались от од его предшественников, его объект восхваления это уже определенная личность. В его стихах объект хвалы восхваляется непосредственно, напрямую и это служило выявлению личных качеств восхваляемого. Эта особенность перекликается с восхвалениями (медхийя) – касидами, в том значении, которое мы им придаем сегодня. В одах Горация пропагандировалась политика правителя его времени Августа. В этом смысле его уместно назвать идеологом Августа (7, 237-238).

Классические, содержательные образцы восхвалений мы встречаем и в китайской литературе. И.С. Лисевич в своей монографии «Древняя китайская поэзия и народная песня» отмечает, что произведением «Скорбь изгнанных» поэта Тсуй Юаня в III в. до н. э. была заложена основа панегирической поэзии в Китае (8, 80). По мнению Алоима, указанная поэма написана в жанре «фу», содержащем элементы восхвалений (8, 80-81). Произведения, написанные в этом жанре, в свою очередь, служили укреплению политики династии Хан, правящей с III в. до н.э. до начала III в.н.э., пропагандировали ее идеологию, играли роль летописей, анналов войн, которые она вела (8, 103). Восхваления в китайской империи Хан развивались в двух направлениях. Первое направление – в виде песен, другое – чисто в виде фу. К первому направлению относились народные песни, именуемые «юэфу», которые в свою очередь делились на

«гэ» и «яо». Гэ, исполняемые в сопровождении музыки, отличались художественным богатством (8, 49). Яо же, в отличие от него, исполнялись без музыки и были лаконичными, они состояли из 2,3 или 4 строк. В яо очень редко встречаются описания сцен войн, а мотив любви полностью отсутствует. Оба жанра, как гэ, так и яо, в основном, выступали в роли выразителей восхвалений. Другое направление жанра фу также занимало достойное место. По мнению И.С. Лисевича, «фу в целом нашли применение в качестве выражения произведений хвалебного типа и были первыми письменными образцами поэзии, возникшими в Китае» (8, 175). Основываясь на имеющиеся источники, И.С. Лисевич подразделяет оды, возникшие в Китае на две группы: «народные песни» и «фу». По мнению ученого, «фу» вследствие того, что были связаны с дворцом, привлекают внимание как образцы, отличающиеся высокими поэтическими особенностями, достойные всяческих похвал. В них сосредоточены в тоже время летопись империи Хан и важные исторические факты (8, 103). Эта особенность фу перекликается с особенностью жанра касыда в нашей литературе XI-XIII веков. Это обещает нам возможность выявления интересных параллелей между фу и касыдой, сходства между которыми можно отследить. Так, в жанре касыда мы также часто встречаем богатство исторических фактов.

Бан Гу в I веке н.э. характеризовал оды, возникшие в Китае следующим образом: то, что не поется, как песня, а торжественно произносится есть ода (9, 126). Отметим и то, что Бан Гу был влиятельным ученым и поэтом, несколько од-фу, написанных им, дошли до наших дней (9, 127). Н.Т. Федоренко в предисловии к книге «Антология китайской поэзии» отмечает, что «поэзия, состоящая из од, была образцом дворцовой поэзии. Образцы жанра фу периода Хан в основном восхваляли деятельность императора, что составляло основную цель фу» (9, 19).

В Европе появление стихотворений хвалебного характера под термином «ода» относится к периоду Возрождения. Идеи Ренессанса в Европе XVI века проявили себя во всех областях культуры.

Поэт Ронсари (1524-1585) занимает передовое место среди ряда поэтов одической поэзии во французской литературе. Хотя тематика его од различна, в произведениях «Оды» (1550-1552), прославившейся еще при жизни поэта,

«Любовь к Кассандре» (1552-1553), «Любовь к Марии» (1553-1556), «Сонеты, посвященные Елене» (1578) поэт остался верен идее «единого французского языка» (30, 22). В одах Ронсари ощущается влияние мастеров античного периода. Оды поэта написаны как подражание стихам Пиндара, Горация, Анакреонта. После Ронсара ода, развиваясь, XVII веке еще более закрепляется в литературе как жанр, совершенные образцы которого мы находим в творчестве другого выдающегося представителя французской литературы, одного из основоположников классицизма Франсуа Мелерба (1555-1628) (10, 738). Франсуа Мелерб хотя и происходил из знатной семьи, участвовал во многих путешествиях герцога Ангулема в качестве его секретаря, он привлек внимание короля Генриха IV своими многочисленными стихами и получил приглашение во дворец в качестве придворного поэта. Франсуа Мелерб, в свою очередь, как все придворные поэты, превращается в воспевателя идеологии дворца короля. Большую часть его од составляют оды на исторические и политические темы. В одах, являющихся торжественным жанром, как и в касыдах, непременным условием были пропаганда правящей идеологии и чрезмерные преувеличения. В этой связи, Франсуа Мелерб, описывая в своих одах военные походы короля Генриха IV в Седан и Лимож, характеризует правителя следующим образом: «Ужас перед его именем сделают наши города величественными, после этого нет нужды оборонять их. Не нужно ни дверей, ни стен» (9, 738-739). После Франсуа Мелерба во Франции прославились такие представители хвалебного стиха, как Ж.Б. Руссо, Лебрэн, Лефрен де Помпиньян, Ламот. Не случайно, что в период Великой Французской революции появились оды, вобравшие в себя политические мотивы. Прекрасные образцы этой поэзии в творчестве Гюго, Ламартина, Жозефа, Андре Шенье долгое время привлекали внимание поклонников (7, 237-240). В других европейских странах, представляющих составные части европейского Ренессанса, также появились выдающиеся представители, писавшие стихотворения хвалебного характера. Уже в XVI-XVII веках прославились своими одами в Италии Бернардр Тассо, Кьябрера, в Испании – Франциско де Медрано, в Англии – Самуэль Даниэль, Коули, Драйден, в Германии-Веккерлин, Опутс и др. В русской литературе в XVI-XVIII веках уже были созданы совершенные образцы од. В русской литературе первые содержательные образцы од мы встречаем в

творчестве Кантемира. Однако в качестве термина это слово впервые использовал Третьяковский в своей «Торжественной оде о сдаче города Гданска» (7, 740). XVIII веке М.В. Ломоносов утверждает оду как основной лирический жанр феодально-дворянской литературы, в его одах восхвалены различные должностные лица его времени. Ода Ломоносова, написанная по поводу восшествия на престол Екатерины Алексеевны 1-го июля 1762 года, представляет значимость также с исторической точки зрения (7, 748).

В хвалебной поэзии, в какой бы период, у какого бы народа она не возникла и как бы она не называлась, основную роль в ней играли пышные, выражения и торжественный дух.

Арабы после принятия ислама во всех странах, взятых под свою власть, развивали и распространяли свою культуру. Таким образом, арабская касыда проникла и завоевала большую популярность в персидской классической поэзии. Это влияние распространилось затем и на персоязычные литературы других народов. В X веке все малые жанры нашли свою высшую форму выражения в творчестве Рудаки Самарканди. В классической персидской поэзии Абдурраззаг Исфгани, Захираддин Фариabi, Манучехр Дамгани, Анвари Абиверди, Муиззи и многие другие внесли свой вклад в развитие жанра касыда, возведя его до уровня школы. Интересно, что размах од в мировой литературе, как правило, соответствовал развитию периода Возрождения. Мы проследили это, осуществив экскурс по одам в римской, греческой, китайской, азербайджанской, французской, итальянской и немецкой литературах.

Касыда по своему идейно-художественному содержанию, занимая важное место в средневековой литературе, выступала выразителем художественно-теоретического мировоззрения своего времени. Благоприятную почву для совершенствования жанра касыды с идейно-художественной точки зрения создали исторические условия. Именно в результате исторических условий сформировалась определенная литературно-общественная среда. Знания во многих сферах науки находили свое отражение в касыдах, написанных великими мастерами слова. Одическое искусство закрепилось в творчестве различных поэтов в виде специальности, как профессиональная деятельность. Не случайно, что в средневековых теоретических книгах касыды поэтов подвергали групповой классификации по профессионализму их написания.

Среди этой классификации привлекает внимание деление авторов од аль-Асмаи на «фехлов» и «не фехлов». К группе фехлов он относил таких поэтов, для которых поэзия являлась ведущим фактором в жизни и которые являлись автором хотя бы пяти-шести, а в целом, до двухсот касыд. А.Б. Куделин, обращая внимание на вышеуказанную мысль аль-Асмаи, заключает, что в произведении средневекового филолога термин «фехл» используется для указания относительного превосходства одного поэта над другим (11, 66). По словам аль-Асмаи «насколько фехл - сильный, старый верблюд отличается от не фехла – трехгодовалого верблюда, настолько отличается поэт-фехл от поэта-не фехла» (11, 66-67). К этому жанру, представляющему значимость со времени его становления и на всем пути развития, в различные исторические периоды относились по-разному. В современном литературоведении в ряде исследований по средневековой литературе наблюдалось негативное отношение к этому жанру по причине хвалебных мотивов в его содержании. Тенденцию рассмотрения касыд только как хвалебных стихов встречается чаще всего в исследовательских трудах советского периода.

Многогранность жанра касыды, деление его на виды в зависимости от тематики (товхид, не'т, мунаджат, мадхийя, фахрийя, джулусийя, бахарийя, шекваийя, хабсийя, хаджвийя, раджас, урджуз, марсийя и др.) являются показателем его частого использования относительно других классических жанров.

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Mathematics, Technologies & Engineering

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Modeling of a High Performance Grid Connected Photovoltaic System

ABSTRACT

This paper presents detailed modelling of a grid-connected photovoltaic (PV) system components. The study is helpful to understand the working principles of the PV system. The performance of the system has been discussed by means of a Matlab/Simulink Toolbox. The results show that the PV system capable of tracking the maximum power point (MPP) quickly and precisely in case of sudden changes in solar radiation, cell temperature, and in case of existence of sand. Under the non-uniform atmospheric conditions, to get a high performance of the PV system, appropriate converters are required to operate at the MPP.

Keywords: photovoltaic system; solar irradiation; maximum power point tracking (MPPT).

1. INTRODUCTION

Solar energy provides the opportunity to develop electric energy from clean, endless, and green energies [1,2]. A PV cell is a basic unit that generates voltage in the range of 0.5 to 0.8 volts depending on cell technology being used [3,4]. Therefore the solar cells are connected in series and parallel in order to create a solar module depending on the capacity demands [5]. Regardless of the intermittency of sunlight, solar energy is widely available and completely free of cost [6-8]. The efficiency of the PV cells is quite dependent to the environmental and operational conditions. The output power of the PV systems affected by solar radiation, ambient temperature, and sand (dust, clouds, shading, etc.) [9,10]. The cell conversion ranges from 12% up to a maximum of 29% for very expensive units [11,12]. So to extract the maximum possible power from a PV system, tracking the single maximum power operating point is very important to raise the efficient operation of the PV system, and so,

MPPT is one of the most important issues in PV system [13,14]. MPPT methods are various and they differ in terms of complexity, speed of response, and cost [15,16,17,18,19]. A popular method of perturb and observe (P&Q) based on a boost converter as MPPT device is considered in this paper.

In the last few years, the demand for electrical power in Jordan has increased significantly due to developments in the industrial sector and people's standard of living conditions. Solar energy can cover these conditions in the future, and achieve great results due to the location of the Kingdom and the large desert areas. The demand for solar energy, globally, has increased by 20% to 25% over the past 20 years [20]. The electrical system powered by solar arrays requires special design considerations due to the varying nature of the solar power generated resulting from unpredictable and sudden changes in weather conditions, which change the solar radiation level as well as the cell operating temperature. A PV array is interfaced with DC/DC converter to obtain the desired DC voltage by utilizing Maximum Power Point Tracking (MPPT) technique to extract the maximum power, which is converted to alternating current (AC) by an inverter.

The nonlinear output PV characteristics, Power-Voltage (P-V) and Current-Voltage (I-V), are affected by the solar radiation and the temperature. The PV system should always operate so as to extract the maximum power under the variations of solar radiation, while the environment temperature supposed to be maintained at nominal value (25°C), therefore the PV current only depends on solar radiation. The time, required, to reach MPP under variable conditions has to be analysed to evaluate the performance of the PV system [21,22].

2. PHOTOVOLTAIC SYSTEM MODELLING

2.1 PV Cell Model

A mathematical description of current-voltage terminal characteristics for PV cells is available in the literature. The single exponential equation (1) which models a PV cell is derived from the physics of the PN junction and is generally accepted as reflecting the characteristic behavior of the cell [7].

$$I = I_{ph} - I_s \left\{ \exp \frac{q(V+R_{sl})}{NKT} - 1 \right\} - \frac{V+R_{sl}}{R_{sh}} \quad (1)$$

Where:

I_{ph} : Represents the current generated by the photons (it will be constant if the radiation and the temperature are constants too). The photon generated current will flow out of the cell as a short-circuit current (I_{sc}).

I_s : Is the panel dark saturation current, in A, which depends strongly on temperature,

q : Is the electron charge (1.602×10^{-19} C),

V : Is the voltage across the diode (V),

K : Is the Boltzmann's constant (1.381×10^{-23} J/K),

T : Is the working temperature of the cell, in Kelvin,

N : Ideality factor of the diode,

R_s : Is the series resistance in ohm, which models the ohmic losses,

R_{sh} : Is the shunt resistance, in ohm, which represents the current leakage.

From the equations, an equivalent circuit can be easily determined, and this aids in the development of the simulation model. This equivalent circuit model is shown in Fig. 1. It includes a current source, a diode, a series resistance and a shunt resistance.

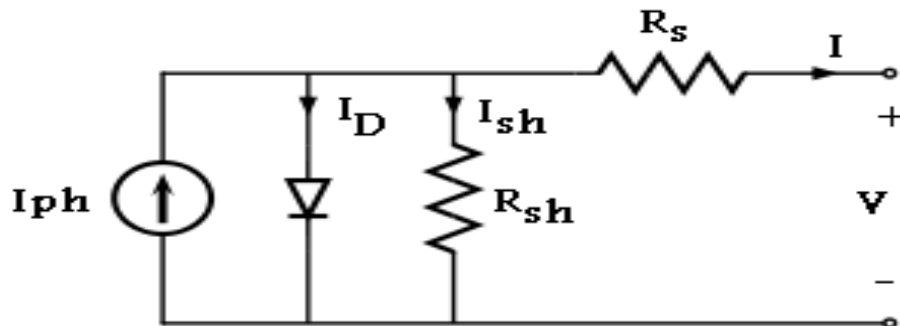


Fig. 1. PV cell equivalent circuit

2.2 The Influence of Solar Irradiation Variation

Based on the above equation, the subsystem of Fig. 1 is obtained. The above model includes two subsystems: one that calculates the PV cell photocurrent which depends on the radiation and the temperature [23].

$$I_{ph} = [I_{sc} + K_i(T-298)] \frac{G}{1000} \quad (2)$$

Where $K_i=0.0017 \text{ A/C}^\circ$ is the cell's short circuit current temperature coefficient and G is the solar radiation (W/m^2).

2.3 The Influence of Cell Temperature Variation

Like all other semiconductor devices, solar cells are sensitive to temperature, Increase in temperature, reduce the band gap of a semiconductor, thereby effecting most of the semiconductor material parameters. In a solar cell, the parameter most affected by an increase in temperature is the open-circuit voltage. Panel temperatures in the summer in warm climates can easily reach 50°C resulting in a 12% reduction in output compared to the rated output at 25°C . To calculate the exact percentage of losses due to the difference of temperature in Jordan, For the PV module selected in section below (Kyroce KD235XL) the temperature confection for voltage is $(-1.33 \times 10^{-1} \text{ V/C}^\circ)$ and for current is $(5.13 \times 10^{-3} \text{ A/C}^\circ)$.

The Jordan ambient temperature is about 45°C so it's greater than the STC (standard test conditions) value by 20°C . By calculating the value of the reduction in voltage and current the expected effect of temperature is about 1% of losses in power. The diode reverse saturation current varies as a cubic function of the temperature and it can be expressed as [23]:

$$I_s(T) = I_s [T/T_{\text{nom}}]^3 \exp [(T/T_{\text{nom}} - 1)E_g/(N \cdot V_t)], \quad (3)$$

where

(I_s) is the panel dark saturation current, in A;

T_{nom} is the nominal temperature, equals to 300 K;

E_g is the band gap energy of the semiconductor;

V_t is the thermal voltage.

When there is no connection to the PV cell (open circuit), the photon generated current is shunted internally by the intrinsic p-n junction diode, this gives the open circuit voltage (V_{oe}). In general, for a given solar radiation, when the cell temperature increases, the open circuit voltage V_{oe} , drops slightly, while the short circuit current increases. Figs. 2 and 3 show temperature effect.

2.4 The Influence of Dust and Sands

Dust, Sands, clouds, and snow decrease solar panel efficiency. For our reign in Jordan as Mediterranean climate high altitudes require high tilt in a PV system. A lower fixed tilt angle is recommended to optimize year-round solar. Gain dust

generally tends to fall off with the increase in the tilt angle. The reign of Jordan is almost clear and not dusty or windy so the effect of the dust and soil can be reduced when using a fixed (manual change) title angel is about 3-4%.

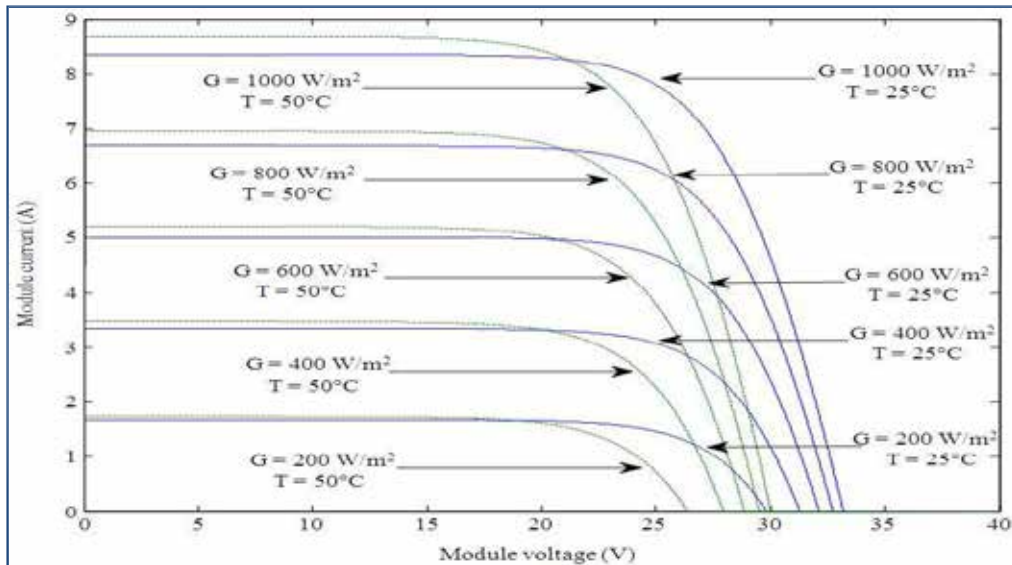


Fig. 2. The I-V characteristic for 25° C and 50° C

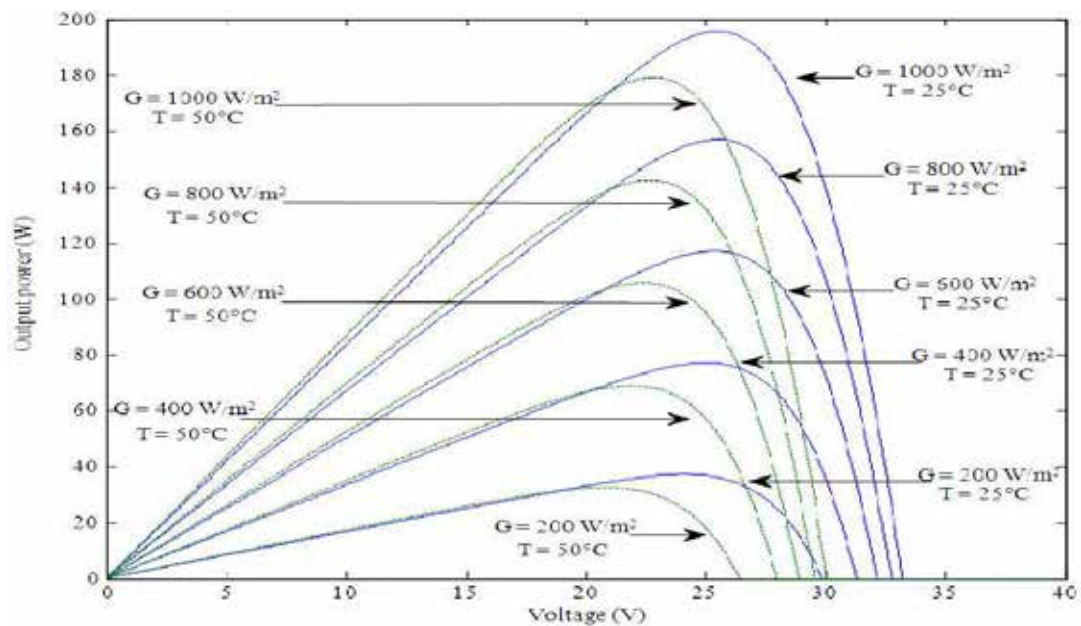


Fig. 3. The P-V characteristic for 25° C and 50° C

2.5 Boost Converter with MPPT Controller and the Voltage Sourced Converter

A DC-DC power, converter boosts the DC power from one voltage level to another higher or lower to the input voltage, has to be added at the output of the

photovoltaic array to achieve the optimum voltage and to implement the Maximum Power Point Tracking (MPPT).

$$V_o = V_{in_j} (1 - D), \quad (4)$$

where V_{in} is the input voltage (output voltage of PV array), V_o is the output voltage and D is the duty ratio of controllable switch. With the boost topologies the output voltage could be higher than input voltage. And can vary from 0 to 1, although there is no practical value of D equal to 1 due to voltage limitation issues Fig. 4. Is the configuration of the boost circuit and its control system [10]. In the detailed model, the DC-DC converter boosts DC voltage from 273.5 V to 500 V. Basically, the module current is perturbed by a small increment, and the resulting change in the power is observed. A simple updating algorithm is given as follows: The terminal voltage V and current I of PV arrays are first measured and PV power P is therefore obtained from the product of V and I . If the maximum power point P_m is the demarcation point, when $V(k) > V(k-1)$, if $P(k) - P(k-1) > 0$, then the solar cell works in the left section of the curve. To make the operating point close to the maximum power P_m point, need to continue to increase the output voltage V ; In contrast, $V(k) > V(k-1)$, if $P(k) - P(k-1) < 0$, then the solar cell works in the right part of the curve, in order to make the operating point near the point of maximum power P_m , require to reduce the output voltage V . With this control algorithm, the operating point of PV arrays can move toward the maximum power point corresponding to different temperature and irradiance. In order to suit the frequency and voltage level requirement of the load, a suitable switching power inverter is used. PV array is connected to the AC grid via a common DC/AC inverter. The inverter is used in current control method with PWM switching mechanism to make the inductance current track the sinusoidal reference current command closely and obtain a low THD injected current.

The direct current (DC) link capacitor maintains the solar PV array voltage at a certain level for the voltage source inverter. The single phase inverter with the output filter converts the DC input voltage into AC sinusoidal voltage by means of appropriate switch signals and then the filter output passes through an isolation step up transformer to set up the filter output voltage required by the electric utility grid and load [24].

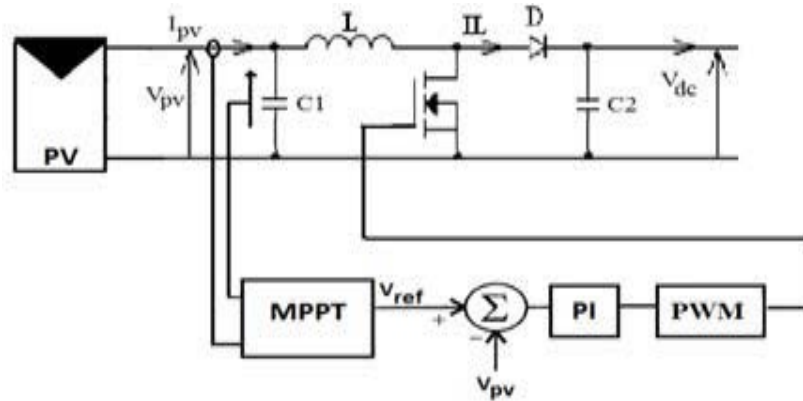


Fig. 4. Boost converter with MPPT controller

3. RESULTS AND DISCUSSION

Fig. 5 shows the system model configuration that will be used to generate electrical energy using PV array, then feed it to a building in Amman (load) as a case study. And the extra power to the grid. The system is composed of two main buses: a DC bus and an AC bus. The PV panels are connected to the DC bus. This power is then converted to AC bus to which the electrical load and the grid will be connected. The annual global solar radiation in Amman-Jordan is about $5.47 \text{ kWh/m}^2/\text{day}$. Suppose that the electrical load of the research building is 40 kWh/day . Due to the losses of the system the Electrical load will be $E_l = 1.15 * 40 = 46 \text{ kWh/day}$. The average number of the sunshine of hours in Jordan for the year is set to 9.5 hours per day If the selected PV module is KYOCERA KD235GX solar panel with 235 Wp peak power. The parameters of the PV module used in our study are tabulated in Table 1 and its approximated I-V and P-V characteristics are depicted in Figs. 2 and 3 respectively [15]. PV array size = Electric. Load / sunshine hours $46 / 9.5 = 4.85 \text{ kW}$. Due to the inverter losses PV array size becomes: PV array size = $1.045 * 4.85 = 5.07 \text{ KW}$. The number of PV modules = PV array sizing / peak power of module = $5.07 / 0.235 = 22$. If the selected Grid Tie Solar Inverter is GT5.0SP with the specifications in Table 2 Inverter power= $4850 * 0.95 = 4651.15 \text{ W}$. So the number of PV in series = $600/36.9 = 16$ modules Number of PV modules in parallel = $22/16 = 2$ modules. So the final number of PV panels = $2*16 = 32$ modules. The maximum current = (number of PV in parallel) * $I_{sc} = (2) * 8.55 = (17.1) \text{ A}$. So number of PV in parallel = $22/8.55 = 2$ modules Number of PV modules in parallel = $22/2 =$

11 modules. So the final number of PV panels = $2 \times 11 = 22$ modules, and the maximum voltage = number of PV in series * $I_{sc} = 11 \times 36.9 = 405$ V.

The I-V and P-V characteristics for the array and for each module are shown in Figs. 6 and 7, respectively. The duty cycle of the boost is set to 0.5.



Fig. 5. System model configuration

Table 1. The PV module data

Power peak	235 watt
Maximum power voltage V_{mpp}	29.8 V
Maximum power current I_{mpp}	7.89 A
Open circuit voltage V_{oc}	36.9V
Short circuit current I_{sc}	8.55 A
Max system voltage	600 V
Temperature voltage coefficient	-1.33×10^{-1} V/C0
Temperature current coefficient	5.13×10^{-3} V/C0

Table 2. The specification of selected inverter

AC power	5000
AC voltage	240 V
AC current	21 A
Frequency	50 Hz
Maximum DC voltage V_{max}	600 V
Maximum DC current I_{max}	22 A
Maximum efficiency	95 %

3.1 The Effect of Irradiation

3.1.1 Irradiation varying in a ramp up/down form

At $t=0$ sec the radiation is set to 1000 w/m^2 then at $t=0.7$ Sec it decreases with a rate of 1500 w/m/Sec for 0.5 sec then at $t=1.5$ sec it increases with a rate of

1500 w/m²/search for 0.5 sec. As it is shown in Figs. 8 and 9. shows the variation of the PV DC voltage, PV DC current, and the diode current as a result of the radiation variation. Fig. 10 shows the PV output power and the effect of the variation of the radiation. And how the duty cycle decreases to track the PV output power close to the maximum power point of the PV for the given conditions.

3.1.2 Irradiation varying in a step form

At t=0.7 Sec a step from 1000 w/m² to a 200 w/m² has been done as shown in Figs. 11-13 show the variation of the output array voltage and power. It is shown that the output PV current decreases and increases as the radiation decreases or increases. Once the radiation changes sharply consequently the output PV power changed sharply Fig. 13 shows that the duty cycle value follows the changes of the radiation (the response of the MPPT) in order to track the maximum power point that can be attained from the PV array under these conditions.

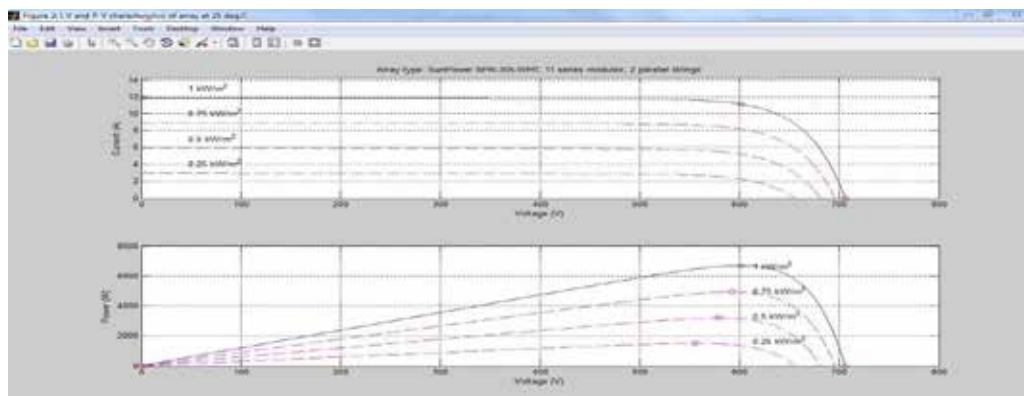


Fig. 6. Array 1-V and P-V characteristics

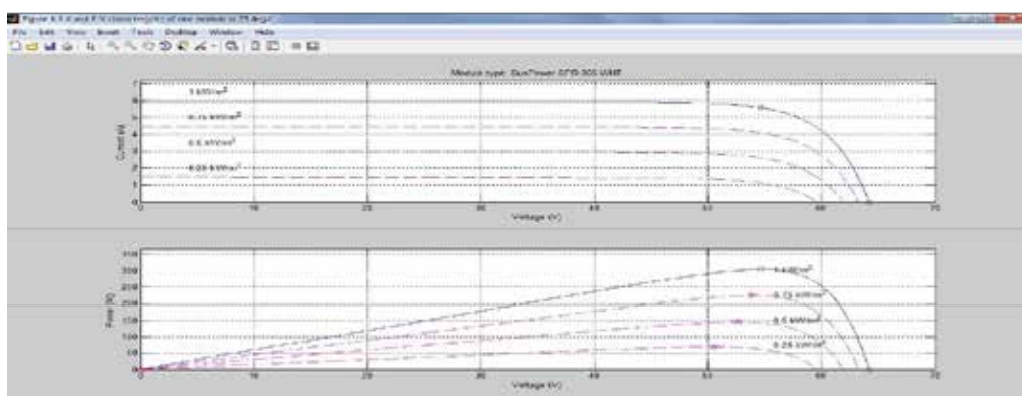


Fig. 7. One module 1-V and P-V characteristics

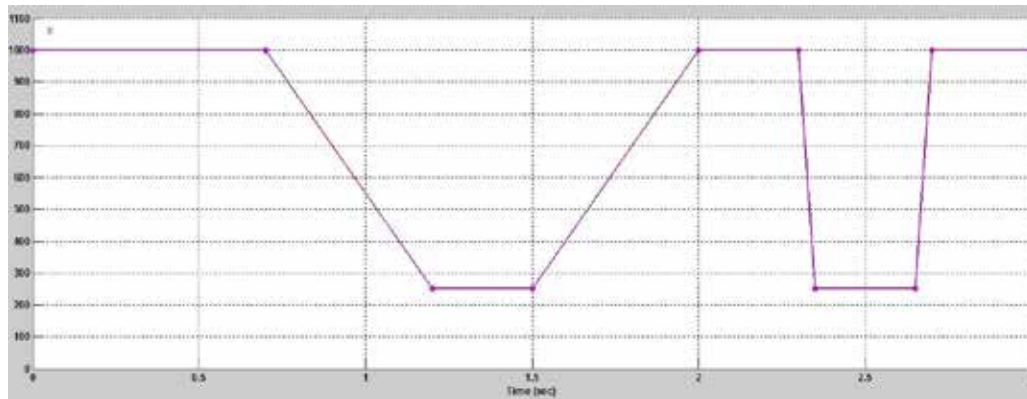


Fig. 8. The radiation as a function of time

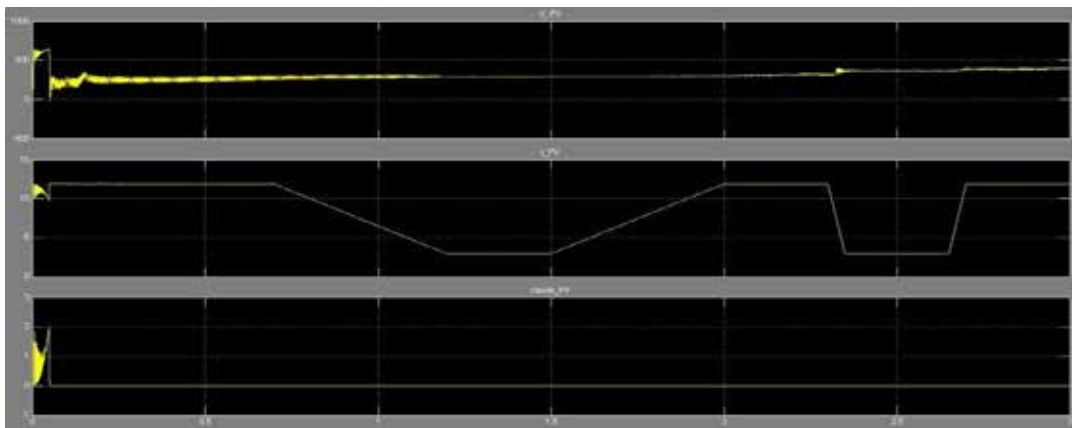


Fig. 9. The output PV-voltage, PV-current, and the PV diode's current

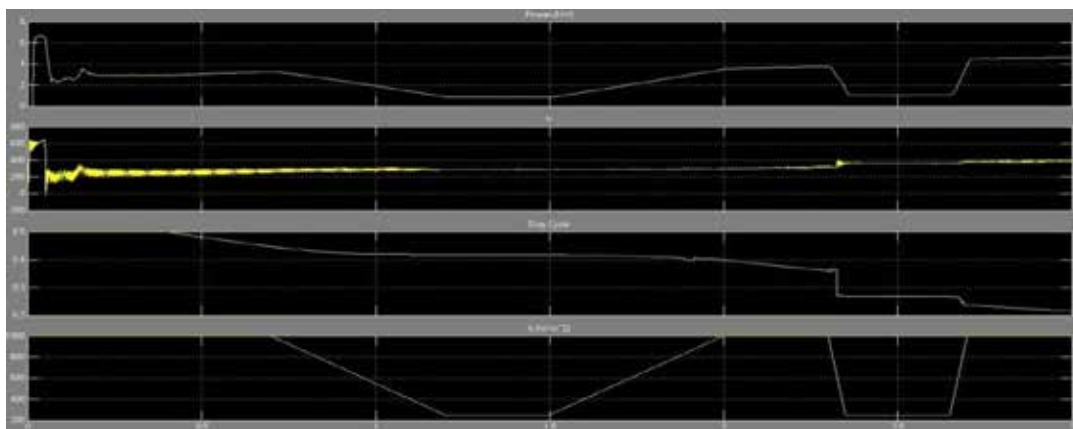


Fig. 10. The Boost converter output mean power, boost converter output voltage, the duty cycle, and the PV array irradiation

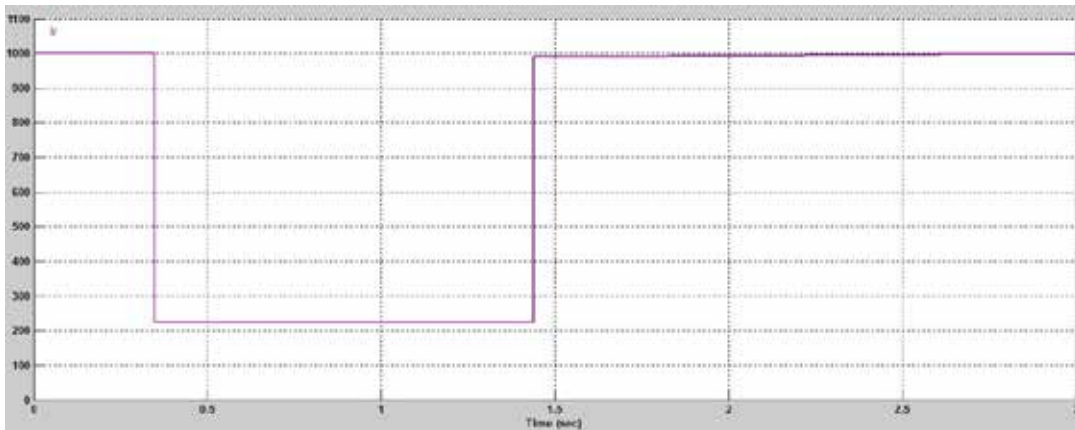


Fig. 11. Step irradiation

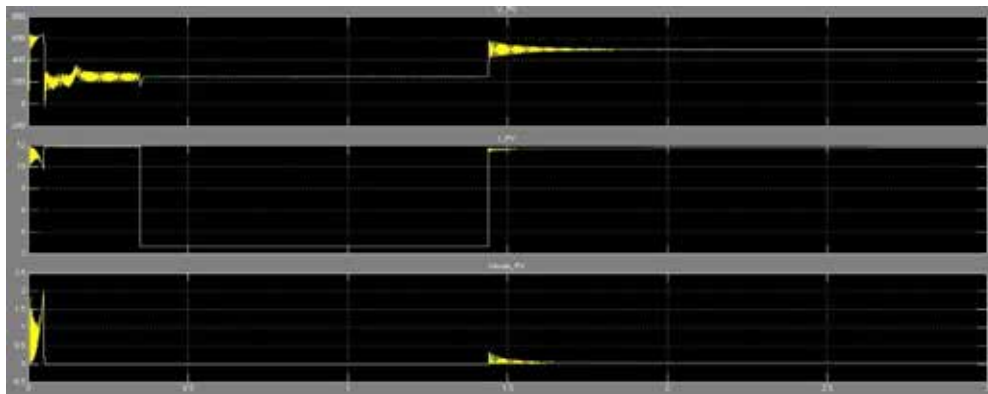


Fig. 12. The boost converter output voltage, output current, and the diode's current

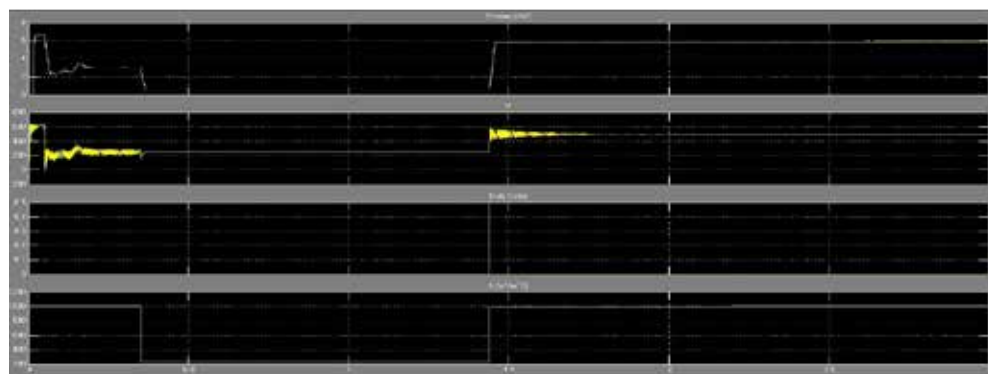


Fig. 13. The boost converter output mean power, output voltage, the duty cycle, and the PV array irradiation

3.1.3 Changing the duty cycle (D) of the boost

The duty cycle set to 0.75 instead of 0.5, and the same parameters of the first case. Fig. 14 shows how the output PV power under such conditions decreases than that of case one.

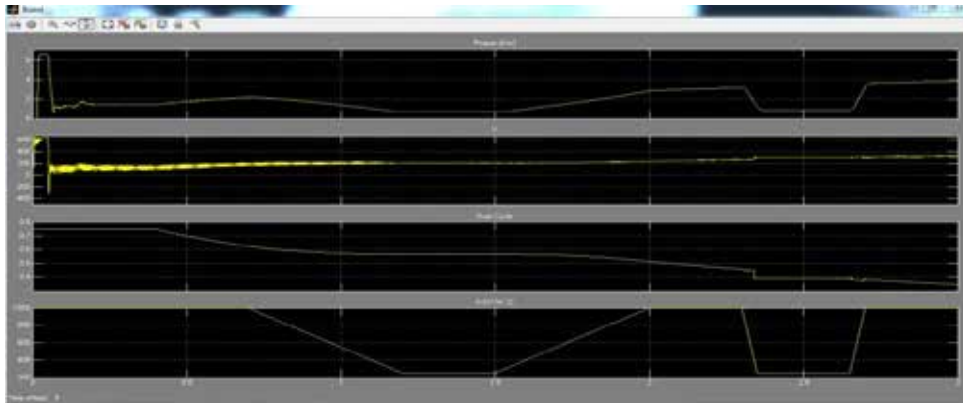


Fig. 14. PV power, boost converter output voltage, duty cycle, and the irradiation

3.1.4 Sand effect on PV array

Sand effect, or any analogue effect like shading, dust, snow, clouds., etc., can be simulated by adding another signal to the signal of irradiation. As shown in Figs. 15 and 16 shows how the PV current changed following the irradiation variation caused by the sand effect. Leading to a decrease of the output PV power which means minimization of the efficiency and so the performance of the PV.

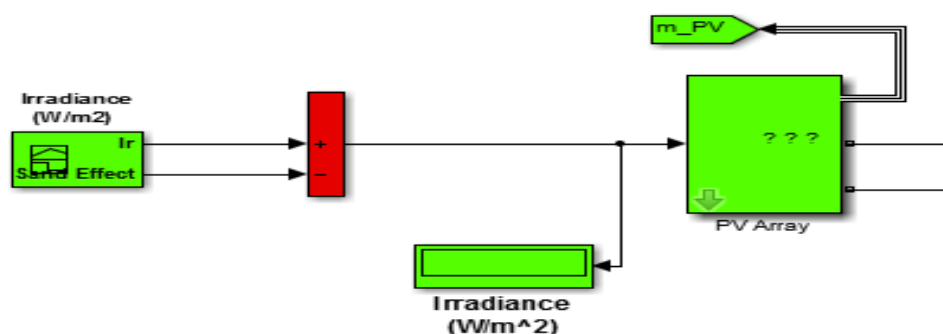


Fig. 15. Sand effect models

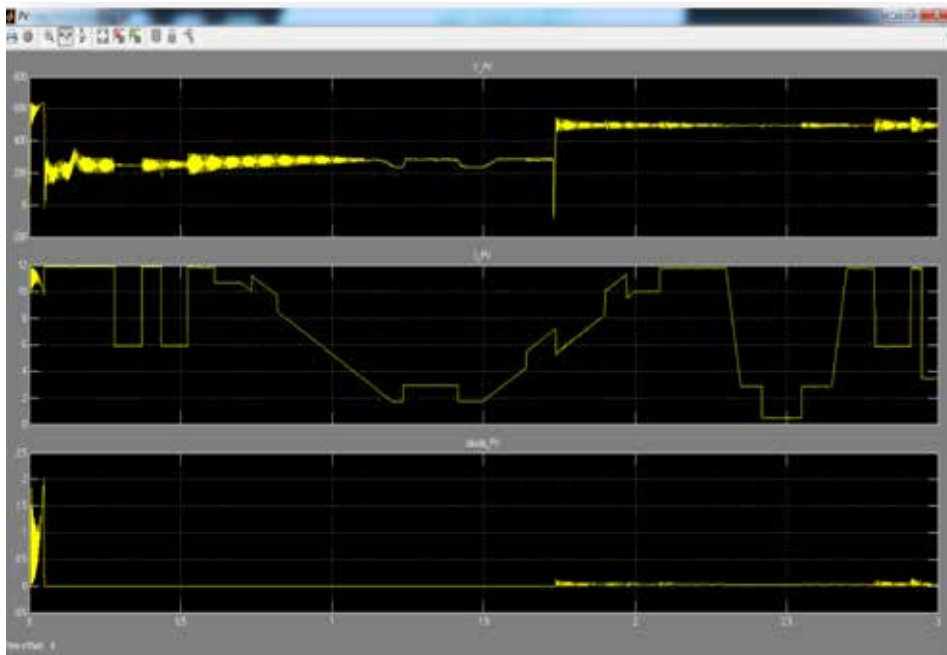


Fig. 16. The PV voltage, PV current, and the diodes current under the sand effect

4. CONCLUSION

The paper presents an approach of modelling a solar PV cell. The model is based on the fundamental circuit equations of a solar PV cell taking the effects of the environmental parameters such as the solar radiation, the cell temperature and the sand effect. The module was simulated on a Matlab/Simulink model using a KYOCERA KD235GX solar panel with 235 Wp peak power, such model would provide a tool to predict the I-V, and P-V characteristics of the solar PV cells and to select the proper power electronics and the associated control method to track the maximum power point under the changes of the environmental parameters.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Optimization of the Extraction of Pectin from *Cucumis Melo*

ABSTRACT

Cucumis melo, a plant found in Cameroon, is being used at the artisanal scale as vegetable in some Cameroon local dishes. These extracts are still to be exploited at the industrial level. In order to add more value to the Cameroon vegetative potential in general, the optimisation of pectin extraction from this plant was studied. Pectin was extracted from the fruits of C. M. by solubilisation in aqueous media followed by ethanol purification. A centred composite experimental design with three factors: temperature, pH and alcohol/water ratio was used to this effect. Responses considered were, water absorption capacity, solubility index and the emulsifying activity. The results obtained were analysed with the Statistica Centurion Software and the validation criteria for the obtained models where: the AMOA¹, the determination coefficient R² and the sum of residuals. Sigma plot-11 software was used to plot surface response curves so as to better visualise the results. From this work, it follows that the optimum conditions for the extraction of pectin from *Cucumis melo*, was attained at pH 2.4, alcohol/water ratio of 1.5 and a temperature of 74°C.

Keywords: food pectin; cucumis melo; extraction; optimisation.

1. INTRODUCTION

Generally, many plants serve as a source of raw material for the manufacture of water-soluble gums. These substances are exploited in the cosmetic, therapeutic, textile and food industries amongst others. The main industrial sources of water-soluble gums of vegetative origin are: the brown algae (agar, alginates) originating

¹Absolute Mean Deviation Analyses.

from England, the red algae (carraghenanes) originating from Ireland, the carob seeds of Egyptian origin, the guar seeds of Indian origin (galactomannanes), foreign fruits and vegetables more precisely apples [1,2]. Amongst several studies, proved the presence of pectin in the fruits of *Cucumis melo*, commonly called *African melon*, and demonstrated the presence of pectin in some vegetative species of Africa [2,3,4], the industrial exploitation of these resources are still rudimentary in Cameroon; indeed, this plant is only used for human consumption [5,6]. In order to promote the industrial application of this local plant, this work had as main objective to optimise the extraction processes and the characterisation of pectin obtained from the fruits of *Cucumis melo*.

Otherwise, pectin has the advantage of being soluble in water. Being polysaccharides, those of vegetative origin are generally affected by temperature and pH. Indeed the temperature and the pH of pectin extraction vary according to their chemical composition. Non ionised pectin resulting from fruits is more soluble at a pH range from 6 to 9. As for their extraction temperature, it varies between 50 and 85°C, in order to limit degradations due to severe heat treatment [7]. For pectin, the extraction pH is rather acidic because of their great stability in acid medium due to their high percentage of galacturonic acid. Their extraction temperature generally lies between 60 and 100°C [8]. The extraction yield is thus strongly affected by the pH and the extraction temperature.

Moreover, alcohol/water ratio is a factor to consider for the extraction of pectin. Indeed being an organic solvent, alcohol facilitates the precipitation of polysaccharides which are insoluble in organic solvents [9]. However, the quantity of pectin precipitated depends strongly on the alcohol/water ratio and the interactions between the various components of the raw material during the purification of pectin, hence the importance of this factor in pectin extraction. Generally pectin extraction depends on the temperature, pH and alcohol/water ratio for which pectin extracted have different yields and properties; it is the reason to study how these factors affect the extraction of water soluble pectin from the fruit of *Cucumis melo*.

2. MATERIALS AND METHODS

2.1 Sampling of the *Cucumis melo* (C. M.) Fruits

Mature ripe fruits of *C.M.* were purchased at Makenene, a town located in the Centre Region of Cameroon in July 2012. They were transported to the Physico-

Chemistry Laboratory of ENSAI, University of Ngaoundere in polyethene bags. Once at the laboratory, these fruits were washed with tap water and peeled. The Pulp obtained was sliced into 1 mm thick lamellas with the help of a knife. These lamellas were blanched in distilled water at 80°C for 5 minutes, then dried at 45°C for 72 hours with an electric dryer (P. Dominioni Lurate Caccivio Como, Italy). After drying, a cereal crusher (SAMAP) was used to crush the dried lamellas into a powder. This powder was sieved with a 400 µm mesh sieve, and preserved in an airtight container prior to analysis.

2.2 Extraction of Pectin from C. M.

The method used for extraction was the extraction in aqueous acid. The precipitation was with ethanol 95°C. The wet pectin obtained were then dried with an electric dryer and preserved in polyethylene bags. In a more detailed approach, the various stages for the extraction process of C. M. pectin was as follows:

2.2.1 Preparation of the extraction solution

10 g of sample was weighed out on an analytical balance (Denver Instrument, model Apx3202) and each dispensed into 250 ml distilled water, to obtain a solution of final concentration of 10 g / 250 ml. In order to optimise the extraction of pectin, a centre composite experimental design was used to permit the variation of pH within experimental limits. A pH range from 1.5 to 4 was used. The experiments carried out were represented on an experimental matrix as shown on Table 1. The solutions were buffered with 2 M citric acid solutions and 0.5 M sodium hydrogen carbonate solution with the help of a pH-meter within a temperature range from 60 to 100°C.

2.2.2 Extraction

Extraction was done based on the conditions described by the experimental matrix presented on Table 1. A centred composite plan was used for the extraction optimisation. Solutions at different temperatures were placed under agitation at a speed of 3600 rpm for 4 hours.

2.2.3 Centrifugation

After extraction, the solutions were centrifuged at 3600 rpm for 15 minutes. The supernatant was recovered and stored at 4°C, while the sediments were discarded.

The resulting supernatants from the two successive extractions were considered to be the purified pectin.

2.2.4 Purification

After measurement of the supernatant volume, precipitation was carried out by incorporating a given volume of ethanol at 95°C into the medium. The alcohol/water ratio was between 1 and 3 and the precipitation time was fixed at 30 minutes. This operation was optimised by the use of a centred composite experimental plan, whose matrix is presented in the Table 2. After precipitation, the pectin was thus separated by filtration. They were washed with ethanol in order to eliminate the impurities.

Table 1. *Cucumis melo* pectin's extraction matrix

Trials	Temperature (°C)	pH
1	60	1.5
2	90	1.5
3	60	4
4	90	4
5	60	1.5
6	90	1.5
7	60	4
8	90	4
9	75	2.75
10	75	2.75
11	75	2.75
12	50	2.75
13	100	2.75
14	75	0.65
15	75	5
16	75	2.75
17	75	2.75

P.S: During the handling, the pH of 0.647 was replaced with pH 1 to practical convenience

Table 2. *Cucumis melo* pectin's purification matrix

Trials	Alcohol/water ratio
1	1
2	1
3	1
4	1
5	3
6	3
7	3
8	3
9	2
10	2
11	2
12	2
13	2
14	2
15	2
16	0.3
17	3.7

2.2.5 Drying

The pectin was dried at 38°C for 15 hours with an electric dryer. They were then crushed in order to obtain a powder which was conditioned in airtight packages. Fig. 1 illustrates the extraction method.

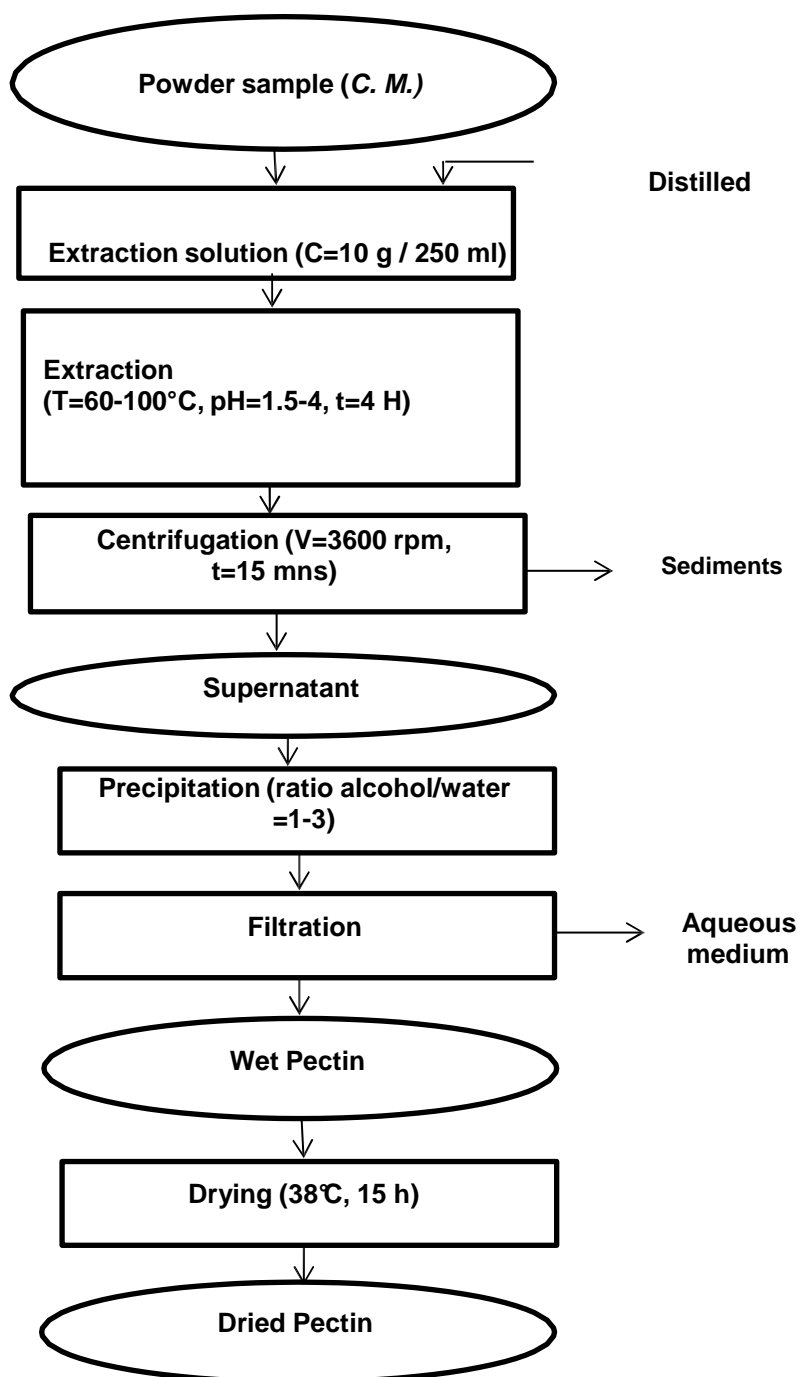


Fig. 1. Extraction process for the pectin of *Cucumis melo*

2.3 Determination of the Extraction Yield

The extraction yield (Y) determines the proportion or the percentage of pectin obtained from the raw material for each experiment. It was thus calculated:

$$Y(\%) = \frac{(m1-m2)}{m1} \times 100\%,$$

where: m1: mass of sample; m2: mass of pectin.

2.4 Determination of the Absorbency Apparent Water (aaw)

The absorbency apparent water (aaw) is the ability of a substance to adsorb onto water molecules. The method used was adapted from that of Phillips et al. [10], 0.4 g of corn starch powder was mixed with 0.1 g of pectin powder. This mixture with a total mass of 0.5 g was mixed with 10 ml distilled water under agitation for 30 minutes with an agitator and centrifuged at 5600 turns/min for 30 minutes in a centrifuge (standard DL - 6000). The recovered sediment (m2) was weighed and the aaw was thus calculated:

$$aaw(\text{gwater} / \text{gSample}) = \frac{(m1-m2)}{m1} \times 100.$$

2.5 Determination of the Solubility Index

The solubility index (SI) expresses the percentage of dissolved pectin in a given volume of water compared to the mass of dry raw material. It was done according to the method of Anderson et al. [7], 0.1 g of pectin was added to 0.4 g of corn starch and the powder mixture was dissolved into 10 ml of water and agitated for 30 mins. The homogenate was centrifuged at 5600 turns/min for 30 mins. The sediments m2 was recovered, weighed and dried at 105°C in an oven for 24 h. The weight of the dry sediments (m3) was determined and the solubility index was thus determined:

$$SI(\%) = Mse - \frac{m3 - m0}{m2 - m0} \times 100.$$

2.6 Determination of the Pectin Emulsifying Properties

The emulsifying properties of pectin determine its capacity to permit the miscibility of two dissimilar liquids. In order to verify the presence of hydrophilic and

hydrophobic groups, emulsions were prepared as described above and emulsifying activity was determined.

2.6.1 Preparation of the emulsions

0.1 g of pectin was dissolved in 5 ml of water, and then mixed with 5 ml cotton seed oil under agitation for 30 mins with a magnetic stirrer. The mixture thus obtained constituted the emulsion used to determine the emulsification activity.

2.6.2 Estimation of the emulsifying activity (EA)

The emulsifying activity was evaluated by the method adapted from Muschiolik [11]. 10 ml of the emulsion was introduced into a graduated tube and left at rest for 30 minutes. The volume (height) of the emulsified phase was measured and the pectin emulsification activity (AE) in percentage was determined thus:

$$EA(\%) = \frac{He}{Hw} \times 100\%$$

With: He; the height of the emulsified layer and Hw; the total height of the liquid in the tube.

3. RESULTS AND DISCUSSION

3.1 The Extraction Yield

The yields of the extraction of pectin from C. M. were obtained as a function of the factors: temperature, pH and alcohol/water ratio. Table 3 presents the observed, the predicted yields and the calculated residuals.

Table 3. Results of the extraction yield of pectin from C. M.

Trial	Temperature (°C)	pH	Alcohol/water ratio	Observed yields	Predicted yields	Residuals
1	60	1.5	1	4.53	3.359	1.170
2	90	1.5	1	3.8	3.447	0.352
3	60	4	1	0.66	0.289	0.370
4	90	4	1	0.9	0.554	0.345
5	60	1.5	3	1.8	1.613	0.186
6	90	1.5	3	2.486	2.324	0.161
7	60	4	3	0.23	0.050	0.179
8	90	4	3	0.3	0.938	-0.638
9	75	2.75	2	0.82	0.774	0.045
10	75	2.75	2	0.8	0.774	0.025
11	75	2.75	2	0.833	0.774	0.058

12	50	2.75	2	0.406	1.283	-0.877
13	100	2.75	2	2.23	2.104	0.125
14	75	0.65	2	3.16	4.016	-0.856
15	75	5	2	0.373	0.269	0.103
16	75	2.75	0.3	0.24	1.3152	-1.0752
17	75	2.75	3.7	0.493	0.170	0.322

From these results it arose that the centre experiments had values of 0.82, 0.8, and 0.833%; with a standard deviation of 0.016. It can be observed that experiments 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 15 and 17 had experimental values higher than those predicted while experiments 8, 12 and 16 had observed yields lower than the predicted one. This could be due to experimental errors and variations in the quality of reagents used. Moreover the sum of the residuals amounted to 0.0000026 which is very close to zero. Results of the C. M. pectin yields were thus valid. The lowest yield value obtained occurred with experiment 7 and this corresponded to the following experimental conditions: temperature of 60°C, a pH of 4 and a ratio of 3. The optimum was attained at experiment 11 corresponding to a temperature of 60°C, a pH of 1.5 and a ratio of 1.

However, it can be observed that, this yield (4.53%) was lower than 7% as observed by Ptichkina et al. [8]. These results can be justified by the state of the maturity of the fruit and the extraction time. Indeed, the fruits used for this study were at the ripening stage, whereas it is advisable to extract pectin from mature fruits which are not sufficiently ripe since high pectinase activity occurs in ripe fruits. Moreover, the extraction time was fixed at 4 hours, a time which could have been sufficiently long to promote the hydrolysis of pectin. Indeed, the extraction time of pectin depends on the maturity of the raw material.

3.1.1 Equation of the model

$$Y = 0.77463 + 0.488191X_1 - 2.22792X_2 - 0.680758X_3 + 0.650268X_1^2 + 0.0885X_1X_2 + 0.3115X_1X_3 + 0.967409X_2^2 + 0.7535X_2X_3 - 0.0225412X_3^2$$

With: X_1 = Temperature; X_2 = pH; X_3 = Alcohol/water ratio.

From this model, the average of the extraction yields of pectin was 0.77463 which corresponded to the constant of the model. The pH factor had a greater impact on pectin extraction from C. M. since it had the highest coefficient - 2.22792; indeed its impact was negative on this response. It was closely followed by the factor ratio which also had a negative effect and thus the coefficient was - 0.680758. The temperature factor had a positive effect which was less significant than the others

factors, with a coefficient of 0.488. The pH-pH interaction had a positive effect which was more significant. It was followed by the pH-ratio, temperature-temperature and temperature-ratio interactions, which had coefficients of 0.967409, 0.7535, 0.650268, and 0.3115 respectively.

According to the variance analysis, only the pH had a highly significant effect on the extraction yield of pectin from *C. M.* the other factors and their interactions did not show any marked significant effect on this response. However, the R^2 was 85.7579%; the AMOA was 0.131 Table 4 with the AMOA close to 0 this model was validated.

Table 4. Validation of the yield model for the extraction of the pectin from *C. M.*

Validation elements	Abbreviations	Observed values	Standard values
Determination coefficient	R^2	85.7579%	100%
Absolute mean deviation analyses	AMOA	0.13138215	0

In order to visualise the effect of the various factors on the extraction yield for pectin of *C. M.*, the surface response curve was plotted Figs. 2 and 3 by considering the factors which had a greater effect on the yield; the temperature was fixed at a value within the experimental limits.

From these surface responses, the yield of extraction of pectin from *C. M.* was highest at an alcohol/water ratio of 1, a temperature of 60°C and a pH of 1.5. This illustrates that low temperatures combine with low pH and small ratios in the experimental domains permitted a better extraction of pectin from *C. M.* In fact, pectin being made up of mainly galacturonic acid residues would easily be solubilised in acidic medium because under these conditions their affinity for the medium becomes dominating. The moderate temperatures would allow the maintenance of their structural integrity contrary to severe temperatures which combined with an acid pH lead to the hydrolysis of pectin. With regard to the ratio, it was observed that the yield was inversely proportional to the ratio up to a threshold ratio of 1. This is justified by the composition of pectin. The latter is very rich in galacturonic acid whose acidic groups can form ester bonds with ethanol in the presence of abundant ethanol in the medium. This justifies a reduction of the yield with an increase in ethanol volume.

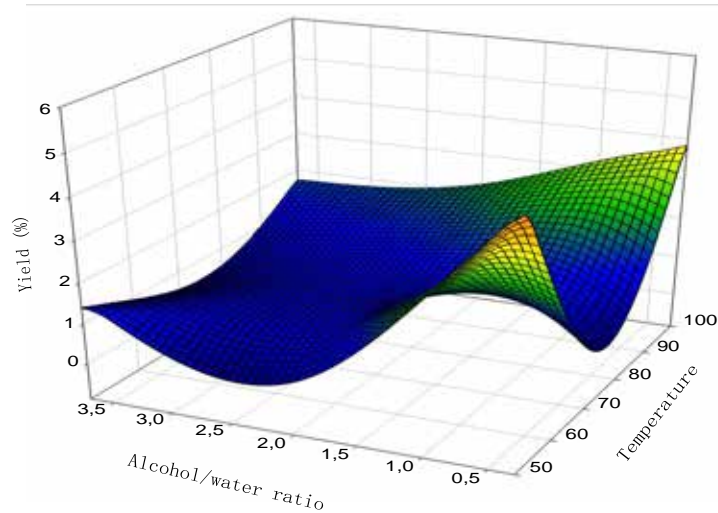


Fig. 2. Evaluation of the yield of the extraction of pectin from C. M. as a function of the alcohol/water ratio and the temperature: Yield:

• : 0%; • : 1%; • : 2%; • : 3%;
• : 4%; • : 5%; • : 6%

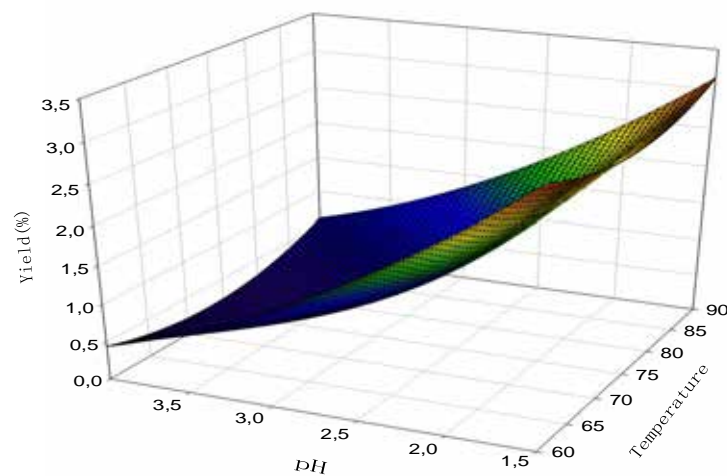


Fig. 3. Evaluation of the yield of the extraction of pectin from C. M. as a function of alcohol/water ratio and the pH Yield:

• : 0%; • : 2%; • : 4%; • : 6%

3.2 Absorbency Apparent Water (aaw)

Absorbency apparent water (aaw) was determined as a function of the factors: temperature, pH and alcohol/water ratio. Table 5 thus contains observed, predicted and the values of the residuals of aaw.

Table 5. Results of aaw of the pectin of C. M.

Trials	Temperature (°C)	pH	Ratio alcohol/water	Observed aaw	Predicted aaw	Residuals
1	60	1.5	1	36	18.275	25.224
2	90	1.5	1	34	5.404	28.595
3	60	4	1	10	33.567	-23.567
4	90	4	1	58	99.195	-41.195
5	60	1.5	3	128	128.159	-0.159
6	90	1.5	3	78	95.787	-17.787
7	60	4	3	19	88.950	-69.950
8	90	4	3	76	135.079	-59.079
9	75	2.75	2	100.1	105.378	-5.278
10	75	2.75	2	102	105.378	-3.378
11	75	2.75	2	104	105.378	-1.378
12	50	2.75	2	46	20.775	25.224
13	100	2.75	2	82	48.740	33.259
14	75	0.65	2	42	78.808	-36.808
15	75	5	2	220	124.707	95.293
16	75	2.75	0.3	25	33.9707	-8.970
17	75	2.75	3.7	224	156.545	67.455

From this table, the aaw of the centre experiments were: 100.1, 102 and 104 g water/g of pectin; with a standard deviation of 1.95. The results revealed that the observed aaw were higher than predicted aaw for experiments 2, 4, 10, 11, 12 and 15 and that the real values were lower than the predicted values for experiments 1, 3, 5, 6, 7, 8, 9, 13, 14, 16 and 17. This could be a result of experimental errors. In addition, the sum of the residuals was 0.00021 a value very close to zero. Hence, the model can thus be validated. The optimum was obtained with experiment 15 which corresponds to operation conditions of temperature 75°C, pH 2.75 and ratio 3.68. These combinations of factors favour the acquisition of a favourable configuration of pectin for water absorption. Despite these, some values of aaw were lower than the aaw of the blank sample, the optimum value of aaw obtained was 224 g of water/g pectin which is largely higher than aaw of the blank sample. The pectin of C. M. can thus be used in bread making, in order to improve dough consistency.

3.2.1 Equation of the model

$$Y = 105.378 + 16.6284X_1 + 27.2917X_2 + 72.8831X_3 - 49.9357X_1^2 + 39.25X_1X_2 - 9.75X_1X_3 - 2.55988X_2^2 - 27.25X_2X_3 - 7.1561X_3^2$$

With: X_1 = Temperature; X_2 = pH; X_3 = Alcohol/water ratio.

The equation constant, which is the average aaw is 105.378. We can observe that, the factor ratio has the greatest effect on aaw followed by the pH and the temperature with positive effects on this response. The quadratic interaction temperature-temperature had the most negative effect on aaw with a coefficient of -

49.935. It is followed by the interaction temperature-pH with a positive effect and a coefficient of 39.25; the interaction pH-ratio with a negative effect and -27.25 as coefficient. Finally, the interaction temperature-ratio has a negative effect with -9.75 as a coefficient. The quadratic interactions ratio-ratio and pH-pH were least with negative effects and coefficients of -7.1561 and -2.55988 respectively. However all these factors and interactions do not have a significant effect on aaw as shown by the variance analysis. Indeed, the variations of all these factors as well as their interactions do not have a considerable influence on aaw for the pectin of C. M. The validation of the aaw model was done by evaluating the R^2 and the AMOA Table 6.

Table 6. Validation of the aaw model for pectin of C. M.

Validation elements	Abbreviations	Observed values	Standard values
Determination coefficients	R^2	83.98%	100%
Absolute mean deviation analyses	AMOA	0.31242399	0

The R^2 had a value of 83.98% and is thus distant from the standard value. The AMOA was equal to 0.31242399. This value being closed to zero permitted the validation of this model. The surface response of aaw of pectin of C. M. Figs. 4 and 5 could be represented as a function of the experimental domain.

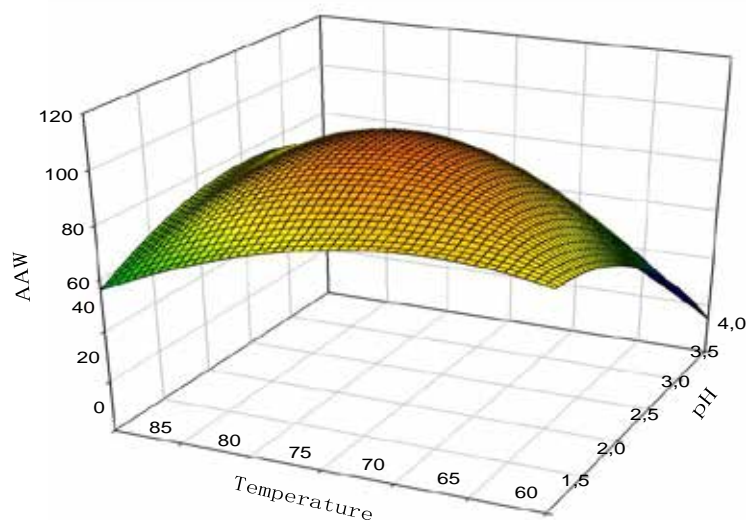


Fig. 4. Evaluation of aaw of the pectin of C. M. as a function of temperature and pH:

• : 2; • : 0; • : 100; • : 200; • : 300

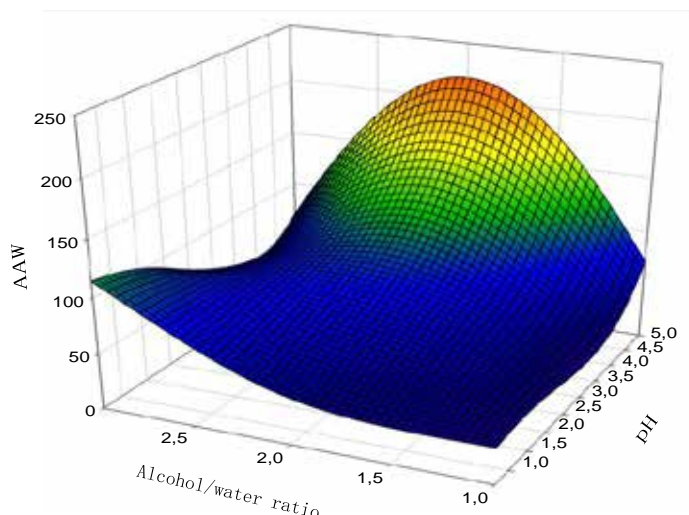


Fig. 5. Evaluation of aaw of the pectin of C. M. as a function of alcohol/water ratio and the pH aaw in g water/g pectin:

• : 0; • : 50; • : 100; • : 150; • : 200; • : 250

From these Figures, we can see that aaw is optimum on two levels; firstly at a pH range from 4 to 4.5 for a ratio from 1.5 to 2.5; and secondly at a pH range between 2 and 3.5 for a ratio greater than 3. These conditions impart a favourable configuration to pectin, hence promoting great water adsorption. From these surface curves, it also arises that the interaction pH-ratio had a dominating effect on aaw for pectin of C. M. and that the two optimum intervals of pH correspond to precise intervals of alcohol/water ratio.

3.3 Solubility Index (SI)

The SI obtained according to temperature, pH and alcohol/water ratio is presented on Table 7. This table also contains the predicted SI and the calculated residuals from the actual and predicted values.

This Table presents experiments at the centre with values being 53.95, 56.11 and 55.10 with a standard deviation of 1.080. The observation of the experimental and predicted values show that the experimental SI are higher than the predicted one for experiments 1, 5, 7, 10, 13, 15 and 17 while they are lower than the predicted one for experiments 2, 3, 4, 6, 8, 9, 11, 12, 14 and 16. These variations are caused by the experimental errors and the use of different ethanol stocks. Nevertheless, these results can be validated because the sum of the residuals obtained through the differences between the actual values and the predicted values is 0.0000014 which is very close to 0. The lowest SI is 47.02% and corresponds to experiment 3 (60°C, pH 4 and ratio 1). The highest SI is 65.82% and corresponds to a temperature of 75°C, a pH of 5 and an alcohol/water ratio of 2 (experiment 15).

3.3.1 Equation of the model

$$Y = 55.4672 - 2.3247X_1 + 4.87747X_2 + 8.05757X_3 - 4.1371X_1^2 + 8.53X_1 X_2 + 1.735X_1X_3 + 1.83198X_2^2 - 4.46 X_2X_3 - 2.37291X_3^2$$

With: X_1 = Temperature; X_2 = pH; X_3 = Alcohol/water ratio

Tab 7. Results of the SI of the pectin of C. M.

Trials	Temperature (°C)	pH	Alcohol/water ratio	Observed SI	Predicted SI	Residuals
1	60	1.5	1	49.9	48.893	1.006
2	90	1.5	1	34.45	36.303	-1.853
3	60	4	1	47.02	49.701	-2.681
4	90	4	1	47.22	54.171	-6.951
5	60	1.5	3	61.51	59.676	1.833
6	90	1.5	3	48.12	50.556	-2.436
7	60	4	3	49.1	45.335	3.764
8	90	4	3	53.38	59.503	-6.123
9	75	2.75	2	53.95	55.467	-1.517
10	75	2.75	2	56.11	55.467	0.642
11	75	2.75	2	55.10	55.467	-0.367
12	50	2.75	2	50.95	51.571	-0.621
13	100	2.75	2	55.52	47.661	7.858
14	75	0.65	2	47.17	48.775	-1.605
15	75	5	2	65.82	56.977	8.842
16	75	2.75	0.3	48.3	51.563	51.563
17	75	2.75	3.7	62.36	58.887	3.473

The average of the SI of the pectin of C. M. corresponds to the constant of the model 55.4672. The factor ratio had the greatest positive effect on the SI with coefficient of 8.0575. It was followed by the positive effect of the pH and the negative effect of the temperature with coefficients of 4.87747 and -2.3247 respectively. The interaction temperature-pH had the greatest positive effect on the SI. It was followed by the ratio-pH interaction having a negative coefficient of -4.46 and the negative temperature-temperature interaction with a coefficient of -4.46. The quadratic interaction ratio-ratio had a negative effect with a coefficient of -2.37291 and finally the interaction temperature-ratio of a positive effect with a coefficient of 1.735.

It is important to note that all these factors and interactions did not have a significant effect on the SI of the pectin of C. M. as shown by the variance analysis. The solubility indices for the pectin of C. M. obtained permitted the establishment of a model. The validation criteria of this model are presented in Table 8 which contains the values of R^2 and the AMOA.

Table 8. Validation of the model of the SI for the pectin of C. M.

Validation elements	Abbreviation	Observed values	Standard values
Coefficient de correlation	R^2	86.1442%	100%
Absolute mean deviation analyses	AMOA	0.06127348	0

From this table, we can see that R^2 is different from the standard value. With regard to the AMOA, it is 0.06127348 values very close to 0. The model of the IS for the pectin of C.M. was thus validated. The result obtained was used to plot surface response curves Figs. 6 and 7. This curve represents the SI as a function of the pH and of the alcohol/water ratio; temperature was fixed at its central value.

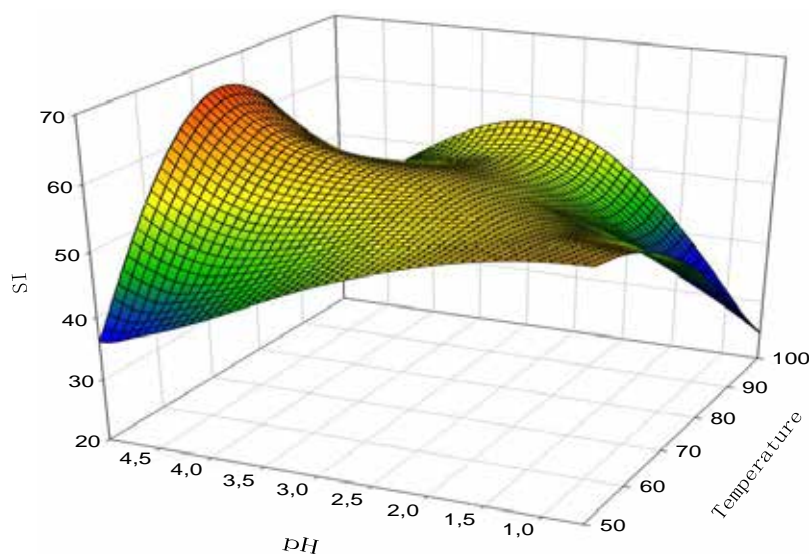


Fig. 6. Evaluation of the SI of the pectin of C. M. as a function of the pH and the temperature SI:

• : 20%; • : 30%; • : 40%; • : 50%; • : 60%; • : 70%

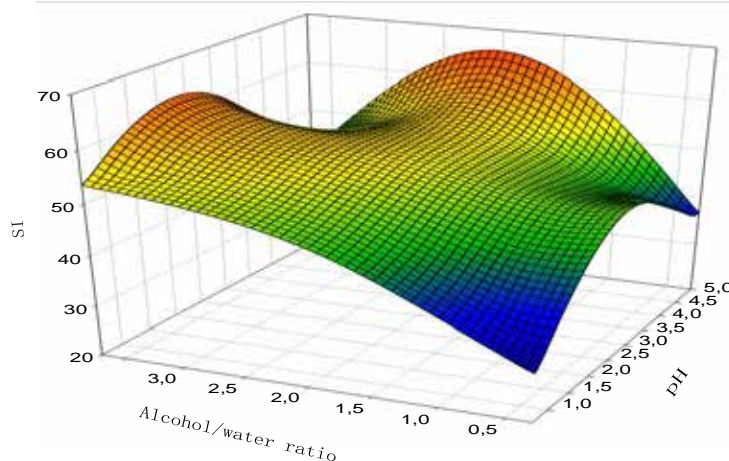


Fig. 7. Evaluation of the SI of the P.C.M. as a function of the pH and the alcohol/water ratio SI:

• : 35%; • : 40%; • : 45%; • : 50%; • : 55%; • : 60%; • : 65%; • : 70%

These Figures show that, the SI was optimum at pH values higher than 4 within the experimental limits, with an alcohol/water ratio range from 1.5 to 2.5 and temperature between 70 and 80°C. The Solubility is related to the competition between

the solute-solute interactions and water-solute interaction. These conditions of extraction would favour the solute-water interaction than the solute-solute interactions. Moreover knowing that the solubility of pectin depends on their ionic state and that of the saline form is more soluble than the acid form, it is thus normal that the SI was highest at higher pH within the experimental limits. With the ideal being SI of 100%, the must thus undergo an additional treatment so that there SI is improved.

3.4 Emulsifying Activity (EA)

The EA of the pectin of C. M. was evaluated according to the various factors chosen within the framework of this study; the results obtained Table 9 were the observed and the predicted AE.

Table 9. Results of the AE of the pectin of C. M.

Trials	Temperature (°C)	pH	Alcohol/water ratio	Observed AE	Predicted AE	Residuals
1	60	1.5	1	60	66.7847	-6.7847
2	90	1.5	1	50	58.7072	16.9687
3	60	4	1	50	33.0313	16.9687
4	90	4	1	40	44.1573	-4.1573
5	60	1.5	3	52.94	59.6343	-6.6943
6	90	1.5	3	77.77	75.2958	2.4742
7	60	4	3	41	64.2018	-23.2018
8	90	4	3	95	94.4483	0.5517
9	75	2.75	2	88.85	89.3842	-0.5042
10	75	2.75	2	88.8	89.3842	-0.5042
11	75	2.75	2	88.88	89.3842	-0.5042
12	50	2.75	2	94.73	70.7471	23.9829
13	100	2.75	2	52.63	67.798	-15.168
14	75	0.65	2	44.44	50.9911	-6.5511
15	75	5	2	75.67	60.304	15.366
16	75	2.75	0.3	40	39.5388	0.4612
17	75	2.75	3.7	97.29	84.3178	12.9722

The centre experiments had AE values of 88.88, 88.85 and 88.8; with a standard deviation of 0.04. The actual values and those predicted showed that experiments 3, 6, 8, 12, 15, 16 and 17 had observed EA higher than those predicted and that of experiments 1, 2, 4, 5, 7, 9, 10, 11, 13 and 14 had observed EA lower than those predicted. These differences could be attributed to experimental errors. The sum of the residual was 0.0001 which is very closer to 0; hence these results were reliable and validated. The lowest EA was 40% and corresponded to experiments 4 and 16. The highest EA was 97.29% and corresponded to experiment 17 (75°C, pH 2.75 and ratio 3.7). Due to the emulsifying capacity of this pectin they could be applied in production of many products such as mayonnaise and creams.

3.4.1 Equation of the model

$$Y = 89.3842 - 1.75345X_1 + 5.53749X_2 + 23.8796X_3 - 14.221X_1^2 + 7.2925X_1X_2 + 24.7075X_1X_3 - 23.8554X_2^2 + 6.3225X_2X_3 - 17.7814X_3^2$$

With: X_1 = Temperature; X_2 = pH; X_3 = Alcohol/water ratio.

This equation has as a constant 89.3842; this value corresponds to the sum of the EA obtained. The ratio had the greatest effect on the EA and this effect was positive. It was closely followed by the pH with a coefficient of 5.53749 and temperature with a negative coefficient of -1.75345. The interactions temperature-ratio, Temperature-pH and pH-ratio had a significant and positive impact on the EA of the pectin with the interaction temperature-ratio having the greatest effect with 24.7075 as coefficient. It was followed by the quadratic interaction pH-pH which has a negative effect with a coefficient of -23.855. Then, the quadratic interaction temperature-temperature with a negative effect, followed by the interaction temperature-pH with a coefficient of 7.2925 (positive effect) and finally by the interaction pH-ratio of coefficient 6.3225 (positive effect). Amongst these factors and interactions, only the factor alcohol-water ratio had a significant effect on the EA as shown by the variance analysis. The other factors and interactions had a slight influence on the EA. The validation elements for the model are contained in Table 10 as follows:

Table 10. Validation of the EA model for pectin of C. M.

Validation elements	Abbreviations	Observed values	Standard values
Coefficient of determination	R^2	82.7901%	100%
Absolute mean deviation analyses	AMOA	0.14789617	0

The R_2 was 82.7901 and the AMOA which was very small and approximately zero permitted the validation of the model. The surface response of the EA of the pectin of C. M. was plotted as a function of the pH, alcohol/water ratio, with the temperature being maintained fixed within the centre points of the experimental domain Figs. 8 and 9.

The EA attained an optimum at pH equal to or higher than 3 for an alcohol-water ratio equal to or higher than 2.5, and a temperature range between 70 and 90°C. At pH equal or higher than 3, there is an attenuation of the effect of severe temperatures combined with the extreme acidic pH. These conditions thus make it possible for pectin of C. M. to preserve their structural integrity. This maintains the viscosity of the macromolecule which slows molecular motion.

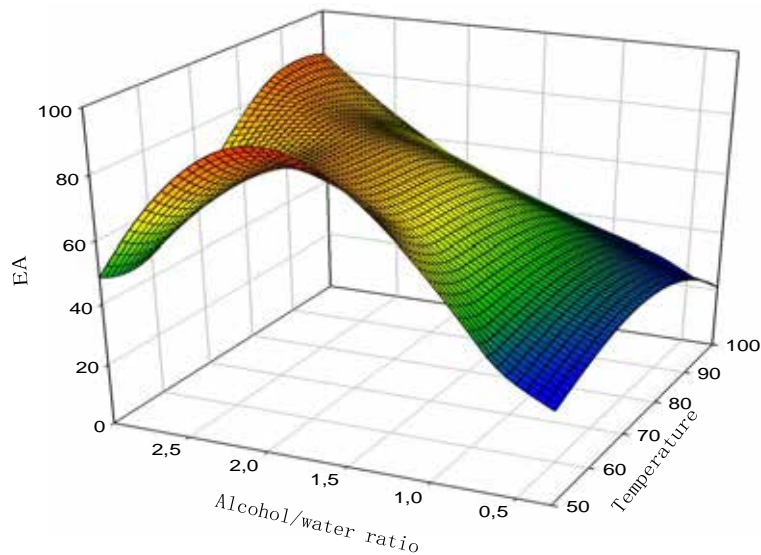


Fig. 8. Evaluation of the AE of pectin of C. M. as a function of the alcohol/water ratio and the temperature EA:

● : 0%; ● : 20%; ● : 40%; ● : 60%; ● : 80%; ● : 100%; ● : 120%

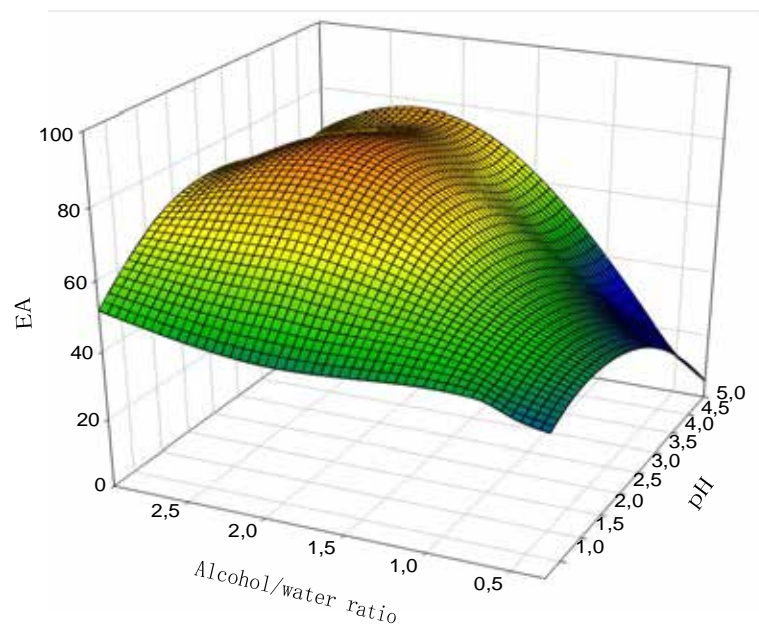


Fig. 9. Evaluation of the EA of the pectin of C. M. as a function of the alcohol/water ratio and the pH EA:

● : 0%; ● : 20%; ● : 40%; ● : 60%; ● : 80%; ● : 100%; ● : 120%

4. DETERMINATION OF THE OPTIMUM POINTS

With the application of response surface methodology in this study, one of the objectives was to determine the compromise zone within the experimental domain. Taking into account the fact that it is difficult to have a combination of factors

permitting the accessibility of optimal responses for all factors at the same time, the results obtained were used to determine the acceptable compromise zone. Table 11 enables us to determine the optimum points for analysed responses.

Table 11. Determination of the optimum zone of the pectin of C. M.

Factors	Yields	CAEa	SI	EA	Optimum
pH	1.5	2-3.5 4-4.5	>4	3	2.4
Alcohol-water ratio	1	1.5-2.5 >3	1.5-2.5	2.5	1.5
Temperature (°C)	60	70-90	70-80	70-90	74

From this table, the obtained P.C.M. is optimized at a pH of 2.4, a ratio of 1.5 and a temperature of 74°C.

5. CONCLUSION

The optimisation of the extraction of pectin from C. M. was the main focus in this work. The main results show that, the only factor which had a significant effect on the extraction of pectin from C. M. was pH, whereas temperature influenced the process slightly. Extraction of pectin from C. M. was achieved at optimum conditions of pH 2.4, an alcohol-water ratio of 1.5 and a temperature of 74°C. The optimisation of the extraction of pectin considered was thus carried out. However the study of the effect of other factors could contribute to improve the optimisation of the extraction yield.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Adsorption of Cu (II) Ions from Aqueous Solution onto Chemically Prepared Activated Carbon from Theobroma Cacao

ABSTRACT

This present research was aimed at studying the adsorption characteristics of Cu (II) ions from aqueous solutions onto two samples of low-cost, cocoa shell-based activated carbons (CSBAC) using the batch adsorption mode. Activated carbon samples were obtained by chemical treatment via pyrolysis using phosphoric acid (PAA) and potassium hydroxide (PHA) as activation agent. Findings from the studies unveiled a pH at zero-point charge (pH_{zpc}) of 7.0 and 5.9 for PAA and PHA samples respectively. Contact time of 35 minutes for PAA and 15 minutes for PHA at pH_{max} = 4 by 0.1 g were observed. Optimum adsorption quantities were 62.2 mg/g for PAA and 42.2 mg/g for PHA for an initial metal ion concentration of 2400 ppm. The Langmuir model for PHA and Freundlich model for PAA best described the adsorption of Cu (II) ions from aqueous solution. The two CSBAC samples both obeyed pseudo-second order kinetics. Generally, these results indicate that CSBAC can be used as an effective and low-cost adsorbent for the removal of Cu (II) ions from aqueous solutions.

Keywords: cocoa shell; chemical activation; activated carbon; Copper (II) ions; adsorption; kinetic model; isotherm model.

ABBREVIATIONS

PAA: Phosphoric acid activated carbon, PHA: Potassium hydroxide activated carbon, CSBAC: Cocoa shell-based activated carbons, In: Iodine number, ASTM: American Society for Testing and Materials, pH_{zpc}: pH at zero-point charge.

1. INTRODUCTION

Voluntary or accidental water, air and soil pollution by some chemical substances of industrial (heavy metals, colorants, microorganics, toxic gases, etc.) or agricultural origin (pesticides, fungicides, fertilizers, etc) constitute a major source of environmental degradation. These problems have been receiving worldwide attention from researchers to savage the health of mankind [1]. Heavy metals on their part are well known for their non-biodegradation properties that render them very toxic even at very low concentrations to all organisms of the plant and animal kingdoms. They accumulate in living organisms even during mass transfer in trophic chain [2]. It is therefore imperative to partially or totally eliminate heavy metal ions from industrial effluents to acceptable levels.

Copper is used in cloth making, marine painting, electrical equipments, boilers, pipes, etc. International norms according to WHO prescribe limiting concentrations of Copper in drinking water to 1 mg/L of copper [3]. Although Copper constitutes one of the micronutrients in the human body, its accumulation have been reported in the liver, brain, pancreas and myocardium of humans that often leads to Wilson Disease [4,5]. Continual inhalation of Copper vapor may lead to lung cancer [6]. The development of several techniques and methods such as chemical precipitation, adsorption on mineral or organic materials, complexation, biosorption, cementation, solvent extraction, distillation, emulsified liquid membranes and membrane processes (microfiltration, ultrafiltration, nanofiltration, reverse osmosis, ion-exchange resins etc), are geared towards greater amelioration of the quality of the environment/water quality [7]. Amongst these methods, adsorption which is reported in this work has shown high potentials and simplicity in management in the depollution of industrial waste water, especially in the elimination of some heavy metals [8]. Nevertheless, its efficacy depends largely on the adsorbent (cost, availability, and its regeneration) put in place.

In this regard, much work has been carried out on diverse materials, be it of natural or biological origin in the elimination of heavy metals from aqueous solutions. Low cost and high adsorption capacity agricultural by-products such as saw-dust, coco fibers, coconut palm fibers, banana peelings, sugar cane bagasse, orange peelings and nut shells etc [9], cola nut shells in the adsorption of colorants [10] have been used as adsorbents for the removal of heavy metals from aqueous solutions. The adsorption of cadmium on bacterium cells and algae has been studied [11-13]

for the adsorption of some heavy metals on cucumber pulps. Adsorption studies of crystal violet [14]; reactive yellow 2 dyes on activated carbons based on cocoa shells showed that they can serve as low-cost adsorbent material for colorants in aqueous solutions [15]. In 2011, in particular, the fixation of methylene blue in aqueous solutions by activated carbon produced from cocoa shells was reported in the literature according to which maximum monolayer adsorption capacity of 37.03 mg/g was obtained [16]. Also, 7.56 mg/g of Pb (II) ions was adsorbed maximally from aqueous solutions onto activated cocoa shells [17]. In another study, 111.1 mg/g of Cu (II) ions was found as maximum adsorption capacity in investigations carried-out on monolayer adsorption of Cu (II) ions on activated water-melon shells [18]. In yet another study, maximum adsorption capacities of Cu (II) ions from aqueous solution by activated sugar cane bagasse, orange peelings, mango saw-dust studied in 2007 stood at 3.19, 3.12, 2.89 mg/g, respectively [19]. Recently, the investigation of the adsorption of Cu (II) ions on synthetic goethite and natural red soils resulted in the following values respectively 78.2 mg/g, 41.2 mg/g, and 32.2 mg/g [20]. All these results show that the adsorbents act as substitutes or compliments to commercial activated carbon in waste-water treatment.

In the same vein, investigation of palm oil empty fruit bunch in the adsorption of Hg (II), Pb (II) and Cu (II) ions showed that the least adsorption capacity of 0.84 mg/g with respect to the others was by Cu (II) ions [21]. Maximum adsorption capacity of Cu (II) in aqueous solutions onto different initial masses of lignite (30, 45 and 60 g) gave the following values respectively: 4.045, 3.908 and 2.625 mg/g [22]. In Cameroon, the fifth largest cocoa producer in the world [23], agriculture represents an important part of total Gross National Products (GNP) and enormous quantities of agricultural waste products are generated on daily basis near agro-industrial zones/installations. Annual production of cocoa is estimated at 320,000 tons in 2015 according to reports [24]. Cocoa shells present post harvest environmental problems as large quantities are left behind as agric waste. The main purpose of this work was to valorize some of these local precursors (*cocoa shells*, *Theooroma cacao*) for the production of activated carbon. In this study, activated carbon was obtained by chemically treating grounded raw samples by phosphoric acid (PAA) and potassium hydroxide (PHA), followed by simple pyrolysis procedure.

2. MATERIALS AND METHODS

2.1 Collection and Pre-Treatment of Raw Materials

In order to valorize low-cost local materials as activated carbons, the forasteros variety of cocoa shells (*Theobroma cocoa*) was used as precursors. The choice of this biomass was attributed to its availability in the sub-region in particular and in the world in general. Samples of raw-materials were collected basically one hour after the splitting of the cocoa pods after harvesting from cocoa plantations of the Santchou locality, a village situated in the West Region of Cameroon. These samples after collection were abundantly washed with distilled water to eliminate dusty and hydrosoluble substances and were sun-dried for 14 days, after which were grounded using RETCH SM 2000/1430 UPM grinder, which were further sieved to obtain fractions of diameter between 0.50 and 1.25 mm.

2.2 Chemical Activation and Pyrolysis

In this study, chemical activation was carried out with the help of phosphoric acid (H_3PO_4) and potassium hydroxide (KOH), as activation agents. The precursor materials obtained were of diameters ranging between (0.50-1.25 mm). They were chemically pre-treated before pyrolysis step, although the order could be reversed as prescribed by [25]. The method involved mixing the chosen precursor fraction of cocoa shells with either 10% wt/wt H_3PO_4 (for PAA samples) and 50% wt/wt of KOH (for PHA samples) in a 1:2 weight ratio before carbonization. The impregnated samples were placed in an oven at 110°C for 24 hours. Pyrolysis of the impregnated samples was carried-out for one hour duration in a carbolite furnace in the absence of air (oxygen) which was preheated to 400°C at a $10^\circ\text{C min}^{-1}$ heating rate, which was then allowed to cool down to ambient temperature, after which a dry residue was obtained. Total elimination of phosphate ions from the acid samples of activated carbon obtained (PAA) were eliminated by abundantly washing with distilled water until a neutral pH was obtained [26]. On their part, the PHA samples were initially washed abundantly with a 10% solution of hydrochloric acid followed by abundant washing with distilled water until the pH of the resulting samples ranged from 6-7 in order to eliminate all chloride ions [27]. The resultant activated carbon samples (PAA and PHA) were then dried in an oven at 110°C for a period of 24 hours. The final material samples were grounded and then sieved to obtain particles with diameters less than 71 microns and later on conserved in desiccators for further use.

2.3 Characterization of Adsorbent

2.3.1 Iodine number (In)

The iodine number was measured according to the procedure established by the American Society for Testing and Materials (ASTM 02866-94) [28]. The iodine number is defined as the milligrams of iodine adsorbed by 1.0 g of carbon when the iodine concentration of the filtrate is 0.02 N. The iodine number is accepted as the most fundamental parameter used to characterize activated carbon performance.

Iodine number was employed in this study as a test for micro porosity via volumetric analysis. This fundamental test for the potentials of the prepared activated carbon determines its microporosity up to values as small as 2 nm. Iodine number is often correlated with sample specific surface area from BET studies, and is obtained from the following expression:

$$\text{Iodin number} = \frac{25.4 \times (20 - V_n)}{m_{AC}}, \quad (1)$$

where, m_{AC} (g) is the mass of the activated carbon and V_n (ml) the volume of the sodium thiosulphate solution at the equivalence point.

2.3.2 Standardization of iodine solution

10 ml of 0.02 N iodine solutions were pipetted into a conical flask. 2-3 drops of starch solution were added. The pale yellow color of iodine solution turned blue and was titrated with 0.005 N sodium thiosulphate till it became colorless.

2.3.3 Surface fonction determination by the boehm method

Titration of total surface acidity and basicity of the activated carbons was carried out via the Boehm method [29,30]. In the determination of acidic surface functions (carboxylic, lactonic, phenolic), 40 ml each of decimolar solutions of NaHCO_3 , Na_2CO_3 , NaOH and HCl , were introduced into different reactors and each put in contact with 0.10 g of activated carbon sample. Titration of excess base was done by HCl solution. In the determination of the basic functions, 0.1 g of activated carbon was put in contact with 40 ml of a decimolar solution of HCl and the excess acid titrated with NaOH . Stirring was maintained during 48 hours with the aid of a magnetic agitator.

2.3.4 Determination of pH at zero-point charge (pH_{zpc})

pH of zero charge, pH_{zpc}, corresponds to a pH at which the surface charge is nul. pH_{zpc} of the activated carbon was estimated according to standard procedure [31]. 50 ml of a decimolar solution of NaCl was introduced each into a reactor each containing 0.1 g of activated carbon to be analyzed. The pH of each solution was adjusted by addition of decimolar solutions of NaOH or HCl (by varying values of pH between 3 and 11). pH_{zpc} was determined by the intersection point of the representative curves $\text{pH (final)} = f[\text{pH (initial)}]$ and the first bisector curve. Stirring was maintained at 27°C for 48 hours with the aid of a multi-agitator system. The contents of the reactors were then filtered with Whatman N°4 filter paper after which the pH of the final solutions was measured.

2.3.5 Analysis by fourier-transform-IR spectrophotometer (FTIR)

In order to determine the surface functional groups existing on the carbon samples, FTIR were carried out on samples using infrared spectrophotometer (trade-mark bruker alpha-p spectrometer) with ethanol as solvent with a resolution of 4cm^{-1} within the interval $400\text{-}4000\text{ cm}^{-1}$.

2.4 Batch Adsorption Experiments (Equilibrium Studies)

2.4.1 Preparation of Cu (II) Ion solution

The UV-Visible absorption spectrum of Cu (II) ions was obtained by spectral scanning of a 3 g/l mother solution of $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ between 770 and 870 nm. Results show a wavelength of maximum absorption of Cu (II) at 830 nm. The mother solution was prepared by dissolving 8.04834 g of $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ ($M=170$, 48 g/mol at 99% purity by mass) in a liter of freshly prepared distilled water contained inside a volumetric flask, and homogenized (agitation for 1 hour). Successive dilution of mother solution gave rise to the working solutions.

2.4.2 Batch adsorption experiments

Kinetic and equilibrium studies of Cu (II) ions adsorption were carried out in a batch reactor maintained at 27°C. In each trial (in a total of ten), 0.1 g of carbon sample preserved as described above was weighed and introduced into 20 ml of a Cu (II) ions solution in a volumetric flask. The pH of the mixture was then adjusted by 0.1 N solution of HCl or NaOH to a pre-determined value to permit maximum

adsorption. The different mixtures obtained were agitated within a time interval of 5-60 minutes in order to determine the time required for equilibrium to be attained. The residual Cu (II) ions concentration in each sample, after filtration of the residual solutions with Whatman filter paper N°4 was determined by UV-visible spectrophotometer (CORNING 259) at 830 nm wavelength. The sorption capacity of samples at equilibrium (Q_e) and the percentage removal (% R) are given by the relations (2) and (3) below:

$$Q_e = \frac{C_o - C_e}{m} \times V, \quad (2)$$

$$R = \frac{C_o - C_t}{C_o} \times 100, \quad (3)$$

where C_o is the initial concentration of Cu (II) ions, C_e is the equilibrium concentration, while V is the volume of the Cu (II) ions solution.

2.5 Kinetic Models

Several kinetic models are often used in modeling the adsorption mechanism of dissolved solutes on adsorbents. In this study, four kinetic models have been studied in describing the adsorption phenomenon of Cu (II) ions onto the two activated carbon samples studied herein: pseudo-first order, pseudo-second order, Elovich's model and intra-particle diffusion model.

2.5.1 Pseudo first-order

Pseudo-first order or Lagergren [32] model was established for liquid phase adsorption and is applicable only in the first few minutes of adsorption. It requires pre-knowledge of the adsorbed quantity at equilibrium. This model takes the form of the following differential equation [33].

$$\frac{dQ_t}{dt} = K_1(Q_e - Q_t), \quad (4)$$

where, K_1 is the pseudo-first-order rate constant (min^{-1}); Q_e and Q_t are the adsorption capacities at equilibrium and at a given time t expressed in (mg/g).

By integration of equation (4) within the time interval $t = 0$, and $t = t$ corresponding to $Q_t = 0$ and $Q_t = Q_t$, the following relation is obtained:

$$\ln(Q_e - Q_t) = \ln Q_e - k_1 t \text{ with } \ln C_t = -k_1 t + \ln C_o \text{ after reduction.} \quad (5)$$

Linear plot of $\ln(Q_e - Q_t)$ versus $f(t)$ should provide values for k_1 and Q_e from the gradient and y-intercept respectively.

2.5.2 Pseudo second-order model

Represented by equation (6) below, the pseudo-second order model [34,35] has been frequently used in diverse experiments involving the adsorption of organics and heavy metals on activated carbon. The pseudo-second order chemisorption kinetic rate equation is expressed as [36]:

$$\frac{dQ_t}{dt} = K_2(Q_e - Q_t)^2, \quad (6)$$

where, K_2 is the pseudo-second-order rate constant ($\text{mg.g}^{-1} \cdot \text{min}^{-1}$).

By integration between $t = 0$ and $t = t$ corresponding to $Q_t = 0$ and $Q_t = Q_t$, we obtain the following relation:

$$\frac{t}{Q_t} = \frac{1}{K_2 Q_e^2} + \frac{t}{Q_e}. \quad (7)$$

The parameters K_2 and Q_e are obtainable from the intercepts and the slope of the graph of t/Q_t versus t .

2.5.3 Elovich model

This model (equation 9), which is often used in modeling chemisorptions of gases on solids can also satisfactorily be applied to solid-liquid adsorption systems especially those with heterogeneous adsorption surfaces [37].

$$a. dQ/dt.exp(-qt), \quad (8)$$

where, a is the initial adsorption rate (mg/g.min) and

$$Q = \frac{1}{-} \ln(a_t) + \frac{1}{-} \ln(t). \quad (9)$$

The value of the constants can be obtained from the slope and intercepts of a plot of $Q_t = f(\ln\{t\})$.

2.5.4 Intra-particle diffusion model

The intra-particle diffusion model or the Weber and Morris equation [38] models the type of diffusion mechanism involved in adsorption processes. It is given here by equation (10):

$$Q_t = k_{id}t^{1/2} + C, \quad (10)$$

where k_{id} is the intra-particle diffusion constant ($\text{mg.g}^{-1}.\text{min}^{-1/2}$). The linear form of this equation takes the following form [39].

$$\ln R = \ln K_{id} + a \ln t, \quad (11)$$

where R is the percentage of Cu (II) ions removed at instant t and a is a constant that depends on the adsorption mechanism. When intra-particle diffusion plays a significant role in controlling the kinetics of the sorption process, the plots of $\ln R$ versus $\ln t$ yield straight lines passing through the origin and the slope gives the rate constant, K_{id} . However, when the transport of the solute molecules from the liquid phase up to the solid phase boundary plays the most significant role in adsorption, the liquid film diffusion model may be applied.

2.6 Isotherm Models

Maximum sorption capacities at a given temperature are obtainable from adsorption isotherm models. In this study, three adsorption models of Cu (II) ions on two activated carbons derived from cocoa shells have been investigated: Langmuir, Freundlich and Dubinin-Radushkevich-Kaganer (D-R-K) models.

2.6.1 Langmuir adsorption isotherm

In this model valid for monolayer adsorption (equation 14), the quantity adsorbed Q_e (mg/g) is related to the maximum adsorption capacity of the adsorbent

Q_m (mg/g), equilibrium adsorbate concentration C_e (mg/L) at a given temperature. The general form of the Langmuir equation is [33]:

$$\frac{Q_e}{Q_m} = \frac{K_L C_e}{1 + K_L C_e}, \quad (12)$$

where, K_L is the Langmuir adsorption constant (L/mg). The linear transformation of this model takes the following expression:

$$\frac{1}{Q_e} = \frac{1}{Q_m K_L C_e} + \frac{1}{Q_m}. \quad (13)$$

A graph of $1/Q_e$ versus $1/C_e$ provides values for the constants $1/KQ_m$ (gradient) and $1/Q_m$ (y-intercept) respectively.

The essential characteristics of a Langmuir isotherm can be expressed in terms of a dimensionless constant separation factor or equilibrium parameter, R_L , which is defined as:

$$R_L = \frac{1}{1 + K C_o}. \quad (14)$$

The R_L value indicates the shape of the isotherm to be either unfavorable ($R_L > 1$), linear ($R_L = 1$), favorable ($0 < R_L < 1$), or irreversible ($R_L = 0$) as shown in Table 3 in this work.

2.6.2 Freundlich adsorption Isotherm

Adsorption of micro pollutants is best modeled by Freundlich isotherm which takes the following mathematical expression [36]:

$$Q_e = K_f C_e^{1/n_f}, \quad (15)$$

where, Q_e is the quantity of Cu^{2+} ions adsorbed per gram of adsorbent material (mg/g); and C_e is the concentration of Cu^{2+} ions at equilibrium (mg/L).

K_f and $1/n_f$ are Freundlich constants that characterize adsorbent efficiency with respect to a given adsorbate. Equation (14) is the linear form of the Freundlich isotherm.

$$L_n Q_e = L_n K_f + \frac{1}{nf} \ln C_e. \quad (16)$$

A linear graph of $L_n Q_e$ versus $L_n C_e$ gives the values of $1/nf$ (gradient) and $L_n K_f$ (y-intercept). The $1/n$ values indicate the type of isotherm to be irreversible $1/n = 0$, favorable $0 < 1/n < 1$, unfavorable $1/n > 1$.

2.6.3 Dubinin-Radushkevich-Kaganer adsorption model

Langmuir and Freundlich isotherms are insufficient to explain the physical and chemical characteristics of adsorption. D-K-R isotherm is commonly used to describe the sorption isotherms of single solute systems. The D-K-R isotherm, apart from being an analogue of Langmuir isotherm, is more general than Langmuir isotherm as it rejects the homogeneous surface or constant adsorption potential. The D-K-R isotherm is expressed as [33].

$$Q_e = Q_{max} \exp I \frac{(RT_{in}(1 + \frac{1}{C_e}))^2}{-2Ea^2} D, \quad (17)$$

where, Ea is the main energy of adsorption and gives information about the physical and chemical features of adsorption. The linear form of the D-K-R isotherm equation is:

$$\ln Q_e = \ln Q_{max} - E^2, \quad (18)$$

where $E = RT_{in} \left(1 + \frac{1}{C_e}\right)$ is called the Polanyi Potential.

3. RESULTS AND DISCUSSION

3.1 Characterization of Adsorbents

3.1.1 Chemical composition of raw cocoa shells

The chemical composition of raw cocoa shells was determined by X-ray fluorescence using Bruker-S4 Pioneer Wavelength Dispersive Fluorescence Spectrometer (WDFS) analyzer. In this study, X-ray fluorescence showed the following percentage compositions for the raw materials (cocoa shells): K₂O (83.28%); CaO (4.905%); MgO (1.04%); SiO₂ (0.671%); SO₃ (0.652%); P₂O₅ (0.527%); Fe₂O₃ (0.467%); Al₂O₃ (0.329%); MnO (0.224%); TiO₂ (0.112%); Rb₂O (0.0867%); ZnO (0.0793%); CuO (0.0468%); Na₂O (0.041%); SrO (0.0259%); LOI (7.21%); Sum (99.6967%).

3.1.2 Iodine number test (In)

Iodine number (In) is a fundamental parameter used to characterize activated carbon performance. It is a measure of the micropore content of the activated carbon and is obtained by adsorption of iodine from solution by the activated carbon sample. The micropores are responsible for the large surface area of activated carbon particles and are created during the activation process [28]. Tests were carried out according to the ASTM D2866-94 procedures, and the results obtained for activated carbons prepared by chemical activation (Fig. 1) suggest that the values of (In) obtained for PHA based-carbon is greater than the value obtained for PAA based-carbons with values 538 mg/g and 500 mg/g respectively. This implies that there are more micropores in PHA than PAA.

3.2 Determination of pH at Zero-point Charge (pHzpc)

Basic or acidic character of the activated carbon samples are often indicated by values of pHzpc obtained and consequently, knowledge of net surface charge (according to the pH of the solution).

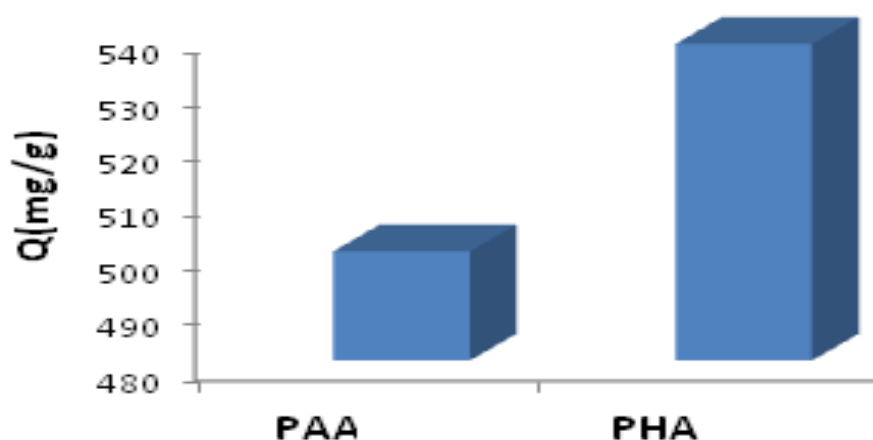


Fig. 1. Iodine number test for PAA and PHA

Thus, for manipulations for which $\text{pHzpc} > \text{pH}$ activated carbon samples studied have positively charged surfaces while negatively charged ones are obtained for $\text{pHzpc} < \text{pH}$ [40]. In the liquid phase, knowledge of pHzpc is of great importance in interpreting the electrostatic interactions between molecules and adsorbent material. pH at zero-point charge (pHzpc) was obtainable from the graph of pH_{final} versus $\text{pH}_{\text{initial}}$ (Fig. 2) from which we infer neutral character for PAA ($\text{pHzpc}=7.0$) and acidic character for PHA ($\text{pHzpc}=5.9$).

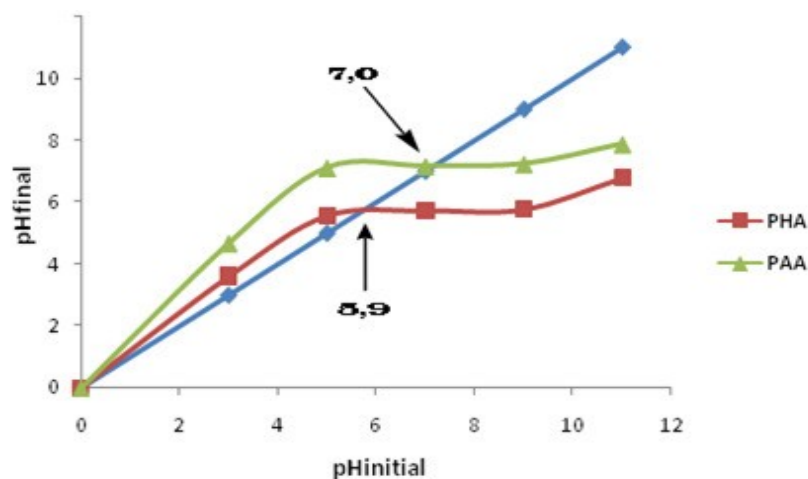


Fig. 2. Graph for the determination of pHzpc for PAA and PHA

3.3 Determination of Oxygen Containing Functional Groups

Nature and quantity of functional groups on the activated carbons were obtained from the titration of surface functional groups [29,30]. The quantification of the surface functions (basic or acidic) of the two activated carbon samples have been presented on (Table 1). The validation of our results was through Boehm titration which was carried out in triplicate measurements. Results in (Table 1) show that the two activated carbon samples PAA and PHA have different chemical properties. PAA-based CSBAC present an equivalent quantity of oxygen-based surface groups (acid and basic) therefore confirming its neutral character while PHA-based CSBAC show more acidic than basic groups, confirming its acidic character. We can therefore conclude that the quantification of the surface functional groups by the Boehm method is coherent with pHzpc values obtained for each carbon sample (Fig. 2) [41]. The two carbon samples PAA and PHA contains carboxylic groups and very small quantities of lactonic groups, on the other hand, PAA-based carbon contains more phenolic groups than PHA based carbons (Table 1).

Table 1. Quantification of surface oxygen-containing groups by the Boehm method

Activated carbon	Carboxylic (meq g ⁻¹)	Lactonic (meq g ⁻¹)	Phenolic (meq g ⁻¹)	Total acid (meq g ⁻¹)	Total basic (meq g ⁻¹)	Total (meq.g ¹)	Character
PAA	0.271	0.008	0.058	0.337	0.293	0.620	Neutral
PHA	0.222	0.005	0.015	0.242	0.131	0.373	Acid

3.4 Fourier Transform Infrared Spectroscopy (FTIR)

FTIR analysis have been used in confronting obtained results to those from Boehm test and from pHzpc measurements. IR spectra of PAA and PHA activated carbons are represented in (Figs. 3 and 4) below.

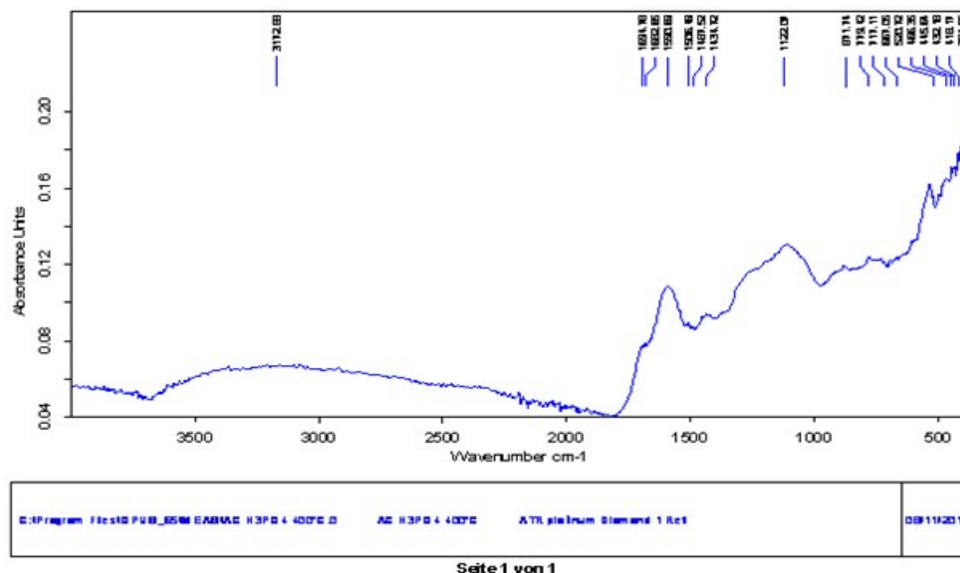


Fig. 3. FTIR spectrum for PAA

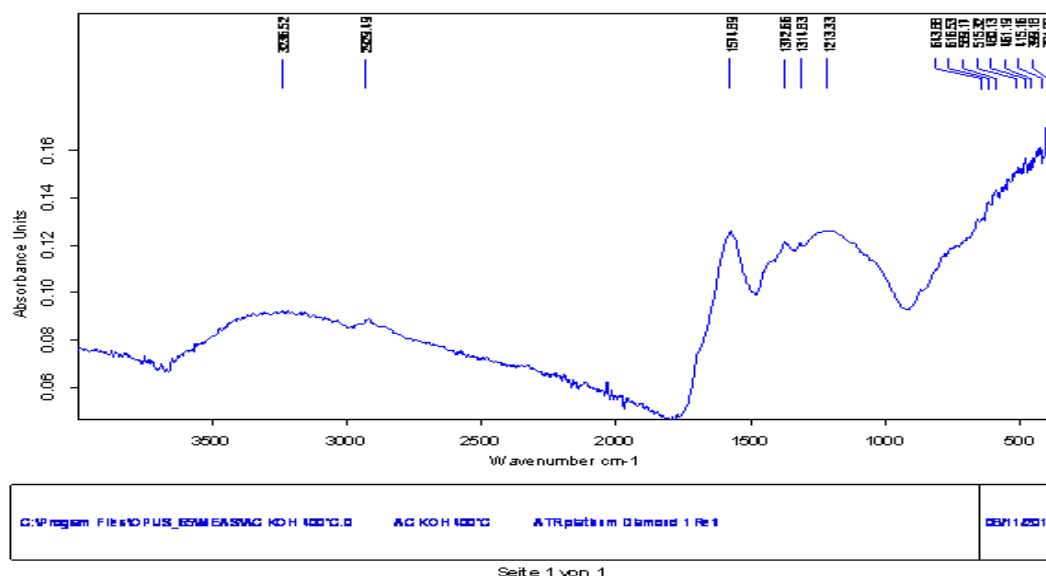


Fig. 4. FTIR spectrum for PHA

The most intense bands in the IR spectrum of phosphoric acid-based activated carbon (PHA) were: 418, 520, 667, 871, 1122, 1487, 1434, 1487, 1506, 1590, 1682, 1694, 3172 cm⁻¹. The large absorption band observed at 3172 cm⁻¹ is attributed to

hydrogen bond-stretching and may be the characteristic peak of the carboxylic, phenolic or alcohol hydroxyl groups or water adsorbed activated carbon. Absorption bands between 1700-1650 cm^{-1} with maximum at 1694 cm^{-1} and 1682 cm^{-1} is attributed to C=O bond stretching of the carboxylic anhydride groups. The pic observed at 1590 cm^{-1} is attributed to the carbonyl functional group. The region towards 1506, 1487, 1434 cm^{-1} provide some clues to the relative abundance of bending of CH_2 and CH_3 or of the O-H bending supported by the existence of phenols or carboxylic groups. The pick observed at 1122 cm^{-1} is attributed to the ionized chemical bond, $\text{P}^+\text{-O}^-$, found in the esters of phosphate acids [42] and to symmetric vibrations of the P-O-P chains (polyphosphate) [43]. The absorption band from 900-600 cm^{-1} can be attributed to C-O-C groups of esters or ethers.

On the IR spectrum of PHA-based CSBAC (Fig. 4), we observe a large absorption band from 3600-2000 cm^{-1} and presents a maximum at 3236 cm^{-1} and 2929 cm^{-1} . The pick corresponding to 3236 cm^{-1} is assigned to O-H stretching vibrations of hydrogen bonded hydroxyl, or carboxylic groups, and the pick situated at 2929 cm^{-1} is attributed to C=O bond stretching of ketones. The spectra of PHA based CSBAC equally show a pick situated at 1574 cm^{-1} due to C=C bond vibrations of aromatic rings. The shoulder at 1371.53 cm^{-1} can be ascribed to N-O stretching of aliphatic nitro compounds of the activated carbon derived from sodium hydroxide activation [40]. The band between 600-400 cm^{-1} corresponds to C-H bond vibrations in the aromatic ring. From the forgoing, the functional groups present on PAA-based CSBAC are phenols, carboxylic, esters or ethers while those present on PHA-based CSBAC are carboxylic, ketones, aliphatics, which are all in line with other results from the Boehm method.

3.5 Influence of Contact Tim

During adsorption processes, the rate of mass transfer from the liquid to the solid phase is influenced by contact time between the two phases. In order to determine the effect of the contact time on the extent of adsorption, 0.1 g of the adsorbent was stirred with a 20 mL solution of Cu (II) ions of initial concentration 2400 mg/L for a time interval of 5-60 minutes for PAA and PHA at pH=4.0. The experimental results obtained for the adsorption of Cu (II) ions during various contact times are illustrated in (Fig. 5). It can be observed that the quantity adsorbed increases with time, then attains a constant value beyond which no further adsorption

took place. It can be inferred from these results that adsorption takes place in two stages: an initial rapid phase which attains saturation point within 15 and 35 minutes for PHA and PAA, attributed to the presence of free adsorption sites at the surface of the adsorbents [44]. Once the Cu (II) ions are adsorbed from solution onto these sites, they block the adsorption pores (which are of smaller sizes) from subsequent adsorption. As a consequence, adsorption speed decreases and that marks the onset of the slow second phase (step) from 35 to 60 and 15 to 16 minutes corresponding to PAA and PHA respectively. Therefore, surface adsorption sites are exhausted with time. The remaining vacant sites are difficult to be occupied by the cation due to repulsive forces between adsorbate present in solid and bulk phases [45]. We also observed from (Fig. 5) that adsorption reach equilibrium within 35 and 15 min for PAA and PHA, respectively.

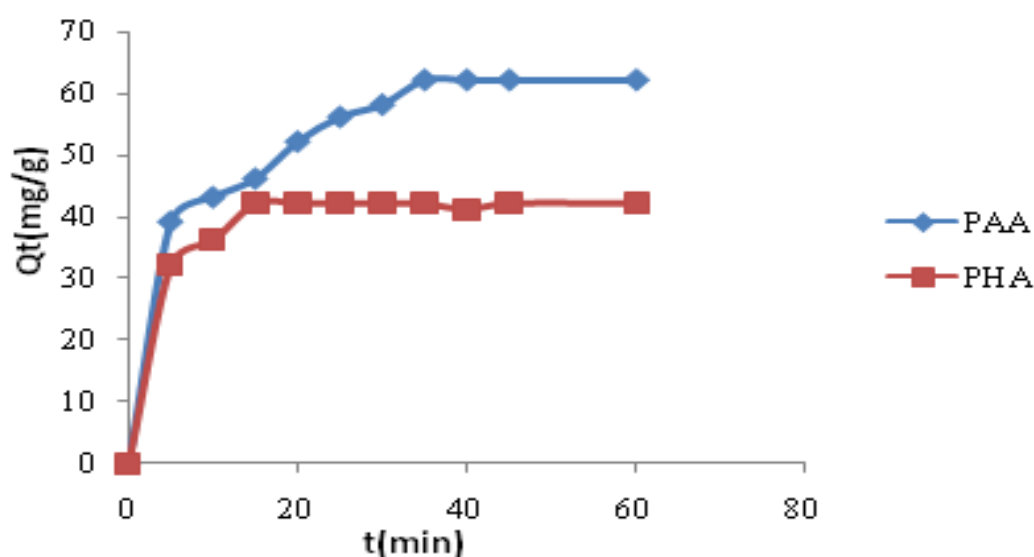


Fig. 5. Effect of contact time on the adsorption of Cu (II) ions on PAA and PHA

3.6 Influence of pH

Sorption of metallic ions from aqueous solutions depends very much on pH as it influences surface charge, degree of ionization and the nature of the adsorbent ionic species in solution [46]. (Fig. 6) represents the effect of initial pH of the solution on the sorption of Cu (II) ions onto PAA and PHA using 2400 mg/L initial Cu (II) concentration and 0.1 g of adsorbent. pH was varied between 2 and 4 in the present study. Sorption potentials of PAA and PHA for Cu (II) ions were seen to increase

with solution pH appreciably up to pH 4.0 as shown in (Fig. 6). The optimum pH for Cu (II) ions adsorption by PAA and PHA was found to be 4.0.

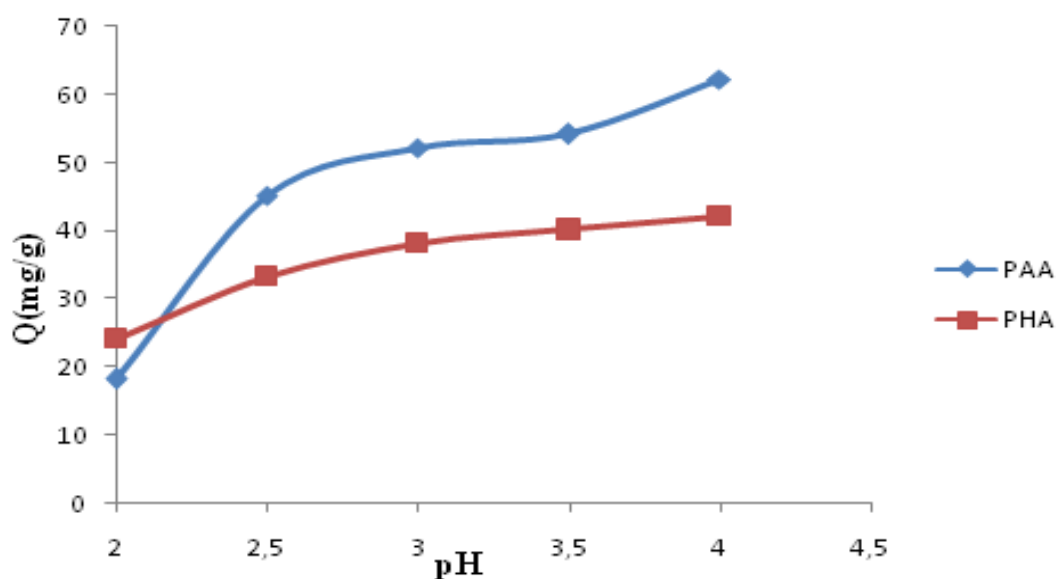


Fig. 6. Influence of pH on copper (II) ion adsorption on PAA and PHA

At strong pH range ($\text{pH} < 3$) we observed low values of adsorbed quantities. This is attributed to the fact that H^+ ion concentration is high in solution which induces competition (in favor of H^+) for free adsorption sites between Cu (II) and H^+ ions [47]. Adsorbed quantities have been found to decrease as surface becomes negatively charged (excess OH^- ions) at $\text{pH} > 4$ and this too is attributed to the precipitation of $\text{Cu}(\text{OH})_2$ and adsorption becomes impossible [48]. From these results we can conclude that maximum adsorption/retention capacity of adsorbents for Cu (II) ions is at $\text{pH} = 4.0$.

3.7 Influence of Adsorbent Dose

The influence of the adsorbent concentration on the removal of Cu (II) ions from aqueous solution was studied by varying their concentration from 0.1 to 0.6 g. (Fig. 7) represents the influence of adsorbent dose on the adsorption of Cu (II) ions onto PAA and PHA using 2400 mg/L initial Cu (II) ions concentration at $\text{pH} = 4.0$. Adsorbed quantity decreased with increasing adsorbent dose. This is explained by the fact that an increase in adsorbent dose leads to an agglomeration of unit cells and consequently a decrease in intercellular distances which in turn produces a screening effect leading to the protection of the adsorption sites of the adsorbent [49]. Furthermore,

maximum quantity adsorbed, $Q_e=62.2$ and 42.2 mg/g for PAA and PHA respectively, was reached for 0.1 g of each of the adsorbents as presented on (Fig. 7).

3.8 Influence of Initial Concentration

On the basis of the results of the preceding paragraph, the analysis of the effect of the initial concentration of Cu (II) ions were hence carried out at pH 4.0 on 0.1 g of each adsorbent samples (both PAA and PHA), mixed with 20 mL of the aqueous solution at (27 ± 1) °C for a duration of 35 and 15 minutes respectively for PAA and PHA. (Fig. 8) shows the variation of amount adsorbed versus concentration of Cu (II) ions for each adsorbent. The results obtained show that an increase in the initial concentration between 900 and 2400 ppm leads to a change in the quantity adsorbed from 32.2 mg/g to 62.2 mg/g for PAA and from 29.2 mg/g to 42.2 mg/g for PHA. This increase in adsorbed quantity with initial concentration of metal ion is due to the fact that an increase in the concentration of metal ion increases the collisions between the molecules of the metal and the adsorption sites. Also, with increasing metal concentrations the binding sites become more quickly saturated as the amount of adsorbent concentration remained constant [50]. This result also show that maximum adsorption capacity for both adsorbents PAA and PHA is reached at initial adsorbate concentrations of 2400 ppm.

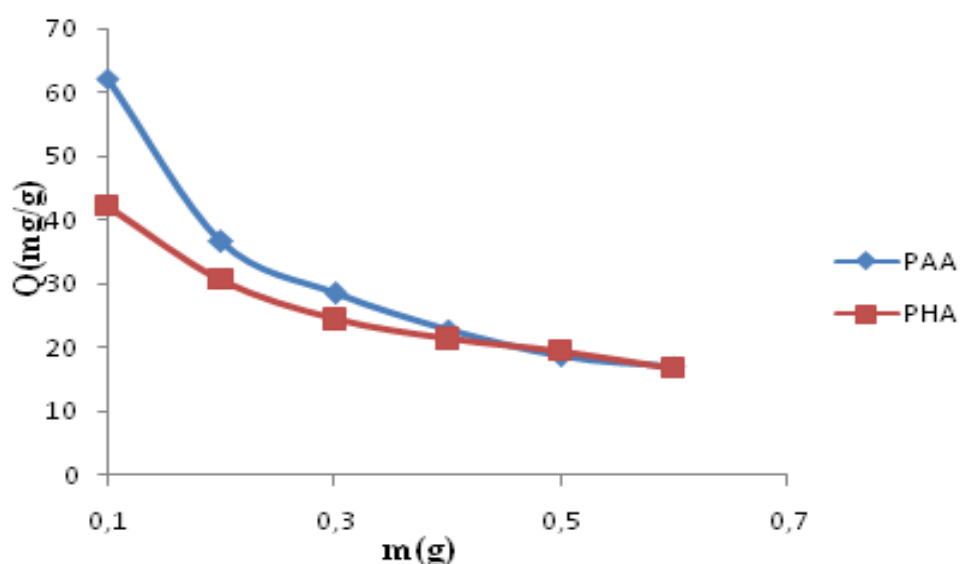


Fig. 7. Influence of adsorbent dose for the uptake of copper (II) ions on PAA and PHA

From these results we observe that, of the two activated carbon samples studied, PAA (62.2 mg/g) adsorbs better than PHA (42.2 mg/g). This is in contradiction with the awaited results [28], because iodine number of PHA (538 mg/g) is greater than that of PAA (500 mg/g). This can then be directed toward the size of the Cu (II) ions and the micro pores.

3.9 Kinetic Model

Sorption performances of the CSBAC samples (PAA and PHA) were estimated through kinetic and equilibrium studies. Four Kinetic models that were applied in this study provided pieces of information on the sorption mechanisms of Cu (II) ions onto the two samples. The straight-line plots have been represented on (Figs. 9, 10, 11, 12 and Table 2) gives all the kinetic parameters deduce from the plot. Correlation coefficients, R^2 obtained (0.995 for PAA and 0.998 for PHA respectively) show that the pseudo second-order model best describes the adsorption of Cu (II) ions from aqueous solutions. This implies that adsorption of Cu (II) ions onto both adsorbents may occur through a chemical process involving the valence forces of the shared or exchanged electrons [34,35]. This means that chemisorption reaction or an activated process becomes more predominant in the rate-controlling step for the system. A comparison of the R^2 values for intraparticle diffusion (Fig. 12) for both samples show that the rate limiting step governing the adsorption of Cu (II) onto CSBAC is by pore diffusion for PAA but not PHA.

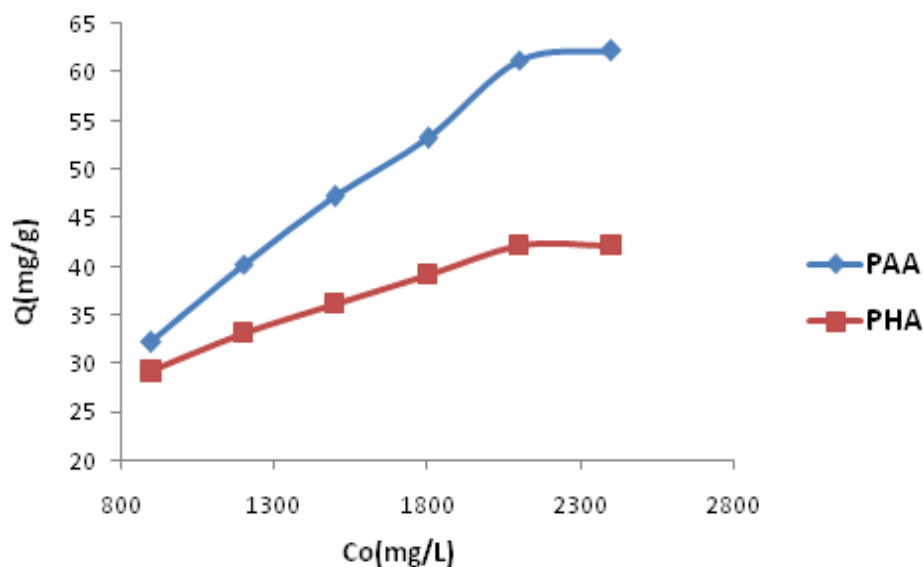


Fig. 8. Effect of initial concentration on copper (II) Ion adsorption on PAA and PHA

3.9.1 Pseudo first-order model

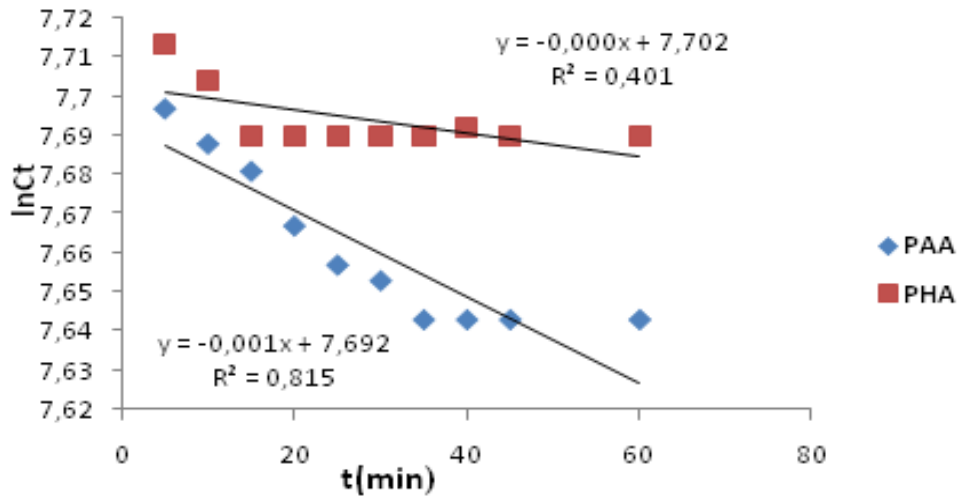


Fig. 9. Linearized pseudo-first order plots for $C_o=2400$ mg/L, $V=20$ mL, $pH=4$, $m=0.1$ g adsorbent

3.9.2 Pseudo second-order model

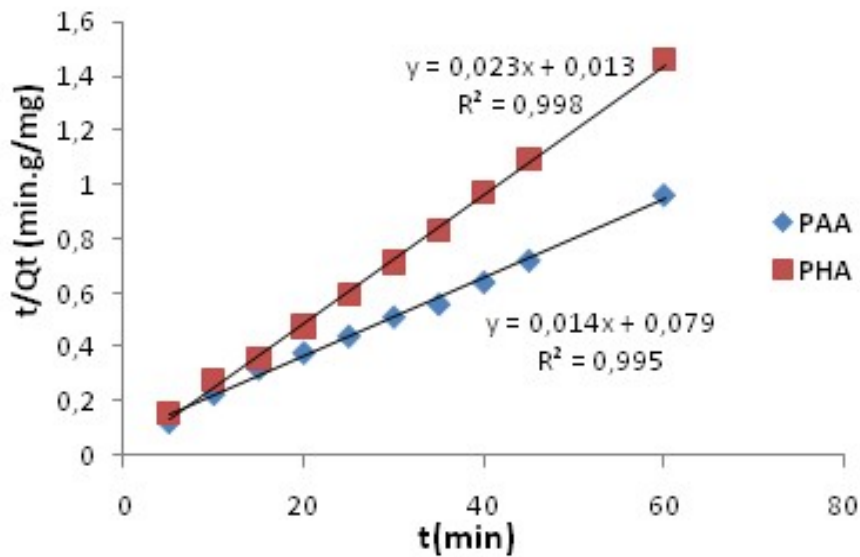


Fig. 10. Linearized pseudo-second order plots for $C_o=2400$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

3.9.3 Elovich model

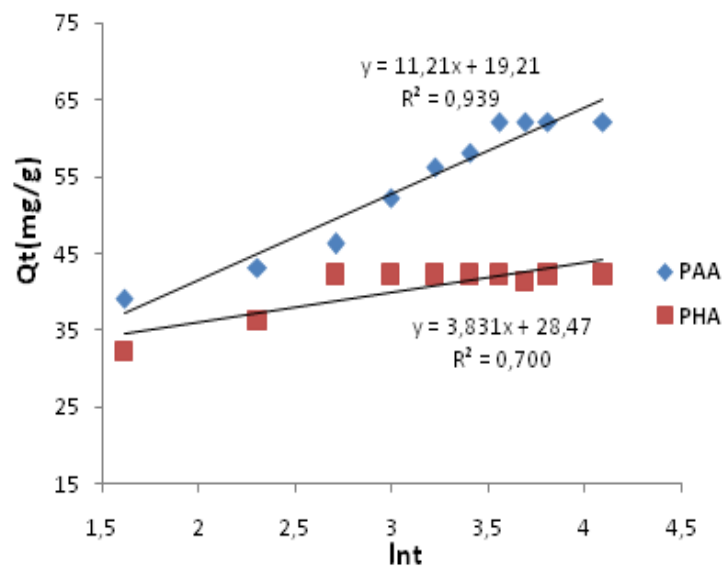


Fig. 11. Linearized elovich plots for $C_o=2400$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

3.9.4 Intra-particulaire diffusion model

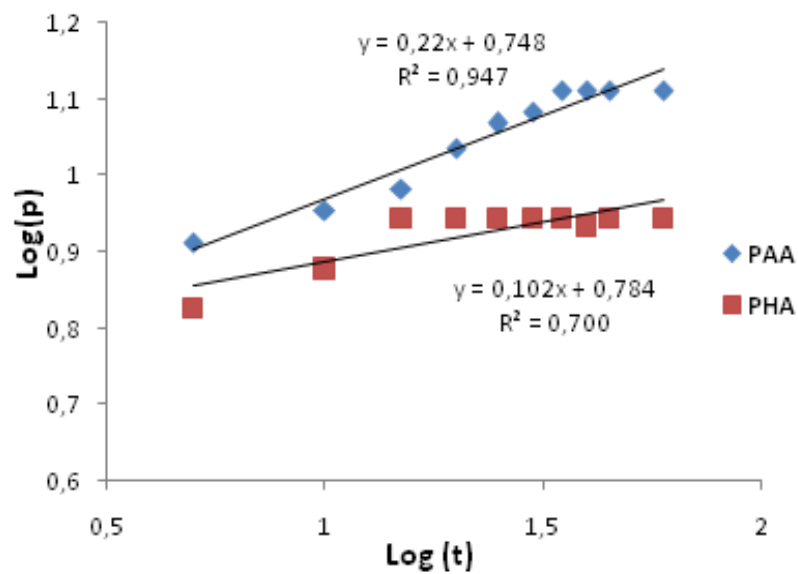


Fig. 12. Linearized intraparticle diffusion plots for $C_o=2400$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

3.10 Adsorption Isotherms

Equilibrium adsorption isotherm is one of the most important data used in understanding the mechanism of adsorption systems. The equilibrium adsorption data were analyzed by the Langmuir, Freundlich, and Dubinin-Kaganer-Radushkevich (D-K-R) adsorption isotherm models.

Table 2. Adsorption parameters for the different models

Models	Parameters	Adsorbents	
		PAA	PHA
Pseudo-first order	R^2	0.815	0.401
	K_1 (min^{-1})	0.001	0.000
Pseudo-second order	R^2	0.995	0.998
	K^2 ($\times 10^{-3}$ g/mg. min)	2.481	40.70
	Q_e (mg/g)	71.42	43.47
Elovich	R^2	0.939	0.700
	(g/mg)	0.090	0.261
	a (mg/g min) $\times 10^{-9}$	62.60	4.701
Intra-particle diffusion	R^2	0.947	0.700
	K_{id} (min^{-1})	2.112	2.190
	a (mg/g)	0.220	0.102

These isotherm models are characterized by certain constants whose values represent surface properties as well as sorbent affinities of the adsorbed species. These parameters for the two carbon samples (PAA and PHA) have been assembled in (Table 3) and the modeling of the adsorption isotherm presented on (Figs. 13, 14 and 15).

Linear curves, obtained by plotting C_e/Q_e versus C_e , indicate the validity of Langmuir isotherm and $\ln Q_e$ versus $\ln C_e$, indicate the validity of Freundlich isotherm and $\ln Q_e$ versus E^2 , indicate the validity of Dubinin-Radushkevich-Kaganer isotherm. The values of the correlation coefficients from (Table 3) show that all three isotherm models describe the sorption process fairly well (for both samples) but the very best correlation for PHA samples is from Langmuir with $R^2=0.994$. Maximum adsorption capacity according to Langmuir (mono-layer adsorption) is equal to 58.82 mg/g. From the different values of RL (Table 4 and for $R_L < 1$), we can conclude that Cu (II) ions adsorption onto PHA carbon sample is favorable within the concentration range studied [51]. (Table 3) shows that the best correlation of the experimental results is obtained with the Freundlich isotherm model with PAA ($R^2=0.995$). This result suggest that Cu (II) ions are adsorbed onto the adsorbent surface of the PAA carbon in different ways. Also from the values of the parameter $1/n$, it comes out that adsorption is favorable for $1/n < 1$ for the two adsorbents, which implies an increase in

the adsorption capacity and the appearance of new adsorption sites, and as such, a homogenous adsorption at the surface of PAA and PHA. The positive values of sorption energy ($E_a=2.411$ and 3.194 kJ/mol) indicate that the adsorption of Cu (II) ions by PAA and PHA respectively is endothermic and the value is less than 8 kJ/mol. This also is indicative of weak interactions between the adsorbent (PAA and PHA) and the Cu (II) ions [52]. The Q_m values obtained for the present system in comparison with those reported in the literature for sorption of Cu (II) ions onto various adsorbents (Table 5) revealed that PAA and PHA are effective adsorbents in removing copper from aqueous solutions.

Table 3. Isotherm models parameters of adsorption

Models	Parameters	Adsorbents	
		PAA	PHA
Langmuir isotherm	R^2	0.969	0.994
	Q_{max} (mg/g)	166.66	58.82
	K_L ($\times 10^{-4}$ L/mg)	2.877	11.83
Freundlich isotherm	R^2	0.995	0.980
	$1/n$	0.722	0.375
	K_F (L/g)	0.252	2.363
D-K-R isotherm	R^2	0.950	0.954
	K_D	0.086	0.049
	Q_{max} (mg/g)	66.75	43.81
	E_a (KJ/mol)	2.411	3.194

Table 4. Langmuir isotherm with separation factor (RL)

Concentration (ppm)	900	1200	1500	1800	2100	2400
Adsorbents		R_L				
PAA	0.794	0.743	0.698	0.658	0.623	0.591
PHA	0.484	0.413	0.360	0.319	0.287	0.260

Table 5. Comparison of adsorption capacity of copper (II) with other adsorbents

Adsorbents	Q_m (mg/g)	References
Watermelon shell	111.1	[18]
Orange peel, sawdust bagasse	3.19; 3.12; 2.89	[19]
Palm oil empty fruit bunch	0.84	[21]
Kolubara lignite	4.045; 3.908; 2.625	[22]
PAA	62.2	Present Study
PHA	42.2	Present Study

3.10.1 Langmuir isotherm

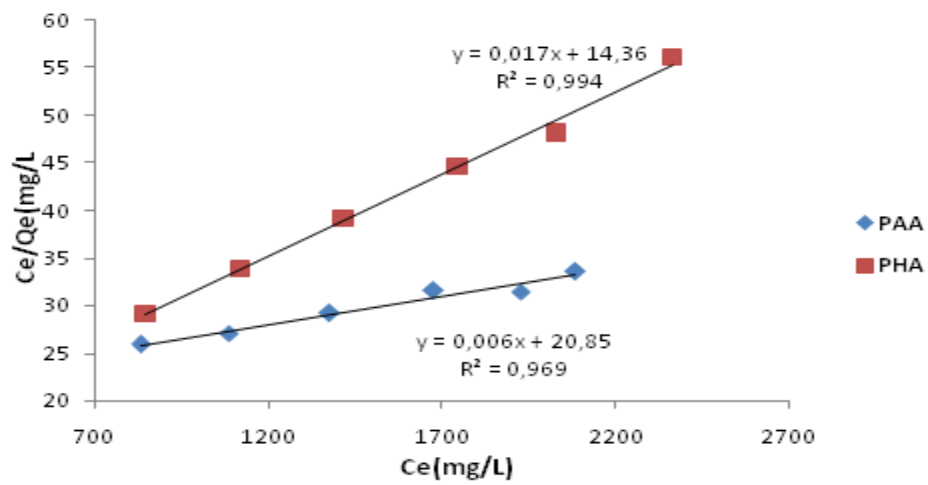


Fig. 13. Linear plot of langmuir model, for $C_o=2400$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

3.10.2 Freundlich adsorption isotherm

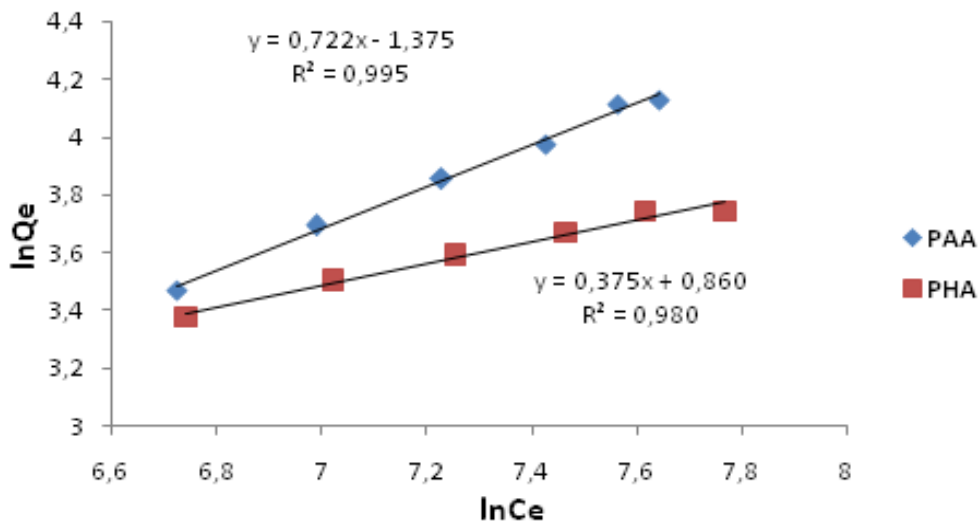


Fig. 14. Linear Plot of the model of Freundlich for $C_o=50$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

3.10.3 Dubinin et radushkevich kaganer (DRK) isotherm model

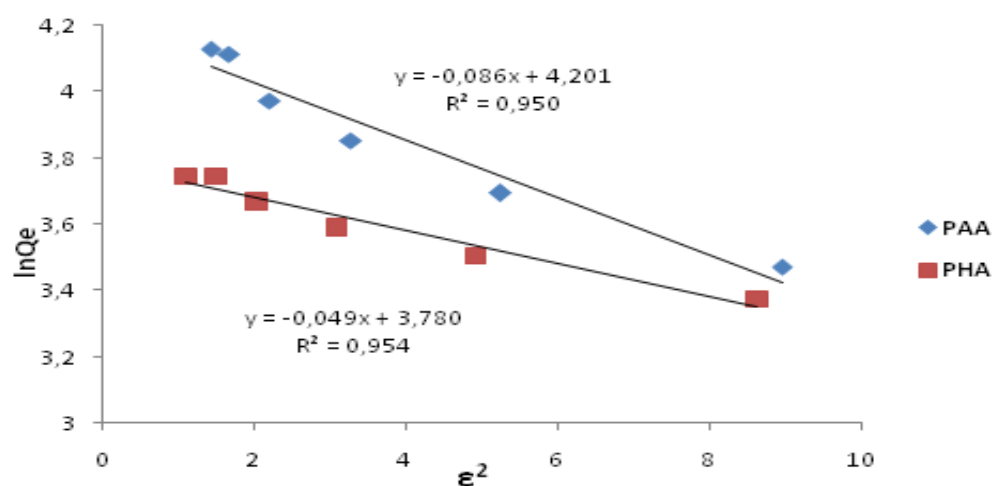


Fig. 15. Linear transform of the model of D-K-R for $C_0=2400$ mg/L, $V=20$ mL, $pH=4.0$, $m=0.1$ g adsorbent

4. CONCLUSION

A basic investigation on the adsorption of Cu (II) ions from aqueous solution by cocoa shell-based activated carbon (CSBAC) was carried out under batch mode. Sorption of Cu (II) ions were influenced by various parameters such as contact time, adsorbent dosage, initial pH and initial Cu (II) ions concentration within the range 900-2400 mg/L. The maximum removal of Cu (II) ions observed at pH 4.0 and sorbent dose of 0.1 g were 62.2 mg/g for PAA and 42.2 mg/g for PHA for an initial metal ion concentration of 2400 ppm. Iodine number for both PAA and PHA samples were obtained as 500 mg/g and 538 mg/g respectively. Results revealed by titration via Boehm method showed predominance of acidic functional groups on the surface of PAA (0.337 meq/g) and basic groups on PHA (0.103 meq/g). FTIR analysis for both the raw cocoa shells and activated carbon showed that hydroxyl, carbonyl, aliphatic, ethers, alcohol, phenol and carboxylic groups were present on their surfaces. A pH at zero-point charge (pH_{Zpc}) of 7.0 and 5.9 were obtained for PAA and PHA samples respectively. Sorption equilibrium time was observed in 35 minutes for PAA and 15 minutes for PHA. X-ray fluorescence showed that the chemical composition of the oxide level in raw material (cocoa shell) is composed mainly of potassium oxide (K₂O) of 83.28% followed by calcium oxide (CaO) 4.905%. The Langmuir model for PHA and Freundlich model for PAA best described the sorption of Cu (II) ions from aqueous solution by the two adsorbents. The two

activated carbon samples both obeyed pseudo-second order kinetics. The results indicated that CSBAC can be used as an effective and low-cost adsorbent to remove Cu (II) ions from aqueous solutions.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Agricultural Water Technologies Adopted by Smallholder Farmers in Lare Division, Nakuru County Kenya

ABSTRACT

This study aimed at investigating agricultural water use technologies adoption by smallholder farmers in Lare Division Nakuru County Kenya. The study adopted a descriptive research design and was carried out between February and March 2014. It involved smallholder farmers who had adopted agricultural water technologies namely; water harvesting, water storage and irrigation to mitigate effect of climate change induced agricultural water scarcity. Data was collected by use of face-to-face administered interview schedule and analyzed using descriptive statistics such as percentages and means. Out of 115 household heads interviewed, 53.9% were male, 46.1% were female and 75.6% had primary level education and below. The main source of income was farming (70.4%). Water harvesting, storage and irrigation technologies were adopted by 98.3%, 93.9% and 37.4% of the farmers respectively. Common water harvesting structures were gutters and runoff drains (59.1%) and tanks (plastic and concrete) for storage (98.30%). Out of those that have adopted irrigating technology, 86.1% and 9.3% used buckets and drip respectively. However, the farmers face challenges in technologies adoption in terms of inadequacy of water harvesting (74%) and storage (81%) structures' capacities and use of efficient irrigation facilities (78%). Farmers' adult education, improvement of technologies structures' capacities and usage of efficient irrigation facilities are recommended. Formulation and implementation of policies that would facilitate Lare farmers' accessibility and usage of efficient irrigation technologies are advised.

Keywords: agricultural water use; technologies adoption; climate change; food and economic security.

1. INTRODUCTION

In sub-Saharan Africa, climate change-induced rainfall scarcity has led to increased incidences of extreme droughts resulting in food insecurity at household, regional and national levels [1]. This has prompted affected governments and development partners to get actively involved in sensitizing rural resource scarce smallholder farmers, in water constrained Arid and Semi-Arid Legions (ASALs), to adopt appropriate agricultural water technologies. This approach is aimed at empowering the farmers in mitigating effects of climate change induced agricultural water scarcity and vulnerability. This effort aims at ensuring both food and economic securities at household levels hence stimulate rural development.

Water scarcity is a rural developmental challenge facing Kenya [2]. This is because close to 80% of Kenya's population is rural and dependent on agriculture for basic livelihoods. This makes the country highly vulnerable to rainfall variability since 98% of the country's agriculture is rain-fed [3]. The water scarcity problems in Kenya have been exuberated by decreased rainfall amount and frequency of occurrence due to climate change, high population which leads to high water demand, vulnerability of water resources and human encroachment of marginal areas among others [4]. One way of addressing this challenge is through rural farmers' empowerment in adopting agricultural water technologies. Agricultural water technologies are easily acceptable and replicable across many cultural and economic settings [5]. However, the technologies' adoption depends on socio-economic status of the adopting farmers such as age, education level, family size, perception of farming and land tenure among others [5].

In Kenya rainfall scarcity is a major challenge facing rural communities in farming activities from which they derive both households' foodstuffs and economic returns. Therefore, adoption of water harvesting, water storage and irrigation application technologies may be one approach of increasing smallholder farmers' access and efficient use of agriculture water. This would enable the farmers to engage their farms all year round including off seasons, as natural rainfall would now not be a limiting factor in agricultural production. This paper focuses on agricultural water technologies adoption namely water harvesting, storage and irrigation, by smallholder farmers in Lare Division, Nakuru County Kenya in the face of climate change induced agricultural water vulnerability.

1.1 Agricultural Water Technologies

Three agricultural water technologies of interest are water harvesting, water storage and irrigation. They are ancient practices and still form an integral part of many farming systems worldwide. They were first used in Iraq over 5000 years ago, in the Fertile Crescent [6]. In sub-Saharan Africa, over 90% of farmers depend on rain-fed agriculture. However, agricultural activities face many constraints due to erratic and unreliable rainfall in quantity and distribution patterns. Therefore adoption of agricultural water technologies use in sustainable and integrated production systems can assist smallholder farmers in boosting agricultural output by supplementing the rain-fed agriculture production [7].

1.2 Agricultural Water Harvesting Technology

In Kenya, runoff harvesting from roads, footpaths and compounds is a practice that is currently not so widely used considering its potential replicability. Road runoff harvesting systems vary from simple diversion structures that direct surface water into agricultural fields or water pans, to deep trenches with check-dams in to trap eroded soil [8]. The rainwater harvesting potential in Kenya is estimated at over 12,300 m³ per person per year compared with the current annual renewable water availability of just over 600 m³ per person per year, indicating a significant gap [9].

1.3 Agricultural Water Storage

Agricultural water can be harvested and stored in situ or transported and stored away from the point of harvesting. Water storage systems can be cistern or pond. In the former, water is stored in underground or above ground tanks while in the latter, in dams, ponds, pans and trenches. Where soil type permits, pond system can be cost-effective [10]. In the Tigray region of Ethiopia, small earth KRA 2006). - dams harvesting stream-flow diverted from small gullies are used for storing water [9]. In the semi-arid parts of Laikipia District, in central Kenya, underground water tanks have been constructed for agricultural water storage [5]. The largest concentration of rock catchment, water storage dams in East Africa, is found in the semi-arid parts of Kitui District in Eastern Kenya (8).

1.4 Irrigation Application

Traditional agricultural water application technologies include farming using irrigation, kitchen gardening, poultry keeping; zero grazing, biogas making, fish and apiculture farming among others. Modern agricultural water applications technologies encompass efficient use of agricultural water such as drip and sub-surface irrigation, among others. Harvested water application is seen as a major component in curbing the rural-urban migration by ensuring farmers economic stability, enhanced living standards and jobs' creation at rural farm levels. Agricultural water application technology has been used to stabilize farm yields hence enhancing food security in rural India [11]. Studies done in Zibambwe, Tanzania and Niger on irrigation using harvested agricultural water showed increased sustained agricultural yields for local rural communities involved [12].

2. RESEARCH METHODOLOGY

Descriptive survey design was deemed suitable as it provided information about subjects under study on the past and current situation [13]. Lare Division was purposively selected for this study because the area is water constrained and is inhabited by resource scarce smallholder farmers. The division had a human population of 36,924 and 6008 households in 2009 [14], 60% of who use agricultural water technologies. The study targeted 115 household heads and employed purposive sampling in selecting four out of eight study locations with high concentration of farmers who use the water technologies. Proportionate sampling technique was then employed to assign a representative sample from each selected location. Simple random sampling was finally applied, at 95% confidence interval, in picking study sample size for each location, [15] as shown in Table 1.

Table 1. Farmers that have used the technologies in Lare division

Location	Households	Sample size
Kabati	1,552	30
Bagaria	762	14
Kiriri	3,156	61
Ngano-in	538	10
Total	6,008	115

The study used face to face administered semi-structured interview guide to collect data from the respondents. The data was analysed with statistical package for

social sciences (spss) using descriptive statistic involving frequencies, percentages and means.

3. RESULTS

3.1 Demography of Farmers in Lare Division

Out of 115 household heads interviewed, 53.9% were male while 46.1% were female. According to [16] Women contribute 66% of all the hours worked throughout the world. In Lare Division, some female are also household heads hence decision makers on agricultural water technologies' adoption. Therefore, views of both genders have been captured in this study as both are involved in agricultural water technologies adoption. Respondents aged 51 years and above constituted 51.7%. This age category consists of those farmers that first acquired and settled in Lare Division. They regard themselves as original land owners, hence the ultimate decision makers on issues touching use of land. Their rather advanced age may have bearing on adoption of agricultural water technologies in their own farm and even in those pieces of land in the hands of their off springs. A study by [16] found that age influences a farmer's adoption of technologies, but direction of the influence is in contention. Some researchers find it positively influencing adoption and others find a negative correlation or no significant influence at all.

3.2 Lare Farmers' Education Levels

Generally, respondents had low levels of education by Kenyan standards with more than 76% having primary or no formal education, as indicated in Fig. 1.

3.3 Lare Farmers' Family Sizes

On family sizes, 60.9% of the respondents are in the range of 6-10 members. This is in line with rural African communities that tend to have large families or live with extended families.

Having a large family to house, feed, pay school fees and medical bills among others, may encourage or discourage a household head in adopting farming related technologies.

Technologies may be adopted if they are perceived as having the potential to boost farm production so that there would be enough food for household consumption. However, the technologies may not be adopted if they are perceived as having

inherent potential risks of underperforming. This would translate to inability of household heads to meet household's dependents' basic needs.

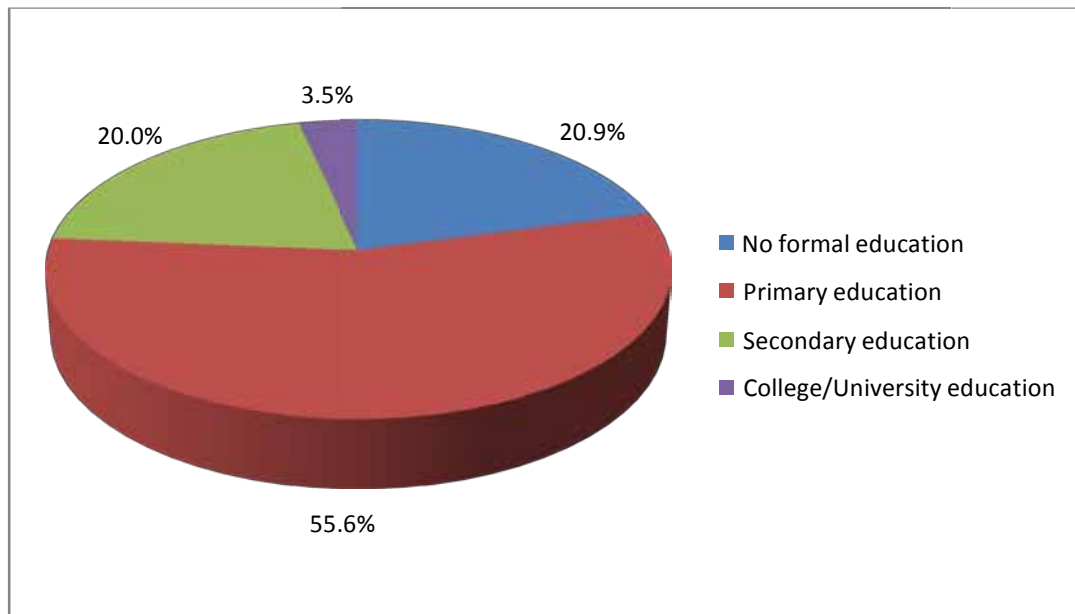


Fig. 1. Farmers' education levels in Lare division

3.4 Socio-economic Characteristics of The Farmers In Lere Division

The main source of income (70.4%) is farming, the rest (29.6%) indicating business and employment as their other income sources. On community interaction, only 20.0% of the respondents belonged to farmers' groups. 75.7% of the respondents indicated that the foodstuffs consumed in their households were obtained from their farms. The rest (24.3%) supplemented by buying from markets.

3.5 Adoption of Agricultural Water Technologies in Lare Division

Water harvesting technology was adopted by 98.3% with 67.8% of them indicating a period between 5-10 years of this technology adoption using water harvesting structures such as gutters (93.9%) and runoff channels (63.5%). However, (59.1%) of the farmers use both gutters and runoff channels. The farmers, (74%) felt water harvesting structures capacities were inadequate leading to a lot of rain water going to waste in rainy seasons.

Water storage technology was adopted by 93.9% of the smallholder farmers with commonly used water storage structures being plastic and concrete tanks (98.30%). Plastic tanks are popular as are affordable, maintainable and water stored

in them is hygienically clean hence suitable for domestic use. These tanks are also locally available in various capacities to suit households' water requirements. 49.3% of the farmers use water pans for water storage. Water storage technology has been adopted for over 10 years by over half of the respondents (54.8%). A few farmers have designed innovative way of conserving and cleaning the stored water in pans. Azolla plants have been introduced to cover the stored water surfaces thereby minimizing water loss through evaporation. Suspended plant roots physically clean water stored in water pans. Out of 115 farmers investigated, only 37.4% have adopted irrigation application technology. Out of these 37.4% that have adopted irrigation technology, 42% of them irrigate crops, 93% water livestock while 35% use the water for both purposes as shown in Fig. 3. Bucket, drip and sprinkler irrigation facilities have been adopted by 86.1%, 9.3% and 2.3% of Lare farmers respectively.

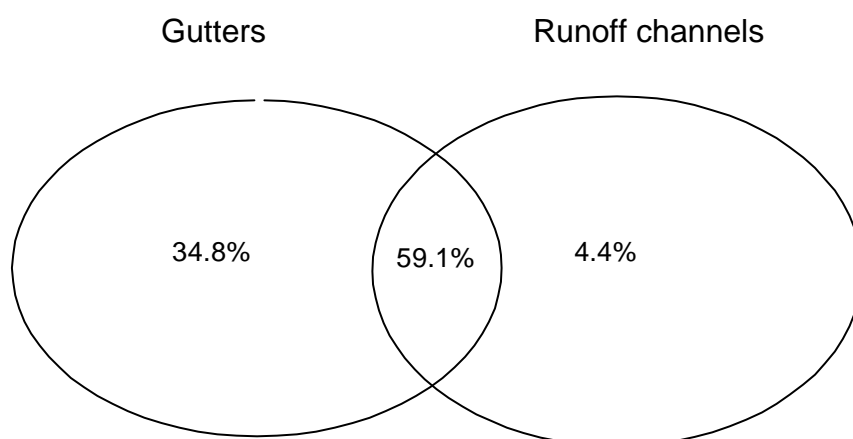


Fig. 2. Water harvesting structures in Lare division

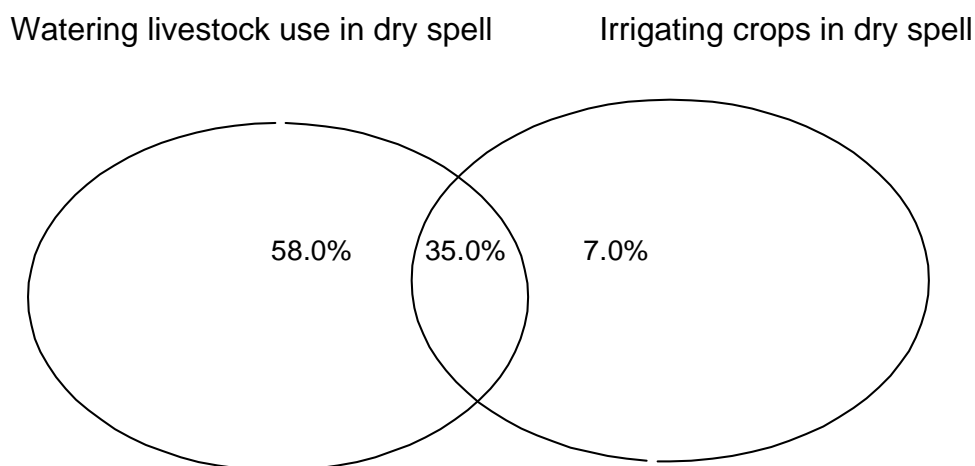


Fig. 3. Applications of stored water in dry spell by Lare farmers

4. DISCUSSION

Out of 115 household heads interviewed, 53.9% were male while 46.1% were female. Therefore, there was gender streaming on issues of agricultural water adoption by Lare farmers. Women contribute 66% of all the hours worked throughout the world [16]. Besides, men and women do not benefit equally from agricultural water technologies adoption. Respondents aged 51 years and above constituted 51.7%. This rather advanced age may have had bearing on adoption of agricultural water technologies. A farmer's age influences technologies adoption. However the direction of the influence is in contention. Some researchers have found positive and negative correlation or no significant influence at all [16]. Generally, Lare farmers had low levels of education by Kenyan standards with more than 76% having primary or no formal education. Education is believed to create a favourable mental attitude for the uptake of new practices [16]. Since educated farmers are expected to embrace new farming related technologies, it would appear that the low level of education among Lare farmers could have led to low adoption of irrigation technology as it requires some knowledge which these farmers may not adequately have. The main source of income (70.4%) is farming, the rest (29.6%) indicating, business and employment as their other income sources. Relying on farming alone or partly for source of income may have bearing on a farmer's effort in adopting agricultural water technologies. Resources farmers commit to these technologies such time, labour and finance may determine amount of benefits accrued from technologies' adopting. Therefore, fulltime farmers are expected to be highly involved in adoption of agricultural water technologies given that farming is the only source of their households' income [17]. However, an extra occupation may mean an extra source of finance that could possibly be ploughed into agricultural water technologies management [16]. In Lare Division, a few farmers were observed as having left other businesses to fully concentrate on farming but not the other way round. On community interaction, only 20.0% of the respondents belonged to farmers groups. Farmers groups are effective avenues for passing farming technologies to farmers. According to [18], new ideas' such as adoption of agricultural water technologies, spread effectively through groups found in communities. A study done in India found that smallholder farmers active in farmers groups had adopted farming related technologies twice as much compared to their counterparts who did not [19]. The low level of community interaction in Lare may explain low adoption of irrigation techno-

logy. Majority of the respondents indicated that the foodstuffs consumed in their households were obtained from their farms. The rest supplemented by buying from market implying that majority of the smallholder farmers in Lare Division are subsistence farmers [20]. They are therefore resource, knowledge and skills scarce hence would be expected to adopt simple farming technologies that would boost their farms' agricultural production. Lare Division has no single permanent river. Hence, roof and runoff are techniques adopted by Lare farmers for water harvesting during rainy season each year. Using simple channels with tree twigs placed at intervals inside the channels, to trap eroded soils, road runoff is diverted either directly into cropped land or into water pans. The trapped fertile soil is periodically scooped from the channels and spread on farms as manure. The farmers felt water harvesting structures' capacities were inadequate leading to a lot of rain water going to waste in rainy seasons. Water storage technology was adopted by 93.9% of the smallholder farmers with commonly used water storage structures being plastic and concrete tanks (98.30%). Plastic tanks are popular as are affordable, maintainable and water stored in them is hygienically clean hence suitable for domestic use. These tanks are also locally available in various capacities to suit households' water requirements. 49.3% of the farmers use water pans for water storage. Water storage technology has been adopted for over 10 years by over half of the respondents (54.8%). A few farmers have designed innovative way of conserving and cleaning the stored water in pans. Azolla plant has been introduced to cover the stored water surfaces thereby minimizing water loss through evaporation. Suspended plant roots physically clean water stored in water pans. Majority of Lare farmers use bucket while others use drip and sprinkler irrigation facilities. The low percentage of Lare farmers that use water efficient irrigation facilities was attributed to cost involved and skills needed acquisition and maintenance.

5. CONCLUSION

The low education level and rather advanced general age of majority of Lare farmers may have limited adoption of agricultural water technologies that would require relatively high knowledge and skills to effectively operate. The low level of community interaction in Lare, may explain low adoption of irrigation technology. Majority of the respondents are subsistence resource, knowledge and skills scarce farmers. Lare Division has no single permanent river. Hence, roof and runoff are

techniques adopted by Lare farmers for water harvesting during rainy season each year. The commonly used water storage structures are plastic and concrete tanks. A few farmers have designed innovative way of conserving and cleaning the stored water in pans using azolla plant which covers the stored water surfaces in water pans thereby minimizing water loss through evaporation and suspended plant roots in the water physically clean stored water. However, water harvesting and storage structures' capacities are inadequate leading to a lot of rain water going to waste in rainy seasons. Low usage of water efficient drip and sprinkler irrigation facilities by Lare farmers may be attributed to cost involved and skills needed acquisition and maintenance.

6. RECOMMENDATIONS

Agricultural water technologies' adoption is an all-inclusive social learning process involving farmers, extension workers, researchers, decision makers and other stake holders on how to respond to farming challenges brought about by climate change. Intervention measures should include both technical and financial empowerment components. For ownership and sustainability, agricultural water technologies adoption process should start off from farmers' indigenous technical knowledge, skills and experiences.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Synthesis and Evaluation of Analgesic and Anti-Inflammatory Activities of Most Active Free Radical Scavenging Derivatives of Mangiferin

ABSTRACT

In the present study, structural modification of mangiferin was carried out for structure activity relationship studies. One new compound and three known derivatives were prepared from mangiferin. All these compounds were synthesized and purified by standard procedures, identified by using physical and spectral (IR, ¹H NMR, ¹³C NMR and MS) properties. The synthesized mangiferin derivatives were tested for In vitro antioxidant properties. Benzyl and methyl substituted mangiferin showed poor antioxidant activity than mangiferin. However, mangiferin derivatives substituted with acetyl and benzoyl groups were showed potent antioxidant activity than mangiferin in lipid peroxidation, p-NDA, deoxyribose and alkaline DMSO methods. But both the compounds failed to show potent analgesic and anti-inflammatory activities. In all these methods, standard drugs showed better activity than mangiferin and its derivatives.

Keywords: mangiferin derivatives; antioxidant; analgesic; anti-inflammatory.

1. INTRODUCTION

Mangiferin (1,3,6,7-tetrahydroxyxanthone-C2-D-glucoside) is a pharmacologically active phytochemical compounds present in large amounts in the bark, fruits, roots and leaves of *Mangifera indica* Linn. (family: *Anacardiaceae*). The plant is indicated in traditional medicine for the treatment of various diseases. The root, bark, leaves and flowers are astringent, refrigerant, styptic, vulnerary, laxative, cardiogenic, haemoptysis, haemorrhages, constipating and diabetes [1,2]. Mangiferin showed

antidiabetic [3], anticancer [4,5], antioxidant [6], anti-inflammatory [7], antiviral [8] and antimicrobial [9] activities.

Free radicals play important roles in many physiological and pathological conditions. In general, excess of free radicals caused by the imbalance between free radicals generation and scavenging may contribute to disease development. Painful stimulation increases the production of free radicals with increased lipoperoxidation. The application of antioxidants increases the antioxidative capacity and thus enhances the protection against the consequences of pain. Antioxidants are known to protect CNS against free radicals and also decrease the sensation of pain. The role of reactive oxygen species in the pathophysiology of inflammation is well-established. Free radicals can damage membranes, proteins, enzymes and DNA, increasing the risk of diseases such as cancer, Alzheimer's, Parkinson's, angiocardopathy, arthritis, asthma, diabetes, and degenerative eye diseases. Natural products, natural products derivatives, synthetic compounds with natural products-derived pharmacophore and synthetic compounds designed from natural products are also important to manage pathological conditions of those diseases caused by free radicals.

Bhatia et al. [10] reported acetylation and methylation of mangiferin. Further, Hu et al. [11] synthesized a series of substitutional benzyl mangiferin derivatives. However, literature showed that detailed pharmacological investigation of mangiferin derivatives was not reported. Hence, the structural modification of mangiferin was taken up for the development of new pharmacologically active compounds.

2. MATERIALS AND METHODS

2.1 General

IR spectrum was recorded using FT-IR, Perkin Elmer 8400 series instrument. NMR spectrum was obtained on a DDR X - 400 MHz and 100 MHz Bruker Daltonics, Germany. Absorbance was recorded by using Elisa Reader, Bio-Rad Laboratories Inc, California, USA, model 550. Mass spectrum was recorded by using Shimadzu MS-2010 A, Koyoto, Japan. Melting points (uncorrected) were obtained on a melting point apparatus, Lab India, Mumbai.

2,2-Diphenyl-2-picryl hydrazyl (DPPH) and 2,2'-azinobis (3-ethylbenzo-thiazoline-6-sulphonic acid) diammonium salt (ABTS) were obtained from Sigma-Aldrich Co., St. Louis, USA. Rutin and p-nitroso dimethyl aniline (p-NDA) were obtained from

Acros Organics, NJ, USA. Naphthyl ethylene diamine dihydrochloride (NEDD) was from Roch-Light Ltd., Suffolk, UK, ascorbic acid, nitro blue tetrazolium (NBT) and butylated hydroxy anisole (BHA) were from SD Fine Chemicals Ltd., Mumbai, India. H₂O₂ and 2-deoxy-d-ribose was from Hi-Media Laboratories Pvt. Ltd., Mumbai, India. Sodium nitroprusside were from Ranbaxy Laboratories Ltd., Mohali, India. Sulphanilic acid used was from E-Merck (India) Ltd., Mumbai, India and carrageenan were obtained from Sigma Aldrich Co, St Louis, USA. Pentazocine was obtained from Ranbaxy, New Delhi, India. Diclofenac sodium was obtained from Wochardt Ltd, Mumbai, India. Rutin was obtained from Acros Organics, New Jersey, USA. Ascorbic acid was obtained from S.D. Fine Chem, Ltd., Biosar, India. All other chemicals used were of analytical grade.

2.2 Plant Material

The leaves of *Mangifera indica* were collected from Namakkal, Tamilnadu, India and authenticated by Medicinal Plants Survey and Collection Unit, Ootacamund, Tamil Nadu, India, where a voucher has been deposited for further reference (Voucher No: J322/2014).

2.3 Extraction and Isolation of Mangiferin

Shade-dried and powdered leaves of *Mangifera indica* (1 kg) were soxhleted for 18-20 h with petroleum ether (60-80°C). The defatted plant material was extracted with ethanol under reflux for 18-20 h. On keeping overnight a solid matter separated out, it was filtered and washed with petroleum ether repeatedly, affording yellow powder of mangiferin [3]. After repeated crystallization of the powder in aqueous ethyl acetate and methanol pale-yellow needle-shaped crystals of mangiferin were obtained (1, 3, 6, 7-tetrahydroxyxanthone-C2-D-glucoside, mp 270-272°C, yield 4.5 g, 0.45%), and exhibited violet color with ferric chloride. It was found to be homogeneous by HPTLC when separated using the solvent system ethyl acetate: methanol: water: formic acid (6:2:1:1, R_f = 0.76). It was characterized by comparing its melting point, IR, NMR and MS data with literature values [12].

2.4 Structural Modification of Mangiferin

The structural modifications of mangiferin was carried out by using the following standard procedure.

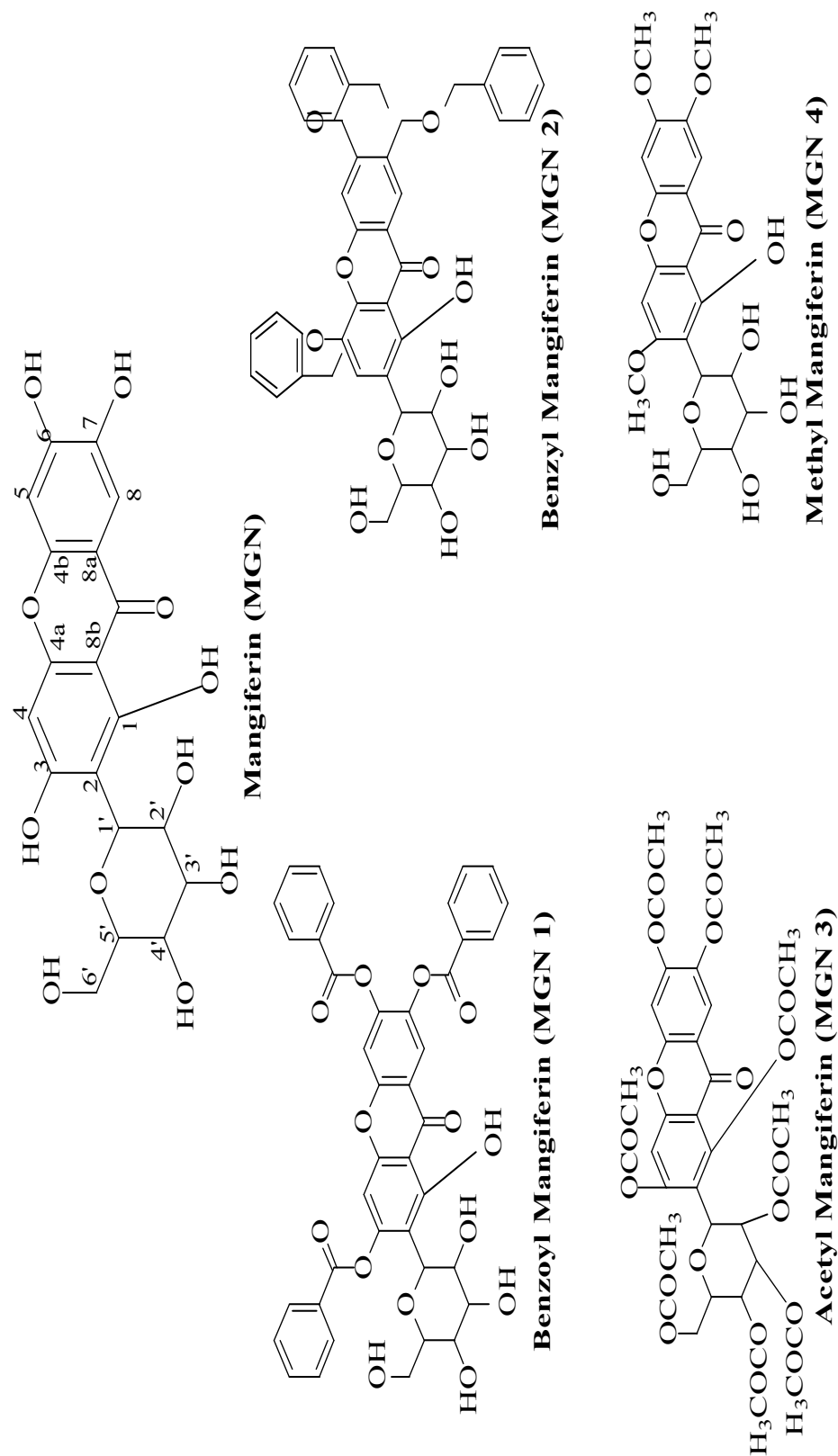


Fig. 1. Structure of mangiferin and its derivatives

2.4.1 Benzoylation of mangiferin

Mangiferin (0.844 g, 2 mmol), benzoyl chloride (0.560 g, 4 mmol), pyridine (0.474 g, 0.6 mmol) and basic alumina (2 g) were added in a 50 ml beaker [13]. The mixture was stirred to obtain a free flowing powder, at room temperature. Then the temperature was increased up to 70°C for 30 min. After cooling to room temperature, the product was extracted with methylene chloride (3 x 15 ml). The combined extracts were washed with water and dried over sodium sulfate. The product obtained after removal of solvent under reduced pressure was crystallized from a suitable solvent (Ethyl acetate-petroleum ether; ethanol), yielded tribenzoyl mangiferin and designated as compound MGN 1 (Fig. 1).

2.4.2 Benzylation of mangiferin

A solution of mangiferin (0.422 g, 1 mmol) in dry DMF (20 ml) was treated with benzyl chloride (0.504 g, 4 mmol) and K_2CO_3 (0.1 g) with stirring at 60°C for 10 h [11]. The reaction mixture on evaporation in vacuo gave a residue and was submitted to column chromatography using dichloro methane and methanol as eluent to give tribenzyl mangiferin, designated as MGN 2.

2.4.3 Acetylation of mangiferin

A solution of mangiferin (0.422 g, 1 mmol) in pyridine (0.395 g, 5 mmol) was treated with acetic anhydride (0.306 g, 3 mmol) and then stirred at 40°C for 36 h at room temperature [10]. The reaction mixture was poured into ice-cold water and extracted with chloroform soluble fractions. On evaporation in vacuo gave a residue and was submitted to column chromatography using chloroform and methanol as eluent to give octaacetyl mangiferin, designated as MGN 3.

2.4.4 Methylation of mangiferin

A solution of mangiferin (0.422 g, 1 mmol) in acetone (150 ml) was treated with dimethyl sulphate (0.882 g, 7 mmol) and K_2CO_3 (0.1 g) with stirring at room temperature for seven days [10]. The reaction mixture on evaporation under hood gave a residue and was submitted to column chromatography using chloroform and methanol as eluent to give trimethyl mangiferin, designated as MGN 4.

2.5 In vitro Antioxidant Activity

The *in vitro* antioxidant activity of mangiferin and its derivatives were carried out by using the following standard procedure.

2.5.1 Preparation of test and standard solutions

All the synthesized compounds including mangiferin and the standard antioxidants (ascorbic acid, rutin, butylated hydroxy anisole and alpha tocopherol) were dissolved in distilled dimethyl sulphoxide (DMSO) separately and used for the *in vitro* antioxidant assays using seven different methods except the hydrogen peroxide method. For the hydrogen peroxide method (where DMSO interferes with the method), the compounds and the standards were dissolved in distilled methanol and used. The stock solutions were serially diluted with the respective solvents to obtain lower dilutions.

2.5.2 In vitro antioxidant activity

The synthesized compounds and mangiferin were tested for their *in vitro* antioxidant activity using the standard methods. In all these methods, a particular concentration of the compounds or standard solution was used which gave a final concentration of 1000-0.45 µg/ml after all the reagents were added. Absorbance was measured against a blank solution containing the compounds or standard, but without the reagents. A control test was performed without the compounds or standards. Percentage scavenging and IC₅₀ values ± S.E.M. (IC₅₀ value is the concentration of the sample required to inhibit 50% of radical) were calculated.

2.5.2.1 Scavenging of ABTS radical cation

Accurately 54.8 mg of ABTS was weighed and dissolved in 50 ml of distilled water (2 mM). Potassium per sulphate (17 mM, 0.3 ml) was then added. The reaction mixture was left to stand at room temperature overnight in dark before usage. To 0.2 ml of various concentrations of the compounds MGN, MGN1-4 or standards, 1.0 ml of distilled DMSO and 0.16 ml of ABTS solution were added to make the final volume to 1.36 ml. Absorbance was measured after 20 min by spectrophotometrically at 734 nm.

2.5.2.2 DPPH radical scavenging method

A 10 µl aliquot of the different concentrations of the compounds MGN, MGN1-4

and standards were added to 200 μ l of DPPH in methanol solution (100 μ M) in a 96-well microtitre plate (Tarson Products (P) Ltd., Kolkata, India). After incubation at 37°C for 20 min, the absorbance of each solution was determined at 490 nm using ELISA reader (Bio-Rad Laboratories Inc., CA, USA, Model 550) [14].

2.5.2.3 Scavenging of hydrogen peroxide

A solution of hydrogen peroxide (20 mM) was prepared in phosphate-buffered saline (PBS at pH 7.4). Various concentrations of the compounds MGN, MGN1-4 and standard in methanol (1 ml) were added to 2 ml of hydrogen peroxide solution in PBS. After 10 min the absorbance was measured at 230 nm [15].

2.5.2.4 Lipid peroxidation inhibitory activity

Lipid peroxidation inhibitory activity of all the compounds MGN, MGN1-4 and standard was carried out according to the method of Duh et al. [16]. Egg lectin (3 mg/ml, phosphate buffer, pH 7.4) was sonicated. The test sample of different concentrations was added to 1 ml of liposome mixture, control was without test sample. Lipid peroxidation was initiated by adding 10 μ l of ferric chloride (400 mM) and 10 μ l L-ascorbic acid (200 mM). After incubation for 1 h at 37°C, the reaction was stopped by adding 2 ml of 0.25 N HCl containing 15% trichloro acetic acid and 0.375% thiobarbituric acid and the reaction mixture was boiled for 15 min then cooled, centrifuged and the absorbance of the supernatant was measured at 532 nm.

2.5.2.5 Nitric oxide radical inhibition assay

The reaction mixture (6 ml) containing sodium nitroprusside (10 mM, 4 ml), phosphate buffer saline (1 ml), compounds MGN, MGN1-4 and standard solutions (1 ml) were incubated at 25°C for 150 min. After incubation, 0.5 ml of the reaction mixture was removed and 1 ml of sulphanilic acid reagent (0.33% in 20% glacial acetic acid) was mixed and allowed to stand for 5 min for completion of diazotization reaction and then 1 ml of NEDD was added, mixed and allowed to stand for another 30 min in diffused light. The absorbance was measured at 540 nm against the corresponding blank solutions in a 96-well microtitre plate (Tarsons Product (P) Ltd., Kolkata, India) using ELISA reader (Bio-Rad Laboratories Inc., Model 550) [17,18].

2.5.2.6 Scavenging of hydroxyl radical by deoxyribose method

Various concentrations of the compounds MGN, MGN1-4 and standard in DMSO (0.2 ml) were added to the reaction mixture containing deoxyribose (3 mM, 0.2 ml), ferric chloride (0.1 mM, 0.2 ml), EDTA (0.1 mM, 0.2 ml), ascorbic acid (0.1 mM, 0.2 ml) and hydrogen peroxide (2 mM, 0.2 ml) in phosphate buffer (pH, 7.4, 20 mM) to give a total volume of 1.2 ml. The solutions were then incubated for 30 min at 37°C. After incubation, ice-cold trichloro acetic acid (0.2 ml, 15%, w/v) and thiobarbituric acid (0.2 ml, 1%, w/v) in 0.25 N HCl were added. The reaction mixture was kept in a boiling water bath for 30 min, cooled and the absorbance was measured at 532 nm [19].

2.5.2.7 Scavenging of hydroxyl radical by p-NDA method

Various concentrations of the compounds MGN, MGN1-4 and standard in distilled DMSO (0.5 ml) were added to a solution mixture containing ferric chloride (0.1 mM, 0.5 ml), EDTA (0.1 mM, 0.5 ml), ascorbic acid (0.1 mM, 0.5 ml), hydrogen peroxide (2 mM, 0.5 ml) and p-NDA (0.01 mM, 0.5 ml) in phosphate buffer (pH 7.4, 20 mM), to produce a final volume of 3 ml. Absorbance was measured at 440 nm [20].

2.5.2.8 Scavenging of super oxide radical by alkaline DMSO method

To the reaction mixture containing 0.1 ml of NBT (1 mg/ml solution in DMSO) and 0.3 ml of the compounds MGN, MGN1-4 and standard in DMSO, 1 ml of alkaline DMSO (1 ml DMSO containing, 5 m MNaOH in 0.1ml water) was added to give a final volume of 1.4 ml and the absorbance was measured at 560 nm [20].

2.9 In vivo Analgesic and Anti-inflammatory Activities

The *in vivo* analgesic activity was carried out by using the following standard procedure.

2.9.1 Animals

The animals were obtained from the animal house of Sree Siddaganga College of Pharmacy, Tumkur, India, maintained under standard conditions (12 h light/dark cycle; 25 ± 3°C, 45-65% humidity) and had free access to standard rat feed and water *ad libitum*. All the animals were acclimatized to laboratory conditions for a week before commencement of the experiment. The experiments were performed

during the light portion between 07:00-18:00 h to avoid circadian influences. Animal studies were performed according to the prescribed guidelines of Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Government of India, India.

2.9.2 Analgesic activity

Three different sets of mice were randomized into eight groups, each containing six animals and used in three different models for the evaluation of analgesic activity. Different doses of compounds MGN 1 and MGN 3 were prepared as suspensions in Tween-80 (1% v/v in saline). Two doses of mangiferin, MGN 1 and MGN 3 (10 and 20 mg/kg) were selected based on an earlier study [21].

Group I were treated with Tween-80 (1% v/v in saline) as normal vehicle control. Groups II-VII were treated with mangiferin, MGN 1 and MGN 3 at 10 and 20 mg/kg, respectively and Group VIII animals were treated with standard pentazocine at 20 mg/kg. All the treatments were administered intraperitoneally.

2.9.3 Eddy's hot-plate method

Mice were treated and placed on Eddy's hot plate kept at a temperature of $55 \pm 0.5^\circ\text{C}$. A cut off period of 15 sec was observed to avoid damage to the paw. Reaction time and the type of response were noted using a stopwatch. The response is in the form of jumping, withdrawal of the paws or licking of the paws. The latency was recorded before and after 15,30 and 45 min following the treatments. The percentage protection was calculated using the formula, $\text{protection (\%)} = (t-n/t) \times 100$, where, t = reaction time of treated group and n = reaction time of normal group [22].

2.9.4 Tail immersion method

In this method [23], 5 cm of the end of the mice tail was immersed in warm water maintained at $55 \pm 0.5^\circ\text{C}$. The tail withdrawal reflex was recorded before and after 60 min following the treatments. The percentage protection was calculated as per hot plate method.

2.9.5 Acetic acid induced writhing method

In the acetic acid induced writhing [22] in mice an intraperitoneal injection of acetic acid (1%, 10 ml/kg) was given 30 min after the treatments. The response is in

the form of abdominal contractions, trunk twist and extension of hind limb. The number of writhing in each mouse was counted for 20 min from the injection of acetic acid. The percentage protection was calculated using the formula, $\text{protection (\%)} = (c-t/c) \times 100$, where, t = reaction time of treated group and c = reaction time of control group.

2.10 Anti-Inflammatory Activity

The *in vivo* anti-inflammatory activity was carried out by using carrageenan induced paw edema method.

2.10.1 Carrageenan induced paw edema in rats

Swiss albino rats (150-200 g) were divided into eight groups with six animals in each group. Group I was served as control and received Tween-80 (1% v/v in saline). Groups II-VII were received the treatments as described in analgesic activity. Group VIII was treated as positive control and received standard diclofenac (20 mg/kg). All the treatments were administered intraperitoneally. The initial hind paw volume of rats was determined volumetrically by using a plethysmometer [24]. A solution of carrageenan in saline (1%, 0.1 ml/rat) was injected subcutaneously into the right hind paw 30 min after the treatments. The animals in the control group received the vehicle only. Paw volumes were measured up to 6 h at intervals of 30, 60, 120, 180 and 360 min and percent increase in edema between the control and treated groups were compared. The percentage protection was calculated as acetic acid induced writhing method.

2.11 Statistical Analysis

The values were expressed as mean \pm SEM. The statistical analysis was carried out by one way analysis of variance (ANOVA) followed by multiple comparison using the Dunnet's test. P values < 0.05 were considered as significant.

3. RESULTS

3.1 Structural Modification of Mangiferin

The following results were obtained from various instrumental analysis of mangiferin and its derivatives.

3.1.1 2-b-D-glucopyranosyl-1,3,6,7-tetrahydroxy-9H-xanthen-9-one, mangiferin (MGN)

Mangiferin was isolated from the leaves of *Mangifera indica*, found to be homogenous by HPTLC when separated using the solvent system ethyl acetate: methanol: water: formic acid (6:2:1:1, $R_f=0.76$). Obtained as pale-yellow needle shaped crystals, mp 270-272°C; yield-1 4.5 g, 0.45%; IR ν_{\max} (KBr) cm: 3367 (OH), 1651 (C=O), 1622 and 1585 (aromatic C=C), 1199 and 1095 (C-O), 1051, 829, 588; ^1H NMR (400 MHz, DMSO) 5: see (Table 1); negative ESI-MS: m/z calculated for 422.08, Found: 444 for [M +Na - H].

3.1.2 2-b-D-tetrahydroxyglucopyranosyl-3,6,7-tribenzoyl-1-hydroxy-9H xanthen-9-one (MGN 1)

Obtained as yellow crystals, mp 181-183°C; yield 0.78 g, 56.07%; IR ν_{\max} (KBr) cm^{-1} : 3352 (OH), 1747, 1742 (carbonyl ester), 1618 (C=O), 1600 and 1556 (aromatic C=C), 1259 and 1091 (C-O), 1022, 821, 705, 567; ^1H NMR (400 MHz, DMSO) 5: see (Table 1); negative ESI-MS: m/z calculated for 734.16, Found: 755 for [M +Na - 2H].

3.1.3 2-b-D-tetrahydroxyglucopyranosyl-3,6,7-tribenzyl-1-hydroxy-9H-xanthen-9-one (MGN 2)

Obtained as yellow powder, mp 137-139°C; yield 0.53 g, 82.68%; IR ν_{\max} (KBr) cm^{-1} : 3392 (OH), 1647 (C=O), 1608 and 1577 (aromatic C=C), 1190 and 1080 (C-O), 1024, 808, 734, 696; ^1H NMR (400 MHz, DMSO) 5: see (Table 1); negative ESI-MS: m/z calculated for 692.23, Found: 689 for [M - 3H].

3.1.4 2-b-D-tetraacetoxyglucopyranosyl-1,3,6,7-tetraacetoxy-Hxanthen-9-one (MGN 3)

Obtained as white amorphous powder, mp 141-143°C; yield 0.60 g, 79.58%; IR ν_{\max} (KBr) cm^{-1} : 1751 (Carbonyl ester), 1651 (C=O), 1620 (C=C), 1224 and 1055 (C-O), 1039, 920, 839, 601; ^1H NMR (400 MHz, DMSO) 5: see (Table 1); negative ESI-MS: m/z calculated for 758.17, Found: 755 for [M - 3H].

3.1.5 2-b-D-tetrahydroxyglucopyranosyl-3,6,7-trimethoxy-1-hydroxy-9H-xanthen-9-one (MGN 4)

Obtained as white amorphous powder, mp 193-195°C; yield 0.40 g, 86.58%; IR ν_{\max} (KBr) cm^{-1} : 3367 (OH), 1647 (C=O), 1606 (C=C), 1217 and 1064 (C-O), 1022, 819, 759, 619, 576; ^1H NMR (400 MHz, DMSO) δ : see (Table 1); negative ESI-MS: m/z calculated for 464.13, Found: 464.

3.2 In vitro Antioxidant Screening of Mangiferin and Its Derivatives

Mangiferin showed potent antioxidant activity with IC₅₀ values 1.72±0.07, 0.09±0.01, 8.39±1.09 and 32.58±0.34 $\mu\text{g/ml}$ in DPPH, ABTS, H₂O₂ and nitric oxide methods, respectively. Mangiferin failed to show potent activity in rest of the methods. Benzoyl (MGN 1) and acetyl (MGN 2) substituted mangiferin were showed potent to moderate activity in all the methods. MGN 1 and 3 showed better activity than mangiferin in deoxyribose, p-NDA and lipid peroxidation methods. In alkaline DMSO method, only MGN 1 exhibited potent activity (Table 2). In p-NDA, lipid peroxidation and alkaline DMSO methods, MGN 1 showed better activity than the standards. Mangiferin substituted with acetyl and benzoyl groups was beneficial for the activity. Based on these results, MGN 1 and 3 along with mangiferin were chosen for comparing their in vivo analgesic and anti-inflammatory activities.

3.3 Analgesic Activity of Selected Mangiferin Derivatives

In the hot plate method, a significant increase in the response time was observed for mangiferin and MGN 1 at both the doses after 15, 30 and 45 min, MGN 3 at 20 mg/kg after 30 and 45 min, when compared to control. Similar results were observed for standard pentazocine at 20 mg/kg. MGN 1 showed better results than mangiferin. However, the standard pentazocine produced better results compared to the other treated groups. The percentage protection after 45 min for all the compounds ranged between 51.59 to 72.45% (Table 3). A significant increase in the tail withdrawal reflex was observed for MGN 1 at both the doses and mangiferin at 20 mg/kg. MGN 1 showed better activity than mangiferin. The percent protection was found to be 9.11 to 55.34%.

Table 1. ¹H NMR spectrum of mangiferin and its derivatives

Proton	Reported	MGN	MGN 1	MGN 2	MGN 3	MGN 4
1-OH	13.76 (1H)	13.50 (1H)	13.50 (1H)	13.50 (1H)	-	13.50 (1H)
6-OH	10.55 (1H)	10.80 (1H)	-	-	-	-
7-OH	10.55 (1H)	10.80 (1H)	-	-	-	-
3-OH	9.86 (1H)	9.80 (1H)	-	-	-	-
3''4'-OH	4.86 (2H)	4.90 (2H)	4.95 (2H)	4.90 (2H)	-	4.90 (2H)
6'-OH	4.49 (1H)	4.49 (1H)	4.50 (1H)	4.50 (1H)	-	4.49 (1H)
2'-OH	3.87 (1H)	4.60 (1H)	4.65 (1H)	3.75 (1H)	-	3.75 (1H)
8-H	7.38 (1H)	7.40 (1H)	7.45 (1H)	7.45 (1H)	7.40 (1H)	7.45 (1H)
5-H	6.86 (1H)	6.90 (1H)	7.00 (1H)	7.30 (1H)	6.90 (1H)	6.65 (1H)
4-H	6.37 (1H)	6.40 (1H)	6.50 (1H)	6.75 (1H)	6.40 (1H)	6.65 (1H)
1'-H	4.60 (1H)	4.60 (1H)	4.85 (1H)	4.70 (1H)	4.90 (1H)	4.60 (1H)
2'-H	4.05 (1H)	4.05 (1H)	4.00 (1H)	4.00 (1H)	4.00 (1H)	3.95 (1H)
6'a-H	3.69 (1H)	3.69 (1H)	4.50 (1H)	3.40 (1H)	4.00 (1H)	3.65 (1H)
6'b-H	3.42 (1H)	3.41 (1H)	4.60 (1H)	3.20 (1H)	4.00 (1H)	3.30 (1H)
3'-H	3.18 (1H)	3.18 (1H)	4.60 (1H)	3.40 (1H)	5.80 (1H)	3.30 (1H)
4'-H	3.18 (1H)	3.18 (1H)	4.85 (1H)	3.20 (1H)	5.30 (1H)	3.30 (1H)
5'-H	3.18 (1H)	3.18 (1H)	4.90 (1H)	3.20 (1H)	5.20 (1H)	3.30 (1H)
CH ₃ CO	-	-	-	-	1.20-2.00 (24 H)	-
Benzene ring	-	-	7.20-8.30 (15H)	7.30-7.50 (15H)	-	-
-CH ₂	-	-	-	5.25-5.40 (6H)	-	-
-OCH ₃	-	-	-	-	-	4.60-4.90 (9H)
Total number of protons	18	18	30	36	34	24

Table 2. *In vitro* antioxidant activity of mangiferin and its derivatives using standard methods

Compound	IC ₅₀ values±SEM (µg/ml) by methods							
	DPPH	ABTS	Deoxyribose	p-NDA	H ₂ O ₂	Nitric oxide	Lipid peroxidation	Alkaline
DMSO								
Mangiferin	1.72±0.07	0.09±0.01	502.20±3.20	106.84±0.07	8.39±1.09	32.58±0.34	433.20±4.08	>1000
MGN 1	23.80±0.89	0.65±0.02	87.58±2.21	24.13±1.05	23.57±0.34	52.67±1.30	8.90±0.98	152.30±3.63
MGN 2	>1000	2.41±0.08	>1000	>1000	215.02±3.11	>1000	>1000	>1000
MGN 3	36.47±0.81	3.71±0.14	406.30±2.85	31.53±3.72	81.23±1.05	>1000	29.80±1.27	>1000
MGN 4	>1000	2.23±0.06	>1000	>1000	>1000	>1000	>1000	>1000
Ascorbic acid	4.92±0.28	11.25±0.49	-	>1000	193.45±2.30	-	-	>1000
Rutin	8.91±0.10	0.52±0.04	-	205.54±3.25	32.35±1.02	65.21±2.97	-	>1000
BHA	-	-	83.46±4.34	-	22.16±0.56	-	110.02±3.41	-

Average of three determinations

Table 3. Analgesic activity of mangiferin and its derivatives using standard methods

Treatment (dose, mg/kg, i.p.)	Hot plate test			Tail immersion		Acetic acid induced writhing No. of writhing (% Protection)
	Latency period, sec (% Protection)	30 min	45 min	Latency period, sec (% Protection)		
Control	2.32±0.25	2.27±0.26	2.43±0.27	4.39±0.60	43.83±2.32	
Mangiferin (10)	3.21±0.25(27.73)	4.58±0.47 ^a (50.44)	6.46±0.71 ^b (62.38)	5.70±0.50(22.98)	23.33±2.99 ^a (46.77)	
Mangiferin (20)	4.97±0.32 ^a (53.32)	5.46±0.54 ^a (58.42)	7.35±0.95 ^a (66.94)	8.69±0.49 ^a (49.48)	16.17±2.33 ^a (63.11)	
MGN 1 (10)	3.90±0.47 ^a (40.51)	4.75±0.45 ^a (52.21)	7.14±0.50 ^a (65.97)	7.64±0.60 ^a (42.54)	24.17±2.93 ^a (44.85)	
MGN 1 (20)	6.16±0.72 ^a (62.34)	6.66±0.27 ^a (65.92)	8.82±0.51 ^a (72.45)	9.83±0.89 ^a (55.34)	17.33±1.69 ^a (60.46)	
MGN 3 (10)	3.08±0.19(24.68)	3.85±0.46(41.04)	5.02±0.42(51.59)	4.83±0.41(9.11)	27.50±2.32 ^a (37.26)	
MGN 3 (20)	3.61±0.33(35.73)	4.58±0.50 ^a (50.44)	5.79±0.44 ^a (58.03)	7.04±0.81(37.64)	23.50±2.69 ^a (46.38)	
Pentazocine (20)	5.11±0.32 ^a (54.60)	6.85±0.50 ^a (66.86)	10.61±1.14 ^b (77.10)	10.21±1.00 ^a (57.00)	7.67±1.45 ^a (82.50)	

Values are given as mean±S.E.M. for groups of six animals each, Dunnett's test, values are statistically significant at ^aP<0.001, ^bP<0.01, ^cP<0.05 between control and treated groups

Table 4. Anti-inflammatory activity of mangiferin and its derivatives against carrageenan induced paw edema in rats

Treatment (dose, mg/kg, i.p.)	Paw volume, ml after min (% Protection)					
	0	30	60	120	180	360
Control		1.63±0.04	1.77±0.05	1.90±0.07	1.96±0.07	2.13±0.06
Mangiferin (10)	0.84±0.02	1.51±0.07(7.36)	1.60±0.06(9.60)	1.56±0.03 ^a (17.89)	1.52±0.08 ^a (22.45)	1.48±0.08 ^a (30.52)
Mangiferin (20)	0.91±0.04	1.39±0.04 ^a (14.72)	1.46±0.04 ^a (17.51)	1.43±0.06 ^a (24.74)	1.38±0.05 ^a (29.59)	1.34±0.04 ^a (37.09)
MGN 1 (10)	0.98±0.08	1.55±0.04(4.90)	1.57±0.04(11.30)	1.59±0.04 ^a (16.32)	1.55±0.09 ^a (20.92)	1.52±0.05 ^a (28.64)
MGN 1 (20)	1.00±0.06	1.40±0.04 ^a (14.10)	1.40±0.06 ^a (20.90)	1.41±0.04 ^a (25.79)	1.36±0.03 ^a (30.61)	1.37±0.05 ^a (35.68)
MGN 3 (10)	0.95±0.05	1.58±0.03(3.07)	1.67±0.06(5.65)	1.60±0.07 ^a (15.79)	1.55±0.07 ^a (20.92)	1.53±0.06 ^a (28.17)
MGN 3 (20)	1.02±0.03	1.51±0.06(7.36)	1.55±0.04(12.43)	1.57±0.04 ^a (17.37)	1.45±0.08 ^a (26.02)	1.42±0.07 ^a (33.33)
Diclofenac (20)	0.89±0.04	1.22±0.05 ^a (25.15)	1.25±0.05 ^a (29.38)	1.30±0.03 ^a (31.58)	1.16±0.02 ^a (40.82)	1.13±0.03 ^a (46.94)

Values are given as mean ± S.E.M. for groups of six animals each, Dunnett's test, values are statistically significant at ^aP<0.001, ^bP<0.01, ^cP<0.05 between control and treated groups

Injection of acetic acid into control mice produced 43.83 ± 2.32 writhes. Pre treatment with mangiferin and its derivatives at both the doses significantly reduced the number of writhes (Table 3). Mangiferin at both the doses showed better activity than its derivatives. The percent protection was found to be 37.26 to 63.11%. However, the standard pentazocine showed better and significant results than all other treated groups.

3.4 Anti-Inflammatory Activity of Selected Mangiferin Derivatives

In carrageenan induced paw edema in rats, mangiferin and MGN 1 produced significant activity at 20 mg/kg dose during 30 to 360 min measurements, compared to the control. Mangiferin, MGN 1 at 10 mg/kg and MGN 3 at 20 mg/kg showed significantly reduced paw edema after 120, 180 and 360 min (Table 4). However, the standard diclofenac at 20 mg/kg also produced similar and better results than the tested samples. The percent protection was found to be 28.17 to 37.09 after 360 min measurements.

4. DISCUSSION

Chemical modification of mangiferin for obtaining compounds with better activity has also been tried. One new and three known mangiferin derivatives were prepared and characterized.

Mangiferin on benzoylation, showed an intense ionic peak at m/z 755 for $(M+Na-2H)$ of tribenzoyl derivative in its positive mode ESI-MS spectrum. In its IR spectrum, it exhibited characteristic absorption bands at 3352 (OH), 1747, 1742 (ester carbonyl), 1618 (C=O), 1600 and 1556 (C=C of aromatic ring) and at 1091 cm^{-1} (C-O). The presence of signals at δ 7.20-8.30 (15 H) indicated the presence of benzoyl groups in the molecule. Further disappearance of -OH group signals at 3, 6 and 7th position in ^1H NMR suggesting the position of the benzoylation in the hydroxyl groups of the basic molecule.

Mangiferin on benzoylation, showed intense ionic peaks at m/z 689, 599 and 510 for tribenzyl, dibenzyl and monobenzyl derivatives in their negative mode ESI-MS spectrum. In its IR spectrum it exhibited characteristic absorption bands at 3392 (OH), 1647 (C=O), 1608 and 1577 (C=C of aromatic ring) and at 1080 cm^{-1} (C-O). The presence of three signals at δ 5.40, 5.30 and 5.25 each for two protons accompanied with the aromatic protons at δ 7.30, 7.40 and 7.50 suggests the presence of a tribenzyl derivative of mangiferin.

Mangiferin on acetylation, showed an intense ionic peak at m/z 611, 653, 695 and 755 for $[M-3H]^+$ ion of tetra acetyl, penta acetyl, hexa acetyl and octa acetyl derivatives, respectively in its positive mode ESI-MS spectrum. In its IR spectrum, it exhibited characteristic absorption bands at 1751 (ester carbonyl), 1651 (C=O), 1620 (C=C of aromatic ring) and at 1055 cm^{-1} (C-O). The ^1H NMR values showed signals at δ 1.20-2.00 (24 H) indicating the formation of an octa acetyl derivative. The position of the acetylation in the octa acetyl derivative is at all the -OH groups, which is evident from the downfield shift of the corresponding protons in the ^1H NMR spectrum. The hydroxyl group signals disappeared in the acylated spectrum.

Mangiferin on methylation, showed an intense ionic peak at m/z 450, and a pseudo molecular ion peak at m/z 464 for $[M]^+$ ion and analyzed for $\text{C}_{22}\text{H}_{24}\text{O}_{11}$ in its positive mode ESI-MS spectrum. In its IR spectrum, it exhibited characteristic absorption bands at 3367 (OH), 1647 (C=O), 1606 (C=C of aromatic ring) and at 1064 cm^{-1} (C-O). The presence of signals at δ 4.60-4.90 (9 H) suggests a trimethyl derivative of mangiferin. The signals of the remaining protons are same as that of mangiferin. This suggests that methylation occurred in the xanthone nucleus (C-3, 6 and 7).

All the synthesised mangiferin derivatives were screened for their *in vitro* antioxidant activity using various standard methods. Mangiferin showed better activity in DPPH, ABTS, H_2O_2 and nitric oxide methods when compared to all the derivatives. Furthermore, mangiferin was poorly active in lipid peroxidation, p-NDA, deoxyribose and alkaline DMSO methods. A possible reason for these results is that mangiferin has ability to scavenge free radicals formed in the initial step of lipid peroxidation as has been noticed previously in rat liver microsomes [25]. MGN 1 and MGN 3 showed potent activity than mangiferin in lipid peroxidation, p-NDA, deoxyribose and alkaline DMSO methods revealed that acetyl and benzoyl group substitution is beneficial for the activity. However, methyl and benzyl mangiferin abolishes the antioxidant activity in most of the methods. Based on these results, compounds MGN 1 and MGN 3 along with mangiferin were chosen for comparing their *in vivo* analgesic and anti-inflammatory activities with mangiferin.

4. CONCLUSION

In analgesic and anti-inflammatory studies MGN 1 and MGN 3 did not produce significant activity when compared to mangiferin. However, MGN 1 showed slightly better results than mangiferin in analgesic models, but it failed in acetic acid induced writhing and anti-inflammatory studies. Further studies are required to confirm its mechanism of action.

COMPETING INTERESTS

Authors declare that there are no competing interests.

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An integrated approach to the design of systems of Autonomous power supply of objects of housing on the basis of renewable energy sources

Abstract: The paper considers approaches to the design of the Autonomous combined energy systems based on renewable energy sources for transformation and for clean energy that does not pollute the natural environment, what is most important for the Crimea as a resort and recreational areas.

Keywords: combined Autonomous power system, renewable energy, environment, the Crimean region.

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***Комплексный подход к проектированию систем
автономного энергоснабжения объектов жилого
фонда на базе возобновляемых источников энергии***

Аннотация: В работе рассмотрены подходы к проектированию комбинированных автономных энергосистем на базе возобновляемых источников энергии с целью получения чистой энергии, не вызывающие загрязнения окружающей природной среды, что наиболее актуально для Крыма как курортно-рекреационной территории.

Ключевые слова: комбинированная автономная энергосистема, возобновляемые источники энергии, окружающая природная среда, Крымский регион.

В настоящее время одной из проблем бесперебойного энергоснабжения различных объектов является удаленность от централизованных сетей или их низкая пропускная способность [1]. С целью разработки полностью автономного проекта энергоснабжения индивидуального жилого дома на базе возобновляемых источников энергии (ВИЭ) был выбран жилой дом общей площадью 345 м² на семью 5-6 человек, расположенный за пределами городской черты. В связи с тем, что объект строительства удален от централизованных сетей энергоснабжения, была спроектирована автономная комбинированная энергосистема с полным их замещением [2].

Разработка проекта предусматривала поэтапное решение следующих задач: энергетический анализ территории; конструктивные особенности здания; энергопотребление здания; энергоисточники на базе ВИЭ; технико-экономическое обоснование проектируемой автономной энергосистемы.

На подготовительном этапе был проведен энергетический анализ территории предполагаемого строительства объекта, по результатам которого определены энергоустановки преобразующие ВИЭ [3].

По результатам теплотехнического расчета наружной стены здания с целью снижения тепловых потерь была определена толщина дополнительной наружной теплоизоляции из минераловатного утеплителя, что позволило снизить тепловые потери здания в 1,5 раза.

Используя технические характеристики выбранного оборудования на базе ВИЭ, была спроектирована автономная система энергоснабжения жилого дома. Система включает в себя две подсистемы – автономного электро-снабжения и автономного теплоснабжения. Каждая из этих подсистем содержит

по несколько генерирующих источников, объединенных в малые системы с распределенной генерацией.

Для обеспечения круглогодичного горячего водоснабжения для бытовых нужд, отопления здания в зимний период и подогрева воды в бассейне в летний период была разработана комбинированная энергосистема теплоснабжения (рис. 1).

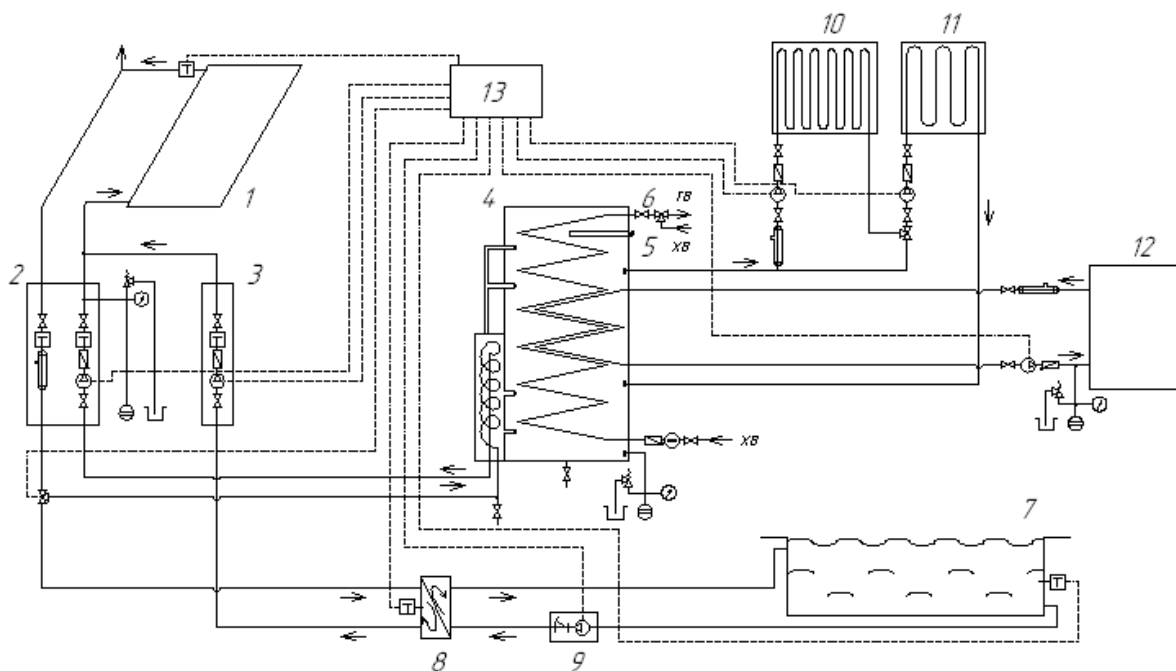


Рис. 1. Принципиальная схема комбинированной энергосистемы теплоснабжения: 1 – солнечный коллектор; 2 – насосный модуль коллекторного контура; 3 – насосный модуль; 4 – термосифонный бак-аккумулятор; 5 – трубчатый электронагреватель; 6 – водоразборные точки; 7 – плавательный бассейн; 8 – теплообменник; 9 – фильтровальная установка с насосом; 10, 11 – система труб напольного отопления; 12 – тепловой насос; 13 – блок управления

По результатам проведенных натурных испытаний солнечных коллекторов различных типов [4] и выбору оптимального режима эксплуатации было принято решение на использование в проекте разрабатываемой энергосистемы плоских солнечных коллекторов (ПСК) общей площадью 23,7 м² обеспечивающих нагрев термосифонного бака-аккумулятора объемом 1,5 м³ [5]. Отопление помещений в зимний период осуществляется системой нагревательных труб напольного отопления. В летний период подогрев воды в бассейне

осуществляется за счет теплообмена с теплоносителем гелиоконтура в выносном пластинчатом теплообменнике. В случаях, когда интенсивности солнечной радиации недостаточно для обеспечения заданной температуры воды в бассейне с помощью одних лишь гелиоколлекторов, ее догрев осуществляется за счет использования теплового насоса (ТН) типа «грунт-вода», расположенного в помещении котельной цокольного этажа здания.

В первый контур установки входит система плоских солнечных коллекторов. Система замкнутая и заполнена незамерзающим, нетоксичным теплоносителем. Низкие температуры замерзания теплоносителя позволяют не сливать его из коллектора в зимнее время, что удешевляет эксплуатацию и повышает коррозионную устойчивость системы. Гелиосистема состоит из секций, соединенных последовательно-параллельно, с целью уменьшения гидравлических потерь.

Второй контур системы обеспечивает подачу водопроводной воды в спиральный трубчатый теплообменник, выполненный из нержавеющей стали, расположенный в баке-аккумуляторе, ее нагрев посредством теплообмена и водоразбор. Подача водопроводной воды осуществляется за счет естественного давления в магистральной системе.

Третий контур в зимний период обеспечивает отопление помещений здания. В него входит система труб напольного отопления, уложенных меандровым (змеевиковым) способом, в которых с помощью насоса осуществляется циркуляция теплоносителя [6].

В летний период передача теплоты от гелиоконтура контуру бассейна осуществляется через скоростной пластинчатый теплообменник по противоточной схеме.

В проекте разработана система электроснабжения здания с распределенной генерацией (рис. 2), включающая три источника электрической энергии: ветроэлектроустановка (ВЭУ); дизель-генераторная станция (ДГ); блок аккумуляторных батарей (АКБ) с инвертором); две группы приемников электрической энергии: первая группа – бытовые приемники в здании объекта: электроосвещение и розеточная сеть; технологическое оборудование; сантехническое оборудование; вторая группа – ТН большой мощности и ТЭН системы горячего водоснабжения; а так же систему электросетей с коммутирующими, регулирующими и защитными устройствами для подачи и распределения

электроэнергии, устройства подключения источников, измерительные элементы параметров системы электроснабжения, систему автоматического регулирования режимов работы системы электроснабжения.

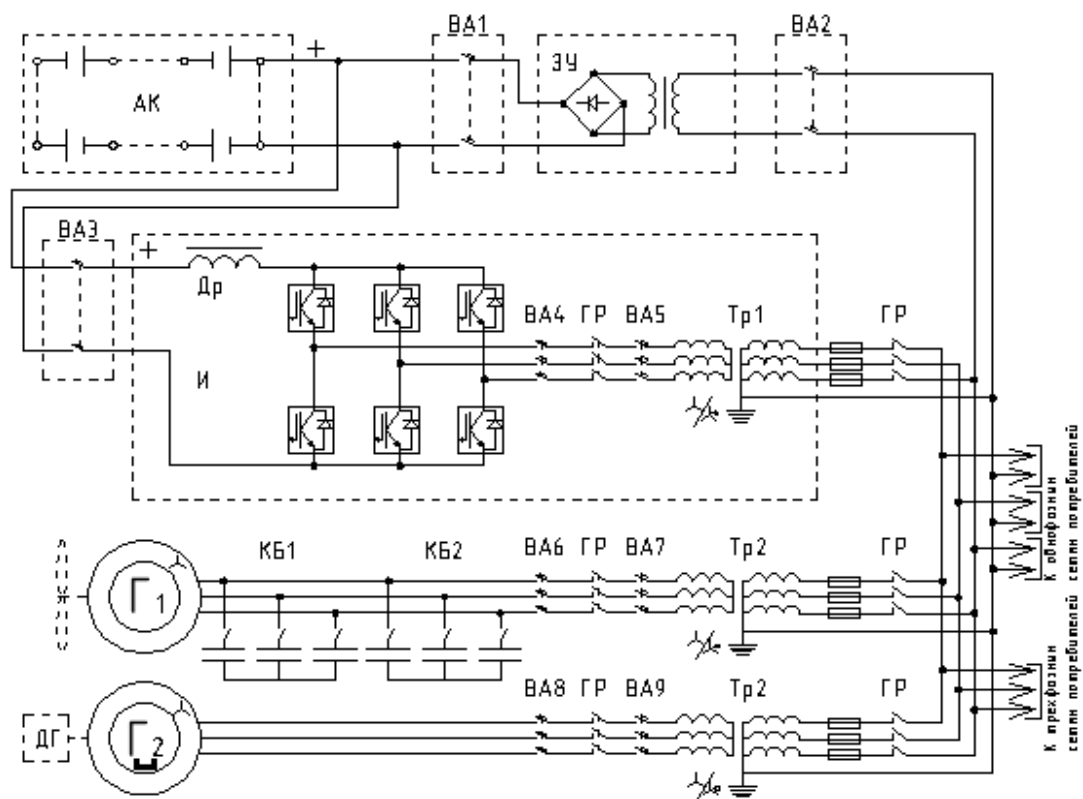


Рис. 2. Однолинейная схема системы автономного электроснабжения: АК – аккумуляторные батареи; Г1 – трехфазный индукционный генератор с компенсацией реактивной мощности; Г2 – трехфазный синхронный генератор на постоянных магнитах; ДГ – дизель-генератор; ЗУ – зарядное устройство; И – инвертор; Тр – разделительные трансформаторы; Др – дроссель; КБ – конденсаторные батареи; ВА – выключатели

Для оценки надежности автономной системы теплоснабжения и электроснабжения по методике [7] были рассчитаны интенсивности достоверных переходов между состояниями и составлена система уравнений Колмогорова для определения стационарной достоверности пребывания системы в каждом из состояний. Результат оценки надежности системы автономного энергоснабжения индивидуального жилого дома на базе ВИЭ показал, что вероятность её отказа составляет 3%. Полученный результат удовлетворяет потребностям энергоснабжения здания с применением комбинированных энергосистем данного класса [8].

Проведенный расчет количества замещаемого топлива за счёт использования комбинированной теплогенерирующей системы показал, что экономия условного топлива составляет 2,1 т. в год [9]. Применение комбинированных энергосистем как альтернативы топливосжигающим установкам позволит значительно сэкономить органическое топливо и снизить антропогенное воздействие на окружающую природную среду, что весьма актуально для Крымского полуострова, как курортно-рекреационной территории.

Проведенный технико-экономический расчет показал, что срок окупаемости автономной системы электроснабжения, с учетом особенностей данного проекта, составляет 6 лет, срок окупаемости тепловой части автономной энергосистемы лежит в пределах от 6 до 8 лет при сложившейся цене на органическое топливо. Данный срок окупаемости проекта является относительным, так как при учете изменения цен на энергоносители, и как следствие увеличение стоимости электроэнергии и органического топлива, развития ВИЭ в Крымском регионе, срок окупаемости комбинированной энергосистемы может быть снижен.

Еще одним из путей снижения стоимости автономных объектов энергоснабжения на базе ВИЭ является поэтапный ввод в эксплуатацию автономных систем тепло- и электроснабжения в зависимости от существующих централизованных энергосетей, что позволит снизить потребление традиционных энергоносителей для эксплуатируемого объекта и в перспективе свести к минимуму использование централизованных сетей энергоснабжения, что в итоге приведет к улучшению экологической ситуации и экономии традиционных энергоресурсов [10].

Данные факторы свидетельствуют об эффективности и перспективе использования ВИЭ и энергосберегающих технологий для комбинированного автономного энергоснабжения объектов различного функционального назначения.

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Study of localization and fracture arrest in gas pipelines of larger diameter

Abstract: In this work the results of experimental researches of features of destruction of models of pipelines without a wire winding and model from a wire winding are resulted. Use is proved as an effective way of localization and stop of a crack of destruction of a wire winding.

Keywords: gas pipeline, method, cartridge tube, crack, crack propagation, temporary resistance, yield strength.

Problem definition. The problem of extensive destruction of main pipelines has recently attracted increasing attention of researchers [1,2].

Literature review on the operation analysis of the cylindrical shells with wire winding, as well as patterns of occurrence and development of cracks in gas pipelines demonstrates the complex mechanism of fracture propagation and the impact of numerous factors such as the technological and structural nature. In this regard, during the experiments on the effect of the wire windings on the nature of the crack propagation and evaluation of possible control capabilities for winding-path cracks, special attention was paid to the design parameters of the winding wire.

Analysis of researches on the problem. There are two principal directions defined in solving the problem of extended destruction of main gas pipelines.

The first is aimed to remove the possibility of slowly developing local defect transfer into the extended destruction. This approach is based on research of the structure of the steel pipe material level, as well as control on identification and elimination of dangerous cracks in the pipeline before the destruction starts.

Second direction is connected with development of constructive ways of localization and arrest the incipient destruction. In the situation when there is no reliable way to prevent extensive damage, the development of structurally simple but effective technical solutions to localize the area of destruction is of interest and very relevant.

Object Goal and objectives of research. In accordance with methodology assessment of pipeline resistance to extensive destruction suggested by the results of studies of the fracture patterns pipelines, in the first stage [3.4] of operations one (power, energy or strain) of the criteria of fracture mechanics is tested. During performance of this condition the additional condition is tested in association with comparison of the crack move speed and permissible speed:

$$v_p \leq [v_p] = \frac{v_p^{cp}}{k_3}, \quad (1)$$

where $[v_p]$ - permissible speed of the crack, v_p^{cp} - the maximum speed of the crack, k_3 - the safety factor.

If condition (1) is failed there is a need to review the mechanical parameters of the material or develop the design solutions that provide localization or stop the extensive destruction of the pipelines.

Presentation of material and justification of results, obtained from the research. To solve this problem there were conducted comprehensive theoretical and experimental research of localization method and stoppage of extensive destruction for the pipelines of wire winding.

Experimental studies on the mechanism of crack propagation were carried out using the patterns of linear part of the gas pipeline in scale 1:5, length 1000 mm, diameter 200 mm and 250 mm. The patterns are made of steel St08 and St10 with a limit of tensile strength of 320 MPa and 450 MPa respectively, and yield strain – 240 MPa and 255 MPa.

Winding of wire on the pattern case made using special machine, which allows pulling the wire with a certain rate and effort. Material of the wire steel St10 $\sigma_b = 445$ MPa and $\sigma_T = 245$ MPa with wire diameter 1.0 mm.

Determination of residual plastic deformation in the circular and longitude directions was made by the grid method. On the bare hull of pattern there was a staked grid marked with the base of 5 mm. Measurements of base grid performed before and after the destruction and on difference between them is determined by the absolute deformation, the ratio of the latter to the base of the grid made it possible to determine the components of the relative plastic deformation.

The width of the zone of plastic deformation within the crack edges was determined by measurement of the pattern wall thinning. After the destruction of the pattern, metal strips were cut perpendicular to the crack edges, and measurements

made using micrometer on pattern wall thickness at different distances from the edge of the crack, which were the reference for the width of the plastic deformation on the crack edges. Measurement of the crack propagation speed along the body of the pattern performed under the procedure described in [5].

As the pressure increases in the pipe pattern without wire break at the place of the break initiator the intensive buckling of the pattern wall was noted.

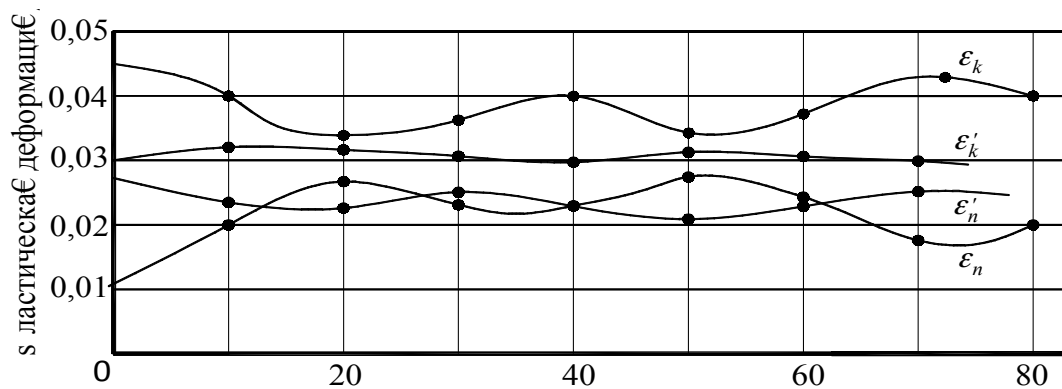
The destruction start is connected to the instantaneous destruction of the walls of the pattern incision, which was accompanied by a flap and outflow of air from the pattern. The destruction of the body of the model occurred when the limit margin pressure of 2.3 MPa. Visual inspection of the fracture area revealed that in the area near the top of crack is formed concave and the cross section coinciding with the crack top takes the form of ellipse with a horizontal main axis. At a distance of 10-13 mm in front of the crack top is formed bulge, and the pipe in this section takes the form of an ellipse with vertical main axis. Crack length was 106 mm, the maximum opening width - 8.2 mm.

The destruction of the model with wire damper accompanied with loud flap and air vent through the cracks, when the pressure is 3.8 MPa. As might be expected, due to the effect of compressing the wire winding significantly change the nature of the disclosure and the deformation area of fracture in comparison with model tests without winding.

As in the case of test patterns without wire winding, there were no concavities and buckling observed without tension. Crack length was 52 mm, i.e. achieved only a cut length, the maximum width of the crack opening was 3.1 mm, compared with the tests without winding patterns, the crack length decreased respectively 2.03 times, the width of the crack opening 2,6.

The attention deserves the change behavior of the ring and longitudinal components of plastic deformation at the edge of the crack (Figure 1).

It is known [6] that the pre-tension thread winding redistributes ring and longitudinal forces, bringing full-strength of the cylindrical shell. As expected, significantly changed the nature of the curves, component of plastic deformation curves of the crack damage.



$\epsilon_k \epsilon_n$ - for the model without wire winding, ϵ'_k, ϵ'_n - with wire winding

Figure 1. The nature of the change of the ring (ϵ_k) and longitudinal (ϵ_n) component of plastic deformation

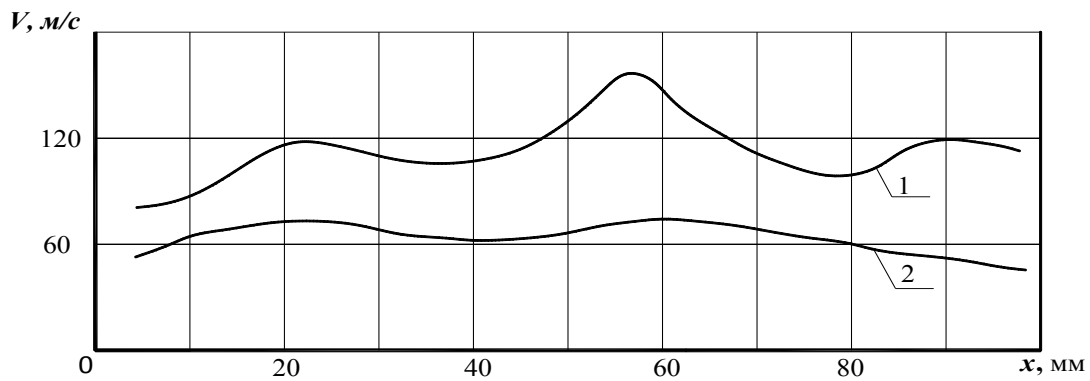
The amplitude components of plastic deformation as compared with the test data of models without wire windings have a smoother properties. Due to the compressive tension under the winding coils the ring plastic deformations are reduced considerably. A slight increase of the longitudinal components of the plastic deformation is noted.

The ring plastic deformation at the crack edges in comparison with the results of the test models without wire winding decreases 1.4 ...1.8 times, and longitudinal plastic deformations increases 1.2 times.

The nature of change in the width of the plastic area has a smooth appearance, without clear noticeable jumps. The width of the plastic area in comparison with the option without winding, as might be expected, decreases from 13,8 mm to 5,2 mm, ie 2.7 times.

Smoothing of amplitudes of ring deformation and its decline as well as increase of the longitudinal component of the plastic deformation can be attributed to the favorable factors of wire winding influence.

Comparison of experimental speeds of crack fracture are shown in Figure 2, where there is a noticeable effect on the crack damage speed from the winding wire.



1 - for the model without wire winding, 2 - with wire winding

Figure 2. The nature of the change of crack speed development

Comparison of pattern test results without wire windings and winding shown in Table 1.

Table 1. Test results of the patterns with pipeline fragment of traditional constructive solutions (A) and wire winding (B)

A series of model tests	Model	Destructive pressure MPa	Opening angle fracture, degree	Crack length, mm	Crack width, mm	Width of the plastic area, mm
1	A	2,3	14	106	8,2	13,8
2	B	3,8	5	52	3,1	5,2

Conclusions and prospects for future research. Thus, the experimental research of the models destruction of pipeline fragment to study the effects of the winding on the development properties, localization and stoppage of the crack, confirmed the possibility of using a wire coil as an effective way to prevent the intensive destruction of long pipelines.

Pre-stretched wire winding, changing the stress field in the area of the cracks, as well as changing the trace and intensity of the main stresses at the crack top causes stoppage or bend the trace of the crack. At the same time significantly changing the nature of the deformation of fracture area, increasing destructive pressure as well as the geometric parameters of the crack.

It should be noted that the pipeline Wire would be considered as a combined structure in which the possible selection of optimal design parameters of the wire windings in dependence on the geometrical dimensions of the material and operational parameters of the pipeline.

This approach makes it possible to control the stress state of the structures to obtain the structure averse to lengthy destruction, that from the point of reducing the damage caused by the destruction of pipelines is very important.

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Stress state of prestressed reinforced concrete bars during installation

Abstract: This paper devoted to the definition of the stress state of prestressed concrete bars arising during dismantling of the formwork, storage and installation in concreted construction formwork. Computational schemes of bars installation depending on the number of mounting traverse hangers were observed, which allow to determine installation schemes most suitable for insurance of bars concrete crack resistance. Also analytical solution of problem was observed. Computational scheme represented as a multispans bar loaded by uniformly distributed load, prestressing force and random eccentricity. Stress distribution in the stretched zone of bar section caused by its installation and prestressing are represented.

Keywords: reinforced bar, installation load, rebar, temperature, concrete prestressing, stress, strain.

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Напряженно-деформированное состояние предварительно-напряженных железобетонных брусков при их монтаже

Аннотация: Данная статья посвящена определению напряженно-деформированного состояния предварительно-напряженных железобетонных брусков, возникающего при их демонтаже из опалубки, складировании и

монтаже в опалубку бетонизируемой конструкции. Рассмотрены расчетные схемы монтажа брусков в зависимости от количества подвесок к монтажной траверсе, что позволило определить наиболее благоприятные схемы монтажа брусков с точки зрения обеспечения трещиностойкости бетона бруска. Рассматривается аналитическое решение задачи. Расчетная схема представлена многопролетной балкой с нагрузками в виде равномерно-распределенной от собственного веса, усилия предварительного обжатия бруска и наличия случайного эксцентриситета. Представлено распределение напряжений в растянутой зоне сечения бруска при его монтаже с учетом обжатия бетона напрягаемой арматурой.

Ключевые слова: железобетонный брусок, монтажная нагрузка, арматура, температура, обжатие бетона, деформация, напряжение.

Ранее, в статьях [1, с. 95-96], [2, с. 38-41] нами были рассмотрены конструкции предварительно-напряженных железобетонных брусков и их напряженное состояние, возникающее при их изготовлении от воздействия на них усилия предварительного обжатия напрягаемой арматуры, приложенного в центре тяжести сечения бруска. Применение таких брусков в монолитных плитах перекрытий и пролетных строениях неразрезных мостов позволяет повысить трещиностойкость бетона, жесткость плиты и снизить стоимость и трудоемкость возведения большепролетных перекрытий [2, 3].

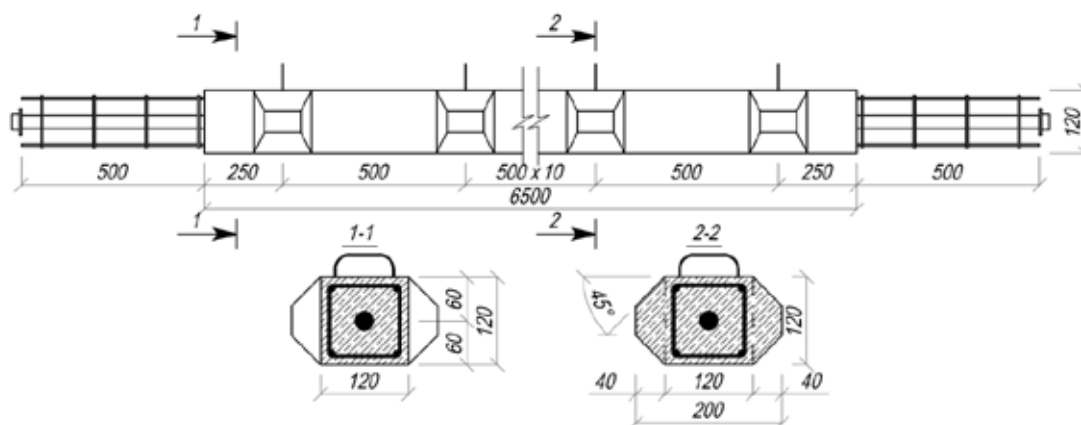


Рис. 1. Железобетонный брусок сечением 120x120 мм.

В качестве примера на рис. 1 рассмотрен железобетонный брусок сечением 120x120 мм длиной 6.5 м. Такие бруски устанавливаются в опалубку на поперечную арматуру нижней сетки между стержнями продольной рабочей

арматуры, установленные с шагом 200 мм [2, с. 41]. Монтажные петли на брусках, в виде петлевых связевых выпусков, установленные с шагом 500 мм по осям расположения шпонок, позволяют производить их монтаж по различным расчетным схемам при применении специальной жесткой металлической траверсы.

На рис. 2 приведены варианты расчетных схем монтажа железобетонных брусков под действием нагрузок собственного веса и усилия предварительного обжатия бруска напрягаемой арматурой. Наиболее неблагоприятной расчетной схемой следует считать монтаж бруска за две монтажные петли, когда возникает максимальное значение изгибающего момента в середине пролета.

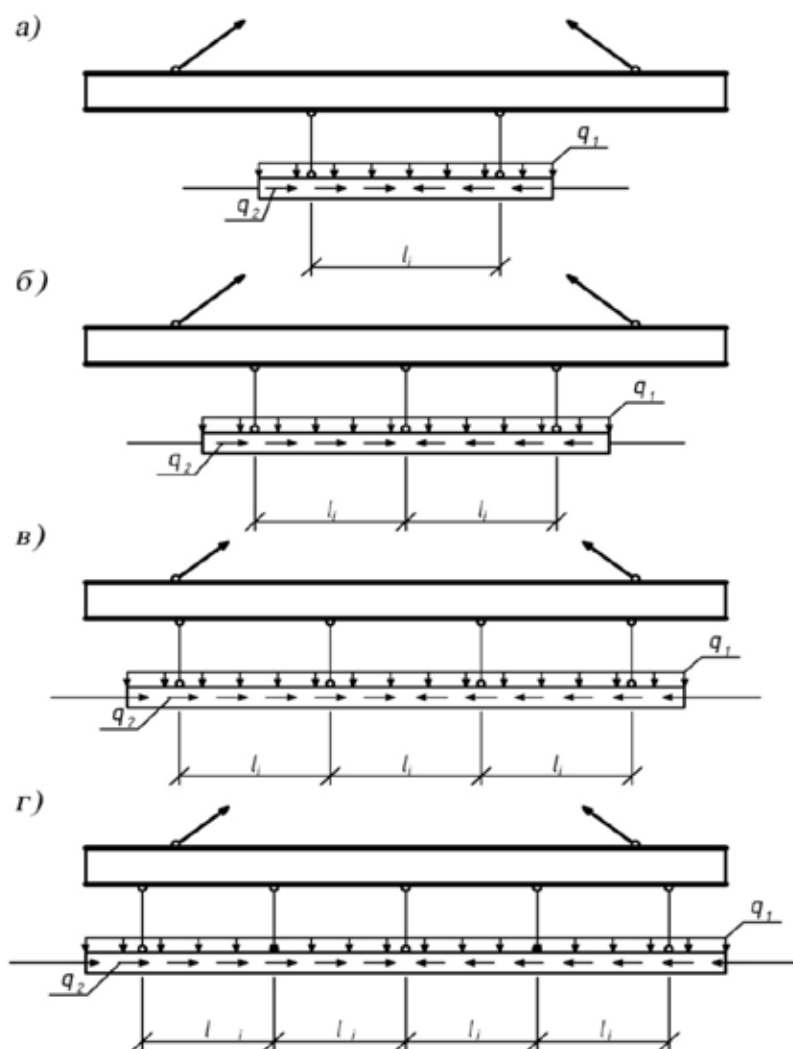


Рис. 2. Схемы монтажа отдельных брусков

а – монтаж за 2 петли; б – то же, за 3; в – то же, за 4;

г – то же, за 5 петель

При монтаже брусьев за 3 и более петли максимальные значения изгибающих моментов и прогибов уменьшаются за счет появления отрицательных опорных моментов у монтажных петель. Монтаж составных брусьев рекомендуется производить по схеме монтажа, приведенной на рис. 3.

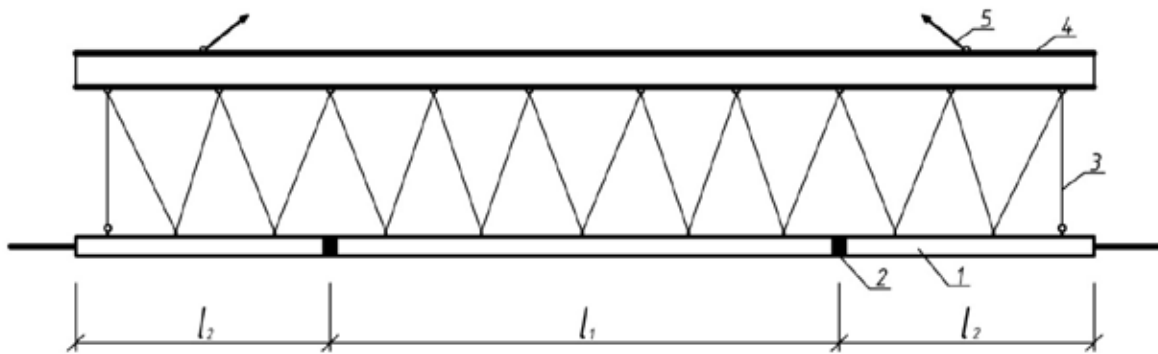


Рис. 3. Схемы монтажа составных железобетонных брусьев
1 – брусья длиной l_1 и l_2 ; 2 – монтажный стык брусьев; 3 – гибкий трос;
4 – монтажная траверса; 5 – монтажный трос траверсы

При аналитическом методе расчета схему монтажа брусьев можно определить по следующей методике.

Для оценки растягивающих напряжений в бетоне, вызванных изгибом бруска, примем следующие гипотезы:

- упругие деформации бетона и арматуры изменяются линейно в пределах поперечного сечения;
- деформации бетона равны деформациям арматуры на границе их контакта;
- поперечное сечение арматуры принимается квадратным из условия равенства площади круглому сечению;
- модули деформаций бетона и арматуры при растяжении принимаются равными модулю деформаций при сжатии, что, учитывая симметричность сечения бруска и расположения арматуры, приводит к равенству нулю упругих деформаций в центре тяжести сечения.

Тогда упругие деформации бетона и арматуры выразятся следующим уравнением:

$$\varepsilon = \varepsilon_b = \varepsilon_s = \varepsilon_{sp} = c \cdot y, \quad (1)$$

где: ε_b , ε_s , ε_{sp} – упругие деформации бетона, конструктивной арматуры и предварительно-напряженной арматуры, соответственно, равные одной функции ε ;

y – поперечная координата; c – искомый коэффициент.

Коэффициент c находим из следующего уравнения равновесия:

$$\int \varepsilon \cdot E_b \cdot y dA_b + \int \varepsilon \cdot E_s \cdot y dA_s + \int \varepsilon \cdot E_{sp} \cdot y dA_{sp} = M, \quad (2)$$

где: E_b , E_s , E_{sp} – модули деформации деформаций бетона, конструктивной арматуры и преднапряженной арматуры, соответственно;

где: A_b , A_s , A_{sp} – переменные интегрирования, показывающие что интегрирование производится по площади бетона, конструктивной арматуры и преднапряженной арматуры, соответственно;

M – момент в заданном сечении.

Подставляя (1) в (2) и производя интегрирование, находим переменную c :

$$c = \frac{M}{E_b \cdot \frac{h^4}{12} + E_{sp} \cdot \frac{h_p^4}{12} + \frac{4}{3} \cdot h_s \cdot E_s \cdot \left[\left(\frac{1}{2}h - a \right)^3 - \left(\frac{1}{2}h - a - h_s \right)^3 \right]}, \quad (3)$$

где: h – длина стороны поперечного сечения бруска;

$h_s = \sqrt{A_s}$, где: A_s – площадь арматуры (одной) по периметру;

$h_p = \sqrt{A_p}$, где: A_p – площадь напрягаемой арматуры.

Напряжения в бетоне от изгиба бруска находим по закону Гука:

$$\sigma_{b2} = c \cdot y \cdot E_b. \quad (4)$$

При схеме монтажа для однопролетной балки (рис. 2а) длиной 1.5 м, сечением 12x12 см изгибающий момент в середине пролета балки составит:

$$M_1 = ql^2/8 = \frac{0.54 \cdot 2.25}{8} = 0.152 \text{ кН} \cdot \text{м}, \quad (5)$$

где: q – погонная нагрузка от собственного веса балки с учетом коэффициента динамичности 1.5:

$$q = h^2 \rho \gamma_f = 0.12^2 \cdot 25 \cdot 1 \cdot 1.5 = 0.54 \text{ кН/м}. \quad (6)$$

Для железобетонного бруска длиной 5 м, армированного напрягаемой арматурой диаметром 28 мм класса А800 и пространственным каркасом с продольной арматурой: 4Ø5 класса Вр-I значения растягивающих напряжений, определенные по формулам (3-5), составили 0.6 МПа при прочности бетона 2.1 МПа.

Момент трещинообразования бруска, с учетом обжатия бетона с напряжением 4.0 МПа [4, с. 47], составит:

$$M_{\text{crc}} = 0.85(R_{\text{bt,ser}} + \sigma_{\text{b1}} + \sigma_{\text{b2}})W_{\text{pl}} = 0.85 \cdot (2.1 + 4.0 - 0.6) \cdot 504 = 2.35 \text{ кН} \cdot \text{м}, \quad (7)$$

где: $W_{\text{pl}} = W_{\text{red}} \cdot \gamma = \frac{1.75 \cdot 12 \cdot 144}{6} = 504 \text{ см}^3$.

Прогиб конструкции бруска от нагрузок собственного веса:

$$f = \frac{5}{384} \left(\frac{ql^4}{E_b J} \right) = \frac{5 \cdot 5.4 \cdot 150^4}{384 \cdot 36 \cdot 10^5 \cdot 1728} = 0.06 \text{ мм}. \quad (8)$$

Значение случайного эксцентриситета, учитывающее неравномерное распределение прочности бетона как в пределах сечения, так и по длине бруска, согласно п. 1.21 [4, с. 4]:

$$e = \frac{h}{30} = \frac{12}{30} = 4 \text{ мм};$$

$$e = \frac{L}{600} = \frac{300}{600} = 5 \text{ мм}. \quad (9)$$

Расчетное значение изгибающего момента от усилия обжатия бруска с учетом его прогиба:

$$M_2 = N_b(f + e) = 233.23 \cdot 0.0056 = 1.306 \text{ кН} \cdot \text{м}, \quad (10)$$

где: $N_b = (0.75 \cdot R_{\text{s,ser}} - \sigma_{\text{los}})A_s = (0.75 \cdot 785 - 210) \cdot 6.158 = 233.23 \text{ кН}$.

Расчетное значение изгибающего момента в середине пролета бруска: $M = M_1 + M_2 = 0.152 + 1.306 = 1.458 \text{ кН} \cdot \text{м}$, что меньше момента образования нормальных трещин в бруске: $M_{\text{crc}} = 2.35 \text{ кН} \cdot \text{м}$.

Выводы: 1. Разработан аналитический инженерный метод расчета напряженно-деформированного состояния предварительно-напряженных железобетонных брусков на действие монтажных нагрузок и усилия предварительного обжатия с учетом прогиба бруска и наличия случайного эксцентриситета.

2. На примере железобетонного бруска сечением 12x12 см с прочностью бетона в момент обжатия класса В40 и с уровнем напряжения в напрягаемой арматуре диаметром 28 мм класса А800 75% от нормативного сопротивления арматуры на растяжение показано, что трещиностойкость нормальных сечений бруска на участке максимального прогиба от его собственного веса будет обеспечиваться при монтаже бруска через петли на расстоянии 1.5 м по длине бруска.

3. Главным и определяющим при решении задачи обеспечения трещиностойкости и устойчивости железобетонных брусьев при их обжатии напрягаемой арматурой и монтаже являются: опалубочная длина брусьев и расчетное значение случайного эксцентриситета усилия предварительного обжатия.

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Procedures formalizing recognition of technical condition of gears

Abstract: Proposed in article process of recognition is carried out by comparing parameters of the current state of the object with the standard of each class. Formalization of the system is carried out using a model that reflects current state of the gear in the form of a graph. For gears, as attributive characteristics, claw harmonics are considered.

Keywords: algorithm of recognition, vibration characteristics, current state of the graph, time grid, attributive space.

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Процедури формалізації розпізнавання технічного стану зубчастих передач

Анотація: Запропонований в статті процес розпізнавання здійснюється за допомогою порівняння параметрів поточного стану об'єкта з еталоном кожного класу. Формалізація системи здійснюється за допомогою моделі, яка відображає поточний стан зубчатої передачі у вигляді графа. Для зубчастих передач в якості ознакових характеристик розглядаються зубцеві гармоніки.

Ключові слова: алгоритм розпізнавання, вібраційні ознаки, поточний стан граф, часові сітки, ознаковий простір.

Зубчаті передачі набули широкого застосування в різних галузях машинобудування і висувають ряд нових завдань, які пов'язані з підвищенням їх довговічності. Інформація про технічний стан зубчастих передач носить узагальнений характер, який полягає в описуванні зміни структурних параметрів за часом, при цьому виникає проблема оперативного реагування у функції часу на відхилення структурних параметрів від їх еталону. Для цього викорис-

товуються кусково-сплайнові апроксимації [1], які модулюються завдяки введенню функції стану, тобто технічний стан зубчастих передач можна інтерпретувати як розпізнавання класів технічного стану об'єкта за сукупністю його технічних характеристик. Для вирішення цього завдання доцільно застосовувати математичну теорію розпізнавання образів.

Реалізація процесу розпізнавання здійснюється за допомогою порівняння параметрів поточного стану об'єкта з еталоном кожного класу. Під еталоном матимемо на увазі деякий усереднений образ класу. При великій кількості членів класу можна значно спростити процедуру визначення приналежності до одного з класів попереднім формуванням еталонів кожного класу й порівнянням наступного, пред'явленого до розпізнавання стану об'єкта, з кожним з еталонів. При наявності вибірки з l членів класу станів W в якості еталону можна прийняти еталонний вектор і еталонну криву ознак даного об'єкта.

Одним з основних факторів, які впливають на вірогідність класифікації, є ознаковий простір, розмірність якого намагаються зробити якомога меншою, оскільки при цьому скорочується кількість необхідних вимірювань, спрощуються обчислення, які формують та реалізують вирішальні правила, зростає статистична сталість результатів розпізнавання. Разом з тим зменшення ознакового простору призводить до зниження вірогідності розпізнавання, тому його формування є компромісною задачею, яку можливо розділити на дві частини: формування початкового ознакового простору і мінімізація його розмірності [2]. В частині мінімізації розмірності існують формальні методи і алгоритми, засновані на дослідженні кореляційних властивостей ознак і послідовному вилученню з ознакового простору будь-якої ознаки з пари найбільш корельованих. При цьому підсумковий рівень помилки класифікації залежить від випадкових характеристик вибірки. Разом з тим при нескінченному об'ємі вибірки рівень помилки не буде меншим за байєсівський більше ніж в два рази.

Використовуючи послідовний аналіз Вальда, на кожному етапі простір вибірки спостережень розподіляється на три області: припустиму G_1 , критичну G_2 та проміжну $G_{пр}$. Якщо вибіркоче значення належить $G_{пр}$, то виконується наступне спостереження, і так доти, поки при деякому значенні n_1 розміру вибірки вибіркоче значення не буде належати G_1 або G_2 . Після цього приймається одна з гіпотез: спостерігається клас a_1 (при попаданні в G_1) або вибірка, за якою проводиться спостереження, належить класу a_2 (G_2). Критерієм

якості послідовного правила вибору розв'язку є мінімум середнього значення розміру вибірки, яка необхідна для ухвалення рішення [3].

Оскільки при послідовному аналізі розмір вибірки є випадковою величиною, то навіть при досить малих середніх значеннях тривалості процедури можливі випадки неприпустимо великих розмірів вибірки. Типовим прикладом компромісного розв'язку для розподілення тривалості процедури є скорочений послідовний аналіз, коли, заздалегідь встановлюється максимальне значення об'єму вибірки n_{\max} , при досягненні якого послідовна процедура закінчується і відповідне відношення правдоподібності порівнюється не з двома порогами (c_1 і c_2), а тільки з одним (c_{yc}). В результаті чого обов'язково ухвалюється одне з рішень.

Тому перший шаг процесу розпізнавання – розділити данні в підгрупи (*кластери*); при цьому в одну групу об'єднуються данні зі схожими ознаками. Найбільш ймовірною мірою подоби (або відмінності) між двома спостереженнями (відліками) є відстань між ними: відстань між відліками в одній групі (одному класі) буде суттєво меншою за відстань між відліками з різних груп.

Розглянемо послідовність розподілу n відліків на k груп. По-перше, це розподіл на n груп, до того ж кожна група вміщує по одному відліку. Потім – розподіл на $(n - 1)$ групи, на $(n - 2)$ групи і т.д. *Агломеративні* (з'єднуючі) процедури починають з n поодиноких груп і утворюють послідовність груп, що поступово об'єднуються. *Ділені* процедури починають з однієї групи, яка вміщує всі n відліків, та утворюють послідовність груп, які поступово розділюються [4].

Припустимо, що точки даних розглядаються як вершини графа, а ребра графа утворюють шлях між вершинами в одній підмножині X . Ця послідовність подій має характеристики паралельних процесів, кількісний аналіз яких потребує визначення у моделі часових характеристик об'єкта моделювання, властивостей дискретних об'єктів, що динамічно змінюються, фіксованого (пріоритетного) порядку виконання запланованих дій. Процеси, які моделюються, подаються як множина подій та умов. Події, в свою чергу, це дії, послідовність появи яких керується станами системи. Умови поділяються на доумови, які пов'язані з фактом наступу події, та постумови, які пов'язані з фактом здійснення події.

Для реалістичного відображення процесів та подій, які вимагають для свого звершення певного часу, як наприклад у випадку спрацювання елементів зубчастих передач, використовуватимемо часові сітки Петрі.

Теоретично-множинне визначення часових сіток Петрі має вигляд:

$$N = (P, T, F, H, Z, \mu_0),$$

де $P = \{p_1, p_2, \dots, p_n\}$ – кінцева непорожня множина позицій (станів);

$T = \{t_1, t_2, \dots, t_m\}$ – кінцева непорожня множина переходів (подій);

$$P \cap T = \emptyset;$$

$F : P \times T \rightarrow \{0;1;2;\dots\}$ – функція, яка визначає доумови здійснення подій і призначає кожному переходу вхідну множину позицій:

$$\bullet t_j = \{p_i \mid F(p_i, t_j) \neq 0\};$$

$H : P \times T \rightarrow \{0;1;2;\dots\}$ – функція, яка визначає постумови і призначає кожному переходу вхідну множину позицій:

$$\bullet t_j = \{p_i \mid H(t_j, p_i) \neq 0\};$$

$\mu_0 : P \rightarrow \{0;1;2;\dots\}$ – початкове маркування, яке означає кількість маркерів у позиції p_i сітки;

$Z : P \rightarrow R^+$ – час затримки маркерів у позиціях, де R^+ – множина додатних дійсних чисел.

Це обґрунтовано, коли необхідно виконати певні розрахунки часу роботи об'єктів, що моделюються, або зробити кількісний аналіз функціонування системи [5].

Нехай матриця A розраховується на базі операцій над матрицями $F = [F_{ij}]$ і $H = [H_{ij}]$, які задають кількість дуг, які виходять відповідно з позицій і переходів:

$$A = H - F,$$

тобто елементи F_{ij} задають кількість маркерів, які потрібно забрати з позиції p_i при спрацюванні переходу t_j , а елементи H_{ij} визначають кількість маркерів, які направляються в позицію p_i при спрацюванні переходу t_j .

Розглянемо рекурентне матричне рівняння, яке описує стан сітки:

$$M = M_0 + A \cdot S, \quad (1)$$

де M – поточний стан сітки,

M_0 – початковий стан сітки,

S – вектор підрахунку спрацьовувань переходів сітки.

Помножимо обидві частини (2.1) на транспонований вектор X^T :

$$X^T \cdot M = X^T \cdot M_0 + X^T \cdot A \cdot S, \quad (2)$$

де X називається p -інваріантом.

Враховуючи рівність

$$A^T \cdot X = 0 \quad (3)$$

і те, що

$$A^T \cdot X = X^T \cdot A,$$

з виразу (2) одержуємо:

$$X^T \cdot M = X^T \cdot M_0,$$

тобто будь-який p -інваріант характеризує всі досяжні маркування сітки з точки зору збереження деяких властивостей процесів, що моделюються сіткою.

Якщо позначити

$$X^T \cdot M = K_0,$$

то інваріантність досяжних маркувань сітки подамо у вигляді співвідношення:

$$X^T \cdot M = K_0 = const.$$

У загальному випадку рівняння (3) має нескінченну кількість рішень. Якщо ранг матриці A дорівнює числу невідомих ($r = n$), то система (3) має тільки нульові розв'язки. Якщо $r < n$, то (3) окрім нульових розв'язків має нескінченну множину інших розв'язків, причому фундаментальна система складається з $(n - r)$ векторів X .

Ранг матриці $A = \{a_{ij}\}$ розміром $n \times m$ дорівнює найвищому порядку відмінного від нуля визначника, який одержаний через викреслення $(n - r)$ стовбців і $(m - r)$ рядків з матриці A . Таким чином, всі інваріанти X для маркування сітки можна отримати з $(n - r)$ базисних рішень. Об'єднавши записані у вигляді

векторів-рядків розв'язки фундаментальної системи, одержимо матрицю інваріантів чи базисних розв'язків B .

Тоді для будь-якого досяжного маркування маємо:

$$B \cdot M = B \cdot M_0 = K_0. \quad (4)$$

Якщо для вимірювання відстані між підмножинами використовується d_{\min} , найближчі вершини визначають найближчі підмножини. Злиття X_i і X_j відповідає додавання ребра між двома найближчими вершинами в X_i і X_j . Оскільки ребра, що з'єднують точки підмножини, завжди проходять між різними групами, то підсумковий граф ніколи не буде мати замкнутий контур або ланцюг. Використовуючи термінологію теорії графів, можна вважати, що ця процедура генерує дерево. Якщо її продовжити до того моменту, поки всі точки підмножини не будуть з'єднані, то в підсумку отримаємо покриваюче дерево (остов) – дерево зі шляхом від любої вершини до любої вершини в групі. При цьому сума довжин ребер сумарного дерева не буде перевищувати суми довжин ребер для любого іншого покриваючого дерева для даної множини вибіркового даних. Таким чином, використовуючи d_{\min} як міру відстані, агломеративна процедура групування перетворюється в алгоритм для генерації мінімального покриваючого дерева.

Мінімальне покриваюче дерево отримаємо, додаючи найкоротше ребро між двома іншими ребрами (двома найближчими парами точок). Якщо деякі точки розташовані таким чином, що між початковими групами утворюється міст, то це призводить до «ланцюгового ефекту» - об'єднанню даних в одну велику довгасту групу і одну або декілька маленьких компактних груп [4].

Якщо для вимірювання відстані між групами використовується d_{\max} , то використовують граф, в якому ребра з'єднують всі вершини в групу. а кожна група утворює повний підграф. Відстань між двома групами визначається найбільш віддаленими вершинами в цих двох групах. Коли дві найближчі групи об'єднуються, граф змінюється додаванням ребер між кожною парою вершин в цих двох групах. Якщо *діаметр групи* визначається як найбільша відстань між точками в групі, то відстань між двома групами – просто діаметр їх об'єднання. Якщо *діаметр розподілу* визначається як найбільший діаметр для групи розподілу, то кожна ітерація збільшує діаметр розподілу мінімально [3].

При побудові реальних систем оцінки технічного стану зубчастої передачі виникає питання про потужність безлічі ознак. Збільшення потужності безлічі хоча й приводить до збільшення вірогідності розпізнавання, але вимагає зазвичай додаткових матеріальних засобів на реалізацію системи.

При потужності безлічі U вірогідність оцінки знижується, тому важливо при розробці системи оцінки технічного стану ретельно контролювати, які класи технічних станів зубчастих передач доцільно включати в безліч ознак.

При виборі ознак необхідно враховувати ряд вимог, які впливають із задачі оптимізації системи оцінки технічного стану. Ознаки повинні бути однозначно пов'язані зі станом об'єкта й здійснювати виявлення дефектів на ранніх стадіях їхнього розвитку.

Інформативність ознаки u_j , тобто кількість інформації, яку одержує система розпізнавання при вимірі ознаки u_j , визначається за формулою:

$$I_j = \frac{(U_j^D - U_j^H)}{U_j^H},$$

де U_j^H , U_j^D – значення ознак при нормальному й дефектному станах зубчастої передачі.

Для зубчатих передач оберемо вібраційні ознаки, чутливі до зміни параметрів плями контакту. Алгоритм розпізнавання визначається сумою 28-ти зубцевих гармонік ведучого вала синхронно накопиченого спектра віброприскорення, яке вимірюється у вертикальному напрямку:

$$K_1 = \sum_{i=1}^9 A_i K_1 = \sum_{i=1}^{28} A_i,$$

де A_i амплітуда i -й зубцевої гармоніки, $i = \overline{1, 28}$, $i = \overline{1, 9}$.

Таким чином, використовуючи даний метод при різних частотах обертання валу, можна оцінити якість плями контакту зубчатого зачеплення за наступною формулою:

$$K_2 = \frac{A_{z1} + A_{z2}}{2F_{z2}} K_2 = \frac{A_{z1} + A_{z3}}{2A_{z2}}; K_3 = \frac{\sqrt{A_{z1}^2 + A_{z3}^2}}{2A_{z2}} K_3 = \frac{\sqrt{A_{z1}^2 + A_{z3}^2}}{2A_{z2}},$$

де A_{z1}, A_{z2}, A_{z3} A_{z1}, A_{z2}, A_{z3} – 1-ша, 2-га і 3-тя зубцеві гармоніки провідного валу у спектрі вертикальної вібрації.

В якості оціночного параметру приробляння пар будемо використовувати різницю векторів, які отримані за 2-ою та 1-ою зубчатими гармоніками, обмірюваними у вертикальному й осьовому напрямках.

Тут параметр A_Z визначається наступною формулою:

$$A_Z = \sqrt{H_2^2 + P_2^2} - \left(\sqrt{\frac{(H_1 H_2 + P_1 P_2)^2 + H_1^2 + P_1^2}{(H_1 H_2 + P_1 P_2)^2 + (P_1 H_2 - P_2 H_1)^2}} \right)$$

де $P_1 = A_{Z1B}$, $H_1 = A_{Z10}$ – 1-ша зубцева гармоніка в спектрах вертикальної й осьової вібрації відповідно; $P_2 = A_{Z2B}$, $H_2 = A_{Z20}$ – 2-га зубцева гармоніка в спектрах вертикальної й осьової вібрації відповідно.

На кожному кроці циклів програмування для компенсування відхилень від заданої траєкторії руху застосовано лінійну інтерполяцію методом оцінної функції на постійній несучій частоті. При цьому інтерполяційна траєкторія пролягає переважно над заданою траєкторією, а оцінні функції визначають накопичену похибку інтерполяції не тільки поточного кроку, але і всього процесу дослідження зубчатих передач. Проведений порівняльний аналіз та вибір вібраційних ознак для оцінки якості зачеплення дозволяє відбракувати зубчасті пари.

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Simulation of expanded polystyrene thermal decomposition in the lost foam casting process

Abstract: The mathematical model of the formation of thermal decomposition products of expanded polystyrene in the lost foam casting was developed. It is shown that the rate of thermal decomposition has a maximum the initial period of casting and then stabilizes at a certain level. It is determined primarily by the rate of liquid metal flow in the mold and the area of the horizontal section of the model of the molded part.

Keywords: lost foam casting, mathematical model, thermal decomposition of expanded polystyrene, thermal decomposition products.

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Математическая модель образования продуктов термодеструкции пенополистирола при литье по газифицируемым моделям

Аннотация: Разработана математическая модель образования продуктов термодеструкции пенополистирола при литье по газифицируемым моделям. Показано, что скорость термодеструкции максимальна в начальный

период заливки, а затем стабилизируется на некотором уровне. Она определяется в основном скоростью подачи жидкого металла в форму, плотностью пенополистирола и площадью горизонтального сечения модели отливки. Разработаны способы расчета скорости выделения и количества продуктов термодеструкции при литье с применением математической модели.

Ключевые слова: литье по газифицируемым моделям, математическая модель, термодеструкция пенополистирола, продукты термодеструкции.

При заполнении формы методом литья по газифицируемым моделям происходит термодеструкция вещества модели, как правило – пенополистирола, и образуются газообразные, жидкие и твердые продукты термодеструкции (ПТД) [1,2,3,4]. Они образуются в газовой промежутке между поверхностью жидкого металла и пенополистиролом под действием высокой температуры жидкого металла (рис. 1). Газообразные ПТД через огнеупорное покрытие модели и песок попадают в систему разрежения. Парообразные – проходят через огнеупорное покрытие и большей частью конденсируются на песке. Твердые, в виде сажи, осаждаются на огнеупорном покрытии и могут растворяться в жидком металле, способствуя его науглероживанию [1, 5, 6]. Поток этих веществ оказывает давление на стенку формы и целиком определяет ее устойчивость, а значит и получение годной отливки. Этот факт, а также необходимость иметь ясное представление о количестве и составе ПТД и соотнесение этих данных с видом и количеством выпускаемого литья подтверждает важность настоящих исследований. Проведенные к настоящему времени исследования и разработки математических моделей [5, 6, 7, 8, 10] не всегда исследуют проблему полностью и часто включают в основном постановку задач, сформулированную на основе известных уравнений в их общем виде. Целью данной работы является разработка математической модели образования ПТД пенополистирола и метода прямых расчетов их количества и скорости образования для проектирования технологии литья по газифицируемым моделям с использованием результатов ранее выполненных исследований [11, 12, 13]. Наличие этих данных имеет существенное значение для решения вопросов о внедрении технологии ЛГМ, создании технологических систем и специального оборудования.

Материалы и методы исследования

Состав ПТД и их количество в массовых процентах от массы пенополистирола (коэффициенты термодеструкции) экспериментально определены В.С.Шуляком и приведены в работе [1] для температур 973К (700⁰С), 1573К (1300⁰С) и 1823К (1550⁰С). Обозначим эти коэффициенты, деленные на 100, как $a_{ПТД973}$, $a_{ПТД1573}$, $a_{ПТД1823}$, где в качестве ПТД может быть стирол, бензол, водород и т.д. Для практического использования эти коэффициенты нужно привести к реальным температурам заливки различных сплавов: литейных алюминиевых сплавов, латуней, бронз, серых чугунов, легированных чугунов, сталей. Тогда коэффициенты будут обозначаться как $a_{ПТД,сплав}$, т.е.:

$a_{стирол,сталь}$, $a_{водород,ал.сплав}$ и т.п.

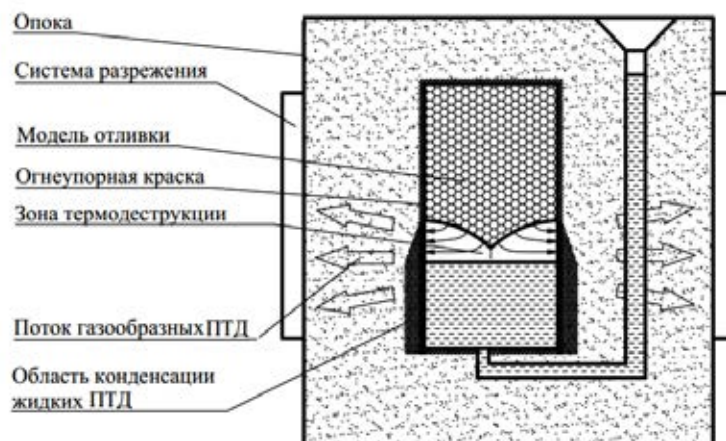


Рис. 1. Схема заполнения формы и образования продуктов термодеструкции пенополистирола при литье по газифицируемым моделям

Масса конкретного продукта термодеструкции ППС, $m_{ПТД}$, рассчитывается как:

$$m_{ПТД} = a_{ПТД,сплав} m_{ППС}, \quad (1)$$

где $m_{ППС}$ - масса пенополистирола модели и литниково-питающей системы при заливке формы. Скорость образования ПТД и их выделения, Q , будет равна:

$$\begin{aligned}
 Q &= \frac{dm_{\text{ПТД}}}{dt} = a_{\text{ПТД,сплав}} \rho_{\text{ППС}} S_{\text{средн}} \frac{dy(t)}{dt} = \\
 &= a_{\text{ПТД,сплав}} \rho_{\text{ППС}} \frac{(m_{\text{отл}} + m_{\text{ЛПС}}) \varepsilon}{\rho_{\text{м}} H_{\text{мод}}} v(t) ,
 \end{aligned} \tag{2}$$

где $\rho_{\text{ППС}}$ - плотность ППС в модели, которая в дальнейших расчетах принята равной 25 кг/м^3 ; $V_{\text{мод}}$ - объем модели, в котором произошла термодеструкция, $S_{\text{средн}}$ - средняя площадь горизонтального сечения модели; $y(t)$ - высота уровня жидкого металла в форме в момент времени t ; вертикальная координата; $v(t)$ - скорость подъема металла в форме; $m_{\text{отл}}$ - масса отливки; $m_{\text{ЛПС}}$ - масса литниково-питающей системы из пенополистирола; $\rho_{\text{м}}$ - плотность жидкого металла; ε - коэффициент объемной усадки сплава; $H_{\text{мод}}$ - высота модели.

Для практических целей, как правило, необходимо иметь реальные данные о массе ПТД, образующихся при изготовлении отливок, в расчете на единицу массы годного литья. Используя значения коэффициента термодеструкции, $a_{\text{ПТД,сплав}}$, эту величину определим следующим образом:

$$\begin{aligned}
 b_{\text{ПТД,сплав}} &= \frac{m_{\text{ПТД,сплав}}}{m_{\text{отл}}} = \frac{a_{\text{ПТД,сплав}} \rho_{\text{ППС}} \varepsilon}{m_{\text{отл}} \rho_{\text{м}}} (m_{\text{отл}} + m_{\text{ЛПС}}) = \\
 &= \frac{a_{\text{ПТД,сплав}} \rho_{\text{ППС}} \varepsilon}{\rho_{\text{м}} K} ,
 \end{aligned} \tag{3}$$

где K - коэффициент выхода годного литья. При этом учтены значения технологических свойств сплавов из работ [14,15], а также имеющийся у авторов опыт проектирования конкретных технологий. Тогда выражение (2) можно записать в виде:

$$Q = \frac{b_{\text{ПТД,сплав}} m_{\text{отл}}}{H_{\text{мод}}} v(t) . \tag{4}$$

Для проведения дальнейших вычислений определим скорость подъема уровня металла в форме в момент времени t от начала заливки, $v(t)$, воспользовавшись математической моделью заполнения формы при ЛГМ [11]. Данная модель отличается от других известных математических моделей [7,8,9] тем, что позволяет применять данные и производить вычисления в явном виде, что существенно облегчает ее применение и анализ результатов. Согласно этой модели:

$$v(t) = \frac{d}{dt} y(t), \quad (5)$$

$$y(t) = \begin{cases} u_1(t) & \text{при } t \leq \tau \\ u_1(\tau) + u_2(t) - u_2(\tau) & \text{при } t > \tau \end{cases}, \quad (6)$$

$$\tau = \frac{(S_{\text{средн}} + S_{\text{см}})z}{q\mu}, \quad (7)$$

$$u_1(t) = \frac{S_{\text{см}}}{S_{\text{средн}} + S_{\text{см}}} \left\{ \left(\frac{q\mu}{S_{\text{см}}} + \frac{P}{\tau} \right) t - \left[\left(\frac{q\mu}{S_{\text{см}}} + \frac{P}{\tau} \right) \frac{Dl\rho_{\text{ППС}}S_{\text{средн}}S_{\text{см}}T_0}{g^2\rho_m^2\Pi(S_{\text{средн}} + S_{\text{см}})} \right]^{\frac{1}{2}} \times \right. \\ \left. \times th \left[\left(\left(\frac{q\mu}{S_{\text{см}}} + \frac{P}{\tau} \right) \frac{g^2\rho_m^2\Pi(S_{\text{средн}} + S_{\text{см}})}{Dl\rho_{\text{ППС}}S_{\text{средн}}S_{\text{см}}T_0} \right)^{\frac{1}{2}} t \right] \right\}, \quad (8)$$

$$u_2(t) = \frac{S_{cm}}{S_{средн} + S_{cm}} \left\{ \frac{q\mu t}{S_{cm}} + P - \left[\frac{q\mu D l \rho_{ППС} S_{средн} T_0}{g^2 \rho_m^2 \Pi (S_{средн} + S_{cm})} \right]^{\frac{1}{2}} \times \right. \\ \left. \times th \left[\left(\frac{q\mu g^2 \rho_m^2 \Pi (S_{средн} + S_{cm})}{D l \rho_{ППС} S_{средн} S_{cm}^2 T_0} \right)^{\frac{1}{2}} t \right] \right\}, \quad (9)$$

$$P = \begin{cases} \left(h + \frac{p_e}{\rho_m g} \right) \frac{t}{\tau} & \text{при } t \leq \tau \\ \left(h + \frac{p_e}{\rho_m g} \right) & \text{при } t > \tau \end{cases}, \quad (10)$$

где

$$p_e = p_{атм} - p_{опоки}, \quad (11)$$

$$D = \frac{c_{ППС} G_0}{\beta \delta_{ГП}}, \quad (12)$$

$u_1(t)$, $u_2(t)$ – вспомогательные функции; τ – время заполнения нижней части литниковой системы и формы до момента перекрытия связи формы с атмосферой; S_{cm} – площадь горизонтального сечения стояка; z – расстояние от нижней точки литниковой системы до верхней точки литника; q – скорость подачи жидкого металла в форму; μ – гидравлический коэффициент расхода; l – среднее расстояние от модели до пояса отсоса опоки, T_0 – температура заливки жидкого металла; g – ускорение свободного падения; Π – средний периметр модели в горизонтальной плоскости; h – расстояние от носка ковша до стояка; p_e – избыточное давление в опоке при разрезании; $p_{атм}$ – атмосферное давление; $p_{опоки}$ – абсолютное давление в опоке при разрезании в ней; $c_{ППС}$ – теплоемкость пенополистирола модели; D – обобщенный

коэффициент свойств пенополистирола при температуре T_0 ; G_0 - безразмерный коэффициент, характеризующий связь теплового давления и тепловой энергии вещества; β - газопроницаемость огнеупорного покрытия и песка в опоке; $\delta_{ГП}$ - средняя высота газового промежутка.

Совокупность выражений (4-10) представляет собой математическую модель кинетики образования ПТД при литье по газифицируемым моделям. Для ее применения нужно рассчитать коэффициенты термодеструкции, $a_{ПТД,сплав}$ и $b_{ПТД,сплав}$. С этой целью, используя методы нелинейной интерполяции и результаты экспериментальных исследований В.С. Шуляка, рассчитаем данные величины, для усредненных температур заливки выбранных нами групп сплавов. Выбор температур заливки сплавов сделан на основании данных литературных источников [1,14,15] и многолетнего опыта применения технологии литья по газифицируемым моделям. Результаты расчетов коэффициентов $a_{ПТД,сплав}$ приведены в таблице 1. При расчетах использованы данные работы [1] для скорости подъема металла в форме равной 1 см/с, которая на практике является наиболее применяемой. Исследования работы [1] и результаты расчетов, приведенных в таблице 1, показывают, что с увеличением температуры заливаемых сплавов снижается образование парообразных и увеличивается образование газообразных ПТД и углерода.

Расчеты коэффициентов термодеструкции $b_{ПТД,сплав}$, показывающих количество ПТД по отношению к массе годного литья, выполнены по формуле (3) и изложены в таблице 2.

Используя формулы математической модели (4-10) и данные таблиц 1 и 2, можно производить практические расчеты и определять существующие закономерности для конкретных условий, рассчитывать количества веществ, образующихся при литье по газифицируемым моделям, как в расчета на одну отливку, так и на их годовой выпуск, и скорость их выделения в процессе заливки. Результаты получаются в явном виде. Вычисления можно производить с использованием программы Mathcad 14.

Результаты и их обсуждение

Используя выражения (4-10) и значения коэффициентов $a_{ПТД,сплав}$, $b_{ПТД,сплав}$ (табл. 1 и 2), проведем анализ разработанной математической модели. Для этого построим графики изменения во времени скорости образования ПТД для макета стальной отливки (например, из стали 35Л) в виде вытянутого вверх параллелепипеда с квадратным основанием, массой 160 кг и высотой 0,5 м, расположенной в опоке вертикально. В расчетах использовались следующие значения свойств материалов и параметров заливки: $\rho_{ПШС} = 25 \text{ кг/м}^3$, $\rho_m = 7830 \text{ кг/м}^3$; $T_0 = 1850 \text{ К}$ [14]; $\mu = 0,85$ [14]; $D = 3,9 \cdot 10^8 \text{ кг/м}^2\text{с}^3\text{К}$ [11]; $l = 0,2 \text{ м}$; $z = 0,05 \text{ м}$; $h = 0,1 \text{ м}$; $q = 0,8 \cdot 10^{-3} \text{ м}^3/\text{с}$; $p_e = -30 \text{ кПа}$. Значения коэффициентов $b_{ПТД,сплав}$ представлены в таблице 2.

График изменения во времени скорости образования ПТД (метана, этилена и пропана) при заливке стальной отливки показан на рис. 2. Видно, что в начальном периоде заливки, когда формируется газовый промежуток между жидким металлом и пенополистиролом и присутствует связь с атмосферой [11], наблюдается резкий выброс ПТД. После заполнения жидким металлом нижней части литниковой системы и прекращения связи с атмосферой газовый промежуток растёт до некоторой величины, при которой давление в газовом промежутке уравнивается сопротивлением потоку ПТД. Затем скорость выделения ПТД стабилизируется на некотором уровне и определяется скоростью заливки и плотностью пенополистирола. Расчет также показывает, что, если эту же отливку повернуть на 90° , т.е. расположить горизонтально, то скорость выделения ПТД увеличится на 15-18%. Этот же вывод можно сделать, анализируя выражение (4). Действительно из-за увеличения периметра модели в горизонтальной плоскости и, соответственно, площади ее горизонтального сечения, происходит увеличение площади боковой поверхности газового промежутка, через которую происходит выброс ПТД (см. рис. 1). Таким образом, если площадь горизонтального сечения модели отливки, расположенной в опоке, больше, то и скорость выделения ПТД будет больше.

Таблица 1. Коэффициенты термодеструкции пенополистирола при заливке различных сплавов,

а ПТД, сплав, 10^{-3} , грамм ПТД на 1 кг пенополистирола в форме

Продукты термо- деструкции	Данные исследований		Алюм. сплавы	Латуни	Бронзы	Серые чугун.	Легир. чугун.	Стали	
	термодеструкции, [2]								
Температура термодеструкции, К									
	973	1273	1823	1040	1420	1450	1680	1720	1850
Парообразные продукты термодеструкции									
Бензол	130,00	23,50	1,10	106,21	17,51	16,29	6,92	5,29	0,00
Толуол	43,50	16,00	0,90	36,14	9,94	8,96	3,38	2,65	0,45
Стирол	694,00	118,50	2,00	565,47	87,36	81,01	32,29	23,82	0,00
Парообразные ПТД, всего	867,5	158,0	4,00	707,82	114,81	106,26	42,59	31,76	0,45
Газообразные продукты термодеструкции									
Водород	2,80	7,50	25,60	3,55	11,17	12,02	19,75	22,13	27,77
Окись углерода	29,40	18,90	43,40	25,61	19,94	20,64	31,63	36,13	48,18
Азот	0,00	46,70	72,50	12,43	61,18	63,45	73,24	73,57	71,12

Метан	21,90	13,40	29,50	18,95	13,70	14,12	21,39	24,47	32,81
Этилен	27,40	17,90	17,50	24,71	15,64	15,37	15,49	16,15	18,49
Этан	2,50	23,00	29,50	8,10	28,65	29,46	31,65	31,06	28,15
Ацетилен	0,20	0,70	1,50	0,31	0,93	0,97	1,30	1,39	1,56
Пропилен	0,00	2,50	5,50	0,60	3,48	3,66	4,88	5,14	5,62
Пропан	0,00	0,40	4,10	0,00	1,02	1,08	2,78	3,31	4,61
Изопентан	22,00	23,00	44,00	22,86	25,75	26,52	35,72	38,95	47,12
Газообразные									
ПДТ, всего	106,20	154,00	273,10	117,12	181,46	187,29	237,83	252,30	285,43
Углерод	32,43	687,87	723,00	178,89	697,35	699,26	713,90	716,50	724,72

Таблица 2. Коэффициенты термодеструкции пенополистирола при заливке различных сплавов в расчете на килограмм годного литья, $b_{\text{ПТД, сплав}}$, грамм ПТД на 1 кг годного литья

Продукты термодеструкции	Алюмин. сплавы	Латуни	Бронзы олов.	Бронзы алюм.	Серые чугуны	Легир. чугуны	Стали
Выход годного	0,60	0,75	0,70	0,65	0,75	0,70	0,70
Парообразные продукты термодеструкции							
Бензол	1,703	0,069	0,067	0,084	0,033	0,028	0,000
Толуол	0,580	0,039	0,037	0,046	0,016	0,014	0,002
Стирол	9,069	0,342	0,332	0,418	0,153	0,127	0,000
Парообразные ПТД, всего	11,352	0,449	0,436	0,549	0,202	0,169	0,002
Газообразные продукты термодеструкции							
Водород	0,057	0,044	0,049	0,062	0,094	0,118	0,129
Окись углерода	0,411	0,078	0,085	0,107	0,150	0,193	0,224
Азот	0,199	0,240	0,260	0,328	0,347	0,392	0,331
Метан	0,304	0,054	0,058	0,073	0,101	0,131	0,153

Этилен	0,396	0,061	0,063	0,079	0,073	0,086	0,086
Этан	0,130	0,112	0,121	0,152	0,150	0,166	0,131
Ацетилен	0,005	0,004	0,004	0,005	0,006	0,007	0,007
Пропилен	0,010	0,014	0,015	0,019	0,023	0,027	0,026
Пропан	0,000	0,004	0,004	0,006	0,013	0,018	0,021
Изопентан	0,367	0,101	0,109	0,137	0,169	0,208	0,219
Газообразные							
ПТД, всего	1,878	0,710	0,768	0,967	1,128	1,346	1,328
Углерод	2,869	2,730	2,866	3,610	3,385	3,822	3,372
Всего	16,099	3,890	4,070	5,125	4,715	5,337	4,702

Аналогичный расчет сделан для отливки массой 25 кг и высотой 0,5 м из алюминиевого сплава АК7. Использовались следующие значения свойств материалов и параметры заливки $\rho_{ППС}=25 \text{ кг/м}^3$, $\rho_m=2700 \text{ кг/м}^3$; $T_0=1040 \text{ К}$ [14]; $\mu=0,8$ [14]; $D=3,9 \cdot 10^8 \text{ кг/м}^2\text{с}^3\text{К}$ [11]; $l=0,2 \text{ м}$; $z=0,05 \text{ м}$; $h=0,1 \text{ м}$; $q=0,8 \cdot 10^{-3} \text{ м}^3/\text{с}$; $p_g=-30 \text{ кПа}$. Коэффициенты $b_{ПТД, \text{сплав}}$ взяты из таблицы 2.

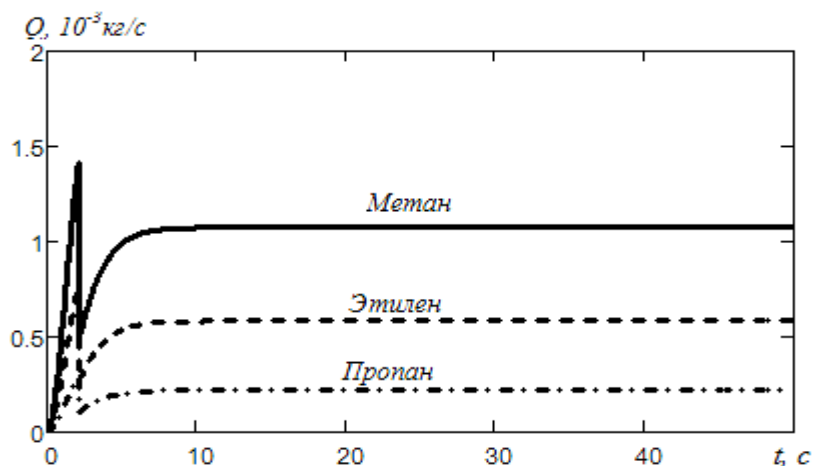


Рис. 2. Графики изменения во времени скорости образования метана, этилена и пропана при заливке макета отливки из стали

Результаты расчета представлены на рис. 3. Ход кривых для алюминиевых сплавов аналогичен ходу кривых $Q(t)$ для стали. Но выбросы паробразных ПТД превышают их выбросы при заливке стали. Это связано с тем, что при температурах заливки алюминиевых сплавов термодеструкция пенополистирола происходит не полностью.

Регулировать скорость образования ПТД можно с помощью задаваемых технологических параметров: скорости подачи металла в форму, сечения стояка, разрежения в опоке, расстояния от модели до стенок опоки, где, как правило, располагается вакуумный пояс. Расчеты показывают, что скорость образования ПТД пропорциональна скорости подачи жидкого металла в форму, рис. 4, что вполне понятно, так как эта величина определяет мощность нагрева пенополистирола в процессе заливки.

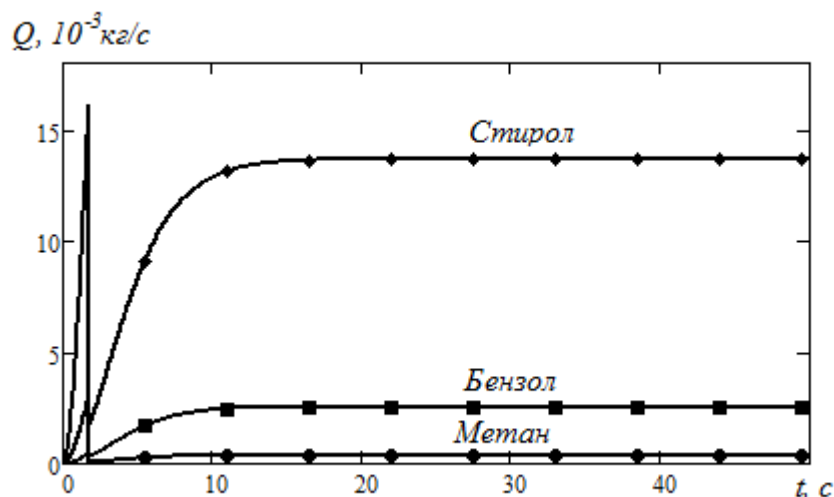


Рис. 3. Графики изменения во времени скорости образования стирола, бензола и метана при заливке макета отливки из алюминиевого сплава АК7

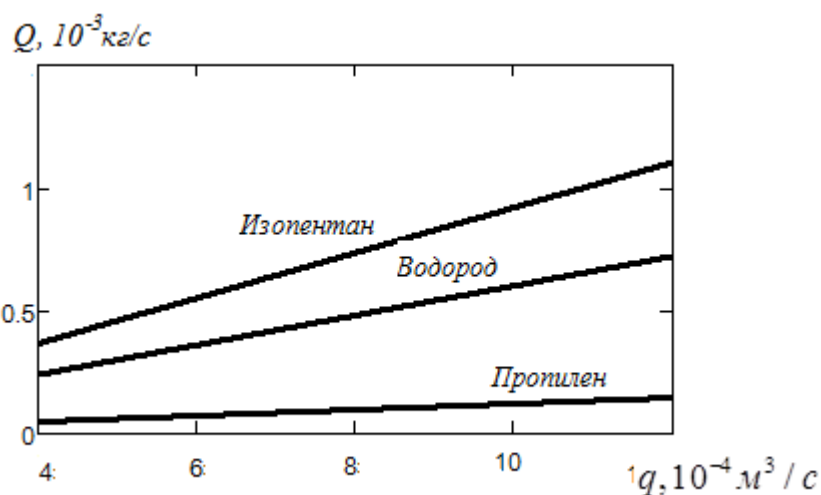


Рис. 4. Графики зависимости скорости выделения изопентана, водорода и пропилена от скорости подачи жидкого металла в форму при заливке макета отливки из стали 35Л

Сечение стояка, незначительно влияет на скорость выделения ПТД, что видно на рис. 5. Также несущественно влияние на скорость образования ПТД разрежения в опоке и расстояния от модели до вакуумного пояса опоки.

Вычислены количества продуктов термодеструкции пенополистирола, образующихся при литье по газифицируемым моделям для различных сплавов в расчете на один килограмм годного литья. При изготовлении отливок методом

ЛГМ из сплавов на основе железа образуется от 4,7 г до 5,34 г ПТД на 1 кг годного литья, из которых до 0,2 г/кг парообразные ПТД, от 1,13 г/кг до 1,33 г/кг – газообразные ПТД, а остальное – углерод в виде сажи. При заливке медных сплавов выделяется от 3,89 г до 5,12 г ПТД на 1 кг литья, в которых от 0,44 г/кг до 0,55 г/кг – парообразные и от 0,71 г до 0,97 г/кг – газообразные ПТД. Алюминиевые сплавы приводят к образованию около 16,1 г ПТД на 1 кг литья, в том числе 11,35 г/кг парообразных и 1,88 г/кг газообразных ПТД. По мере увеличения температуры заливки количество парообразных ПТД снижается, а газообразных и углерода растет. Максимальное количество ПТД на килограмм литья образуется при заливке алюминиевых сплавов, что связано с их малой плотностью.

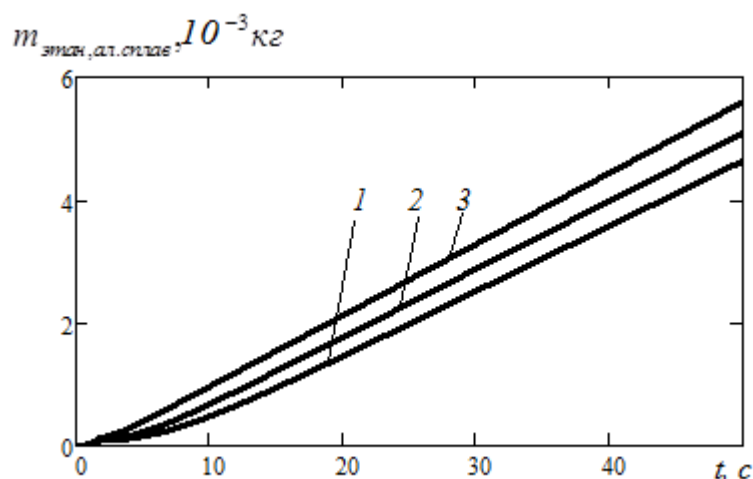


Рис. 5. Графики изменения во времени массы этана при заливке эталонной отливки из алюминиевого сплава АК7 при различных сечениях стояка, S_{cm} , макета отливки из стали 35Л

$S_{cm}, 10^{-3} \text{ м}^2$: 1,0 (1), 2,0 (2), 3,0 (3) .

Сравнение практических расчетов с опытными данными

Достоверность приведенных расчетов и полученных данных основана на достоверности полученных экспериментальных данных по исследованию термодеструкции ППС в работах В.С. Шуляка [1], применении математической модели заполнения формы при ЛГМ, подтвержденной в ряде работ [12,13] и использовании известных методов физических расчетов количества парообразных веществ и газов.

Вывод, следующий из уравнений (4-10), о том, что скорость образования ПТД неизменна в течение основного времени заливки (рис. 2, 3, 5) согласуется с выводами, представленными в работе [10]. В этой работе показаны результаты экспериментов по заливке алюминиевым сплавом образцов из пенополистирола в виде параллелепипедов и установлено, что объем эмиссии газов прямо пропорционален времени, т.е. скорость их выделения постоянна. На экспериментальных графиках изменения объема ПТД во времени [10], также как и на рис. 5, в начале заливки наблюдается почти горизонтальный участок, связанный с образованием газового промежутка между металлом и пенополистиролом.

С целью подтверждения возможности применения математической модели (4-10) для практических расчетов приведем расчеты скорости выделения ПТД при изготовлении некоторых реальных отливок, табл. 3. Изготовление отливок производилось на предприятии «Техоснастка», г. Курган. Литниково-питающая система во всех случаях была сифонного типа и металл подводился в нижнюю часть модели отливки. Использовались опоки размерами 1200x800 и высотой 1000 мм, снабженные поясом отсоса, который соединялся с вакуумным насосом. Технологией задавалась скорость подачи металла в форму и измерялось время заливки. Производство массы пенополистирола в форме на коэффициенты $a_{ПТД,сплав}$ (табл. 1), отнесенное ко времени заливки, есть средняя скорость образования ПТД. Вместе с этим по математической модели (4-10) вычислялась расчетная скорость образования ПТД на 10 секунде заливки, когда данная величина стабилизируется. Результаты измерений и расчетов сопоставлены в табл. 3, расхождение не превышает 2,2%.

Из данных таблицы 3 видно, что разработанная математическая модель (4-10) удовлетворительно описывает процесс образования ПТД пенополистирола при ЛГМ. Расчетные графики изменения величины ПТД аналогичны экспериментальным. Значения определенных на практике и вычисленных скоростей образования ПТД согласуются. Поэтому данная математическая модель может быть применена для расчетов при проектировании производств, оборудования и технологических процессов. Используя ее можно вычислять количество выделяемых при литье ПТД пенополистирола, определять воздействие их на атмосферу цеха, окружающую среду и, соответственно, проектировать системы их удаления и нейтрализации.

Таблица 3. Результаты опытного определения и расчета по математической модели количества и скорости образования продуктов термодеструкции пенополистирола при литье по газифицируемым моделям

Наименование и обозначение отливки	Материал	Масса отливки Масса ППС, кг	Размеры отливки ЛПС, мм			Время заполнения, с	Количество ПТД по нормативам, 10 ⁻³ кг	Средняя скорость образования ПТД, 10 ⁻³ кг/с	Расчетная по математической модели скорость образования ПТД, 10 ⁻³ кг/с
			L	B	H				
Колесо ходовое, M183.03.01PЧЗ	25Л	138,0	208	530	530	58	$m_{нар.} = 0$	$Q_{нар.} = 0,00$	$Q_{нар.} = 0,05$
	ГОСТ977-88	0,63					$m_{газ.} = 186$	$Q_{газ.} = 3,26$	$Q_{газ.} = 3,31$
							$m_{угл.} = 447$	$Q_{угл.} = 7,85$	$Q_{угл.} = 7,97$

Корпус, 150ПГП01.01 РЧЗ	СЧ25 ГОСТ1412- 85	40,2 0,20	207	229	212	22	$m_{нар.} = 16$ $m_{газ.} = 38$ $m_{угл.} = 151$	$Q_{нар.} = 7,86$ $Q_{газ.} = 1,87$ $Q_{угл.} = 6,85$	$Q_{нар.} = 8,03$ $Q_{газ.} = 1,91$ $Q_{угл.} = 7,00$										
										Вкладыш, 1953.03.110 РЧЗ	Бр05Ц5С5 ГОСТ613-79	168,0 0,64	815	400	750	55	$m_{нар.} = 166$ $m_{газ.} = 74$ $m_{угл.} = 636$	$Q_{нар.} = 3,24$ $Q_{газ.} = 1,44$ $Q_{угл.} = 7,66$	$Q_{нар.} = 3,28$ $Q_{газ.} = 1,46$ $Q_{угл.} = 7,65$
Колосник, 1953.17.112 РЧЗ	40Х24Н12СЛ ГОСТ977-88	65,6 0,30	410	830	320	24	$m_{нар.} = 0$ $m_{газ.} = 88$ $m_{угл.} = 213$	$Q_{нар.} = 0$ $Q_{газ.} = 3,68$ $Q_{угл.} = 8,86$	$Q_{нар.} = 0$ $Q_{газ.} = 3,75$ $Q_{угл.} = 9,03$										

Выводы

1. Разработана математическая модель образования продуктов термодеструкции при литье по газифицируемым моделям. Анализ этой модели показывает, что в начальный период заполнения формы при образовании газового промежутка между жидким металлом и пенополистиролом происходит резкий выброс ПТД, а затем величина скорости термодеструкции стабилизируется. Она в основном зависит от скорости подачи жидкого металла в форму, плотности пенополистирола и площади горизонтального сечения модели отливки. Площадь сечения стояка, расстояние от модели до пояса разрежения опоки, величина разрежения в опоке несущественно влияют на нее.

2. Схожий вид экспериментального и расчетного графиков изменения количества образовавшихся ПТД во времени и сопоставление расчетных и практических данных позволяют утверждать о возможности применения математической модели для расчетов скоростей образования и количеств ПТД при проектировании технологических процессов литья по газифицируемым моделям, специального оборудования и производств в целом, а также определять их влияние на атмосферу цехов и окружающей среды.

3. Вычислены количества продуктов термодеструкции пенополистирола, образующихся при литье по газифицируемым моделям для различных сплавов в расчете на один килограмм годного литья. При изготовлении отливок из сплавов на основе железа образуется от 4,7 г до 5,34 г ПТД на 1 кг годного литья, из которых от 0,2 г/кг парообразные ПТД, от 1,13 г/кг до 1,33 г/кг – газообразные ПТД, а остальное – углерод в виде сажи. При заливке медных сплавов выделяется от 3,89 г до 5,12 г ПТД на 1 кг литья, в которых от 0,44 г/кг до 0,55 г/кг – парообразные и от 0,71 г/кг до 0,96 г/кг – газообразные ПТД. Алюминиевые сплавы приводят к образованию около 16,1 г ПТД на 1 кг литья, в том числе 11,35 г/кг парообразных и 1,88 г/кг газообразных ПТД.

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Development and deployment of system of HACCP in production of flour confectionery from sponge and short cake dough with use of flour «Zdorovia»

Abstract: The article deals to definition the critical points of control (CPC) sponge cake and sand semi-finished product, it is analyzed dangerous factors that critical limits which are maximum to the parameter which CPC need to control for the purpose of emergence, elimination or reduction to the acceptable level of an essential dangerous factor are defined.

Keywords: HACCP, technology, flour «Zdorovia», sponge cake, short cake, critical control points.

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Розробка та впровадження системи HACCP у виробництві борошняних кондитерських виробів з бісквітного та пісочного тіста із використанням борошна «Здоров'я»

Анотація: У представленій роботі визначено критичні точки контролю (КТК) бісквітного та пісочного напівфабрикату, проаналізовано небезпечні чинники та встановлені критичні межі, які є максимальними до параметра, який

потрібно контролювати КТК з метою виникнення, усунення або зменшення до прийняттого рівня суттєвого небезпечного чинника.

Ключові слова: HACCP, технологія, борошно «Здоров'я», бісквіт, пісочне печиво, критичні точки контролю.

Головною метою, що стоїть перед виробниками харчової продукції є гарантія безпечності продукції для здоров'я населення. Тому головним завданням є забезпечити населення якісними продуктами, впроваджуючи нову систему безпечності продукції HACCP (Hazard Analysis and Critical Control Points) [1].

HACCP – це потужна система, яка може застосовуватися до великого спектру простих і складних операцій. Вона використовується для забезпечення безпечності харчових продуктів протягом усього ланцюга виробництва і реалізації харчового продукту. Для впровадження системи HACCP потрібно досліджувати не тільки продукт, а й методи його виготовлення [2].

Система управління безпечністю харчових продуктів на основі концепції HACCP надає можливості виробництва безпечної продукції за рахунок систематичного контролю на всіх стадіях виробництва; гарантує, що харчові продукти безпечні на час їх споживання; забезпечує належні гігієнічні умови виробництва у відповідності з міжнародними нормами; демонструє відповідність законодавчим та нормативним вимогам відносно безпечності харчових продуктів; дає можливість розширити мережу споживачів продукції та вийти на міжнародні ринки; підвищити відповідальність персоналу щодо безпечності харчових продуктів.

Для застосування системи HACCP при виробництві бісквітних та пісочних напівфабрикатів застосовували сім основних принципів, які складають її основу: проведення повного аналізу ризиків; визначення критичних точок контролю; встановлення критичних меж для контрольних точок; встановлення моніторингу всіх критичних точок контролю; розробка корегуючих дій, якщо ситуація вийшла з контролю; встановлення процедур ведення та обліку документації; встановлення перевірки документів [3].

Із вищезазначеного можна зробити висновок, що сім принципів, які обумовлюють виробництво безпечних продуктів, можна застосовувати під час розробки нової продукції.

Перспективним шляхом розроблення новітніх технологій борошняних кондитерських виробів є використання сировини рослинного походження – борошна із пророщеного зерна пшениці у розчині морської харчової солі (борошно «Здоров'я»), які поліпшують якість продукції, збагачують її склад біологічно цінними компонентами та розширюють асортимент борошняних кондитерських виробів [4].

Суттєве зростання майже усіх нутрієнтів борошна «Здоров'я» порівняно з пшеничним борошном вищого сорту можна пояснити наявністю у його складі усіх частин зерна – оболонки, в якій міститься багато клітковини і більшість мінеральних речовин, алейронового шару, що містить білки, жири, цукри і вітаміни, та ендосперму, що переважно складається з крохмалю і білків.

Таблиця 1. Визначення граничних меж сировини та матеріалів

Сировина, матеріали	Стандарт	Потенційні ризики		
		Біологічні (Б)	Хімічні (Х)	Фізичні (Ф)
Борошно пшеничне в/г	ГСТУ 46.004-99	Шкідники та гризуни	Солі важких металів, залишки мінеральних добрив	Сторонні домішки
Борошно «Здоров'я»	ТУ У 10.6-05476322-001:2013			
Крохмаль картопляний	ДСТУ 4286-96			
Натрій двовуглекислий	ГОСТ 2156-76	Екскременти гризунів		
Цукор білий	ДСТУ 4623:2006			
Какао-порошок	ДСТУ 4391:2005	Шкідники та гризуни	Солі важких металів	Прямі сонячні промені, сторонні домішки
Яйця курячі	ДСТУ 5028:2008	Патогенні мікроорганізми	Залишкова кількість пестицидів	Сторонні домішки
Масло вершкове	ДСТУ 4399:2005		Вміст токсичних елементів	

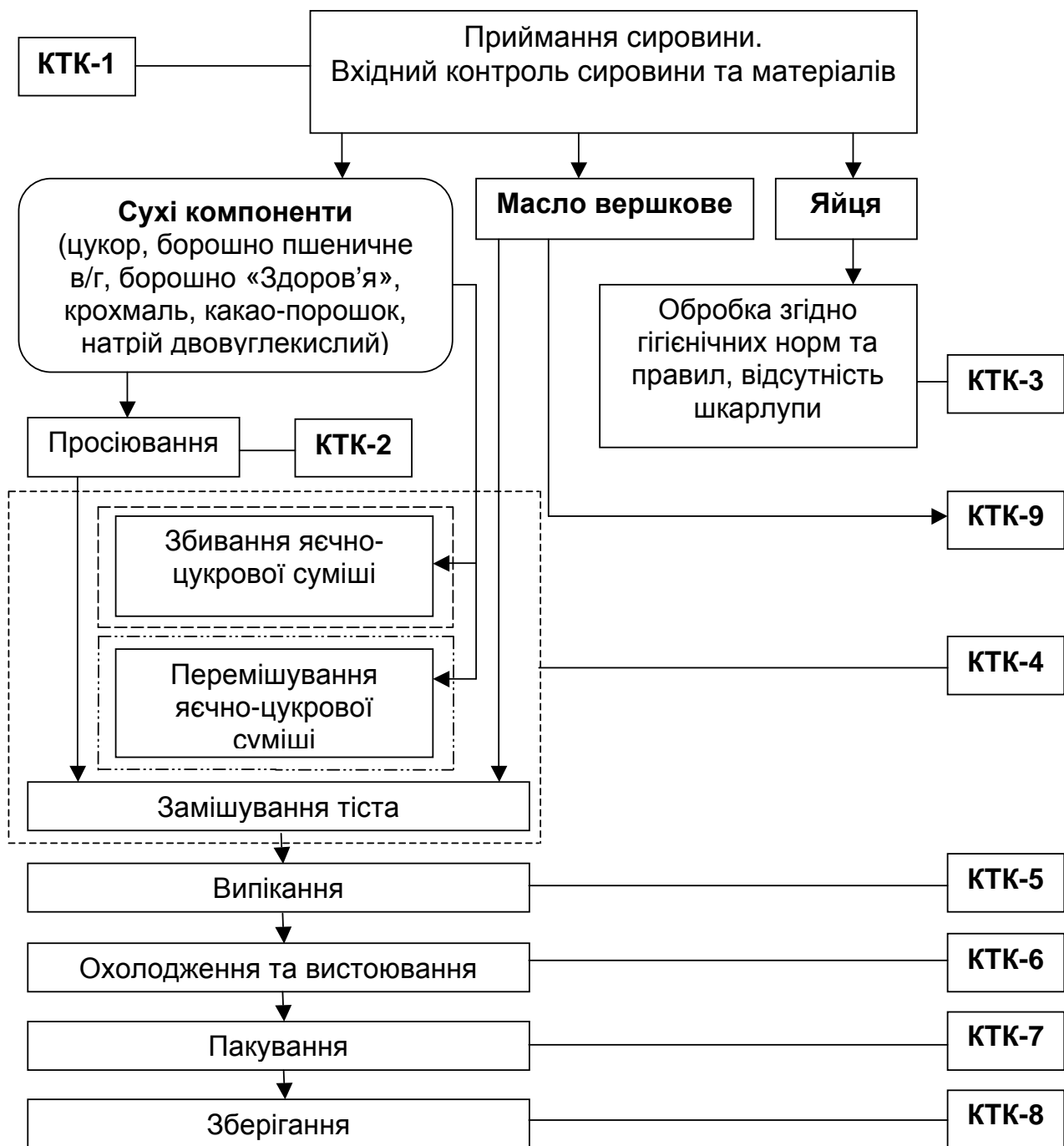


Рис. 1. Технологічна схема виробництва бісквітного та пісочного напівфабрикатів з визначенням КТК

Умовні позначення:

- — — технологічні процеси, для виготовлення бісквітного напівфабрикату;
- · · · технологічні процеси, для виготовлення пісочного напівфабрикату

Технологія бісквітних та пісочних напівфабрикатів з борошном «Здоров'я» відрізняється від традиційної наявністю нової сировини в рецептурі. Застосування борошна «Здоров'я» призводить до змін технологічних параметрів процесу випікання напівфабрикатів. Одним з потенційних ризиків є вхідний контроль сировини та матеріалів, тому необхідна обов'язкова наявність відповідних нормативних документів.

Перед визначенням критичних точок контролю (КТК), необхідно проаналізувати небезпечні чинники та встановити критичні межі, які є максимальним до параметра, який потрібно контролювати на КТК з метою виникнення, усунення або зменшення до прийнятного рівня суттєвого небезпечного чинника (таблиця 1).

Розроблена схема виробництва бісквітного та пісочного напівфабрикату з борошном «Здоров'я» із ідентифікацією критичних точок контролю (рис. 1).

Враховуючи, що до бісквітного та пісочного напівфабрикатів, виготовлених за традиційною рецептурою, додавали борошно «Здоров'я», визначені небезпечні чинники та критичні точки контролю (таблиця 2). Критичні межі потенційних ризиків у визначених КТК встановлені на підставі нормативної документації на всі види сировини, що використовуються під час виробництва бісквітних та пісочних напівфабрикатів.

Таблиця 2. Ідентифікація небезпечних чинників на технологічних етапах виробництва бісквітного напівфабрикату із додаванням борошна «Здоров'я» та заходи щодо їх усунення

КТК	Небезпеки			Запобіжні заходи	Критичні межі	
					Бісквітний напівфабрикат	Пісочний напівфабрикат
1	+	+	+	Дивитись таблицю 1		
2	+	-	+	Характеристики, що стосуються розмірів сита для просіювання (d)	d < 2 мм	
3	+	-	+	Обробка згідно гігієнічних норм та правил, контроль температури, концентрація дезінфікуючих розчинів, відсутність шкарлупи, санітарна обробка обладнання, гігієна персоналу згідно діючих санітарних норм	t = (2...4)°C; 1% розчин хлорного вапна, T _{випр.} =5-60 с, 2% розчин соди	

4	-	-	+	Санітарна обробка та своєчасне технічне обслуговування обладнання	Згідно інструкції до обладнання	
5	+	+	+	Належна обробка форм та дек для випікання	t = 60°C	
6	+	+	+	Контроль тривалості та температури процесу випікання, середовища приміщення, гігієна персоналу згідно діючих санітарних норм	t = 180...200 °C, τ = (45...50)·60 с, відносна вологість повітря (65...70)%	t = 200...220 °C, τ = (45...50)·6 с, відносна вологість повітря (65...70)%
7	+	-	+	Пакування згідно вимог та етикетування	Кислотність пергаменту < 0,03% сірчаної кислоти	
8	+	+	+	Контроль середовища приміщення та термін зберігання	Відносна вологість повітря (70...75)%, t < 20°C, τ = 48·60 ² с,	
9	+	+	+	Термін зберігання згідно нормативних вимог	t = 10°C, не більше 3 діб	t = 12°C, не більше 25 діб

Таким чином, з метою безпечності борошняних кондитерських виробів визначено критичні точки контролю, проаналізовано небезпечні чинники та встановлено критичні межі, які є максимальними до параметрів бісквітного та пісочного напівфабрикатів згідно технологічних характеристик їх виготовлення. Використання борошна «Здоров'я» у виробництві бісквітних та пісочних напівфабрикатів зумовлює збільшення нутрієнтного складу випечених напівфабрикату по відношенню до традиційного та є перспективним при виготовленні борошняних кондитерських виробів.

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Assessment of consumer preferences of bitters from an amaranth

Abstract: This article is devoted to the analysis received from renewable raw material resources - leaves and branches (stalks) of plants of family amarantovy. In the publication are considered an assessment of consumer preferences which can be of interest in medical area as the all-strengthening and treatment-and-prophylactic action.

Keywords: bitters, family amarantovy, organoleptic assessment.

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Оценка потребительских предпочтений горькой настойки из амаранта

Аннотация: Данная статья посвящена анализу полученных из возобновляемых сырьевых ресурсов - листьев и ветвей (стеблей) растений семейства амарантовые. В публикации рассматриваются оценка потребительских предпочтений, которые могут представлять интерес в медицинской области как общеукрепляющее и лечебно-профилактическое действие.

Ключевые слова: настойка горькая, семейство амарантовые, органолептическая оценка.

Введение

Одним из значительных сегментов лечебных препаратов является сегмент горьких настоек.

Сырьевые ресурсы Казахстана богаты многообразием видов дикорастущих растений, многие из которых обладают ярко выраженным физиологическим действием на организм человека. Препараты из растений семейства амарантовых являются адаптогенами, то есть повышают сопротивляемость организма к неблагоприятным воздействиям. В настоящее время с их использованием выпускают пищевые продукты и др. Однако, для получения этих продуктов используют в основном семена и стебли растений, а органы, являющиеся возобновляемым сырьем - корни не применяются [1].

Целью исследования явилось анализ интенсивности вкуса горьких напитков с использованием экстрактов из различных органов растений семейства Амарантовых (amarantsceae).

В соответствии с целью решали следующие задачи:

- обосновать использование растений семейства амарантовые (метельчатый) в производстве горьких настоек в виде водно-спиртовых экстрактов из возобновляемых органов (листьев, ветвей или стеблей) и с помощью шкалы дескрипторов проанализировать органолептические показатели.

В последнее время в сегменте медицинских напитков лечебного характера наметилась тенденция горькими настойками [2,3]. Этому способствует и общая тенденция изменения потребительских предпочтений. Потребители уже меньше интересуются водкой и часто выбирают продукцию рода.

Учитывая то, что иностранные производители раньше отечественных начали продвигаться в сегменте настоек, на сегодняшний день при выборе горьких напитков покупатели Казахстана отдают предпочтение отечественной продукции [4].

Сегодняшние покупатели предпочитают употреблять продукцию без красителей и ароматизаторов, произведенную на основе натурального сырья [5,6]. Поэтому основная доля производителей использует натуральные, природные компоненты, часто – местного происхождения. На сегодняшний день при выборе настоек потребитель может получить отечественный натуральный продукт за сравнительно небольшую цену. Однако введение

натуральных компонентов обуславливает ограничительный срок хранения настоек и небольшие объемы их производства [5].

На основании вышеизложенного следует, что использование дикорастущих растений семейства в горьких напитках перспективно, это позволяет не только повысить биологическую ценность напитков, обогатив их биологически активными веществами, но и сформировать новые качественные признаки – органолептические и физико-химические показатели готовых продуктов [4].

Растение амарант относится к семейству амарантовых или псевдозлаковых и представляет собой разновидность травянистого растения [6].

Одним из основных преимуществ семян амаранта перед другими традиционными культурами является сбалансированное соотношение аминокислот и масла (6-8%) с высокой концентрацией ненасыщенных жирных кислот, содержащего биологически активные компоненты: жирорастворимые витамины, фитостеролы, антиоксиданты, сквален [7].

Из семян амаранта приготавливаются десятки полезных и вкусных продуктов для детей и людей, нуждающихся в соблюдении диеты [6]. Надземная часть амаранта, обладающая антибактериальным действием, используется в виде отваров для лечения простудных заболеваний [7].

В настоящее время выявлено, что антибактериальное и антимикотическое действие амаранта связано с присутствием в семенах низкомолекулярного белка, подавляющего рост бактерий.

Учитывая высокую питательность зеленой массы амаранта, следует отметить также, что для этой культуры характерно повышенное содержание рутина, который является фактом растительного происхождения.

Хотя амарант и не входит в фармакопеи РФ и РК, существуют примеры его использования в народной медицине различных стран в качестве противовоспалительного, кровоостанавливающего, мочегонного, антибактериального средства, для лечения сифилиса и рака [7].

В качестве объектов исследований были использованы экстракты спиртовые из различных органов растений семейства амарантовые (*amarantaceae*) (корни, ветви, стебли, листья).

В качестве вспомогательных компонентов при приготовлении напитков были использованы: спирт этиловый ректификованный из пищевого сырья

«Люкс», вода питьевая, соответствующая ТР ТС 021/2011. Предметом исследования явились разработанные новые настойки горькие «Алатау».

Определение показателей качества сырья и готовых настоек горьких проводили согласно действующей нормативной документации, органолептическую оценку образцов напитков в эксперименте осуществляли по десятибалльной шкале с установлением органолептических профилей и дескрипторов общепринятыми методами. Образцы продукции представляли на дегустацию.

Для определения рациональных условий внесения экстрактов из возобновляемых органов растений семейства Амарантовые в настойки горькие нами была проведена оценка потребительских предпочтений. По результатам анализа установлено, что напитки с экстрактами из ветвей (стеблей) растений обладали приемлемыми органолептическими показателями, наиболее предпочтительными оказались напитки с концентрацией экстрактов из ветвей (стеблей) 12 мл на 1 литр.

Для установления органолептических характеристик нового изделия использовали профильный метод, который позволяет получить полное сенсорное описание продукта. Сложное понятие органолептических свойств представляли в виде совокупности простых составляющих (дескрипторов), которые оценивались по интенсивности проявления (таблица 1). Для органолептического анализа настоек горьких «Алатау» предусматривали следующие главные показатели: цвет, вкус, аромат.

Таблица 1. Профили для настоек горьких «Алатау»

Профиль	Дескрипторы
Цвет	красно-коричневый
Вкус	растительный
Аромат	освежающий

Согласно требованиям ТР ТС 021/2011 для разных уровней качества ликероводочных изделий существуют разные ограничительные баллы, ниже которых проба продукта признается недоброкачественной. Разделение максимальных баллов, по отдельным органолептическим показателям следующее:

Прозрачность и цвет – 2 балла; вкус – 4 балла, аромат и запах – 4 балла.

При выполнении профильного анализа использовали шкалу для оценки интенсивности дескрипторов свежеприготовленных образцов напитка. Все отметки, сделанные дегустатором на графических шкалах, последовательно объединяли отрезками и получали профили для готового алкогольного напитка. Оси на диаграммах соответствовали выбранным дескрипторам, а интенсивность каждой составляющей профиля была отмечена на оси по соответствующей шкале. В зависимости от оцениваемого показателя получали профили вкуса, аромата, цвета (рисунки 1 – 3).

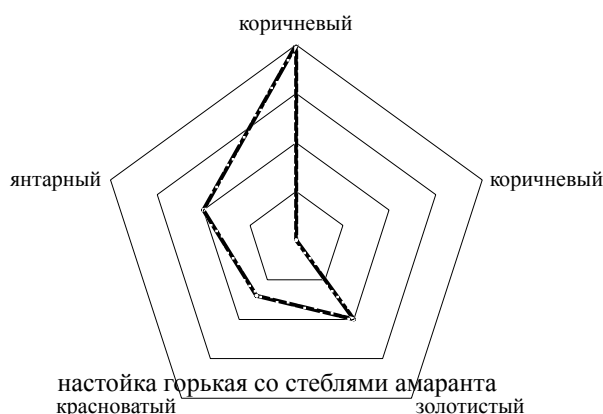


Рисунок 1. Профили для характеристики цвета настоек горьких «Алатау»



Рисунок 2. Профили для характеристики вкуса настоек горьких «Алатау»



Рисунок 3. Профили для характеристики аромата настоек горьких «Алатау»

По результатам проведенного дегустационного анализа определяли органолептические показатели настоек горьких. Новые алкогольные напитки соответствовали высоким дегустационным требованиям (таблица 2).

Таблица 2. Органолептические показатели настоек горьких серии «Алатау»

Наименование показателя	Характеристика
Внешний вид	Прозрачная жидкость без осадка и посторонних включений
Цвет	Темно-коричневый с красноватым оттенком
Вкус	округленный
Аромат	Сложный

Дегустационная оценка новых Настоек горьких серии «Алатау» характеризовалась высокими баллами (выше 9,5) и соответствовала требованиям ГОСТ Р 52522-2006 представленным в таблице 3.

Таблица 3. Дегустационная оценка продуктом, рекомендованных к выпуску и реализации

Наименование продукта	Оценка в баллах, не менее
Водки и особые водки на спирте «Люкс»	9,2
Ликероводочные изделия	9,0
Бальзамы	9,2
Новые изделия	Не менее 9,5

На основании проведенной работы было обосновано использование растительного сырья и получены экстракты из корней, листьев и ветвей (стеблей) растений семейства амарантовых.

Для определения рациональных условий внесения экстрактов из возобновляемых органов растений семейства амарантовые в крепкие алкогольные напитки нами была проведена оценка потребительских предпочтений.

При сравнении содержания экстрактивных веществ, полученных водно-спиртовыми извлечениями, отмечено, что наилучший результат для экстрактов из корней амаранта наблюдали при использовании 60% водно-спиртовой смеси, из ветвей 60% и листьев - 65%.

Готовые напитки - настойки горькие, обладают оригинальными органолептическими характеристиками, отличаются присутствием в них биологически активных веществ и могут представлять интерес в медицинской области как общеукрепляющее и лечебно-профилактическое действие.

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An Intelligent Technique By Using The Method of Constant Coefficient of Short Circuit Current Under Pulse Width Modulation Control of The Photovoltaic Power System

Abstract: Photovoltaic (PV) system is extensively increasing since it is clean, pollution free, and inexhaustible and by consider available resource as a future energy supply. The PV array output power is used to directly control the Pulse-width modulation (PWM), dc/dc boost converter, thereby reducing the complexity of the system. The resulting system has high efficiency with lower cost. This paper presents an improved Constant Coefficient of Short Circuit Current (CCSCC) Maximum Power Point Tracking (MPPT) technique under PWM control of photovoltaic (PV) power generation systems to obtain the maximum output power. The solar panel is modelled and analyzed in MATLAB/SIMULINK.

Keywords: photovoltaic system, modeling of PV panels, Constant Coefficient of Short Circuit Current, Boost converter and Simulation Results.

1. Introduction

The growing demand for electrical energy all over the world has caused a great need to consider renewable energy sources as a technological option for sustainable energy supply. Among the renewable energy sources photovoltaic (PV) energy is now becoming one of the fastest growing renewable energy technologies due to the continuous cost reduction and technological progress. PV is the field of technology related to the application of solar cells by converting sunlight directly into electricity.

Photovoltaic (PV) generation is becoming increasingly important as a renewable source since it exhibits a great many merits such as cleanness, little maintenance and no noise. Due to the nonlinear relationship between the current and the voltage of the PV cell, it can be observed that there is a unique maximum power

point (MPP) at a particular environment, and this peak power point keeps changing with solar illumination and ambient temperature.

An important consideration in achieving high efficiency in the PV power generation system is to match the PV source and load impedance properly for any weather conditions, thus obtaining maximum power generation. Therefore, the system needs a maximum power point tracking (MPPT) which sets the system working point to the optimum and increases the system's output power. It is common that the efficiency of a solar cell is very low. Some methods are used so as to match the source and load properly, thereby increasing the efficiency of solar cell. This is done by utilizing a boost converter whose duty cycle is varied by using an MPPT algorithm.

Maximum power point tracker is an electronic DC to DC converter that optimizes the match between the solar array (PV panels), and the load. The Power point tracker is a high frequency DC to DC converter.

This paper introduces a new index, which designs an intelligent technique by using the method of constant coefficient of short circuit current under pulse width modulation control of the photovoltaic Power system [1-6]. The paper is organized in the following way. Section two presents Nomenclature about everything related to study. In section three presents the entire proposed PV system configuration which components are used and also discuss about the mathematical modeling of the PV array, Maximum Power Point Tracking, analyzing the boost converter. In section four simulation results of numerical experiments under considerations are discussed. Finally, conclusions are made in section five.

2. Nomenclature

PV – Photovoltaic.

$I_{pv}=I$ – Output Panel current, (A).

$V_{pv}=V$ – Output Panel voltage, (V).

I_{ph} – Photovoltaic Current, (A).

I_o – Reverse saturation current of the diode, (A).

Q – Electron charge (1.602×10^{-19}), (C).

R_s – Series resistance of the cell, (Ω).

R_{sh} – Shunt Resistance of the cell, (Ω).

K_B – Boltzmann constant (1.38×10^{-23}), (J/K).

N – The diode factor.

- I_{SC} – Nominal Short-Circuit Current, (A).
 V_{OC} – Nominal Open Circuit Voltage, (A).
 V_T – Thermal Voltage (V).
 I_{MP} – Current at the maximum power point, (A).
 V_{MP} – Voltage at the maximum power point, (V).
 K_I – Constant coefficient of short circuit current.
 G – Illumination, (W/m^2).
 T – PV cell temperature, (K).
 t_{off} – On/off duty cycle of the switching controls.
 PW – Relative pulse width (pulse ratio).
 P – power generated by the PV array, (W).
 P_{out} – Output power, (W).
 P_{PV} – Input power, (W).
 D – Duty cycle.
 F_{cn1} – Represent the equation between I_{SC} & G .
 F_{cn2} – Represent the equation between V_{OC} & G .
 D_1, D_2 – Diode1, Diode 2.
 C – Capacitor, (F).
 V_O – Output voltage of the DC-DC Boost Converter.

3. Proposed PV system

Figure 1 shows the proposed PV system which is single stage power conditioning system, used for feeding the DC loads. The PV system consists of different elements like solar PV array, short circuit current MPPT method, boost converter, energy storage element and net load. Here the PV array is a combination of series and parallel solar cells. This array develops the power from the solar energy directly and it will be changed by depending upon the temperature and solar irradiances.

The DC-DC boost converter is controlled so as to track the maximum power point of the PV array and to transfer the energy to the net load [3-5].

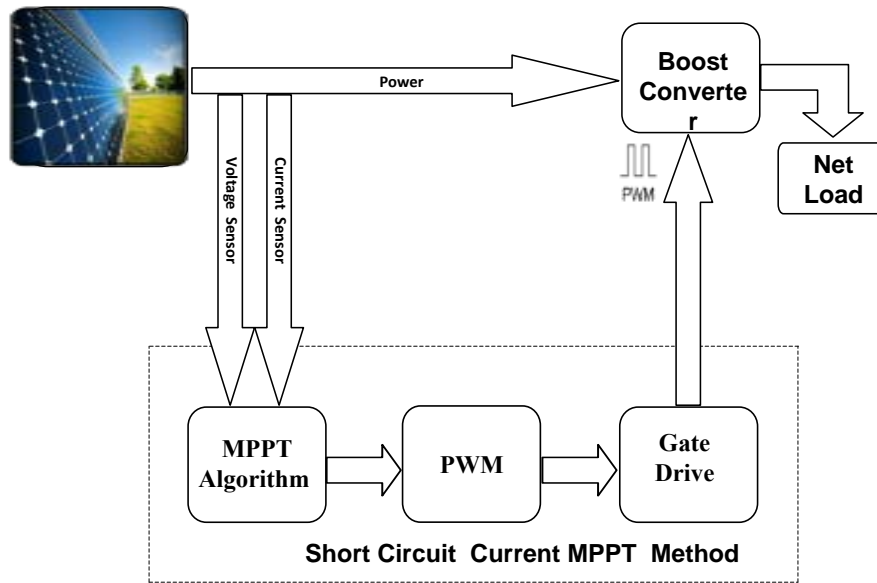


Figure 1. Block Diagram of Power Conditioning PV System

3.1. Mathematical Modeling of PV Array

The output obtained from the panel is variable DC voltage, this voltage depends upon the solar radiation intensity and temperature. The simple equivalent circuit of PV cells is shown in figure 2 [2-8].

From the circuit in figure (2) the output panel current can be expressed as Eq. (1).

$$I = I_{ph} - I_o \cdot \left[e^{\frac{q(V+I \cdot R_s)}{NK_B T}} - 1 \right] - \frac{(V + I \cdot R_s)}{R_{sh}} \tag{1}$$

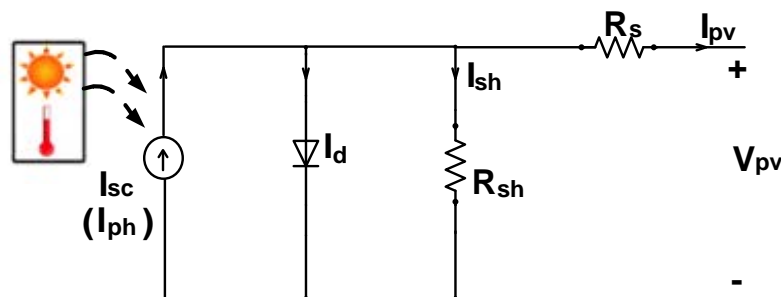


Figure 2. Equivalent Circuit of Photovoltaic Cell

Three operation points on the I-V curve are of special interest for understanding solar cell operation and for designing photovoltaic systems:

The short circuit point ($I=I_{SC}$, $V=0$); the open circuit point ($I=0$, $V=V_{OC}$) and the maximum power point ($I=I_{MP}$, $V=V_{MP}$).

At the short circuit operation point ($I=I_{SC}$, $V=0$) the solar cell model Eq. (1) Can be rewritten as in Eq. (4), which allows to approximate the photo-generating capabilities (I_{ph}) of the solar cell with the short circuit current (I_{SC}) under certain conditions Eq. (2).

$$I_{SC} \cong I_{ph}, \text{ for } R_s = R_{sh} \text{ and } I_o = I_{ph}. \quad (2)$$

From here we can infer the main factors influencing the voltage of the solar cell are: the temperature through the thermal voltage (V_T) as in Eq. (3), followed to a lesser extent by the irradiance through (I_{ph}).

$$V_T = K_B \cdot \frac{T}{q}; \quad (3)$$

$$I_{SC} = I_{ph} - I_o \cdot \left[e^{\frac{I_{sc}R_s}{NV_T}} - 1 \right] - \frac{I_{SC}R_s}{R_{sh}}. \quad (4)$$

The solar cell operation can be described at the open circuit ($I=0$, $V=V_{OC}$) as in Eq. (5), and assuming a high shunt resistance (R_{sh}), the solar cell open circuit voltage (V_{OC}) can be approximated as in Eq. (6).

$$0 = I_{ph} - I_o \cdot \left[e^{\frac{V_{OC}}{NV_T}} - 1 \right] - \frac{V_{OC}}{R_{sh}}, \quad (5)$$

$$V_{OC} = NV_T \cdot \ln \left(\frac{I_{ph}}{I_o} + 1 \right) \text{ for } I_{ph} \gg \frac{V_{OC}}{R_{sh}}. \quad (6)$$

The resistances R_s and R_{sh} are usually neglected in order to simplify the model and under certain conditions Eq. (2) (I_{SC} ; I_{ph}) Therefore, Eq. (1) Can be simplified to Eq. (7) [4-8].

$$I = I_{SC} - I_o \cdot \left[e^{\frac{V}{NV_T}} - 1 \right]. \quad (7)$$

Under an open circuit condition at the PV array can be expressed as Eq. (8).

$$I_O = I_{SC} \cdot \left[e^{\frac{-V_{OC}}{NV_T}} \right]. \quad (8)$$

The maximum power point (*MPP*) is may be the most important parameter relating to PV system performance and operation.

At the maximum power point, where I_{MPP} and V_{MPP} are the Current and Voltage at maximum-power point. From (7) and (8), regarding that $\exp(V/NV_T) > 1$ under normal operation of the diode, the following expressions can be approximated as Eq. (9).

$$I_{MP} = I_{SC} \cdot \left[1 - e^{\frac{V_{MP}-V_{OC}}{NV_T}} \right]. \quad (9)$$

The output voltage of the PV generator can be expressed as a function of the output current, in terms of parameters such as V_{OC} and I_{SC} .

$$V_{MP} = V_{OC} \cdot \left[1 + NV_T \cdot \ln \left(1 - \frac{I_{MP}}{I_{SC}} \right) \right]. \quad (10)$$

The maximum power point generated by the PV array can be expressed as Eq. (11) and Eq. (12).

$$P_{MP} = V_{MP} \cdot I_{MP}, \quad (11)$$

$$P_{MP} = V_{OC} \left[1 + NV_T \cdot \ln \left(1 - \frac{I_{MP}}{I_{SC}} \right) \right] \cdot I_{sc} \left[1 - e^{\frac{V_{MP}-V_{OC}}{NV_T}} \right]. \quad (12)$$

As initial data for Model there were used experimental data from solar panel educational bench in school laboratory in National Airspace University «KhAI», the Department of space technology and alternative energy sources with Si PV cell manufactured by Siemens Corp [2-3]. The common structure of PV Panel Simulation Model is represented in Figure 3.

Simulation of the I-V curve Fig.4a) & P-V curve Fig.4b) of PV module under changing illumination are represented in Figure 4.

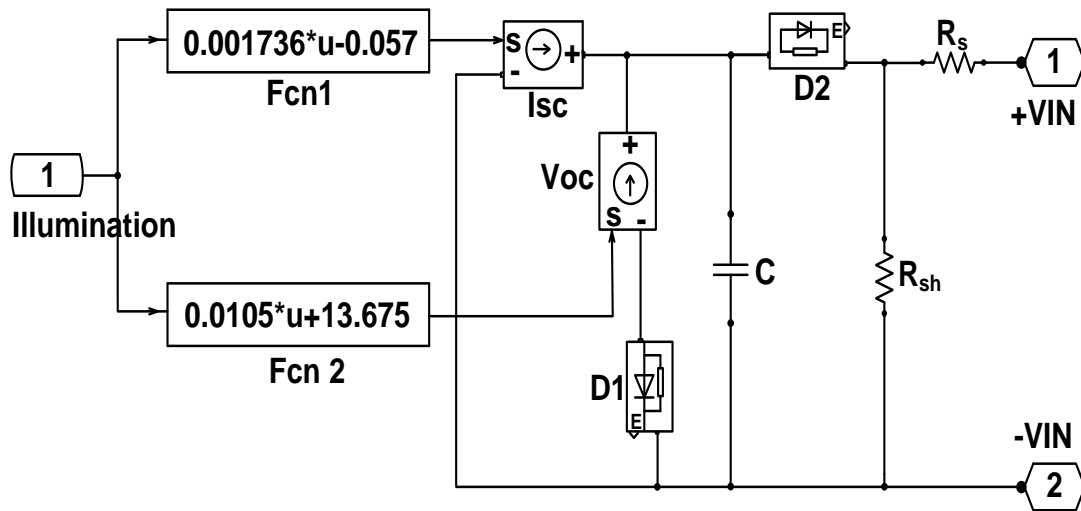


Figure 3. PV Panel Simulation Model

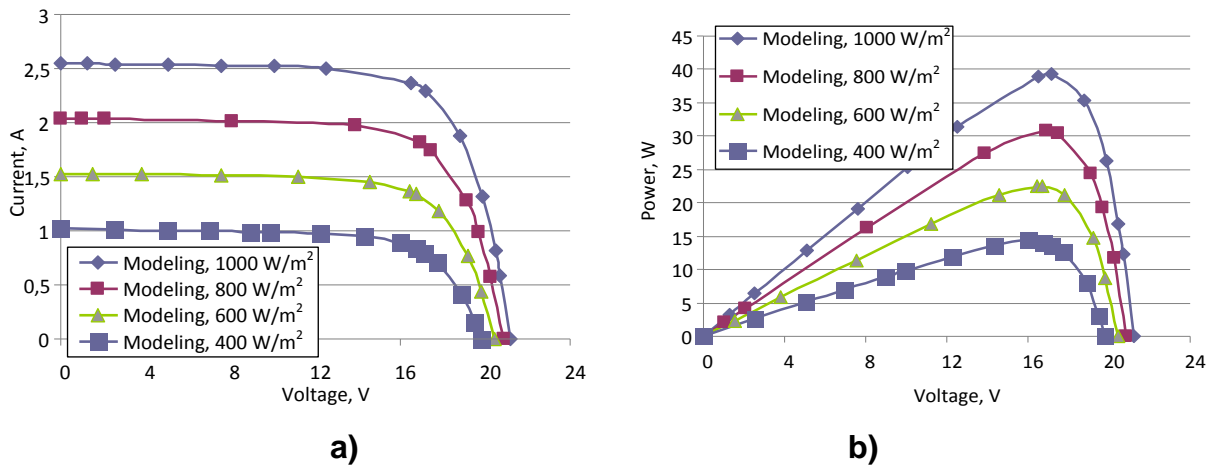


Figure 4. Simulation of I-V curve a) & P-V curve b) of PV module under changing illumination

3.2. MPPT Technique

There are different methods through which the maximum power point in the P-V curve can be obtained. The I-V and P-V characteristics of a PV cell depend upon the solar radiation intensity and temperature [2-5].

By controlling the parameters like current or voltage or both the pinnacle can be obtained. Short Circuit Current (SCC). This method represents an indirect approach, The short circuit current (I_{SC}) technique is based on the measurement of the PV module SCC when its output voltage is equal to zero, and the PV module maximum output current at MPP (I_{MP}), is linearly proportional to (I_{SC}) [1-4]. In order to match the two currents, the error current is used to regulate the duty ratio of DC-DC

converter and the relationship between the PV module output current and SCC at MPP (I_{MP}), which can be described by the following Eq. (13).

$$I_{MPP} = K_I \cdot I_{SC} \quad (13)$$

Where K_I is a constant in the range 0.78-0.92, ($K_I < 1$) that can be calculated from the PV curve [4-8]. The SCC flowchart is shown in Figure 5.

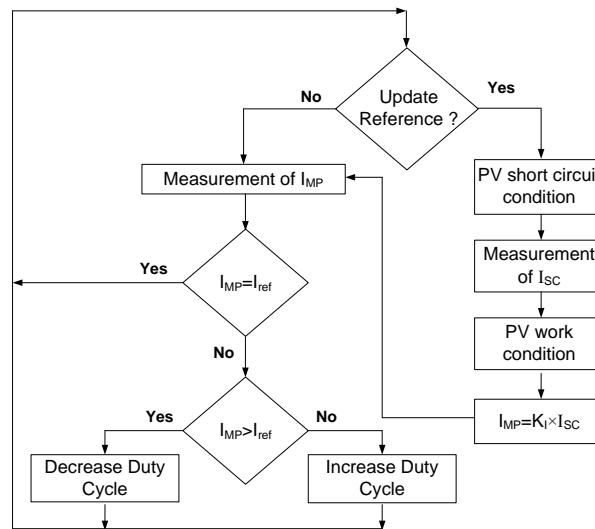


Figure 5. Flow chart of the (SCC) Method

This method has a disadvantage an undeveloped but a rapid technique of tracking the MPP. To track the power, this MPPT technique requires the value of SCC by isolating the PV array. The power output is not only reduced when finding ISC but also because the MPP is never perfectly matched. A way of compensating K_I is proposed such that the MPP is better tracked while atmospheric conditions change. The performance stages of the suggested technique are as follows. It measures the I_{sc} during the start of the MPP tracking. The value of short circuit current is then converted numerically to maximum Power Point current using Eq. (13) [1-4]. After calculating the duty cycle D , the controller reduces the error.

The duty cycle D is used to drive the DC-DC converter and is adopted as the initial point of performance for the constant coefficient of short circuit current. The constant coefficient current method starts tracking the real MPP with very small steps after operating the DC-DC converter at approximated MPP. However, under varying environmental conditions the limit helps the system to Fastly track the MPP [3-10].

3.3. Pulse Width Modulation (PWM)

Pulse width modulation (PWM) is a powerful technique for controlling analog circuits with a processor's digital outputs. The PWM technique is used to control the closing and opening switches. The switching scheme applied is unipolar. The PWM signal is used to control ON/OFF switching state of the IGBTs (insulated-gate bipolar transistor) will function in driver model that created to control the switching scheme. The duty cycle of a square wave is modulated to encode a specific analog signal level by using a higher resolution counter. The benefit of choosing the PWM over analog control increases noise immunity, which the PWM is sometimes used for communication [2, 4, 5, 10]. The system formation of the PWM is shown in figure 6a. And the systematic formation of the Pulse generation is shown in figure 6b.

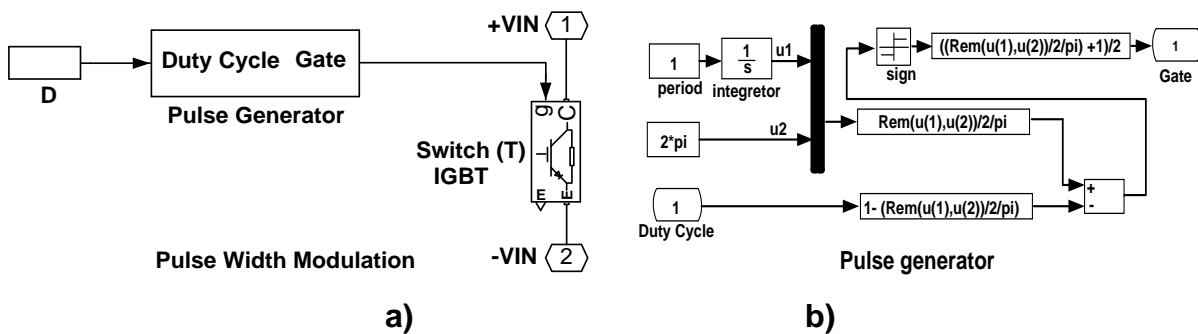


Figure 6. Block Diagram of PWM a) and Pulse Generation b)

3.4. DC-DC Boost Converter

In DC-DC Boost converter output voltage (V_O) is greater than the input voltage (V_{PV}) of boost Converter. Consider a boost type converter connected to a PV module with a resistive load as illustrated in Figure 7.

This Figure shows a step up or the PWM boost converter. It consists of a DC input voltage source V_{pv} ; boost inductor L , controlled switch T , diode D , filter capacitor C , and the load resistance R_L .

Here at the circuit, we can be observed that when the switch S is in the on state (close the switch S), the current in the boost inductor increases linearly and energy is stored in inductor L and the diode D was off at that time of the output RC circuit [3, 8, 9, 10].

When the switch S is in the off state (opens the switch S), the diode D was on at that time the energy which was stored in the inductor is transferred to a resistive

load through diode D and at the same time inductor current will fall. The role of capacitor in the circuit is for producing a continuous output voltage V_O [10].

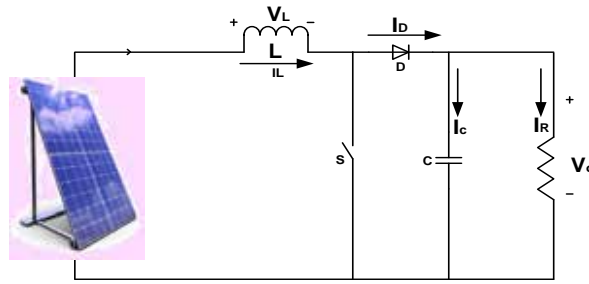


Figure 7. Circuit diagram of DC-DC boost converter

The power switch is responsible for modulating the energy transfer from the input source to the load by varying the duty cycle D [2, 3, 6, 10].

The relation between output voltage and the input voltage (solar cell) is given as the equation (14):

$$\frac{V_O}{V_{PV}} = \frac{I_{PV}}{I_O} = \frac{1}{1-D}. \quad (14)$$

4. Simulation results

Output power of PV unit is strongly depended from the value of the Relative Duty Cycle (D), and for each value of net voltage there is corresponded certain value of PW which provides maximum output power (Fig 7a). With increasing of net voltage the values of Duty Cycle (D) increase too. In the same manner for each value of sunshine illumination there is corresponded certain value of Duty Cycle (D) which provides maximum output power (Fig 7b). With increasing of illumination the optimal Cycle (D) decreases.

Thus the task of control of studying the PV unit consists in finding for each moment of optimal Cycle (D) which correspond to changeable external parameters (illumination and net voltage) for providing maximum output power. The values of optimal Cycle (D) are collected in Table 1.

There are also exist the losses of power due to dissipate energy under transformation (Fig. 8a). They are more with Cycle (D) increasing. But all the same, this loss is repaid through increasing of output power.

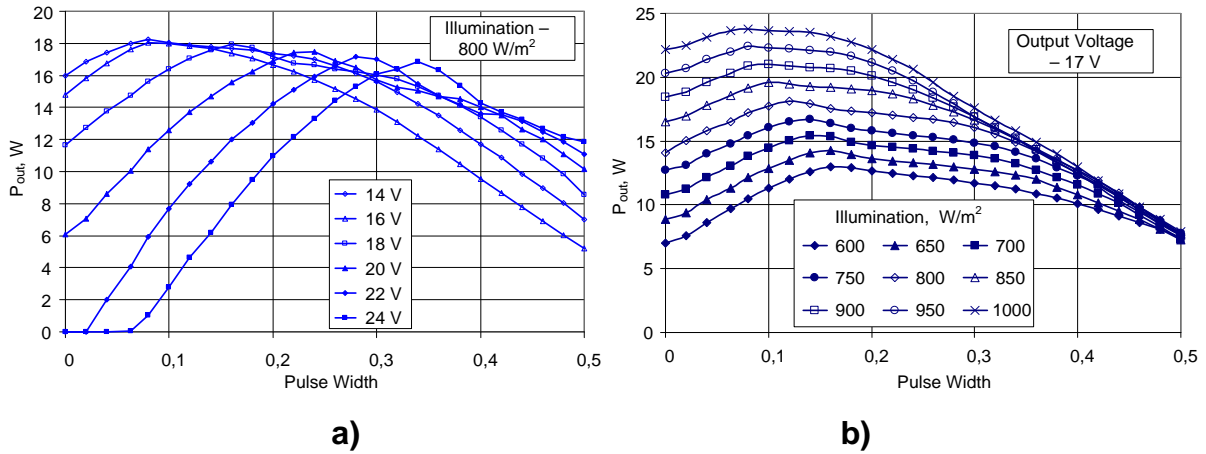


Fig. 7 Output power as function from PW for different net Voltage (a) and different Illumination (b)

Voltage, V	Illumination, W/m ²				
	600	700	800	900	1000
14	0.0001	0.0001	0.0001	0.0001	0.0001
15	0.0001	0.0001	0.0001	0.0001	0.0001
16	0.0001	0.0001	0.0001	0.0001	0.0001
17	0.0001	0.0001	0.0001	0.0001	0.0001
18	0.001	0.0001	0.0001	0.0001	0.0001
19	0.01	0.0001	0.0001	0.0001	0.0001
20	0.11	0.04	0.0001	0.0001	0.0001
21	0.18	0.09	0.001	0.0001	0.0001
22	0.19	0.15	0.05	0.001	0.0001
23	0.22	0.17	0.09	0.05	0.01
24	0.26	0.18	0.12	0.09	0.06
25	0.28	0.19	0.15	0.12	0.09
26	0.29	0.24	0.19	0.16	0.12
27	0.3	0.25	0.21	0.2	0.17
28	0.32	0.28	0.24	0.22	0.19
29	0.34	0.3	0.28	0.24	0.21
30	0.37	0.33	0.3	0.27	0.24

Table 1. Values of optimal Duty Cycle (D) provided maximum output power

Regulator transformation efficiency is shown in (Fig. 8b). It was calculated as the ratio between output and input power for certain external conditions.

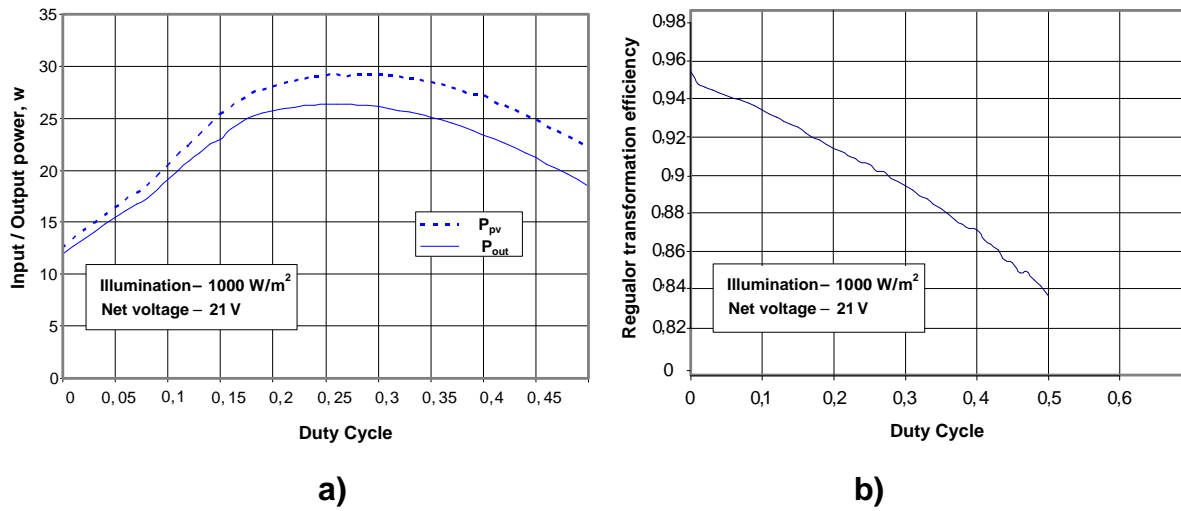


Fig. 8 Input/Output power of regulator (a) and relationship between them (b)

The integrated 3D relationship of optimal Duty Cycle from illumination and net voltage is shown in (Fig. 9a).

The integrated 3D relationship of maximum output power (under optimal D) from illumination and net voltage is shown in (Fig. 9b).

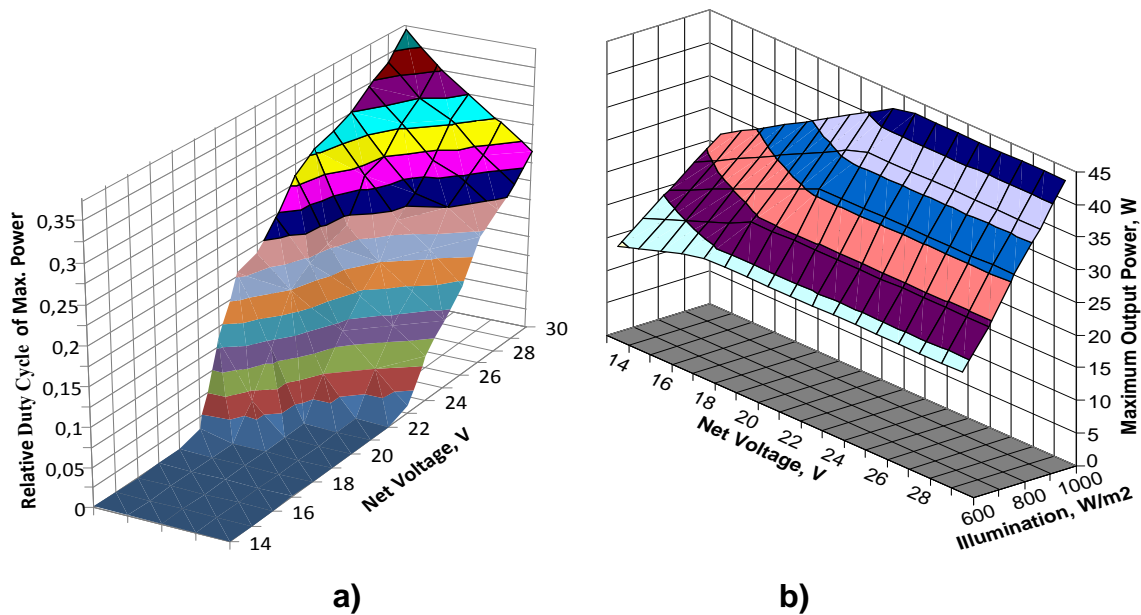


Figure 9. 3D relationship of MP Duty Cycle a) and MP from illumination and net voltage b)

Conclusion

This study presents an energy-efficient, fast-tracking MPPT circuit PV energy reaper. Firstly, it presents the characteristics of the PV system and mathematical model. The maximum power point tracking (MPPT) strategy based on the constant coefficient of the short circuit current method is proposed. The results gained from simulation employing short circuit current approach display the effectiveness of the proposed power tracking and control strategies with quick power tracking response and well direct current output.

However, by using this MPPT method we have increased efficiency. This method computes the maximum power and controls directly the extracted power from the PV. The proposed method offers different advantages which are: good tracking efficiency, response well high and controls for the extracted power.

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Infectious-like Spread of an Agent Leading to Increased Medical Admissions and Deaths in Wigan (England), during 2011 and 2012

ABSTRACT

Aims: To demonstrate infectious-like spread of an agent leading to a period of higher death and medical admissions in the Wigan local authority, part of the greater Manchester area of England, during 2011 and 2012.

Study Design: Longitudinal study of deaths and hospital admissions.

Place and Duration of Study: Deaths (all-cause mortality) for the resident population of Wigan from January 2006 to February 2014. Patients admitted to the Wigan Infirmary, a large acute hospital on the outskirts of Manchester, England, between 2008 and 2013.

Methodology: Running twelve month totals for deaths and medical admissions were used to detect step-like increases in these factors. Additional analysis by age, length of stay and for clusters of persons living in over 40 small areas (called mid super output areas) containing approximately 5,000 population within Wigan and surrounds.

Results: A step-like increase in total deaths can be seen for all-cause mortality in Wigan commencing around February of 2012. Medical admissions to the hospital also show a step-like increase at this point. Deaths and medical admissions remain high for around 15 months before beginning to abate. Infectious-like spread of medical admissions can be observed within 40 small area population groups in Wigan during the period January 2011 to April 2012. Certain medical conditions appear to be affected earlier than others, and the pattern of increased admissions show evidence of saw-tooth behavior with age, which is indicative of 'antigenic original sin' and which has also been demonstrated for deaths in England and Wales during 2012.

Conclusion: The spread of a previously unidentified infectious agent is implicated in the synchronous increases in death (both in- and out-of-hospital) and in medical admissions (some of which result in death). This is not the first occurrence of an outbreak of this agent and urgent research is required to identify both the agent and

clarify its mode of action which appears to be via immune modulation. The ubiquitous herpes virus, cytomegalovirus, which is known to have powerful immune modulating properties, may be involved.

Keywords: emerging infectious diseases; infectious spread; death; medical admissions; age; diagnosis; antigenic original sin; cytomegalovirus; unknown infectious agent; immune function impairment.

ABBREVIATIONS

CI: Confidence Interval; CMV: Cytomegalovirus, an immune modulating herpes virus; ED: Emergency Department; ICD-10: International Classification of Disease, 10th revision; LA: Local Authority; NHS: National Health Service; MSOA: Mid Super Output Area, a collection of OAs containing around 5,000 population; OA: Output area, smallest area to which Census data is aggregated, with around 500 population; ONS: Office for National Statistics.

1. INTRODUCTION

The Wrightington, Wigan & Leigh NHS Foundation Trust (the 'Trust') is a medium sized acute hospital situated in the town of Wigan on the outskirts of Greater Manchester, England. Over 90% of medical admissions are for residents of the Wigan Local Authority (LA). In common with many other parts of the UK during 2012, it experienced an unexpected and unexplained increase in Emergency Department (ED) attendances, medical emergency admissions and consequent bed pressures which coincided with an unexpected and unexplained increase in deaths across England and Wales lasting for around 18 months [1-2]. This was a repeat of similar unexplained increases in deaths which peaked in 2003 and 2008 [3]. On all three occasions deaths showed distinct spatiotemporal spread across the whole of the UK [4-6] and are highly age, gender and condition specific [7-9]. While the peaks in death are the same magnitude as a large influenza epidemic, unusual levels of influenza were absent and no adequate explanation has ever been given.

In 2010, a report by the Nuffield Trust [10] had suggested that such increases may partly be due to a lowering of the acute threshold to admission especially for very short stay admissions. The increase in short stay admissions in England coincided with the introduction of the 4 hour target for ED waiting time in 2001 and

involved the convergence of two developments. The first was the introduction of specialist assessment units in pediatrics, surgery and medicine where patients were admitted directly into a focused assessment and treatment environment that was part of emerging good practice. These developments collided with the introduction of the 4 hour target where, in some instances, it became easier to 'admit patients to assessment units to avoid breaching the target [11-14]. Hence the trend in same day stay 'admissions identified in the Nuffield Trust report were not deliberate acts of lowering the acute threshold *per se* but rather due to the difficulty of aligning the NHS data definitions and the HRG tariff during a period of rapid change [15-16]. However, while such factors distort the national picture, at a local level they become less significant as soon as a relative stable admission process is in place, and this was the case in the Trust at the time of this analysis.

Other analysis of the trends in emergency admissions has determined that such sudden and unexpected increases have occurred previously, and are specific to the medical specialties. They are marked by a set of diagnoses which appear to be immune sensitive, increase with age, have a degree of gender specificity, occur simultaneously with an increase in deaths, GP referral, ED attendance (along with a sudden change in arriving case-mix) and medical bed demand, and occur across the whole of the UK and in other Western countries [17-38]. More curiously they are also associated with a cycle in the gender ratio at birth [39]. Recent reviews of the available studies have suggested that these events could be due to infectious outbreaks involving the herpes virus, cytomegalovirus (CMV). This virus has a formidable array of powerful immune modifying strategies which have been implicated in autoimmune diseases, cardiovascular disease, certain cancers, hospitalization and death [see reviews 40-42].

With respect to the observed trends, it has been noted that deaths in England and Wales unexpectedly increased around February of 2012 and continued at this higher level to around June 2013 after which they reverted back to the more usual levels [1-3]. This increase did however show high granularity with East Cambridgeshire (East of England) showing a 14% reduction (2012 vs 2011) through to a 21% increase in Bromsgrove (West Midlands) [2]. The position with respect to an increase in all-cause mortality in Wigan and surrounding LA's is given in Table 1 and suggests that Wigan and several (but not all) adjacent LA's were a local 'hot

spot, especially for the 80+ age group, i.e. where the infectious-like event had an early rather than later initiation [2-3].

Table 1. Change in deaths between 2011 and 2012 calendar years in Wigan and surrounding Local Authorities

Local authority	Age 65+	Age 80+
Warrington	10%	13
Chorley	4%	12
Manchester	4%	10
Wigan	8%	8%
Salford	7%	7%
Blackburn with Darwen	7%	7%
St Helens	5%	5%
West Lancashire	-2%	4%
Bolton	4%	0%
South Ribble	-2%	-2%

In England, census and other data are aggregated at output area (OA) level. Each OA contains roughly 500 head of population of the same social group and is then aggregated up to progressively larger geographies. Aggregation to what is called a Mid Super Output Area (MSOA), which contains around 5,000 head of population, has sufficient emergency medical admissions to conduct statistically robust analysis of trends over long time periods. In an attempt to resolve the issue as to whether we are dealing with a hospital admission threshold phenomena or a new type of infectious outbreak, this study will investigate the timing and extent of increase in emergency medical admissions within the hospital catchment population at MSOA level over the period 2011 to 2013. This is an extension of previous work analyzing small area infectious-like spread following the 2008 event in the North East Essex area of England [43].

2. MATERIALS AND METHODS

Monthly counts of deaths (all-cause mortality) from January 2006 to February 2014 for the residents of the Wigan Local Authority area were obtained from the Office for National Statistics (ONS). Daily data for emergency admission to the assessment unit and to the medical group of specialties (general and elderly medicine, gastroenterology, hematology, rheumatology, oncology, respiratory medicine, nephrology, endocrinology, rehabilitation), were obtained as part of a review of medical bed requirements at the Trust and are used with permission. Admissions did not contain any patient identifiable information, and contained date of admission, age at admission

(whole years), MSOA code, length of stay of the entire inpatient period and the admitting diagnosis as coded using the International Classification of Disease (ICD) 3-digit code. Distance of each MSOA to the hospital site in Wigan was calculated as straight line distance. Data for hospital admissions does not extend beyond March 2013.

All trends were analyzed using running 365 day or 12 month sums. This method is particularly suited to identifying the initiation point for a sudden step-like increase in activity which would arise from an infectious outbreak involving a persistent agent or from a step increase in admissions due to a reduction in admission threshold. The method is also particularly suited to the analysis of data which contains seasonal patterns since the running 12 month sum removes the underlying month-of-the-year patterns allowing comparison to be made between a time-series of 12 month totals. To determine the point of onset and value of any step-like change comparison is made between two successive 12 month periods, i.e. January to December 2012 versus January to December 2013. This process move forward one month at a time until the maximum percentage difference is reached and a visual check is performed that the end of a 12 month long ramp has been identified.

The potential contribution from Poisson variation to the value of any step-change was evaluated using Monte Carlo simulation for the ratio of two Poisson distributions, i.e. the likelihood of a change in a running 12 month total arising from chance. The 97.5% confidence Interval (CI) was calculated with 200,000 trials using Oracle Crystal Ball for an annual total (N) of between 100 and 700 in increments of 100. The resulting 7 values were plotted using Microsoft Excel and follow a power function where $97.5\% \text{ CI} = (1.965 \times N^{-0.0891}) - 1$. This equation was then used to calculate the 97.5% CI associated with the step-increase observed in the various locations. Given the fact that a Poisson distribution becomes less skewed at higher numbers, when $N > 1,000$ then the $97.5\% \text{ CI} = 2.7 \times n^{-0.5}$ [43].

3. RESULTS AND DISCUSSION

While deaths in the UK have been observed to peak in the 2003, 2008 and 2012 calendar years it is recognized that this is part of a far wider spatiotemporal spread in deaths which generally commences earlier in Scotland than England [1-6], although within England there are a range of initiation dates at LA level which overlap

with Scotland. For consistency these infectious-like events will be referred to by the calendar year in which deaths reach their peak across the whole of the UK. Up to the present international monitoring of increased death has largely focused on the winter months when seasonal influenza and other winter respiratory infections typically lead to spike increases in death and methods have been developed to detect such spike events [1]. However it has been consistently noted that these outbreaks lead to semi-permanent step-like increase in deaths and medical admissions [1-4,17-25] and a method suited to detecting step-like increases therefore needs to be employed. In a running 12 month sum, the point of initiation of a step-like increase is seen at the base of a 12 month long ramp. A running 12 month total trend for deaths (all ages) in Wigan is presented in Fig. 1 where the increase in deaths associated with the 2008 and 2012 events can be seen. The full extent of the increase is seen at the point 12 month after the start. If the step-like increase continues for more than 12 months then a plateau will follow as can be observed in Fig. 1. Hence at LA level the 2012 event appears to initiate for the *whole* of Wigan around February 2012 and endures for 15 months while the 2008 event initiates around January 2007 and endures for around 16 months. In Wigan the 2008 event therefore appears to initiate earlier than the UK average (more in line with Scotland), and appears to result in more deaths than the 2012 event (difference between peak and trough around April 2009).

The somewhat intermediate behavior in the running 12 month sum from March 2010 to November 2011 arises from the 2009 'swine flu' epidemic which concluded around August 2010 and from a 'bad winter period' around December 2010 and January 2011. Such spike-like events create a plateau (rather than a ramp) in a running 12 month total. There are alternative methods which are more suited to analyzing such spike-like events/outbreaks [1-2]. However, note that there is no 12 month long ramp to indicate a step-like feature; that these intermediate effects have cleared away before the onset of the 2008 event, and that the 2009 influenza epidemic failed to increase deaths to the level seen in the 2008 and 2012 events, i.e. we are dealing with recurring events of high public health significance. Similar intermediate behavior is seen in some of the following figures, and Fig. 1 therefore provides a useful context. In this respect Fig. 2 shows the running 12 month trend in admissions and deaths experienced at the local hospital during this time.

Both admissions and in-hospital deaths commence the step-like increase around February 2012, although the shape of the running sum chart is different to that for all-cause mortality Fig. 1 since in-hospital deaths only account for roughly 50% of

all deaths in the UK and will tend to be associated with acute medical conditions/diagnoses. The main point from Fig. 2 is that medical admissions rise almost in parallel to admissions leading to in-hospital death, i.e. the hospital standardized mortality rate is largely unaffected except perhaps very early in the outbreak (February to April 2012) and later (December 2012 to March 2013) when deaths rise faster than admissions. Reasons for this disparity will be discussed later but appear to be related to a time cascade in diagnosis/conditions emanating out of the outbreak.

Having established that the increase in deaths and medical admissions are linked, it is useful to study the trends in admissions in the 40 MSOA which comprise the Wigan LA area. In the past it has been assumed that these step increases are due to hospital-based reductions in the threshold to admission, a proposal which cannot explain the simultaneous increase in deaths, nor the apparent related cycle in the gender ratio at birth. However if this were the case, then admissions would simultaneously rise in all small areas surrounding the hospital. A preliminary comparison of admissions in 2012/13 versus 2011/12 indicated that there was no evidence for a simultaneous jump in admissions, nor any relationship between distance from the hospital, i.e. residents living close to the hospital using the ED as an alternative to primary care, and that there were no length of stay specific issues, i.e. the increase was not due to a change in the use of the assessment unit.

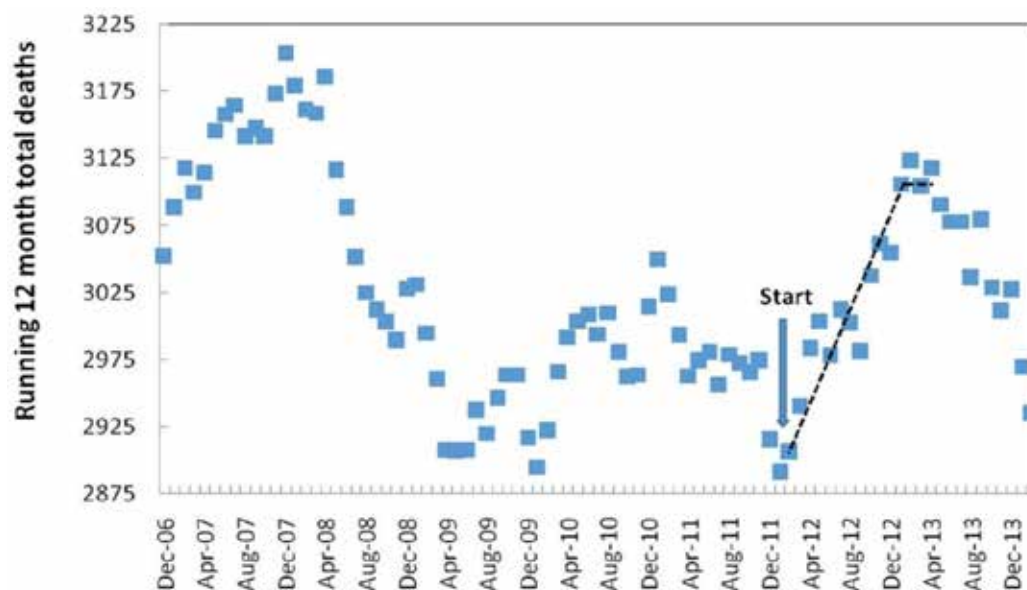


Fig. 1. Running 12 month sum of deaths (all-cause mortality) for residents of Wigan

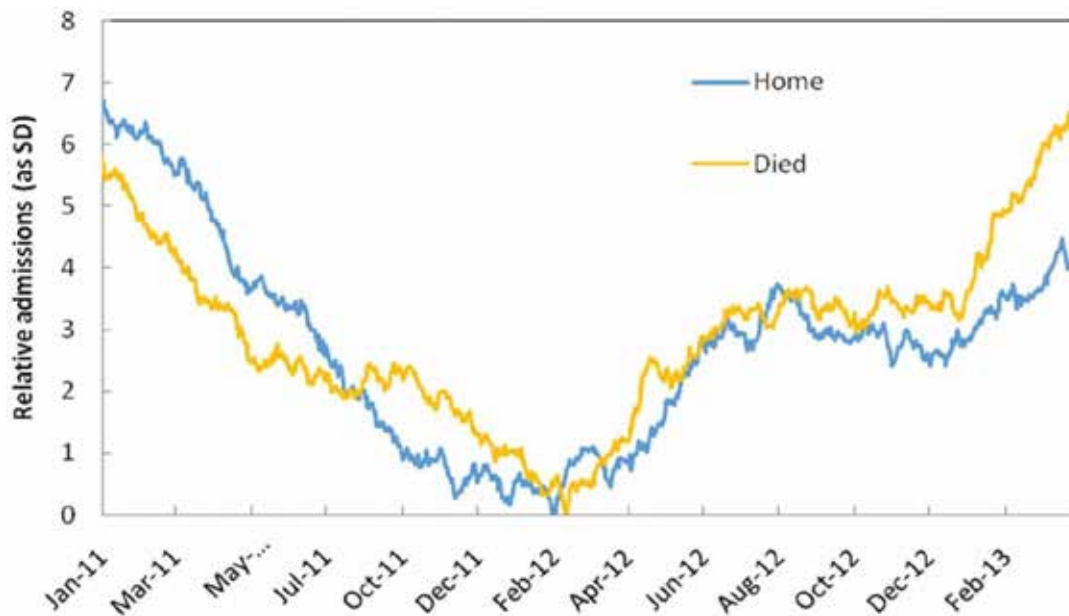


Fig. 2. Trend in the running 365 day total of admissions by destination at discharge

Admissions are a running 365 day total and are relative to the minimum over the period. The difference to the minimum point has been calculated as standard deviations equivalent assuming Poisson statistics where, by definition, one standard deviation equals the square root of the average. On this occasion the average is taken to be the running 365 day minimum number of admissions or deaths which occurs around January 2012

The change in admissions ranged from -14% for MSOA Wigan 016 (5.1 km from the hospital) through to +16% in Wigan 002 (3.4 km from the hospital). The trend in each MSOA was then evaluated to determine the onset of a step-like increase in admissions and the percentage increase in admissions. Due to the way in which the step-like increase is determined an initiation date of, say Jan-12, implies that the step increase occurs toward the end of the month or even very early in the next month. These results are presented in Table 2 where it can be seen that there are a range of initiation dates commencing in January 2011 through to June 2012. This wide range in initiation dates is highly reminiscent of an infectious spread and it would be very difficult to explain why there should be a series of step-like increases other than from an infectious event. The apparent initiation date around (late) January 2012 for the whole of Wigan is driven by the cluster of 10 MSOA initiating at that time and a balancing effect between other MSOA initiating before and after this pivot point. Indeed the very fact that the hospital and the LA experienced a sudden

(and otherwise unexplained) 14% increase in medical admissions is an unprecedented event, especially when this increase then persists for 15 to 18 months.

Poisson statistics describes the random variation around the average for whole number events such as deaths or admissions. The 97.5% confidence interval (CI) shown in Table 1 has been calculated assuming Poisson randomness, i.e. to what extent could a calculated percentage change be influenced by chance. The 97.5% CI has been used to give a slightly higher level of confidence over the usual 95% CI used in many studies. As is expected, those MSOA with higher number of admissions have a much tighter CI and chance can be excluded as a major contributing factor.

Fig. 3 presents running total trends for a sample of MSOA. Points to note are the variable trends downward from the previous winter which will presumably be due to a range of winter respiratory viruses and knock-on bacterial infections. All MSOA exhibit the highly granular effects that would be expected of any infectious event. The size of this previous winter event in each MSOA does not appear to be linked to the size of the 2008 event, i.e. these events are independent. However from a separate study of deaths in English LA's, there is some evidence to suggest that the size of the 2008 and 2012 events may be linked in that LA's experiencing a large increase during the 2008 event show a lesser increase for the 2012 event and vice versa [6]. This is suggestive of some form of linkage perhaps via the death of sensitive individuals.

Up to the present, demographic change (population ageing), has been assumed to be the main driver of hospital admissions. However based on a twenty year career in health care forecasting, the link with demography regarding the medical group of specialties is exceedingly tenuous and other factors appear to play a far greater role. As has been demonstrated the above patterns cannot be explained by hospital threshold to admission, since the behavior depends on location within the hospital catchment rather than the hospital *per se*. Weather and other environmental phenomena can likewise be discounted since all MSOA in Wigan will experience roughly the same weather. Likewise changes in the composition of the population simply do not happen in the sudden step-wise manner demonstrated in this study. The fact that the trend lines for patients discharged home or died in Fig. 2 are roughly parallel is another indicator that whatever is happening is not due to a change in the threshold to admission. If the threshold to admission had reduced then less acutely ill

patients would be admitted and the line for discharged home in Fig. 2 would rise more rapidly than that for deaths.

**Table 2. Initiation date and percent increase in admissions
(with confidence interval)
to a variety of MSOA**

Location	Initiation	Increase	97.5%	Admissions in 2012/13
Wigan 012	Jan-11	14%	11%	587
Wigan 004	Feb-11	17%	16%	355
St Helens	Feb-11	49%	19%	289
Wigan 028/029	Feb-11	16%	28%	120
Other nearby LA	May-11	23%	20%	244
Wigan 019	Jul-11	27%	15%	396
Wigan 026	Jul-11	41%	15%	398
Wigan 030	Jul-11	33%	18%	292
Wigan 023	Aug-11	27%	28%	119
Not Known	Sep-11	20%	9%	718
Wigan 024	Sep-11	30%	13%	502
Wigan 036	Sep-11	10%	13%	517
Wigan 021	Sep-11	17%	15%	424
Wigan 033	Oct-11	35%	12%	539
Wigan 032	Oct-11	24%	14%	471
Wigan 039	Oct-11	21%	17%	331
Wigan 007	Nov-11	60%	17%	351
Wigan 040	Nov-11	66%	16%	366
Wigan 003	Dec-11	42%	13%	485
Wigan 006	Dec-11	48%	13%	476
Wigan 011	Dec-11	37%	13%	486
Wigan 005	Dec-11	14%	14%	462
Wigan 020	Dec-11	20%	14%	434
Wigan 037	Dec-11	39%	18%	313
West Lancashire	Jan-12	32%	10%	698
All Locations	Jan-12	14%	1%	18,928
Wigan 015	Jan-12	11%	8%	811
Wigan 010	Jan-12	27%	9%	739
Wigan 009	Jan-12	19%	8%	795
Wigan 014	Jan-12	37%	11%	612
Wigan 031	Jan-12	57%	12%	577
Wigan 008	Jan-12	15%	14%	450
Wigan 002	Jan-12	40%	13%	482
Wigan 038	Jan-12	13%	14%	443
Wigan 001	Jan-12	39%	20%	260
Wigan 013	Feb-12	15%	12%	561
Wigan 027	Mar-12	21%	13%	481

Table 2 Continued....

Wigan 017	Apr-12	42%	26%	148
Other England	Jun-12	11%	25%	162
Wigan 034	No Increase	n/a	17%	341
Wigan 035	No increase	n/a	15%	425
Wigan 018	No increase	n/a	12%	552
Wigan 016	No Increase	n/a	13%	519

Admissions in 2012/13 are given as an indication of the relative size of each MSOA.

Smaller MSOA

will have a larger confidence interval and vice versa. The confidence interval is calculated based on the number of admissions in the 12 months prior to the step-like change. The 'Other nearby LA group excludes St Helens. Wigan 028 and 029, which are adjacent, were aggregated due to small numbers of admissions. The four MSOA at the bottom of the table labelled 'no increase' had not shown any apparent increase within the study period. Initiation at a later date is possible



Fig. 3. Running 365 day total trends for medical admissions from a variety of MSOA

Note that infectious events prior to this outbreak have ceased to affect the running 12 month total before the start of 2102, and on this occasion allows a clear view of the outbreak, the onset of which occurs at the foot of the ramp seen in each MSOA. The somewhat jagged nature of the trends is due in part of Poisson randomness and the presence or absence of other events influencing admissions.

However on this occasion the contribution from other events are of far less consequence than the particular outbreak of interest

While the apparent increase in deaths occurred around February 2012 in England and Wales, this is known to be part of a wider spread with the increase in deaths commencing first in Scotland as early as August 2011 in the Fife Area Health Board (a large geographic area) [5] and this appears to concur with the earliest onset in Wigan at around January/February 2011 in a minority of MSOA as shown in Table 2. The apparent increase for the whole hospital catchment area does not occur until January 2012, and a similar dispersion in timing will also be occurring in the larger Fife location in Scotland. Such spread is consistent with the transmission of epidemics via the movement of travelers (air, rail, motorway) followed by the movement of individuals within social networks at local small area level [44-45]. Note that emergency medical admissions (at least for some diagnoses) are a leading indicator of these outbreaks while deaths can lag up to a month behind [5]. Earliest introduction for Scotland and hence parts of the wider UK is probably somewhere around the start of 2011. Note also the generally later date for admissions from the rest of England, "Other England" in Table 2, who will be people on business, holidays or visiting family which are mainly from more southern locations and is indicative of a degree of north to south spread but with isolated pockets of earlier initiation [6].

It is the particular nature of the spatial spread of this infectious agent which gives a clue as to why it has remained undetected for so long. National trends in mortality are usually conducted at LA level for the simple reason that the number of deaths becomes too small for meaningful analysis at sub-LA geographies. A comparison of Fig. 1 (LA-level) and Table 2 and Fig. 3 (both at sub-LA level) reveals how the impact upon death is greatly under-estimated at LA-level. What is seen at LA-level is a composite picture of complex small area spread within each LA. Early initiation in a number of small areas, i.e. the MSOA in the top half of Table 2 pull the base line for the whole LA upward, and the running total for the LA only shows a 7.5% apparent increase in deaths which is far lower than the 8% to 66% (range) increase in admissions seen at MSOA level. Admittedly the link between increased deaths and medical admissions may not be a direct relationship, however the very high granularity at small area, both in terms of initiation date and percentage change, shows how the full extent of each outbreak has been concealed. The extent of concealment will be even greater when using data aggregated at national level [6].

Something similar to an influenza or SARS outbreak can be discounted, since such outbreaks usually last between 8 to 12 weeks and therefore in a running 12 month

total chart do not create the 12 month long ramp indicative of the semi-permanent step-increase as demonstrated in this study. The fact that the step-increase endures for 12 months or more is illustrated by the line for Wigan 003 in Fig. 3 where the increase is subsequently maintained from November 2012 through to March 2013, i.e. it has endured at least 17 months. This rise followed by an eventual decline with timing differences between local areas is, what is known in disease epidemic terms, as a travelling wave with spatial hierarchies [46-47].

Analysis of the change in admissions for patients with different length of stay in hospital is suggestive of different phases of an infectious outbreak. First to die are those who are already extremely frail, deteriorate rapidly and die within 24 hours of admission to hospital (data not shown). One month later deaths rise in those with 6-14 day stays and are probably frail but not excessively so, develop exacerbation of existing conditions and die after a moderate period of acute care. That deaths after a 2-5 day stay increase in December is probably a reflection of a subset of the population who experience weakening after 8 to 9 months of exposure and acute illness with death is then triggered by the following winter. This concept was incorporated into the modelling work of Dushoff [48] where the acquisition of the first infection leads to immune weakening with higher likelihood of acquiring a second opportunistic infection after a particular time lag. Whatever the explanation, we are not dealing with a phenomenon that can be explained in simplistic terms of admission thresholds.

A further key observation is the fact that emergency medical admissions are trending downward in the period prior to the proposed infectious outbreak which is contrary to the generally perceived role of the ageing population as the principle driver of ever increasing medical admissions. Such an upward and downward cycle has been demonstrated to be a part of these outbreaks, and indeed is a fundamental part of a cycle of surplus and deficit seen within the NHS in the UK and in the private health insurance industry in the USA over many years [26,31, see review 49].

Having established infectious-like spread at small area level within the larger LA, it is of interest to see if age and diagnosis play a role in these events. Analysis of deaths in England & Wales associated with the 2012 event, has already demonstrated single-year-of-age saw-tooth patterns reminiscent of what is called 'antigenic original sin, i.e. the consequences of the immune priming effects of repeat exposure to a series of different strains of the same agent [3]. In this respect Fig. 4 presents an

analysis of the effect of age upon the difference in admissions for twelve month periods before and after the event.

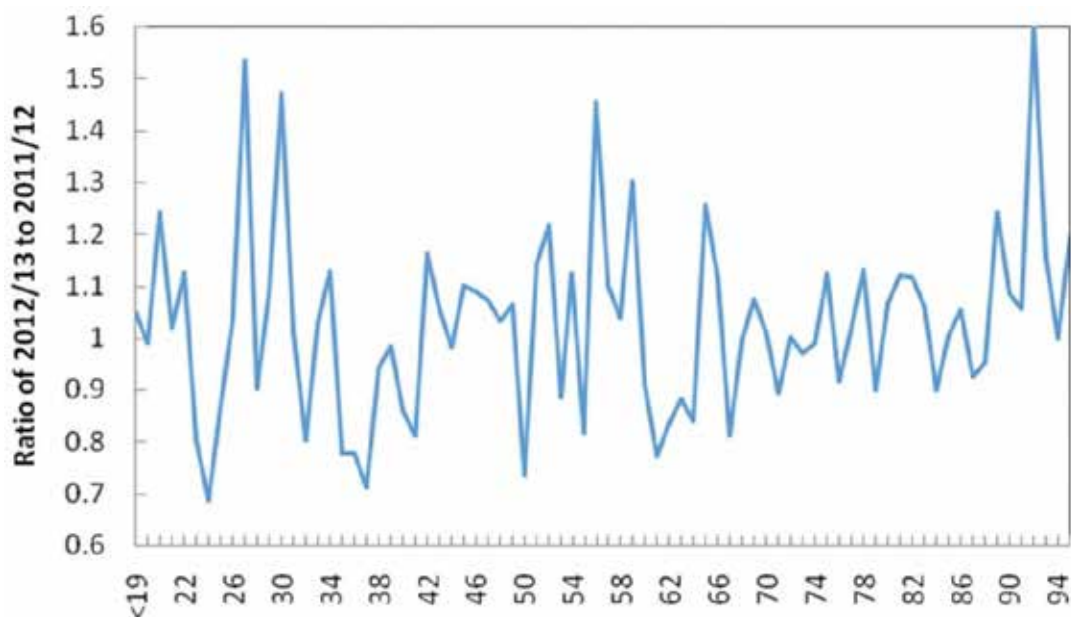


Fig. 4. Ratio of medical admissions in 2012/13 versus 2011/12 by single-year-of-age

Comparison of two twelve month periods is necessary to achieve statistically significant total admissions for each single year of age

As can be seen, the characteristic saw-tooth patterns are evident for medical admissions in Wigan as have been observed for deaths in England & Wales during the 2012 event [3] and for medical admissions in North East Essex during the 2008 event [43]. The implication is that the infectious events are due to different strains of the same agent, and that an immune response is involved. A further clue to immune involvement is given in Table 3 where a time cascade in diagnoses appears to be associated with the infectious-like event.

The possibility of a disease cascade following these outbreaks has already been suggested from a study of increased GP referrals associated with the 2008 outbreak and of outpatient attendance for specific dermatological conditions [32,34,36-37]. Another study also suggests that the 2012 event led to a shift in outpatient case-mix toward immune sensitive conditions [50] while admissions for the more aggressive forms of tuberculosis appear to lag some three years behind these outbreaks [51]. Based on a match with the diagnoses which increase during these outbreaks and are associated with increased death, the herpes virus cytomegalovirus (CMV) has been suggested as a possible causative agent [4,7-9,40-42]. This virus possesses a formidable array of immune evasive and modulating strategies which are implicated

in hospitalization and death [40-42,52-53]. In the USA a set of CMV-sensitive cancers appear to show a cycle of incidence induced by these outbreaks [54].

Table 3. Initiation date and percent increase in admissions for diagnoses associated with the infectious-like event

ICD	Description	Initiation	Increase
K92	Other diseases of digestive system	Jan-11	39%
834	Viral infection of unspecified site	Jan-11	115%
I21	Acute myocardial infarction	Jul-11	68%
K80	Cholelithiasis	Sep-11	22%
O23	Genitourinary infections in pregnancy	Sep-11	50%
K59	Other functional intestinal disorders	Nov-11	42%
T81	Complications of procedures NEC	Feb-12	24%
J18	Pneumonia organism unspecified	Mar-12	41%
L03	Cellulitis	Mar-12	23%
O26	Pregnancy related conditions	Apr-12	12%
J45	Asthma	Apr-12	14%
R06	Abnormalities of breathing	Apr-12	16%
S01	Open wound of head	Apr-12	14%
O68	Labor complicated by fetal stress	May-12	19%
R10	Abdominal and pelvic pain	Jun-12	30%

Analysis at the level of a single diagnosis is generally hampered by small numbers. Further studies on the possibility of disease cascades will need to cluster MSOA with the same initiation point to amplify the exact nature of the cascade

With respect to the issue of CMV, Table 3 is illuminating, since it encompasses a range of conditions known to be CMV sensitive [40-42,53]. The disease cascade is initiated with admissions for an unknown virus and/or non-specific gastrointestinal problems around January of 2011 and CMV-mediated vomiting, diarrhea, enteritis, colitis and inflammatory bowel disease is well recognized [53,55-57] as is the role of CMV in cardiovascular disease [58-59] and fatal myocarditis [60]. The cluster of respiratory conditions around March/April 2012 is also consistent with the lung as a major source of CMV infection [9,61] as is the role of CMV in allergic asthma [62]. The issues relating to pregnancy are likewise expected given a cycle in the gender ratio at birth which appears to accompany these outbreaks [39] and the well-recognized role of CMV in infection and complications during pregnancy [63-64]. The female genito-urinary tract is a well-known locus for CMV infection [64-65]. Such a progression of different diseases could be indicative of sites of direct infection and/or hastening of particular conditions via immune mediated effects against inflammation and auto-immunity [40-42]. An increase in admissions for 'open wound of head (ICD S01) is indicative of a by-stander condition. This diagnosis is part of a wider cluster of upper

torso injuries and fractures (unpublished), suggestive of increased falls among the elderly due either to the clumsiness associated with a generally higher level of illness during an infectious outbreak, or to giddiness which would link to the neurological aspects of CMV infection [8,40-42,53]. The apparent time cascade in conditions presented here is similar to those seen in North East Essex after the previous 2008 outbreak [43]. While the direct link with CMV awaits confirming studies, it would appear that a disease cascade could be a characteristic feature of these outbreaks.

More detailed analysis of cause of death has not been conducted in this study simply because the numbers are too small for statistically meaningful conclusions. However, several recent studies have been conducted on the increase in deaths during 2012 for the whole of England and Wales. Notable increases in death for those suffering from neurodegenerative diseases (mainly dementia, Alzheimer's and Parkinson's) and for respiratory conditions [8-9] have been characterized. A paper investigating increased digestive system deaths is currently in preparation. In all cases the conditions/diagnoses associated with increased death appear to be sensitive to CMV-mediated exacerbation.

This study raises important questions regarding the hidden assumptions behind age standardization of admission rates and hospital mortality rates. Almost all age standardization used in health care employs five year age bands, and it is assumed that there is no hidden spatiotemporal spread of an agent capable of influencing medical admissions and deaths to the extent demonstrated here. The author has noted that particular hospitals in England were temporarily flagged as showing 'high death rates for pneumonia during the 2012 event. It has been suggested that the unique spatiotemporal pattern of spread for this outbreak arises from some form of respiratory phase which enables the very rapid local spread seen in the step-like increases [9,43]. Since pneumonia is one of the most common causes of in-hospital death, the highly granular nature of the spread across the UK combined with the single-year-of-age saw-tooth nature of the increase will invalidate the assumptions lying behind age standardization of hospital mortality and the seemingly sporadic flagging of hospitals will result, especially for pneumonia. Indeed it was such sporadic flagging of apparent excess mortality at this hospital, which has an otherwise exemplary record, along with the accompanying increase in medical bed occupancy which gave the impetus for this study. Given the link between marginal changes in death and medical admissions seen in Fig. 2 and demonstrated elsewhere [33,66],

this work also raises questions regarding the hidden assumptions contained in the NHS (England) funding formula [67].

As with any study there are several limitations worthy of comment. The use of a running 12 month sum is adequate for the detection of a step-like change in admissions and deaths, however, future studies will need to employ a range of alternative methods to further characterize the spread of this agent and strip out any simultaneous contribution from temperature changes and/or other infectious outbreaks which may overlap with the 12 to 18 month period in which admissions and deaths remain high. At the present CMV is not a notifiable infection and detailed studies will be required to determine, if and how, this agent is involved. If a new strain is implicated then both genetic and viral surface glycoprotein changes could be implicated, and this will necessitate appropriate methods over and above the usual measurement of anti-CMV IgG and IgM levels in blood.

It is probably apposite to ask why it has taken so long to recognize the existence of these infectious-like outbreaks. Unusual events such as these are not new. In 1969 the Western Infirmary in Glasgow reported a 27% increase in medical admissions in the six months August 1969 to January 1970 compared to the same period a year earlier [68]. A similar large increase also seems to have occurred in Scotland in late 1984 or early 1985 [69]. In the financial year 1993/94 emergency admissions across England had increased by 7 to 13% compared to 1992/93 [70-71]. At the Aintree hospital in Liverpool there was a 37% increase in medical admissions with an unexpected large increase in the 15 to 44 age group, while in nearby Manchester admissions to one mental health hospital increased by >30% [70]. Parallel increases in medical and mental health admissions were replicated across the whole of England, and medical admissions at the Royal Berkshire Hospital increased unexpectedly by 13% commencing in the middle of March 1993 [72] as did the number of occupied medical beds [73]. Events such as these are usually dismissed as having little relevance to present day changes and pressures in the NHS. Unfortunately in the absence of the knowledge of infectious-like spread, a host of studies into these events assumed that the 'problem was due to a mix of social change and the inability of health service organizations to manage demand [74-77]. While such factors are important in the correct context, they do not lead to large step-like increases in emergency admission, however, such thinking had become so entrenched, that all rises in emergency admission are interpreted from that framework.

Hence the report by the Nuffield Trust suggested that increases in emergency admissions between 2004/05 and 2008/09 were largely due to a reduction in admission thresholds [10]. However, this (unproved) assumption contradicted the conclusions from two earlier studies. In the first, research in the USA had demonstrated that acute admission thresholds are maintained despite considerable fluctuation in demand [78], while in the second it was suggested that emergency medical admissions only ever rose in sudden spurts [19-20], as per the reports cited above [68-71]. Indeed the data presented in the Nuffield Trust report shows evidence for one such spurt of growth at the end of the study period although the significance of this seemed to have been overlooked, but was noted by others [79]. Given the evidence presented in this study, it would seem that preconceived notions may need to be re-evaluated.

These are initial studies conducted in an attempt to explain an otherwise poorly understood phenomena. The results need to be confirmed over wider geographies, and a continuous study over the period 2000 to present would be useful to identify both the 2003, 2008 and 2012 events. Given that it is far easier to demonstrate statistical significance in MSOA with >300 admissions per annum, the aggregation of MSOA with a common initiation date will assist in such studies although this criteria is more readily met in more densely populated urban areas. Such aggregation will further facilitate analysis of cause of death and possible time cascades in both admission and death. It has also been suggested that an outbreak of this agent earlier in the year acts to potentiate the effect of seasonal influenza during the following winter [17-18,43]. This preliminary study will hopefully stimulate further research.

4. CONCLUSION

Evidence has been presented to show unique spatial behavior within Wigan leading to increased emergency admissions at the time that deaths were observed to increase at a local and national level. Acute admission threshold changes can be categorically ruled out as the cause. The cause of the increase shows small area spread, and the characteristic saw-tooth pattern of change in admissions with age is suggestive of antigenic original sin. At the very least, emergency admissions are defying all known models relating to supposed demographic change. The unusual trends seen at larger geographies such as primary care organizations, acute hospitals, regions, state and whole country, are the composite of the small area spatiotemporal trends. Infectious spread of an unrecognized agent is a likely cause and requires

further urgent investigation. The ubiquitous herpes virus, cytomegalovirus, could be involved but this requires further study.

CONSENT AND ETHICAL APPROVAL

Patient consent was not required. Ethical approval was not required. No patient identifiable data was used in this study.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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Public Health Informatics: A Brief Review of the Field

ABSTRACT

In the global community of today, the importance of accessing timely and relevant information has increased in value. However, with the exponential increase in data and data sources, innovations to monitor, control, and effectively manipulate data are required, especially to resolve current mysteries. In addition, with the sophistication of informatics systems, consumers are becoming curious to learn about the technology for their own benefit. In learning information technology, tools become available that gives the consumers ideas and knowledge in conducting research about their health and other health information data. For clinicians it is highly useful to become knowledgeable about health information system as well as larger public health issues. PHI is highly utilized in many global health organizations, government agencies, and medical organizations across the United States as well as in the world.

Keywords: public health; informatics; computer assisted decision making; surveillance; literature review.

1. INTRODUCTION

Approximately two decades ago, public health informatics (PHI) was formally recognized as an applied scientific discipline formed to further improvements in public health monitoring and assessment as well as healthcare service delivery and performance. The whole collection of the technical information has been subdivided into various healthcare practices and associated disciplines [1]. Leveraging information technology, PHI provides an array of substantive capabilities to conduct research and implement the outcomes associated with a particular study to any of a number of field professions.

On a technical level, PHI integrates different levels of research and implementation through human-computer interaction. As such, "The public health focuses on population and society's role in monitoring and achieving good health and quality of life" [2, p. 25].

In order to effectively manage public health practice and enhance the well-being of society, multiple resources that provide accurate, high-quality and timely information are required [3]. Public health professionals have stood as pioneers in the development and adoption of computerized information systems and surveillance programs [4] with the explicit goal of enhancing the quality of life and facilitating strategies that protect public health. The purpose of the present paper was to briefly examine how research activities and outcomes conducted through public health informatics (PHI) provide improvements in the maintenance and delivery of the health care system, including enhancement of the detection of emerging threats to public health. With advance information technology system, the PHI has been considerably utilized by organizations charged with monitoring public health, healthcare organizations, and even primary care practitioners. The competences cogently communicated and well-designed public health informatics system are applied and delivered by skillful and knowledgeable practitioners. PHI serves to inform public health via the field's ability to investigate and design data based on large-scale population metrics and to match or compare the results with other data solutions [5]. Although most organizations and employers utilize computer information system, as a discipline PHI possesses multiple capabilities of structures and content of data sources commonly available to public health practitioners. Indeed, information sharing offers an array of benefits that can impact quality improvement activities and, more important enhance engagement among critical health constituencies including clinicians in the effective and timely use of information [6].

2. BACKGROUND

The United States is known for burgeoning health care expenditures and in fact is among the fastest growth rates in health spending of all developed countries [7]. Among Americans, there is considerable variation in attitudes about the use of health care technology. Unfortunately, differences in technological affinity as well as perceptions that vary along demographic dimensions remain an issue [7].

The capabilities of the information technology are phenomenal. Nonetheless, across the world information technology system is utilized to retrieve an individual's information, to monitoring emerging patterns of illness, and to detect emerging or imminent threats to public health. Biomed Central defined public health informatics as the, "systematic application of information and computer science and technology to public health practice, research, and learning that integrates public health and information technology" [1, p. 1]. In addition, within the healthcare industry, it is a highly important infrastructure necessary to provide quality service delivery and performance. As the technological information systems continuously are used to guide further research for advance program design, PHI provides a variety of resources to assist people in furthering their ends [2]. Because medical practitioners are dedicated of providing care to patients, PHI is also available to provide helpful tools to use to retrieve information.

3. THE OBJECTIVES OF PUBLIC HEATLH INFORMATICS

One of the objectives specified in a recent article in Health Informatics Journal is a need to determine if PHI is sufficiently addressed as a core competencies among those trained in public health [8]. The public health informatics system provides various services for multiple stakeholders, from patients to public health administrators. As with the implementation of any new methodology and/or technology, a variety of ethical issues must be considered. These have been discussed in varying detail elsewhere [3,5,8,9]. At any rate, with PHI consumers have the opportunity to expand their technical knowledge and develop ideas for excellent service and performance. PHI demonstrates it capabilities for medical records become paperless. It produces several benefits such as encouraging the administration to provide additional training for professionals to incorporate with business as well as partner with clinicians for excellent patient care service delivery.

4. REVIEW OF THE LITERATURE, INTEGRATION WITH OTHER FIELDS AND RELEVANT EXAMPLES

Beginning in 1995 [9], PHI has been defined as a specific albeit interdisciplinary field where the advances in computer technology were seen as highly

adaptable to advance health care [10]. Although a number of definitions have been introduced into the literature [3,11], all carry the common theme that PHI as the name implies, is a marriage of medicine (public health), computer science, and information processing (informatics) [12]. Nonetheless, although medical in nature, the field is distinguishable from other areas of informatics such as those consumer-based, biomedical, and medical in nature. As such, PHI is focused on population-level information designed at amelioration and prevention at each node within a causative chain, and serves as applied science within relevant government settings where public health is a core goal [3].

As new trends in monitoring, intervention, and aggregation of data emerged and accelerated during a concurrent explosion in hardware and software advances in the computing sciences, PHI coalesced within public health as a natural outcome of the *Zeitgeist* of the times [3,11-15]. As a result, a myriad of goals developed including the promotion of public and consumer health, knowledge management, information assurance practices [10] as well as the development of public health information sources and supporting infrastructure [16].

By the very nature of their responsibilities, individuals and organizations involved in public health in an official capacity are responsible for detection and monitoring of risks, both environmental and biological in nature. Such responsibilities are distinct from those of involved in primary medical care who are charged with frontline diagnosis and treatment. With the emergence of PHI as a field, population level surveillance has moved beyond detection of trends in population health to the inclusion of emerging and often novel threats associated with syndromic surveillance [17]. Briefly, Syndromic surveillance has been used for early detection of outbreaks, to follow the size, spread, and tempo of outbreaks, to monitor disease trends, and to provide reassurance that an outbreak has not occurred. Syndromic surveillance systems seek to use existing health data in real time to provide immediate analysis and feedback to those charged with investigation and follow-up of potential outbreaks [18, p. 5].

Such informatics strategies are useful as ways of getting out in front of virulent forms of infectious diseases in a globally linked world as well as biological agents used as tools of terrorism [19,20]. Concomitant with this type of monitoring, is the use of geographic information systems (GIS)-based images for mapping out distribution patterns to assess emerging patterns of distribution of threats to public health,

whether the threat is environmental or biological [17]. As an analytic strategy, this differs from the more traditional use of public (or restricted) digital health records used for diagnosis and treatment. Thus, the use of the tools in PHI brings to bear novel strategies and resources for the timely detection and management of disease clusters, ecological analyses, and vectors of exposure [17].

During the economic crisis of the past decade, the American Recovery and Reinvestment Act was passed. Among other things, the act brought considerable economic stimulus monies to fund the continued implementation of electronic health records and health information exchanges with the goal of having a fully modernized system in place by 2014 [21]. In addition to the informatics developments described earlier, elements of the system was seen as a means to provide information about geographic areas that have concentrations of unfavorable health indicators or were comprised of populations of underserved groups [22]. Through the development of such information gathering and repository strategies, accurate information about an entire population groups could be determined, rather than from only those who sought services in the past. Thus, these systems permit assessment of disparities of health status among different population subgroups along a number of dimensions including sex, race, and age [22].

Nonetheless, there are unanticipated roadblocks and challenges that can undermine the best of intentions. In a nutshell, all programs entail risk but unforeseen roadblocks can nonetheless present an opportunity to improve upon existing strategies. While the utilization of PHI to inform and enhance local, state, and national health is a laudable goal, lack of proper consideration of contextual elements of the program during implementation can lead to failure [23]. Here, a government program designed to create a monitoring framework utilizing a primary care based framework to detect and track hepatitis B is instructive. Multiple breakdowns in program effectiveness occurred as a result of erroneous assumptions about a number of factors including the IT and software milieu, participants, and available infrastructure. Analysis of program failures revealed that inadequate attention to the key technological and health care as well as a variety of social and political factors undermined success [23].

Conversely, other programs in PHI have produced more direct positive effects. Salient examples can be found in among public health strategies that deal with common viral diseases such as Lyme disease in the United States and, more

globally, Malaria. The most common vector borne disease in the United States [24,25], Lyme disease is caused by a tick-borne spirochete (*Borrelia burgdorferi*). First, widely reported in the 1980s, it is now tracked at the national level. Although a concern in the United States, malaria is a severe problem especially in Africa [26]. Globally, the disease kills between one and a half to two and a half million people a year [27].

Using the tools of PHI, models of Malaria outbreaks and vector habits have been developed [28,29]. In the United States, the use of GIS analysis has proven quite effective in identifying climate and habitat considerations conducive for the spread of the disease via deer ticks [24,25,30]. On the basis of such data, environmental interventions to inhibit the establishment of Lyme disease causing virus have led to reductions in risk to human populations [31].

Similarly, through modification of an existing source of health records, new avenues to assistance with public health surveillance are available and these strategies are consistent with PHI. For example, death records often contain information that when properly used and mined for information, can assist with detection and patterns of influenza as well as viral and bacterial pneumonia [32]. In addition, utilizing a Death certificates pipeline and Meta Map software [33], can inform public health professionals with systematically assessing the impact of extreme environmental conditions such as severe winter conditions or prolonged heat waves on a vulnerable populations or relevant public health threats such as severe acute respiratory syndrome [34-36].

While concerns remain about data security and privacy, electronic health records [37,38] can act as a mechanism of change to enhance stability population level health as well as enhance the overall level of health within a given population [39]. Further, electronic health records are a valuable mechanism for providing timely data for population and disease registries, such as registries of designer drugs of abuse or newly diagnosed cancers [c.f., 40]. Digitizing health records along with central protected government access can enhance government estimates of health and disease burdens [41]. Further, critical population subgroups can be quickly identified, reducing costs, while facilitating program planning, implementation, review, and refinement [42]. However, for population health data to remain both accessible and protected, adherence to rigors standards is required [41]. Fully embracing specific standard such as the Public Health Reporting Initiative within the Standards

and Interoperability Framework [43] and the International Classification of Functioning, Disability and Health [44] are important steps. Certainly these are critical to fully and effectively utilise the rich data of use to public health professionals.

In addition to syndromic surveillance strategies, adaptive cooperative organizational systems can monitor control measures in a manner far superior to that when monitoring is limited to the local organizational level. For example, using a computer simulation to model organizational behavior in Orange County California hospitals, Lee and colleagues [45] convincingly demonstrated that inter-hospital cooperation and data sharing facilitate so-called contact isolation. Lee and colleagues research examined active control and data sharing mechanisms when dealing with a pressing issue of systemic infection-methicillin-resistant *Staphylococcus aureus*, or MRSA [46]. Thus, cooperative efforts across hospitals can enhance effective infection control, especially when infections have potentially costly and deadly consequences. While the research of Lee and colleagues involved the facilitation of data sharing, it is not hard to conceive of extended such strategies extended to national monitoring for changes in such opportune infections as MRSA or resistance to existing antiviral treatments [47].

In closing, knowingly society has been adapting to the use of information technology usage in home, office, and public access areas. The strategic plans in enhancing patient care delivery and delivery performance ultimately affect all areas of society. In addition, this topic is relevant when identifying barriers and in order to emphasize essential issues that must be addressed in order to embrace that intellectual use of data information recommendation [6]. Given this, it is not surprising that multiple centers of PHI exist at both federal and local levels. These include supportive organizations such as the CDC's Public Health Information Network PHIN, the National Center for Public Health Informatics, and the PHIconnect Center for Public Health Informatics [8].

5. CONCLUSION/RECOMMENDATIONS

The impact of PHI systems in the health care industry reduces the risk of medical errors and helps consumers to prevent risk of fatal diseases. With PHI, there are many aspects that relevant to patients' services. PHI systems involve the creation, storage, research, and contributions that facilitate clinical and public health decision-making. Medical practitioners utilize PHI to help improve their competency

and service delivery. According to Collie and colleagues, "while coding is an important aspect of our professional knowledgebase, our most strategic contribution to the health reform agenda will be in assisting health services to leverage data and information for decision making and self-improvement" [6, p. 29]. Among the relevant solutions to these issues, company administration is mandated in offering computer training and its application to clinicians. The advantages associated with such solutions are seen in a marked increase in the ability to provide the proper care and quality of care to patients in all areas of public health and medicine.

The progression of advanced technology continues at a rapid pace. As a consequence, relevant constituencies struggle to incorporate new information without delaying new programs or systems. Further, information sharing at a comprehensive level will facilitate understand at both the individual patient and population levels [48].

As this brief review suggests, more needs to be done. Indeed, PHI is insufficient to resolve all of the challenges associated with modern public health in a global world. Nonetheless, it is clear that all areas of public health practice benefit from the continued development of informatics frameworks and technologies [14]. As a field, PHI lends itself not only to public health practices, but also to research, strategic outcomes, and learning [49]. Today, there is a recognition that the traditional high versus low risk dichotomy is no longer sufficient to drive positive changes in public health, once it is considered alongside of the myriad of indefinable lifestyle, economic, genetic, and environmental factors present [50]. PHI, with its interdisciplinary origins firmly based in public health, data analysis, and computer science, can contribute much to bettering the human condition.

CONSENT

Not applicable.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Study of the Hormones Controlling Food Intake (Leptin and Agouti Related Protein “AgRP”) in Cannabis Smokers

ABSTRACT

Background: Leptin is an adipocyte derived hormone which is thought to be a key regulator of food intake and body weight. Agouti-related protein also called Agouti-related peptide (AgRP) is a neuropeptide produced in the brain by the AgRP/NPY neuron. It is one of the most potent and long-lasting of appetite stimulators. The appetite stimulating effects of AgRP are inhibited by the hormone leptin. There is a public perception that exposure to cannabis produces an increase of appetite (a phenomenon referred to as the 'munchies'). This phenomenon needs an exploration of the role of the endocannabinoid system in the regulation of obesity and associated metabolic syndrome.

Aim: This study aimed to find out the food intake style, of subjects smoking cannabis by studying the relationship between the most two popular hormones controlling food intake (leptin hormone, and agouti related protein hormone) compared with healthy subjects.

Methods: The study compared two groups of personells; the test group (Group II) included ten males aged 37.40 ± 2.67 years (mean age \pm SD) with positive 9-carboxy-Tetrahydrocannabinol (THC) detected in their urine by qualitative analysis using Gas Chromatography-Mass spectrometry. And control group (Group I) included ten healthy males aged 38.67 ± 2.35 years (mean age \pm SD) as volunteers with negative 9-carboxy-Tetrahydrocannabinol (THC). In both groups, age and body mass index (BMI) were matched, diabetic subjects were excluded. Plasma leptin concentration was measured by quantitative radio immunoassay (RIA). Human plasma AgRP hormone was quantitatively measured by using a kit supplied from Quantikine R&D systems INC.

Results: In group I (GI), there was an increase in mean plasma leptin concentrations \pm SD (6.39 ± 1.93) ng/ml, than that found, in group II (GII) (4.49 ± 1.40) ng/ml, but it's statistically insignificant ($P>0.05$). There was an elevation, in mean plasma AgRP concentrations (27.77 ± 2.17) pg/ml in GII, comparing with mean plasma AgRP concentrations (25.84 ± 1.93) pg/ml, in GI but it's statistically insignificant ($P>0.05$). There was a statistically significant inversely correlation between plasma leptin concentrations and plasma AgRP concentrations in GI ($P<0.05$). There was a proportionally correlation found between plasma leptin concentrations and plasma AgRP concentrations in (GII), but it's statistically insignificant ($P>0.05$).

Conclusion: The relationship between plasma leptin concentrations and plasma AgRP concentrations affected by smoking cannabis, and that may change the mechanism of food intake in cannabis smokers.

Keywords: Leptin; Agouti Related Protein (AgRP); 9-carboxy-Tetrahydrocannabinol (THC); cannabis; RIA; Immunoassay.

1. INTRODUCTION

Appetite is regulated by a number of hypothalamic neuropeptides including neuropeptide Y (NPY), a powerful feeding stimulator that responds to feeding status, and drugs such as nicotine and cannabis [1].

Leptin is an adipocyte derived hormone which is thought to be a key regulator of food intake and body weight [2]. During times when leptin stores in adipocytes are decreasing (e.g., with fasting induced lipolysis), plasma leptin levels would be expected to be suppressed, stimulating food intake [3]. Conversely, during times when lipid levels in adipocytes are increasing (following over nutrition), plasma leptin levels would be expected to rise, curbing additional food intake [4].

Agouti-related protein also called Agouti-related peptide (AgRP) is a neuropeptide produced in the brain by the AgRP/NPY neuron. It is only synthesised in NPY containing cell bodies located in the ventromedial part of the arcuate nucleus in the hypothalamus [5]. AgRP is primarily expressed in the adrenal gland, subthalamic nucleus and hypothalamus; with lower levels of expression in the testis, kidneys and lungs. The appetite stimulating effects of AgRP are inhibited by the hormone leptin and activated by the hormone ghrelin. Adipocytes secrete leptin in response to food intake. This hormone acts in the arcuate nucleus and inhibits the

AgRP/NPY neuron from releasing orexigenic peptides [6]. It is one of the most potent and long-lasting of appetite stimulators [7]. Levels of AgRP are increased during periods of fasting. It has been shown that polymorphisms in the AgRP gene have been linked with anorexia nervosa [8]. AgRP induces obesity by chronic antagonism of the MC4-R [9]. Overexpression of AgRP causes hyperphagia and obesity [10], whilst AgRP plasma levels have been found to be elevated in obese human males [11]. Recent studies have shown that autophagy plays a key role in regulation of food intake and energy balance in maintaining neuronal AgRP levels [12].

Chronic consumption of low-fat diet leads to increased hypothalamic AgRP and reduced leptin [13].

Cannabinoids, the biologically active constituents of marijuana, have been used for millennia for their psychoactive properties. The marijuana plant contains more than 60 distinct chemical substances, of which D 9-tetrahydrocannabinol (THC) is the main psychoactive ingredient [14] subsequently led to the discovery and cloning of 2 specific cannabinoid receptors, CB1 and CB2 [15]. Both receptors are expressed in the CNS, as well as in the peripheral tissues. CB1 was found to be one of the most prevalent G-protein coupled receptors in the mammalian brain, while CB2 was shown to have prominent roles in immune and haematopoietic cells, as well as osteoblasts and osteoclasts [16]. The most widespread abuse of cannabis is by smoking. It may occasionally be abuse orally. Over 80% of the excreted cannabinoid metabolite, 9-carboxy-THC is present in the urine in the form of glucuronid conjugated [17].

Obesity is one of the highest preventable causes of morbidity and mortality in the developed world. It has been well known for a long time that exposure to cannabis produces an increase of appetite (a phenomenon referred to as the 'munchies'). This phenomenon led to an exploration of the role of the endocannabinoid system in the regulation of obesity and associated metabolic syndrome [18].

2. AIM

This study aimed to find out the feeding patterns, of subjects smoking cannabis by studying the relationship between the most two popular hormones controlling appetite and food intake patterns (leptin hormone, and agouti related protein hormone) compared with healthy subjects.

3. METHODS

The study compared two groups; the test group (Group II) included ten males aged 37.40 ± 2.67 years (mean age \pm SD) with positive 9-carboxy-Tetrahydrocannabinol (THC) detected in their urine by qualitative analysis using Gas Chromatography-Mass spectrometry (Agilent 6080N - capillary column 30m - 1μ diameter) collected from forensic medicine institute chemistry lab. Cairo, Egypt. And control group (Group I) included ten healthy males aged 38.67 ± 2.35 years (mean age \pm SD) as volunteers with negative 9-carboxy-Tetrahydrocannabinol (THC). In both groups, age and body mass index (BMI) were matched, diabetic subjects were excluded. Plasma leptin concentration was measured by quantitative radio immunoassay (RIA) using a kit supplied from diagnostic systems Laboratories (DSL) Inc. (445 medical center BLVB. WEBSTEER TX 77598 USA, the method depend on a non-competitive assay in which the analyte to be measured is "sandwiched" between two antibodies. Human plasma AgRP hormone was quantitatively measured by using a kit supplied from Quanti-kine R&D systems INC. (614 McKinley Palace Minneapolis, MN 55413, USA.), this assay employs the quantitative sandwich enzyme immunoassay technique.

SPSS® ver 10 for Windows® (SPSS, Inc., Chicago, IL, USA) was used for data analysis. Qualitative data were presented as number and percentage; quantitative data were presented as mean \pm SD. The D2 test was used to test the association between two categorical variables. Correlation between BLL and manifestations of pre-eclampsia was measured by Pearson correlation coefficient. A p value <0.05 was considered statistically significant.

4. RESULTS

Table (1) shows the plasma leptin and AgRP concentrations in GI and GII. Plasma leptin concentrations were lesser in GII (4.49 ± 1.40 ng/ml) than in GI (6.39 ± 1.9 ng/ml), while plasma AgRP concentrations were greater in GII (27.77 ± 2.17 pg/ml) than in GI ($21.5-27.6$ pg/ml). There was a statistically significant inversely correlation between plasma leptin concentrations and plasma AgRP concentrations in GI, with P value ($P < 0.05$) (Fig. 1). There was a positive correlation found between plasma leptin concentrations and plasma AgRP concentrations in GII, but it's statistically insignificant with P value ($P > 0.05$) (Fig. 2). In GI, there was a statistically significant positive correlation between plasma leptin concentrations and BMI

($P < 0.05$) (Fig. 3) and statistically significant inverse correlation between plasma AgRP concentrations and BMI ($P < 0.05$) (Fig. 4). In GII, there was no correlation between plasma leptin concentrations and BMI (Fig. 5) but statistically insignificant inversely correlation between plasma AgRP concentrations and BMI ($P > 0.05$) (Fig. 6).

Table 1. Comparison between cannabis smokers (GII) and the control group (GI)

Plasma leptin concentrations (ng/ml)	6.39±1.9	4.49±1.40	1.90	0.094
Plasma AgRP concentrations (pg/ml)	25.84±1.93	27.77±2.17	4.20	0.003
Body mass index (BMI) kg/m ²	22.78± 1.38	23.41±1.29	1.52	0.166
Serum creatinine (mg/dl)	0.72±0.27	0.87±0.27	4.21	0.003
Serum ALT (U/L)	19.6±7.7	20.2±7.78	2.26	0.054
Serum AST (U/L)	16.6±7	20.5±5.4	1.37	0.20

5. DISCUSSION

This study demonstrates that cannabis smokers have a lower plasma leptin and a higher AgRP concentrations than comparable individuals not smoking cannabis, that is associated with increased BMI in cannabis smokers. This denote that cannabis smoking can modulate the body weight through affection of appetite and feeding pattern by changing leptin and AgRP concentrations. This finding is consistent with [19] that suggest that AgRP, an endogenous negative regulator of the hypothalamic melanocortin system, constitutes a novel regulatory mechanism of leptin action within the hypothalamus. Antagonism of leptin action by AgRP should be attributable mostly to its ability to block the hypothalamic α -MSH/MC4-R signaling activated by leptin. The discussion above also supports the notion that the hypothalamic melanocortin system plays a pivotal role in leptin action.

Our results are in concordance with that of [20] who suggested that leptin's inhibition of food intake is in part mediated by downregulation of CB1R and that of leptin-deprivation conditions. These results are consistent with other findings showing increased levels of endocannabinoids of the ob rats corroborating the regulation of cannabinoid signaling by leptin.

It has been well known for a long time that exposure to cannabis produces an increase of appetite (a phenomenon referred to as the 'munchies'). This phenomenon led to an exploration of the role of the endocannabinoid system in the regulation of obesity and associated metabolic syndrome [18].

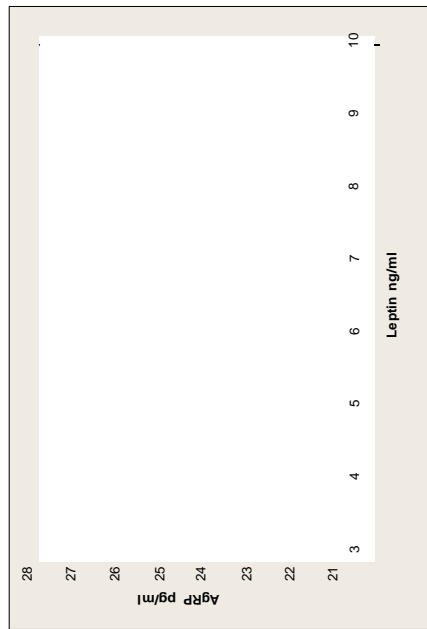


Fig. 1. Correlation between plasma leptin concentrations and AgRP in GI

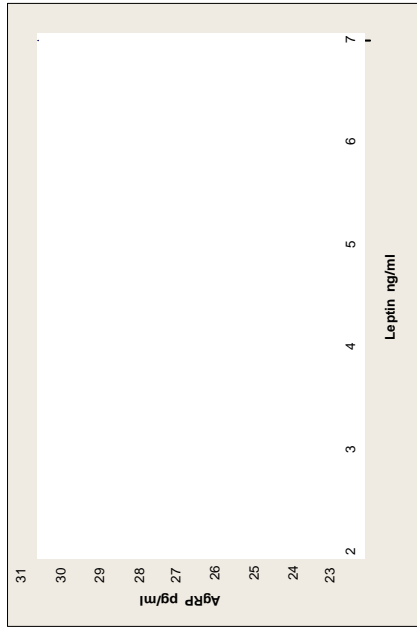


Fig. 2. Correlation between plasma leptin concentrations and AgRP in GII

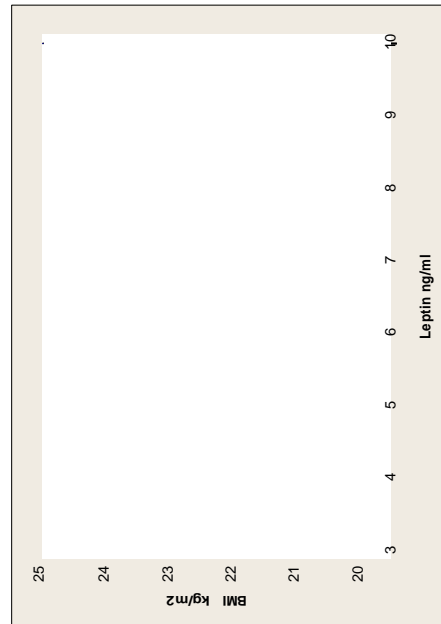


Fig. 3. Correlation between plasma leptin concentrations and BMI in GI

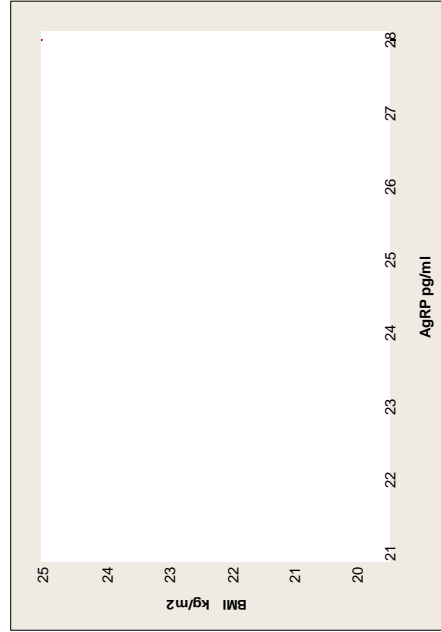


Fig. 4. Correlation between plasma AgRP concentrations and BMI in GI

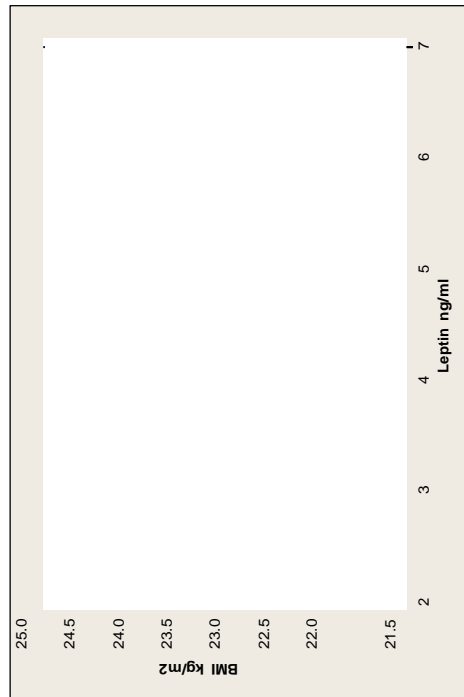


Fig. 5. Correlation between plasma leptin concentrations and BMI in GII

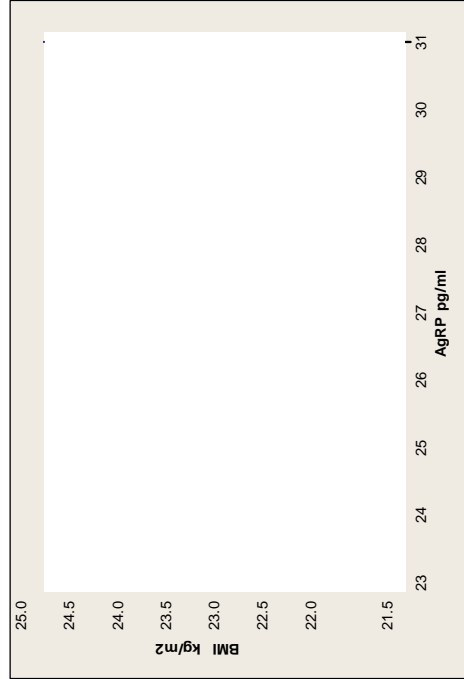


Fig. 6. Correlation between plasma AgRP concentrations and BMI in GII

Leptin regulates hypothalamic signaling that underlies the motivation to hyperphagia but the interaction between leptin and Cannabinoid signaling is poorly understood [20].

Results of the present study showed that cannabis smoking modulate the relation between leptin and AgRP that was associated with increased BMI. There was statistically insignificant positive correlation between plasma leptin and plasma AgRP concentrations in cannabis smokers compared to statistically significant inverse correlation between them in non smokers. Both animal and human data show that the endocannabinoid system is up-regulated in obesity [21]. The plant *Cannabis Sativa* has been used to promote caloric intake by enhancing appetite for many years ago [22]. It seems that Cannabinoids interact with a number of hormonal systems and possibly mediate their effects as leptin, Ghrelin adiponectin and Neuropeptide Y (NPY) and others [21].

It appears likely that some of the obesity-producing effects of AgRP expression in the brain may be due to its interference with signal generation by MSH at MC4-R, a signal which normally acts to suppress food intake and we support this explanation which agreed with [23,24,25] who showed that melanocortinergic neurons inhibit feeding behavior. Chronic disruption of this inhibitory signal causes the agouti obesity syndrome, and [26] who reported that agouti signal protein gene expression is negatively associated with the degree of obesity in men whereas an opposite relationship was observed in women.

Another explanation [25] reported that recombinant agouti protein directly increased $[Ca^{2+}]$ in a variety of cells and stimulated both the expression and activity of adipocyte fatty acid synthase and increased triglyceride accumulation in a Ca^{2+} dependent manner. These effects can be mimicked by stimulation of Ca^{2+} influx and blocked by Ca^{2+} channel inhibition, while treatment of mice with a Ca^{2+} antagonist decreases agouti-induced obesity.

Regulation of food intake by the neuropeptide Y (NPY)/Agouti-related protein (AgRP) neurons of the hypothalamic arcuate nucleus is an area of active investigation [27,28,29]. Recently [18], it was discovered that the prevalence of obesity is paradoxically much lower in cannabis users as compared to non-users and that this difference is not accounted for by tobacco smoking status and is still present after adjusting for variables such as sex and age.

Here, we propose that this effect is directly related to exposure to the D9-tetrahydrocannabinol (THC) present in cannabis smoke. We therefore propose the seemingly paradoxical hypothesis that THC or a THC/cannabidiol combination drug may produce weight loss and may be a useful therapeutic for the treatment of obesity and its complications.

On studying the relation between BMI and appetite regulating hormones, it was found that in cannabis smokers there is no correlation between plasma leptin concentrations and BMI in comparison to significant positive correlation between them in non cannabis smokers. It was found also that cannabis smoking had modulated the statistically significant inverse correlation between plasma AgRP concentrations and BMI in non cannabis smokers to be insignificant inversely correlation between them. These findings are consistent with modulation of appetite hormones mediated through endogenous cannabinoid receptors as previously concluded by [30], whose study results showed that cannabis administration was associated with significant increases in plasma levels of ghrelin and leptin, and decreases in PYY, but did not significantly influence insulin levels and these findings are consistent with modulation of appetite hormones mediated through endogenous cannabinoid receptors, independent of glucose metabolism.

It is demonstrates that [31] agouti directly up regulates adipose tissue leptin as well as plasma leptin and ob mRNA levels. Since agouti is normally expressed in human adipose tissue. In addition, they indicate, "Agouti may function as an autocrine regulator of leptin in human adipocytes. This is the first report of regulation of an obesity gene product by another obesity gene product, suggesting that interaction between obesity genes may play a key role in obesity syndromes.

AgRP could antagonize leptin action by antagonism of MC4-R. It is also, reported that AgRP is unregulated in the Arc from leptin-deficient o b/o b mice and leptin receptor deficient db/db mice, suggesting that leptin may, in turn, regulate hypothalamic AgRP production. All the findings suggest resence of complex interactions between leptin and AgRP to elucidate the role of AgRP in leptin action [7,24,32].

So we can confirm that AgRP may play an important role in affecting plasma leptin concentration this regard may give us a clue to understand the mechanism of leptin resistance, the MCR signaling system is a key regulator of body weight. Profound obesity develops leptin level that leads to activated in MC4R, when the

gene encoding the MCR ligand D-MSH is activated, or when AgRP can't antagonist the MC3/4R, that leads to decrease in AgRP expression in the hypothalamus".

Leptin signaling can influence 2AG (2-arachidonoyl glycerol) biosynthesis in the hypothalamus and anandamide hydrolysis in T-lymphocytes [33]. CB1 is located mostly presynaptically allowing for retrograde action of endocannabinoids. CB1 signaling affects the expression of oreigenic and anorectic mediators in the hypothalamus. In the hypothalamus, changes in endocannabinoids levels seemed to be inversely correlated with the changes that are known to occur in blood vessels of the neurohormone leptin, which is pivotal in regulating the hypothalamic orexigenic and anorectic signals. Indeed, leptin decreases endocannabinoid levels in the hypothalamus, much as it does for other orexigenic mediators, and obese rodents with defective leptin signaling show significantly higher hypothalamic endocannabinoid concentrations [34].

Endocannabinoids may play an integral role in the leptin pathway, which may be the key to understanding their role in appetite stimulation. Leptin is the main signal in which the hypothalamus senses nutritional state and modulates food intake. In one study, a defective leptin signaling pathway resulted in increased levels of hypothalamic endocannabinoids which points to a strong association between the leptin signaling pathway and the endocannabinoid system and this suggestion may be agreed with [34].

Cannabinoid type 1 receptor-mediated appetite stimulation by D9 tetrahydrocannabinol (D9THC) is well understood. Recently, it has become apparent that at least one of non-D9THC phytocannabinoids could definitively stimulate feeding, although further trials using individual phytocannabinoids are required to fully understand the observed effects [35].

6. CONCLUSION

It can be concluded that there is a possible link between endocannabinoid mechanisms and the appetite-regulating hormones and that smoking cannabis, increases food intake by affecting the relation between plasma leptin concentration, and plasma Agouti related protein concentrations.

Leptin and AgPR hormones may be considered as smoking cannabis markers when there was not any other effects on these hormones.

CONSENT

Both authors declare that 'written informed consent was obtained from the participants for sample collection for research and publication.

ETHICAL APPROVAL

Both authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Gauri Billa, Karan Thakkar

A Case of Drastic Improvement in a 43 Year Old Male with Severe Refractory Incapacitating Vertigo

ABSTRACT

Introduction: Vertigo is a common and distressing complaint seen in primary care. It can be due to central or peripheral causes, which should be determined right at the outset. In some cases, the vertigo is transient and easily manageable while in others it can be more troublesome and difficult to treat.

Case: A 43 year old male presented with episodes of severe vertigo and vomiting progressively increasing since six months. Despite multiple consultations, complete work up and treatment with the standard therapy for suppressing vertigo, his symptoms persisted. On history and examination, it seemed to be a case of Meniere's Disease and we started him on specific therapy. The patient showed marked improvement within a week and continued to do so at the end of three months despite stopping all treatment.

Conclusion: Identification of the cause of vertigo, multidisciplinary management and specific treatment, rather than just vestibular suppressants, are paramount in managing a case of vertigo.

Keywords: dizziness; imbalance; Meniere's disease; benign positional paroxysmal vertigo; vestibular neuritis; labyrinthitis.

1. INTRODUCTION

Vertigo has been defined as '*An erroneous perception of self- or object-motion or an unpleasant distortion of static gravitational orientation that is a result of a mismatch between vestibular, visual, and somatosensory systems*' [1]. It is a common complaint seen in approximately 20-30% individuals attending outpatient clinics [1-3]. It can be mild and transient or severe and incapacitating.

The various causes of vertigo are shown in Table 1 [1,3-6]. It is very important to differentiate between central and peripheral causes of vertigo. In cases of central vertigo, the perceived spinning can be in any direction, visual fixation is not suppressed, vertigo and/or nystagmus are not fatigable and the patients usually have

severe instability and additional neurological features [6]. Peripheral vertigo is the opposite and has the following features: the perceived spinning is horizontal and never vertical and they commonly have additional otological features [6]. Although vasodilators like Betahistine and vestibular suppressants like Cinnarizine, etc., are used widely to treat vertigo, identification of the cause and specific treatment are paramount.

Table 1. Various causes of vertigo

Type	Cause
Central	Vertebro-basilar insufficiency Ischemia in the cerebellar artery distribution Cerebellopontine angle tumours/vascular lesions Multiple Sclerosis Generalised Anxiety disorder
Peripheral	Benign Paroxysmal Positional Vertigo Meniere's Disease (Idiopathic Endolymphatic Hydrops) Vestibular Neuritis Labyrinthitis Migranous vertigo Perilymphatic fistula Superior canal dehiscence Otitis media Chronic otomastoiditis Cholesteatoma Toxin/drug induced: (Alcohol, Aminoglycosides, Salicylates, Frusemide etc.)

2. CASE PRESENTATION

A 43 year old male and his wife walked in our clinic and we could see that he was holding his head straight and, as stiff as a stick. His chief complaints were bouts of severe vertigo accompanied by vomiting since the last six months. His vertigo was precipitated by head or body turning to either side and lasted for about 30 minutes to an hour. He had obtained several consultations till now.

During one of his consultations, he was diagnosed as a case of vestibular migraine and treated with Tab Flunarizine 10 mg at bedtime for one month. He had also been referred to an ENT specialist who didn't find any abnormality, but had not documented the performance and results of the Dix-Hallpike test or any other tests, and also didn't conduct an Audiometric testing. When he came to us, the patient was already on Tab Betahistine 16 mg three times a day, Tab Cinnarizine 30 mg two times a day, mouth dissolvable Ondansetron 4 mg on an 'as and when' basis and B complex vitamins.

Since the last month and a half, his symptoms had become more frequent and severe despite treatment. He was severely incapacitated and couldn't even leave his

house for the fear of falling. On enquiry, he also gave a history of a buzzing sound and fullness in his left ear and a fluctuating hearing loss. He gave no history of earache, ear discharge, headaches, aura, photophobia, lightheadedness, blackouts, unsteadiness, weakness, fever, any focal neurological complaints or intake of any ototoxic drugs. There was no history of antecedent cold/flu, head trauma, surgery or any major life stressor in the recent past. Review of his lab reports, CT-scan and MRI didn't reveal any abnormalities except a raised erythrocyte sedimentation rate (ESR) of 45 mm/hr at the end of the first hour.

When we tried to examine his vestibular system and the vestibulo-ocular reflex by performing a Dix-Hallpike manoeuvre and the Head impulse test, respectively, he vomited and we had to stop the test. After a while, when he was feeling better, we conducted his general and neurological examination but didn't find any abnormality. Also, there was no evidence of orthostatic hypotension. His symptoms seemed to fit the description of Meniere's Disease (MD) and we decided to treat him for the same. We didn't conduct an electrocochleography (ECOG) because it has been reported that there is poor correlation between clinical progress and ECOG findings [7].

We gave him an intramuscular injection of Dexamethasone 8 mg and started him on Tab Prednisolone 20 mg once a day in the morning for 10 days, Tab Acetazolamide 250 mg twice a day and a salt restricted diet. When he came to our office after a week, the marked improvement in his symptoms was clearly evident from the way he could freely walk and move his neck. He had not experienced even a single bout of vomiting during that week. We continued Acetazolamide at the same dose, reduced Prednisolone to 10 mg once a day and Betahistine to 16 mg twice a day, and stopped Cinnarizine. After seven days, we stopped Betahistine and reduced Prednisolone to 10 mg every alternate day, and then stopped Prednisolone after seven more days. We continued him on Acetazolamide 250 mg once a day for a month and stopped that too. It has been three months after stopping his medication and he has experienced only a single episode of mild transient vertigo without nausea. He has reported that his hearing also seems to be better and the buzzing sound in his ears has disappeared.

3. DISCUSSION

The most important thing to do when one encounters a case of vertigo is to differentiate central and peripheral vertigo otherwise the consequences can be

disastrous. In case of our patient, his history, absence of neurological signs and symptoms, presence of otological symptoms and a normal MRI and CT scan ruled out a central cause. From amongst the various causes of vertigo, in our opinion, MD was the best fit, as per the criteria described by the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) Committee on Hearing and Equilibrium diagnostic guidelines (1995) [8]:

1. Multiple episodes of vertigo lasting for more than 20 minutes.
2. Associated with fluctuating hearing loss (although, not Audiometrically documented in our case).
3. Associated with a low pitched tinnitus, described by our patient as a buzzing sound, and ear fullness.

The clinical features of other common causes of vertigo are given in Table 2. Although, classically, vertigo induced by head movement is caused by Benign paroxysmal positional vertigo (BPPV), it can be seen with other causes also. The reason being that in any kind of central or peripheral vertigo, head movement will accentuate the baseline asymmetry in vestibular function leading to vertigo [5]. Besides, in BPPV the episode of vertigo is usually transient and not associated with nausea or vomiting, hearing and balance function tests are normal, they don't respond very well to medication and the treatment of choice is otolith repositioning manoeuvres like Epley's manoeuvre [5,9,10].

Table 2. Clinical features of various common causes of peripheral vertigo

Disorder	Duration of an episode	Auditory Sx	Chronicity	Associated Sx	Triggers
Vestibular neuritis	Days	None	Single event	Nausea, imbalance	None
BPPV	Seconds	None	Daily with clusters lasting days or weeks	Imbalance	Head movement in vertical or rotational plane
Meniere's Disease	Hours	Hearing loss, tinnitus, fullness	Episodic	Nausea, imbalance	High-salt, stress, spontaneous
Labyrinthitis	Days	Hearing loss	Single event	Nausea, imbalance	None
Posterior fossa ischemia	Days (TIAs are usually in minutes)	Sudden deafness	Stuttering onset or single event	Central ocular abnormalities	None
Migrainous vertigo	Minutes-days, usually hours	Occasional tinnitus, fullness. Rarely hearing loss	Episodic	Photophobia phonophobia headache, aura	typical migraine triggers

Perilymphatic fistula	Seconds	Sudden, fluctuating, or progressive hearing loss, ear fullness, tinnitus	Multiple times a day	Imbalance	Sound and pressure
Superior canal dehiscence	Seconds	Bone > air conduction, tinnitus, fullness	Multiple times a day	Autophony*, oscillopsia, imbalance	Sound and pressure

*Sx, symptoms; TIA, Transient ischemic attack. * Hearing one's own body sounds like eye movements, breathing, stepping, and so on*

Patients with vestibular neuritis experience severe persistent vertigo, nausea and vomiting. These cases respond very well to steroids. Although audiometric analysis was not conducted on the patient, the patient reported an episodic decrease in hearing. In cases of vestibular neuritis, hearing is usually normal and they don't have a tendency to become chronic as in this case [5,11]. The pathophysiology of MD is still not very clear [6,9,12,13]. It has been said that autoimmune phenomenon may be responsible for as much as 30% of the cases of MD and that early treatment with steroids may even limit the damage to the inner ear [4,12].

Diagnosis and management of MD is a complicated affair and there is a lot of heterogeneity in the treatment protocols used [14,15]. Good quality, robust clinical trials in MD are lacking and there have been conflicting reports about the utility of Betahistine, diuretics like Acetazolamide and salt restriction in the management of MD [14,16–20]. Nonetheless, they are commonly used in the management of MD. In our patient, the vestibular suppressant Cinnarizine was used for about six months when he came to us. It has been recommended that vestibular suppressants be used only, on an 'as and when needed' basis in acute vertigo because long term use can hinder central compensation and prolong the recovery period [5].

The final resort in non-responders is ablative procedures like intratympanic aminoglycosides or surgery. The response rate for these procedures is around 40-50% and they may lead to permanent sensorineural hearing loss due to damage to the hair cells [14,21]. Intratympanic injections of steroids have also been used in non-responders and the response rate seen is around 30-50% [14]. Intratympanic injections are an invasive modality and require expert skill and training. Hence, they may not be feasible at the primary care level.

4. CONCLUSION

Differentiation of central and peripheral vertigo should be the first step in evaluation of a patient with vertigo.

This should be followed by a diagnosis of the specific cause of vertigo and its treatment.

Vestibular suppressants should be used only on an 'as and when' basis, and not for a long time because it will delay recovery.

In patients with severe and or refractory vertigo due to MD, a trial of systemic steroids should be given before starting any invasive or ablative procedures. Since autoimmunity plays an important role in the pathogenesis of MD, early steroids may help prevent damage and hasten recovery.

CONSENT

There is no data in the manuscript which reveals the identity of the patient in any way.

All authors declare that 'written informed consent was obtained from the patient for publication of this case report.

ETHICAL APPROVAL

Not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Sex Determination Potential from Canine Tooth Dimensions

ABSTRACT

Aims: This study was conducted to know sex determination potential from mesiodistal dimensions of permanent canines.

To find out the average size of canines in males and females of south Indian population.

To compare the findings with National and International Studies.

Study Design: The subjects were selected based on the inclusion and exclusion criteria set forth for the study. Measurements of mesiodistal widths of the four canines were made on the dental casts of each of the 600 subjects with Digital caliper with 0.01 resolution and subjected to statistical analysis. Statistical methods used were statistical mean, standard deviation, Student's t-test ($p < 0.05$), step-wise discriminant analysis and cross validated discriminant analysis using SPSS version 11.00.

Place and Duration of Study: Department of Oral Medicine and Radiology, Al-Badar Rural Dental College and Hospital, Gulbarga, Karnataka, India, between May 2008 and May 2011.

Methodology: We included 600 patients (300 men, 300 women; age range 17-25 years).

Results: The mesiodistal width of canines of both the jaws is significantly greater in males than females.

The mean maxillary canine width in males and females is 7.73 mm. The mean mandibular canine width in males and females is 6.825 mm.

The mean (male and female), maxillary and mandibular canine width is found to be less in South Indian Population as compared to Central Indian population.

The mean (male and female), maxillary and mandibular canine width is found to be less in South India Population as compared to values given by Wheelers and similar to the study done in the Saudi population.

Conclusion: The present study measured only linear dimensions because of simplicity, reliability, inexpensibility and in a setup where latest technology utilizing DNA methods are not available and gender estimation has to be managed based on jaw fragments.

Keywords: Canines dimorphism; sex determination; gender; forensic odontology.

ABBREVIATIONS

SD=Standard deviation; Min=Minimum; Max=Maximum; Signi.=Significance.

1. INTRODUCTION

Human beings are born with an identity and deserve the right to die with an identity [1]. Identity means the determination of the individuality of a person [2]. United Nations Declaration of Human Rights states that every freeborn person has the right to be identified even after death [3,4]. The identification of a dead body may be required in cases of sudden and unexpected death, fires, explosions, railway or aircraft accidents, mutilated or hidden decomposed bodies, or foul play and often needs great medico-legal acumen [2]. The law enforcement community expects and requires that forensic scientist report the identification of partial or complete remains of an individual to the best of his or her ability [5]. Various methods are used to establish the identity of unknown remains. The reliability of each method varies [1]. The methods vary and depend on the available bones and their condition [6]. The only method that can give a totally accurate result is the DNA technique, but in many cases and for several reasons it cannot be used [2,6].

Gender determination of skeletal remains is part of the archaeological and many medico legal examinations [6]. An important initial step in identification of the dismembered remains of mass disaster victims is the separation of sexes [7]. Complete skeletons with or without soft tissue present fewer problems. Those bodies, which are, less complete and consisting of parts of a skeleton only, present more problems in identification and in many instances may not be identified at all [8]. Anthropological measurements of the skeleton and the comparison with the existing

data must then be applied and may help to differentiate between male and female remains [6]. Osteometry is considered the preferred technique because it is more effective in determining sex [9]. On an individual basis however, gender differences are always distinctive, but taken collectively can give a good indication in majority of the cases [6]. The determination of sex is among the important aspect of forensic anthropology. These characteristics display population specific variation and therefore, need further attention for major populations of the world [10].

Many authors have done the measurements of crown in teeth between males and females and found certain variations. Though the morphology of the structure is similar to male and female, there is no need that, the size of the structure should remain same, as the size of structure is determined by various factors like exercise, nutrition, metabolic activities etc. Measurements of tooth dimensions are quick, less time consuming, non-invasive and can be easily performed compared to DNA technique.

The study aims to fulfill the following objectives.

Determination of sex by measuring Mesiodistal dimension of maxillary and mandibular permanent canines.

To find out the average size of canines in males and females of south Indian population.

To compare the findings with National and International Studies.

2. MATERIALS AND METHODS

This study was conducted in the Department of Oral Medicine & Radiology, Al-Badar Rural Dental College & Hospital, Gulbarga, Karnataka, India the ethical approval for which was taken from Institutional Review Board.

The study population constituted 300 males and 300 females in the age group of 17 to 25 years, reporting to the Department of Oral Medicine & Radiology, Al-Badar Rural Dental College & Hospital, Gulbarga, Karnataka, India.

The subjects for the study were selected based on simple random sampling technique and those who willingly consented to be a part of the study with following inclusion & exclusion criteria & the legal age of the subject was confirmed using one of following documents: birth certificate, driving license, college or other identity card, 10th class certificate.

2.1 Inclusion Criteria

The subjects having complete set of fully erupted, morphologically well-formed, periodontally healthy, non-carious, non-attrited, intact and satisfactorily aligned maxillary and mandibular teeth with Angle's class I Malocclusion and no history of orthodontic treatment and no evidence of cleft palate or crown restorations were included in the study.

2.2 Exclusion Criteria

1. The Individuals who wear bridges, crowns and other appliances or had any anomalies that could influence the measurements.

2. Conservative treatment other than Class I occlusal restorations and class V on teeth other than canine.

3. Individuals with anodontia, partially edentulous, malformed/hypoplastic teeth and positional variations in any of the segments.

4. Individuals with clinical features suggestive of developmental disturbances, metabolic disorders, history of prolonged illness and medically compromised states were excluded from the study.

An informed written consent was obtained from each of the subjects followed by full arch maxillary and mandibular impressions were taken by Irreversible Hydrocolloid impression material (Hydrogum soft; Zhermack clinical, Germany) and poured immediately by Type III Gypsum product, dental stone (Stone plaster; Neelkanth Healthcare Pvt. Ltd, India).

The following parameters were determined on casts by using electronic digital sliding caliper to the nearest 0.01 mm (Mitutoya Co., Utsunomiya, Japan).

Mesiodistal crown width of right maxillary canine;

Mesiodistal crown width of left maxillary canine;

Mesiodistal crown width of right mandibular canine;

Mesiodistal crown width of left mandibular canine.

Intra-observer reliability or precision (differences between the repeated measurements) and inter-observer errors (differences between the means of two sets measurements) were 0.08 mm and 0.16 mm, respectively; representing only 1.2% and 2.1% of the mean measurements.

The readings obtained were subjected for analysis to derive conclusions. Sexual dimorphism in right and left mandibular and maxillary canines was calculated using a formula given by Garn et al. [11].

$$\text{Sexual dimorphism} = [(x_m/x_y) - 1] \times 100,$$

x_m =mean value for males; x_y =mean value for females.

The results obtained were subjected to statistical analysis (Mean, Standard deviation and co-efficient of variation, t-test, step-wise discriminant analysis and percentage accuracy of reporting gender identity by cross validated discriminant analysis and computed for both sexes using SPSS (Statistical Package for the Social Sciences) Version 11.00.

3. RESULTS

It was observed that the mean value of the mesiodistal crown width of right maxillary canines was 7.90 ± 0.54 mm in males and 7.60 ± 0.37 mm in females, while the mean value of the mesiodistal crown width of left maxillary canines was 7.85 ± 0.64 mm in males and 7.60 ± 0.37 mm in females (Table 1). The differences in these values are statistically significant ($P < 0.001$).

The mean value of the mesiodistal crown width of right mandibular canines was 7.00 ± 0.31 mm in males and 6.65 ± 0.55 mm in women and the mean value of the mesiodistal crown width of left mandibular canines was 7.00 ± 0.32 mm in the males and was 6.65 ± 0.55 mm in females (Table 1). The differences in these values are statistically significant ($P < 0.001$).

Table 1. Mesiodistal crown width of maxillary and mandibular canines - genderwise distribution in mm

Variable	Gender	Min (in mm)	Max (in mm)	Mean (in mm)	SD	t-value	p-value
Maxillary	Male	7.0	9.0	7.9000	0.5394	7.9108	<0.0001
Right Canine	Female	7.0	8.0	7.6000	0.3748		
Maxillary Left	Male	7.0	9.0	7.8500	0.6355	5.8692	<0.0001
Canine	Female	7.0	8.0	7.6000	0.3748		
Mandibular	Male	6.5	7.5	7.0000	0.3168	9.5394	<0.0001
Right Canine	Female	6.0	7.5	6.6500	0.5509		
Mandibular	Male	6.5	7.5	7.0000	0.3168	9.5394	<0.0001
Left Canine	Female	6.0	7.5	6.6500	0.5509		

SD=Standard deviation; Min=Minimum; Max=Maximum; Signi.=Significance; mm=Millimeter

The sexual dimorphism from the mesiodistal crown width of the canine tooth was calculated by the formula $X_m/X_f \times 100$; X_m is the mean mesiodistal width of canines in men and X_f is the mean mesiodistal width of canines in women.

The sexual dimorphism of right maxillary canines was 3.947% and that of left maxillary canines, 3.28% and the sexual dimorphism was 5.263% for the right mandibular canine and 5.263% for the left mandibular canine.

Table 2. Comparing maxillary canine width with the Wheeler's study results

Maxillary canines	Male right (in mm)	Male left (in mm)	Female right (in mm)	Female left (in mm)
Mean	7.90	7.85	7.60	7.60
Maxillary right, left mean	7.875		7.60	
Combined male female mean	7.73			
According to Wheeler	7.5			

Table 3. Comparing Mandibular canine width with the Wheeler's study results

Mandibular canines	Male right (in mm)	Male left (in mm)	Female right (in mm)	Female left (in mm)
Mean	7.00	7.00	6.65	6.65
Mandibular right, left mean	7.00		6.65	
Combined male female mean	6.825			
According to Wheeler	7.0			

Comparing the mean canine measurement of our findings with other studies, the values of our study on South Indian population are similar to the other studies (Table 4).

Table 4. Comparison with other studies

Author	Year	Population	M/F	MxRt (mm)	Mxlt (mm)	Mn Rt (mm)	Mn lt (mm)
Present study	2014	South Indian	M	7.90	7.85	7.00	7.00
			F	7.60	7.60	6.65	6.65
Madhavi Yuwanati [20]	2013	Central Indian	M	8.04	8.32	7.76	8.01
			F	7.73	8.01	7.44	7.74
Gorea & Sharma [27]	2010	North Indian	M	7.61	7.67	6.78	6.71
			F	7.31	7.39	6.39	6.41
Karan Boaz [19]	2009	South Indian	M			7.05	6.98
			F			7.00	6.90
Kaushal [15]	2004	North Indian	M			7.32	7.198
			F			6.69	6.67
Mohd QA & Abdulla [28]	1997	Saudi	M	7.53	7.53	6.90	6.93
			F	7.55	7.36	6.83	6.80

We derived the mean measurement of right and left maxillary canines for males and females and mean of these measurements were taken to arrive at a single value for maxillary canine. Similarly one single value was measured for mandibular canine. These values were compared with the values given by Wheeler's [12]. (Table 2 & 3) Both the maxillary and mandibular canine measurements in the present study were found to be less than the Wheeler's. This finding is very important as it indicates that normative data based on one population cannot be used for other population.

4. DISCUSSION

Teeth form an excellent material in living and non-living populations for anthropological, genetic, odontogenic and forensic investigation. Measurements of tooth dimensions are quick, less time consuming, non-invasive and can be easily performed. Tooth dimensions are used to establish the sex of a victim in major accidents/disasters, medico-legal cases and natural disasters. Sex can be determined well in mature individuals if the human skeletal remains are intact [2].

The dentition takes precedence particularly when preferred parameters such as the pelvis are unavailable and cranial and long bones fragmentary. However, linear tooth measurements usually give moderate levels of accuracy in sex identification [3,4]. Two approaches to sex identification have been described. The first is based on a visual assessment of the shape or relative proportions of sexually dimorphic features. The second is a metric approach, which offers advantages over the visual approach as it is inherently more objective, has higher reliability, is less dependent on the previous observer experience and is more readily amenable to statistical analysis and thus helps comparisons within the sample as well as with previous studies [5]. The present study was based on the second approach of sex identification and the advantages quoted for the metric method hold good for it too. This study was intended to analyze the sexual dimorphism in the maxillary and mandibular permanent canines. Permanent canines were considered as the canines erupt by the age of 12 years with mean age of eruption being 10.87 years [6] and canines are less affected than other teeth by periodontal disease [7,8] and are the last teeth to be extracted with respect to age [9]. Canines are also better likely to survive severe trauma, such as air disasters, hurricane and accidents. The present study utilized a Vernier Caliper with 0.01 mm resolution. Since the anatomic landmarks are standardi-

zed and the instruments calibrated, little variation may be expected in the measurements. In other words, the values reported may be comparable to previous studies. The measurements were made on the dental casts of all the subjects. It is advantageous to measure the tooth dimensions on the casts as they may be examined at a later date to eliminate errors due to fatigue during measurements. Also, it provides convenience for the second investigator to make measurements at a later date.

Garn et al. [13] revealed the magnitude of sexual dimorphism in tooth size as well as percentage dimorphism in 117 subjects from Southwest Ohio, representing 75 families. The largest sexual dimorphism in mesiodistal tooth size was exhibited by the mandibular first and second molars, 7% and 6.2%, respectively, with the mandibular and maxillary canines next in order with 6.2% and 6%, respectively. On percentage basis, dimorphism was greatest for canines and least for mandibular incisors. But canine dimorphism was specific to mesiodistal diameter. Mesiodistally the lower canines showed the greatest difference between the sexes.

Lysell and Myrberg [14] studied the records of 530 boys and 580 girls who were born to Swedish parents and grew up in the Stockholm area, and reported expression of sexual dimorphism in the deciduous dentition as well as in the permanent dentition. Boys exhibited larger mesiodistal tooth widths than girls in both deciduous and permanent dentitions. The largest male and female tooth widths were found in permanent canines (5-6%).

Kaushal et al. [15] found a statistically significant dimorphism in the mandibular canines in 60 subjects in a North Indian population, where the mandibular left canine was seen to exhibit greater sexual dimorphism. They also concluded that if the width of the canine is greater than 7 mm, the probability of the sex of the person under consideration being male was 100%.

Hashim and Murshid, [16] conducted a study on Saudi males and females in the age group of 13-20 years to determine the teeth in human dentition with the highest likelihood of dimorphism and found that only the canines in both the jaws exhibited a significant sexual difference while the other teeth did not. In a continuation of the same study, they also determined that there was no statistically significant difference between the left and right sides suggesting that measurements of teeth on one side could be truly representative when the corresponding measurements on other side was unobtainable.

Schild et al. [17] observed sexual difference in tooth size among American black, European and Mongoloid populations. The degree of sexual dimorphism of mandibular canine width was more in Ohio Caucasians and Australian aborigines than in Pima Indians and Tristanite population [11].

Acharya and Mainalli [18] found reverse dimorphism in the mesiodistal dimension of mandibular second premolar in Nepalese population. The finding could be attributed to evolution resulting in a reduction in sexual dimorphism, causing an overlap of tooth dimension in modern males and females. Similar finding was observed by Karen Boaz and Chaavi Gupta [19] in a dimorphic study of maxillary and mandibular canines in 100 subjects in South Indian population and revealed the lack of significant dimorphism in canines and also the finding of reverse dimorphism where the females exhibited larger canines than males.

Madhavi yuwanati et al. [20] conducted a study on 100 cases in 17-21 years in central Indian population with mean maxillary canine width in males and females was 8.02 mm and the mean mandibular canine width in males and females was 7.73 mm.

In this study an attempt has been made to establish the sex of a person by using the mesiodistal width of canine teeth in the Karnataka population.

In our study, there were no significant differences between the mesiodistal width of right and left, mandibular and maxillary canines among males. Similar observations were made among the female counterparts. These findings were in agreement with the studies conducted by Kaushal et al. [15] Garn et al. [11] Al-Rifaiy et al. [21] Acharya and Mainali, [18] and Anderson and Thompson [22].

The mean mesiodistal width of the right and left mandibular canines in our study was found to be greater in males (right: 7.00 ± 0.31 mm; left: 7.00 ± 0.32 mm) than in females (right: 6.65 ± 0.55 mm; left: 6.65 ± 0.55 mm), which was statistically significant with a P value of <0.001 . This greater dimension of mesiodistal width of canines in males can be attributed to the Y chromosome, which is responsible for the thickness of dentine, contributing to the width of a tooth [18,22]. These findings are in agreement with the studies conducted by Kavitha [23] (males: 7.2-7.9 mm and females: 6.7-7.6 mm) for the Tamil Nadu population (South India), Kaushal et al. [15] (men: right 7.22 ± 0.28 mm; left 7.29 ± 0.29 mm and women: right 6.69 ± 0.25 mm; left 6.69 ± 0.32 mm) for the North Indian population and by Acharya and Mainali [18] (Males: right 6.96 ± 0.39 mm; left 7.00 ± 0.4 mm and Females: right 6.58 ± 0.35 mm; left 6.63 ± 0.35 mm) for the Nepalee population on mandibular canines. However, the

studies conducted by Ates et al. [24] and Al-Rifaiy et al. [21] on Turkish and Saudi populations did not find significant gender differences for the mesiodistal width of mandibular and maxillary canines.

The value for sexual dimorphism of maxillary canines in our study was 3.947% for the right canine and 3.289% for the left canine similar to the study done by Bakkannavar et al. [25] (3.31% right canine; 3.29% left canine). The study conducted by Garn et al. on the Tristanite population showed the sexual dimorphism for maxillary canines to be 2.5%, which has lower dimorphic value than our study. However, Garn et al.'s study on different ethnic groups revealed the value to be 4.5% for Australian Aborigines, 5.3% for Pima Indians and 5.9% for Ohio Caucasians [11]. Their study showed the combined value for both canines.

In our study, the value for sexual dimorphism of mandibular canines was 5.263% for the right canine and 5.263% for the left canine as compared to the study done by Bakkannavar et al. (4.50% right canine; 4.61% left canine) [25], Garn et al. on the Tristanite population (4.1%) [11]. Garn et al.'s study further reported the values for sexual dimorphism in Ohio Caucasians (6.4%), Australian Aborigines (6.8%) and Pima Indians (6.3%). The higher sexual dimorphism values, 6.2% (right canines) and 7.7% (left canines), were computed for the South Indian population by Nair et al. [26] and 7.954% for the right canines and 8.891% for the left canines computed for the North Indian population by Kaushal et al. [15]. The higher values obtained in their studies could be attributed to the small sample size and use of dental casts for their study. The mandibular canines are considered to demonstrate the greatest percentage of sexual dimorphism among all teeth in their mesiodistal width [15,11,23].

5. CONCLUSION

The present study measured only linear dimensions because of simplicity, reliability, inexpensibility and in a setup where latest technology utilizing DNA methods are not available and gender estimation has to be managed based on jaw fragments. The mandibular canine index may also be used as an adjunct to enhance accuracy.

5.1 From the Present Study We Can Conclude That

- The mesiodistal width of canines of both the jaws is significantly greater in males than females.
- The mean maxillary canine width in males and females is 7.73 mm. The mean mandibular canine width in males and females is 6.825 mm.
- The mean (male and female), maxillary and mandibular canine width is found to be less in South Indian Population as compared to Central Indian population.
- The mean (male and female), maxillary and mandibular canine width is found to be less in South India Population as compared to values given by Wheelers and similar to the study done in the Saudi population.

Further investigations are desired with larger samples and in populations of varied ethnic origin in the direction of improving accuracy of using linear dimensions of teeth as a method of sex identification.

CONSENT

Not applicable.

ETHICAL APPROVAL

This study was approved by the Ethical Research Board of the Institution.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Dexmedetomidine Ameliorates Histological and Neurological Outcomes after Transient Spinal Ischemia in Rats

ABSTRACT

Aims: Dexmedetomidine, an D₂ adrenergic agonist, provides neuroprotection in various cerebral ischemia models and against anesthesia-related neurotoxicity. Dexmedetomidine also improves paraplegia induced by intrathecal morphine after short-term spinal ischemia. In this preliminary study, we investigated whether dexmedetomidine provides spinal protection against transient spinal ischemia in rats. **Methodology:** Adult male Sprague-Dawley rats were randomly divided into the following 3 groups: 1) intravenous infusion of 0.9% NaCl at a rate of 0.5 ml/h (control), 2) dexmedetomidine 1 µg/kg/h, and 3) intravenous infusion of 0.9% NaCl without spinal ischemia (sham). The rats received saline solution or dexmedetomidine 30 min before spinal cord ischemia and for 24 h. Spinal cord ischemia was induced by intra-aortic balloon occlusion combined with proximal arterial hypotension for 10 min. Ischemic injury was assessed by the neurological deficit score and by the number of viable motor nerve cells in the anterior spinal cord at 24 h of reperfusion.

Results: The neurological deficit score was significantly lower in the dexmedetomidine group compared to the control group ($p < 0.05$). The number of viable motor nerve cells in the dexmedetomidine group was significantly greater than was that in the control group ($p < 0.05$), but was lower than was that in the sham group.

Conclusion: Our findings suggest that continuous administration of dexmedetomidine ameliorates short-term neurological and histological outcomes induced by transient spinal cord ischemia and reperfusion in rats; thus, dexmedetomidine appears to protect the spinal as well as the brain.

Keywords: spinal protection; spinal ischemia; dexmedetomidine; D₂ adrenergic agonist.

1. INTRODUCTION

Dexmedetomidine, an D₂ adrenergic agonist, has been widely used clinically as an adjuvant of anesthesia and in intensive care because it has sedative and analgesic effects [1,2]. Dexmedetomidine has also been shown to have a protective effect on the brain in various ischemia models, such as focal [3-5], global [6-8], and incomplete cerebral ischemia [9-11]. Previous studies suggested the following mechanisms for these neuroprotective effects: decreased activation of focal adhesion [12], imidazoline 1 receptor-extracellular-regulated kinase pathways [12,13], activation of protein kinase C [14], anti-oxidant effect [7,15], excitatory neurotransmitter suppression [10,16], anti-inflammatory effect [7], and anti-apoptotic effect [7,11,17].

Transient spinal ischemia can occur under various conditions during surgery, especially thoracic aortic surgery, and spinal ischemia can induce detrimental paraplegia in some circumstances. Pharmacological adjuncts need to reduce and prevent the incidence of paraplegia following spinal cord ischemia. Based on the previous reports that dexmedetomidine prevented morphine-induced paraplegia following short-term transient spinal ischemia [18] and reduced spinal cord ischemia-reperfusion injury in mice [19], administration of dexmedetomidine would affect spinal cord injury caused ischemic insult as well as brain protective effects. Thus, the aim of this preliminary study was to evaluate the neuroprotective effect of dexmedetomidine on spinal cord ischemia and reperfusion injury in rats.

2. MATERIALS AND METHODS

2.1 Preparation of Rats

Male Sprague Dawley rats weighing 350 to 450 g were used in this study. The rats had free access to food and tap water before the experiment. None of the animals had any neurological abnormality before anesthesia and surgery. On the day of surgical preparation, the rats were weighed and were administered a continuous flow of 4% halothane and 60% nitrous oxide in oxygen in an acrylic plastic box. Anesthesia was maintained with 0.75% to 1.5% halothane with 30% oxygen with a non-sealing facemask device. The rectal and paravertebral muscle temperatures were maintained at approximately 37.0°C with a heating lamp and an underbody heating pad. Surgical preparation was conducted as previously described [20]. The femoral vein was cannulated with a PE-50 catheter to infuse dexmedetomidine or saline. The catheter was tunneled subcutaneously and was exteriorized through a

swivel sutured over the dorsal mid-thorax, which allowed the rat to move freely in the cage after emergence from anesthesia. The tail artery was cannulated with a PE-50 catheter for monitoring the distal arterial pressure (DAP). A PE-60 catheter was inserted into the right carotid artery for monitoring the proximal arterial pressure (PAP), and the catheter was connected to an external blood reservoir to reduce the mean PAP during aortic occlusion to 40 mm Hg. Spinal ischemia was induced by a balloon catheter via the femoral artery, as previously described [20,21]. Briefly, the right femoral artery was exposed and a Fogarty 2F balloon-tipped catheter (Edwards life sciences, Irvine, CA) was advanced into the thoracic descending aorta (11 cm from the site of insertion). Immediately after performing arterial cannulation, 200 U of heparin (0.2 ml) was injected into the tail artery. The catheter balloon was inflated with 0.05 ml saline and was maintained for 10 minutes. The efficiency of the occlusion was confirmed by a decrease in the DAP measured at the tail artery. The PAP was decreased to 40 mm Hg during occlusion by drawing blood from the carotid artery containing 1 ml of 7% sodium bicarbonate solution. The balloon was deflated after ischemia, and the collected blood was administered to the animals through the carotid artery catheter within 2 min. The rats were brought out of the anesthesia 30 min after reperfusion. The animals were returned to the cage if their hemodynamic variables were stable after all catheters, except for the femoral vein catheter, were removed. The incisions were subsequently closed.

2.2 Groups

The rats were randomly divided into 3 groups as follows: 0.9% NaCl solution (control group; n=8), dexmedetomidine at a rate of 1 µg/kg/h (dex group; n=8), and the sham surgical group (n=6). The drug-infusion or saline-infusion volume was adjusted to a rate of 0.5 ml/h and was administered from 30 min before aortic occlusion until the end of the subsequent 24-h reperfusion. The rats in the sham surgical group received saline through catheters that were inserted in the same manner, without the induction of spinal cord ischemia.

2.3 Measurements

2.3.1 Hemodynamics

Hemodynamic variables (PAP, DAP, and heart rate) were continuously monitored and were recorded after surgical preparation for up to 5 minutes after

reperfusion. Arterial blood gas and blood glucose levels were determined immediately before aortic occlusion and 5 min after reperfusion.

2.3.2 Neurological evaluation

At 24 h after reperfusion, the neurological deficit score (NDS) of the animals was assessed according to previously described grading systems [20]. The NDS was quantified as shown in Table 1. The NDS was calculated for each rat as the sum of the ambulation, placing/stepping reflex scores and sensory score; the maximal score was 8. The assessments were made by a blinded observer (YT).

2.3.3 Histological evaluation

After scoring neurological function at 24 h, the animals were anesthetized with 4% halothane in an acrylic plastic box. A high dose of pentobarbital (80 mg/kg) was administered by intraperitoneal injection. After the administration of a direct left ventricular bolus of 0.2 ml heparin, each rat was transcardially perfused with 100 ml heparinized saline followed by 150 ml of 4% paraformaldehyde in phosphate buffer (pH 7.4). The lumbar spinal cord was removed and was post-fixed in the same fixative for another 48 h. Post-fixation, the L4 spinal segment was dissected and was embedded in paraffin; subsequently, serial transverse sections of 3- μ m thickness were prepared. The slides were stained with hematoxylin and eosin for quantitative evaluation. Analysis of the degree of ischemic cell injury was based on the number of viable neurons in the ventral area of the gray matter (anterior to a transverse line drawn through the central canal) with x 100 magnification in each group. Intact cells that contained Nissl substance in the cytoplasm, loose chromatin, and prominent nucleoli were considered viable neurons. The assessments were made by a blinded observer (YT).

2.4 Statistical Analyses

The physiological variables and the number of normal ventral cells are expressed as the mean \pm SD. Comparisons among groups were made with 1-way analysis of variance for multiple comparisons followed by a Bonferroni post-hoc test. The NDS data for the animals are expressed as the median with the range in parentheses. The differences were determined by nonparametric analysis using the Kruskal-Wallis test. P values < 0.05 were considered statistically significant.

Table 1. Neurological deficit score

Motor and sensory function		Score
Ambulation	Normal	0
	toes flat beneath the body when walking but presence of ataxia toes	1
	knuckle walking	2
	unable to knuckle walk but some movement of the lower extremities	3
	no movement of the lower extremities	4
	Placing/stepping reflex	Normal
	weak	1
	no stepping	2
Sensory	Normal	0
	weak	1
	none	2

3. RESULTS AND DISCUSSION

The physiological variables and arterial blood gas data are presented in Table 2. No differences were found between the experimental groups with respect to the proximal MBP, Distal MBP, heart rate, and paravertebral muscle temperature before and after ischemia. Proximal and distal MBP in the saline group after ischemia were higher than that before ischemia. The blood chemistry values before aortic occlusion were within the normal range, with no significant differences between the groups. The blood glucose and pH levels after reperfusion were significantly higher and lower, respectively, compared to those before ischemia and sham group ($p < 0.05$).

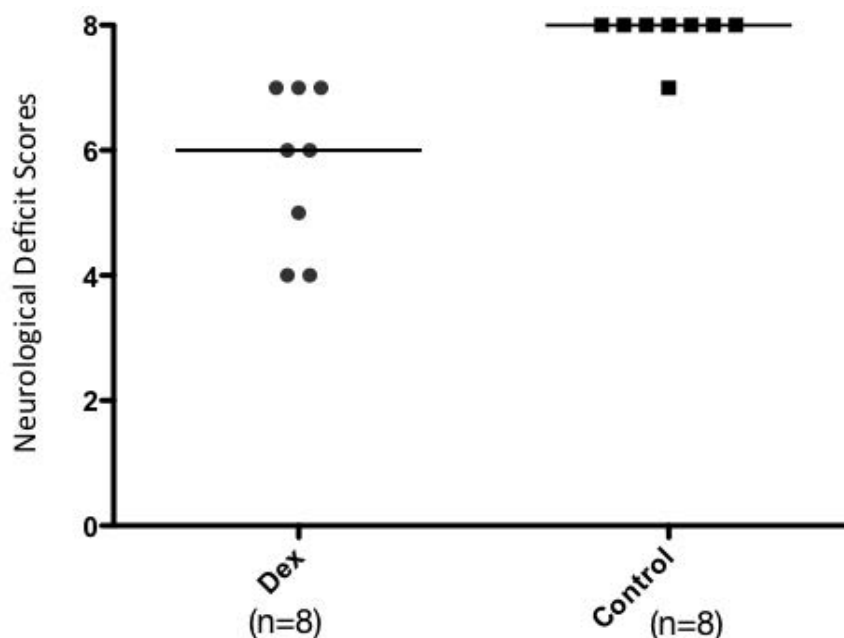


Fig. 1. Neurological deficit score (NOS) 24 hours after transient spinal ischemia in rats

The median value was significantly lower in the dex group compared to that in the control group at 24 hours after ischemia. The score in the sham group was zero. dex = dexmedetomidine

Table 2. Physiological variables 10 min before, during and after ischemia

	Before ischemia			During ischemia			After ischemia		
	Sham (n=6)	Control (n=8)	Dex (n=8)	Sham (n=6)	Control (n=8)	Dex (n=8)	Sham (n=6)	Control (n=8)	Dex (n=8)
Proximal MBP (mm Hg)	89±11	77±9	81±11	99±9	42±4 [#]	41±2 [#]	97±9	111±17 [*]	91±12
Distal MBP (mmHg)	84±11	72±10	79±10	97±10	7±3 [#]	6±1 [#]	99±10	109±20 [*]	89±14
Heart Rate (bpm)	367±27	335±28	339±18	363±19	256±94 [#]	310±21 [#]	371±18	320±32	347±12
Paravertebral temperature (°C)	37.9±0.3	37.9±0.2	37.7±0.2	38.0±0.3	38.0±0.3	37.7±0.1	37.9±0.2	37.8±0.2	37.9±0.1
pH	7.43±0.02	7.412±0.05	7.339±0.06				7.433±0.01	7.314±0.04 [*]	7.282±0.02 [#]
PaO ₂ (mmHg)	141±19	123±23	107±23				136±11	135±19	114±14
PaCO ₂ (mmHg)	43±2	42±3	54±9				43±2	49±4	57±5 [#]
Blood glucose (mg/dl)	110±13	110±20	121±26				108±15	222±18 [#]	197±56 [#]
Hb (g/dl)	14.7±0.8	14.6±1.0	14.5±0.7				14.6±0.3	14.5±0.8	13.9±0.7

Data are expressed as mean ± SD. MBP = mean arterial blood pressure. DEX = dexmedetomidine. *p<0.05 vs before ischemia in the group. # p<0.05 vs sham group

As shown in Fig. 1, the medians (range) of the NDS were significantly lower in the DEX groups compared to the control group ($p < 0.05$).

Representative photomicrographs of the ventral area of hematoxyline and eosin-stained transverse sections taken from the L4 spinal segment are shown in Fig. 2. The number of viable motor nerve cells in the ventral area of the gray matter in the dexmedetomidine group (39.2 ± 6.5) was significantly greater than was that in the control group (20.2 ± 12 , $p < 0.05$), but was lower than was that in the sham group (58 ± 6 , $p < 0.05$).

This preliminary study showed that dexmedetomidine improved the neurological and histological outcomes after 24 h of transient spinal ischemia and reperfusion. These findings are consistent with a previous report demonstrating that dexmedetomidine provided neuroprotection against brain ischemia [3-11].

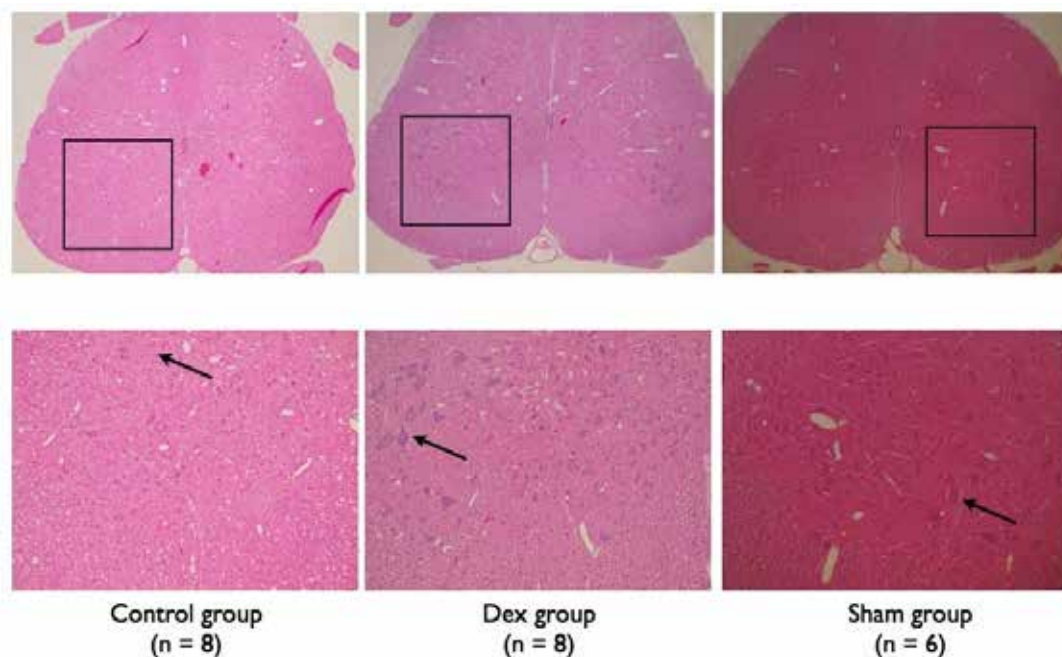


Fig. 2. Representative photomicrographs (x40; upper figures, x100; lower figures) of the ventral area of hematoxyline and eosin-stained transverse section 24 hours after transient spinal ischemia

Arrows indicated viable motor nerve cells

Many previous reports regarding the neuroprotective effects of dexmedetomidine focused on its ability to protect the brain against various insults such as transient focal [3-5], forebrain [6-8], and incomplete ischemia [9-11], anesthesia-related neurotoxicity [22,23], and various other conditions [15,24,25]. Although there

were many studies which referred the drug-induced spinal protection against spinal cord ischemia for example beta-blocker [20], statin [26], and rolipram [27], few studies that dexmedetomidine prevented morphine-induced paraplegia following short-term transient spinal ischemia [18] and reduced spinal cord ischemia-reperfusion injury in mice [19], existed.

In this study, only short-term results (i.e., 24 hours) were assessed. A previous study showed that transient spinal cord ischemia-induced motor dysfunction deteriorated into paraplegia for several days [28]. Neural degeneration was shown to progress gradually after an ischemic insult, with the number of necrotic neurons peaking at 2 days after the insult [29]. Moreover, hind-limb motor function might gradually recover during the 2 weeks following spinal cord ischemia [29]. Therefore, a further study that includes long-term observation is needed.

We did not examine the mechanisms of dexmedetomidine-induced spinal protection in this study. Many previous studies demonstrated the protective effects of dexmedetomidine on the brain against transient focal ischemia [3-5], transient forebrain ischemia [6-8], and incomplete brain ischemia [9-11]. Further, numerous reports have proposed mechanisms for the neuroprotective effects of dexmedetomidine, including decreased activation of focal adhesion [12], imidazoline 1 receptor-extracellular-regulated kinase pathways [12,13], activation of protein kinase C [14], anti-oxidant effect [7,15], excitatory neurotransmitter suppression [10,16], anti-inflammatory effect [7], and anti-apoptotic effect [7,11,17]. Therefore, we can only speculate on the mechanisms responsible for the protective effects of dexmedetomidine against transient spinal ischemia.

Although we did not evaluate the mechanisms or the long-term effects of dexmedetomidine against transient spinal cord ischemia, the results from this preliminary study suggest that dexmedetomidine exerts short-term protective effects against spinal cord ischemia-reperfusion injury. Further studies are warranted to investigate the detailed action, mechanisms, and therapeutic time window of dexmedetomidine-induced spinal protection.

4. CONCLUSION

In summary we investigated the effect of pre-administered dexmedetomidine after transient spinal cord ischemia in rats by performing neurological and histological evaluations. Dexmedetomidine improved the short-term neurological and histological

outcomes, suggesting that dexmedetomidine exerts protective effects on the spinal-cord as well as on the brain.

CONSENT

Not applicable.

ETHICAL APPROVAL

All authors hereby declare Principles of laboratory animal care (NIH publication No. 85-23, revised 1985) were followed, as well as specific national laws where applicable. All experiments have been examined and approved by the Animal Subjects Committee of Akita University Graduate School of Medicine.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Evaluation of clinical and radiological features of the maxillary sinus in the planning of dental implantations

Abstract: The article is devoted to substantiation possibilities of sinus lifting at planning implant rehabilitation in patients with distal dentition defects and bone deficiency of the upper jaw. The features of maxillaries sinus anatomy and mucosa condition was evaluated using CT scan data and described in publication.

Keywords: dentistry, implantology, otorhinolaryngology, maxillary sinus, sinus lift, computed tomography.

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Оцінка клініко-рентгенологічних особливостей верхньощелепної пазухи при плануванні дентальної імплантації

Анотація: Робота присвячена обґрунтуванню можливостей проведення синусліфтингу при плануванні імплантологічної реабілітації у хворих з кінцевими дефектами зубних рядів верхньої щелепи та недостатнім об'ємом кісткової тканини у бокових відділах. У публікації розглядаються особливості анатомії максиллярного синусу та стану слизової оболонки на основі оцінки даних комп'ютерної томографії.

Ключові слова: стоматологія, максиллярний синус, імплантологія, оториноларингологія, синусліфтинг, комп'ютерна томографія.

Вступ

Імплантологічна реабілітація стоматологічних пацієнтів з втратою бічної групи зубів верхньої щелепи може представляти собою складну задачу, що зумовлено нестачею кісткової тканини. Загалом наводять такі основні причини дефіциту: резорбція кісткової тканини після операції видалення зуба чи одонтогенної патології, анатомічні особливості верхньощелепного синусу (наприклад гіперпневматичний тип його будови). Найчастіше спостерігається поєднання перелічених умов [1]. Нерідко зустрічаються випадки, коли між порожниною рота та порожниною пазухи зберігається лише тонка (менш 1 мм завтовшки) кортикальна кістка. Дентальна імплантація у таких хворих без додаткової хірургічної підготовки неможлива (рис. 1).

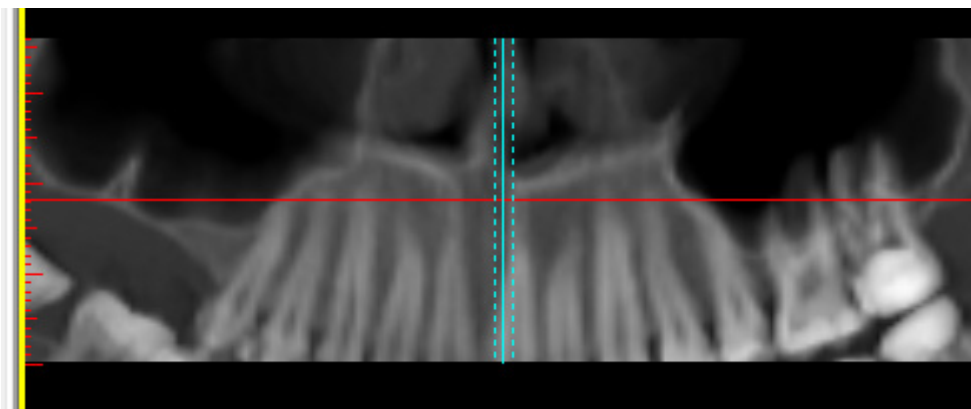


Рис. 1. Пацієнтка Ф., 23 р., історія хвороби № 98. Кінцевий дефект правої верхньої щелепи. Незадовільні умови для дентальної імплантації

Аугментація дна верхньощелепної пазухи на сьогоднішній день є однією з найбільш прогнозованих методик, що дозволяє збільшити об'єм кісткової тканини. Як результат – ділянка стає придатною для постановки дентальних імплантатів (рис. 2).

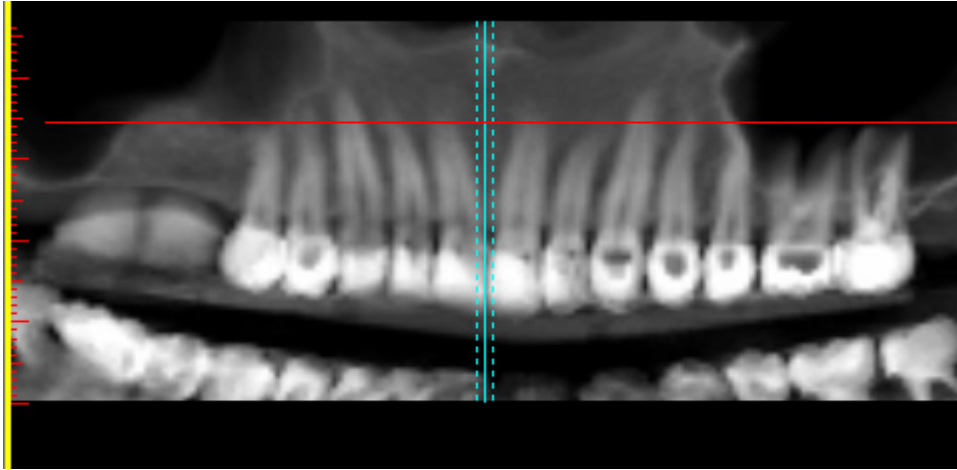


Рис. 2. Пацієнтка Ф., 23 р., історія хвороби № 98. Кінцевий дефект правої верхньої щелепи. Стан після відкритого синусліфтингу

Проведення оперативного втручання потребує ретельного планування. В ході обстеження лікар повинен з'ясувати анатомічні особливості пазухи, взаємовідношення між пазухою та зубами, виявити осередки хронічного інфікування слизової оболонки. Серед об'єктивних методів дослідження комп'ютерна томографія (КТ) є методикою, що найбільш точно відображає кісткову та м'якотканинну структури пазухи. Її вважають своєрідним золотим стандартом дослідження синусу [4, 3]. КТ зображення візуалізують зміни слизової оболонки, що зумовлені різними патологічними процесами: запаленням, алергією, травмою чи пухлиною; чітко визначають присутність кісткової перегородки, наявність якої значно підвищує ризик інтраопераційної перфорації слизової оболонки. Дослідження дозволяє оцінити якість пломбування зубів, що могли стати причиною синуситу, а також побачити остіомеатальний комплекс [6]. Його оцінка є необхідною при плануванні втручання, оскільки зменшений діаметр отвору зумовлює недостатню аерацію пазухи, що підвищує ризик розвитку запальних ускладнень. Отримана інформація дозволяє прогнозувати ризики запланованого втручання та мінімізувати можливі післяопераційні ускладнення. З іншого боку саме запалення чи набряк статистично значимо підвищує ризик розвитку гострого чи хронічного синуситу після процедури аугментації [5].

Таким чином, використання КТ дослідження є запорукою більш безпечного проведення оперативних втручань на максиллярному синусі та підготовки пацієнтів до повноцінної реабілітації.

Мета роботи. За даними комп'ютерної томографії дослідити стан слизової оболонки і структуру максиллярного синусу, та обґрунтувати можливість проведення синусліфтингу при плануванні імплантологічної реабілітації у хворих з кінцевими дефектами зубних рядів верхньої щелепи та недостатнім об'ємом кісткової тканини у бокових відділах.

Матеріали та методи

У клініці кафедри дитячої хірургічної стоматології з пропедевтикою хірургічної стоматології та кафедри оториноларингології з офтальмологією протягом 2010-2015 років нами проведено обстеження 116 пацієнтів. Усім хворим планували заміщення дентальними імплантатами від одного до трьох втрачених зубів у боковій ділянці верхньої щелепи та підняття дна максиллярного синусу. Для оцінки якості кісткової тканини, архітекtonіки верхньощелепного синуса та необхідності у проведенні відкритого чи закритого синусліфтингу здійснювали комп'ютерну томографію верхніх щелеп. Обстеження проводили з використанням спірального комп'ютерного томографа "Siemens somatom Emotion" (Siemens Healthcare GmbH). Характеристики томографа: потужність (kV) 80-130, сила струму трубки (mA) 20-140, час реконструкції (с) < 20, товщина зрізу (мм) 0,63, час сканування (с) 10-15.

Аналіз зображень виконували з використанням програмного забезпечення SimPlant Pro 11.04. Оцінювали показники у трьох площинах (аксіальній, корональній, сагітальній) із кроком 0,63 мм [2]. У дослідження були включені пацієнти, на КТ яких була повністю відображена верхньощелепна пазуха, внутрішньоносові структури, включаючи остіомеатальний комплекс. Основну увагу звертали на потовщення слизової оболонки, наявність ексудату в синусі, стан *ostium maxillaris*. Аксіальні зрізи дозволяли встановити наявність додаткових перегородок. Корональні зображення визначали потовщення слизової дна пазухи та стан природного отвору. Товщину слизової вимірювали перпендикулярно до підлеглої кістки, та занотовували дані. При відсутності патологічних змін слизова оболонка пазухи практично не візуалізується (при її товщині до 2 мм). Потовщення понад 2 мм вважають за патологічний набряк мембрани Шнайдера. Особливості остіомеатального комплексу оцінювали як

«відкритий» при відсутності видимого набряку, та «закритий», якщо слизова блокувала отвір [7].

Поряд з рентгенологічною методикою, при необхідності, оцінювали стан тканин ендоназально. Оптична ендоскопія порожнини носа проводилась усім пацієнтам зі скаргами на порушення носового дихання та наявністю анамнестичних даних за синусити. У разі виявлення стійких морфологічних порушень порожнини носа та остіомеатального комплексу (девіації переділки носа, синехії, наявність *concha bullosa*, гіпертрофії *bullae ethmoidalis*, поліпозних розрощень та новоутворень), проводилось їх хірургічне усунення. Основна мета таких ендоназальних ендоскопічних функціональних втручань – відновлення адекватного дренажу та вентиляції максиллярного синусу перед застосуванням субантральної аугментації. Крім того, в разі виявлення порушень порожнини верхньощелепної пазухи – проводилась її ендоназальна санація. Природний отвір синусу розширювався до розмірів, що забезпечують контроль за станом слизової оболонки в ділянці альвеолярної бухти, можливість локального застосування медикаментозних засобів.

Результати дослідження

Групу дослідження склали пацієнти з повною та частковою адентією верхньої щелепи віком від 21 до 67 років. Чоловіків було 56, жінок 60.

Структура дефектів зубних рядів верхньої щелепи була наступною (табл. 1): у 8 хворих були беззубі верхні щелепи, у 25 – односторонні кінцеві дефекти, у 16 – двосторонні кінцеві, у 34 включені односторонні дефекти (2 та більше зубів), у 21 включені двосторонні, у 12 хворих одиночні дефекти у боковій ділянці.

Таблиця 1. Структура дефектів зубних рядів верхньої щелепи обстежених пацієнтів

Тип дефекта зубного ряду	Кількість хворих	Відсоток
Беззубі верхні щелепи	8	6,90
Односторонні кінцеві	25	21,55
Двосторонні кінцеві	16	13,79
Включені односторонні (2 та більше зубів)	34	29,31
Включені двосторонні (2 та більше зубів)	21	18,10

Одиночні	12	10,34
Разом	116	100

Для отримання прогнозованих результатів ми оцінювали результати КТ дослідження у двох основних аспектах: вивчали стан кісткової тканини, потім – особливості анатомічної будови синусу та його слизової оболонки.

Кількісні характеристики кісткової тканини були такими. Середня ширина кістки становила $6,45 \pm 0,42$ мм. Середня висота кістки під верхньощелепною пазухою становила $6,04 \pm 0,98$ мм (табл. 2). Цей показник коливався від 1 мм до 10,5 мм, що зумовлено давністю видалення зубів, обсягом дефекту зубного ряду. Ця величина набуває більш об'єктивного значення після поділу хворих у залежності від методики оперативного втручання. При виборі тактики ми керувалися загальноприйнятими протоколами щодо проведення синусліфтингу [8]. Так у пацієнтів з висотою кістки більше 6 мм (середнє значення $7,12 \pm 0,65$ мм), нами запланована методика закритого підняття дна гайморової пазухи. Всього таких хворих було 90, з них у 42 випадках не було необхідності додаткового застосування остеопластичних матеріалів (8 мм та більше), у 48 планувалось їх використання (від 6 до 8 мм).

У пацієнтів, висота кістки у яких становила менше 6 мм (середнє значення $3,85 \pm 0,41$ мм), ми планували підняття дна верхньощелепної пазухи за відкритою методикою. Таких хворих було 26, з них у 15 були умови для одномоментної постановки імплантатів (висота 3 мм та більше) у 11 планувалась відстрочена установка дентальних імплантатів (висота менше 3 мм).

Таблиця 2. Висота кістки та тип запланованого втручання у хворих

Запланований вид синусліфтингу		Середня висота кістки (мм)	
		$3,85 \pm 0,41$	$7,68 \pm 0,65$
Відкритий	З одномоментною постановкою імплантатів	15	–
	З відстроченою постановкою імплантатів	11	–
Закритий	Із використанням кісткових замінників	–	48

	Без використання кісткових заміників	–	42
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Особливості архітекtonіки позначені у таблиці 3.

Таблиця 3. Анатомо-рентгенологічна характеристика обстежених хворих

Виявлені особливості	Права пазуха	Ліва пазуха	Обидві пазухи
Потовщення слизової оболонки (від 2 мм)	43	39	22
Тотальний набряк	10	90	5
Наявність кріст	35	41	22
Киста	6	8	4
Пломбувальний матеріал	2	6	–

Потовщення слизової оболонки нами встановлено у 43 хворих справа, у 39 зліва і у 22 – в обох пазухах (рис. 3).

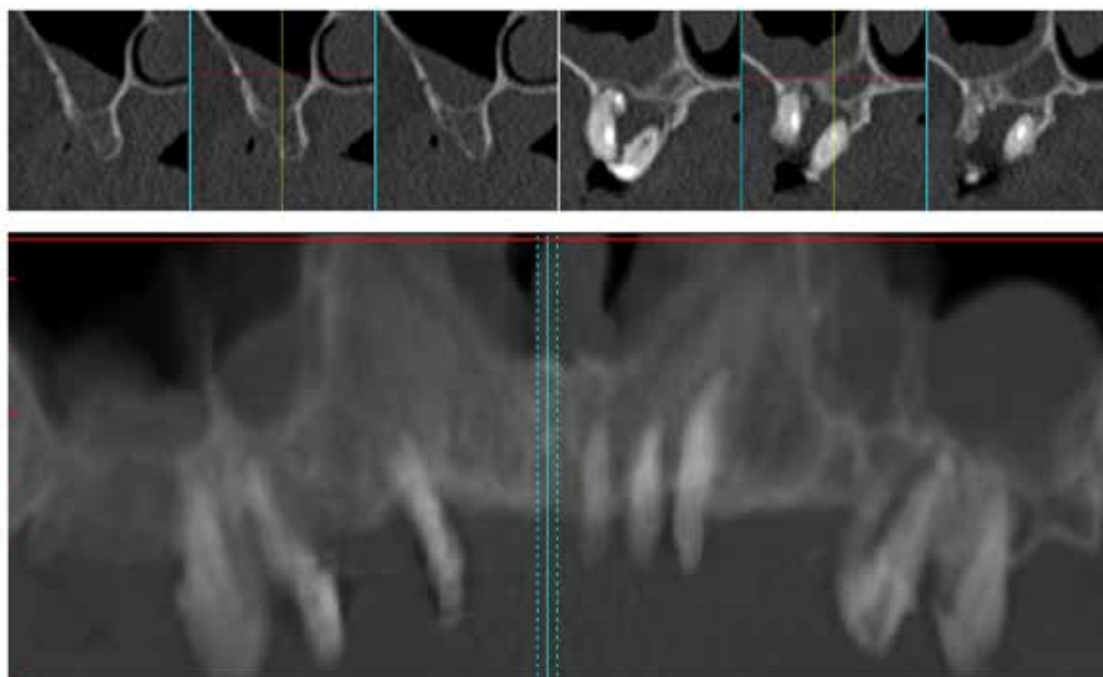


Рис. 3. Пацієнтка А., 61 р., історія хвороби № 63. Двостороннє потовщення слизової оболонки, хронічний періодонтит 16, 26, 27

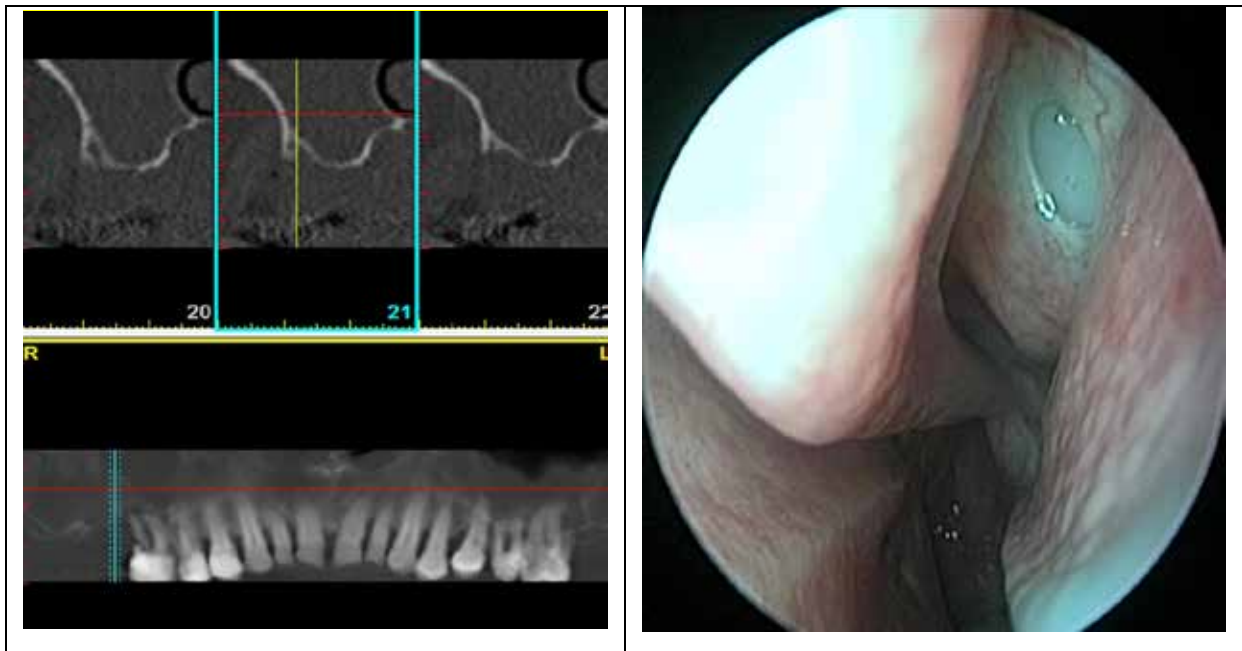


Рис. 4. Пацієнт Г., 59 р., історія хвороби № 89. Двостороннє тотальне потовщення слизової оболонки, обструкція остіомеатального комплексу. Заблоковане співюстя максиллярного синусу

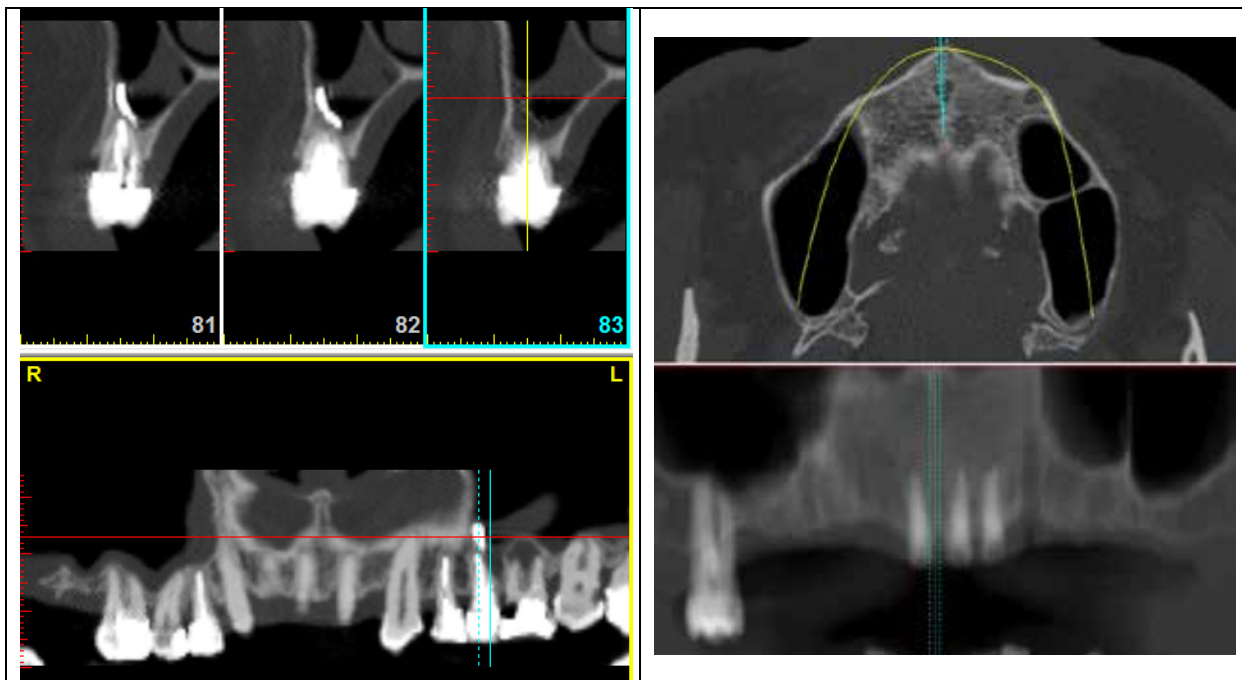


Рис. 5. Пацієнтка Л., 52 р., історія хвороби № 203. Пломбувальний матеріал у лівій верхньощелепній пазусі

Рис. 6. Пацієнт Г., 49 р., історія хвороби № 105. Присутня кісткова перегородка у лівій верхньощелепній пазусі

Товщина мембрани Шнайдера коливалася від 2,5 мм до 13,1 мм (середнє значення становило $4,86 \pm 0,34$ мм). Повна або часткова блокада природного максиллярного отвору констатована у 15 хворих справа та 13 – з лівого боку, двостороння – у 7 пацієнтів. Тотальне потовщення із обструкцією остіомеатального комплексу нами виявлено у 10 пазухах справа, 9 зліва, у 5 – двостороннє (рис. 4).

Присутність пломбувального матеріалу в порожнині пазухи нами встановлено у 2 хворих справа та у 6 зліва (рис. 5). Наявність перетинки визначалась у 35 пацієнтів справа та у 41 з лівого боку, у 22 обстежених з обох боків (рис. 6).

Кісту діагностовано у 4 хворих з обох боків та у 6 з одного боку (рис. 7). Вказані зміни не залежали від віку та статі хворих.

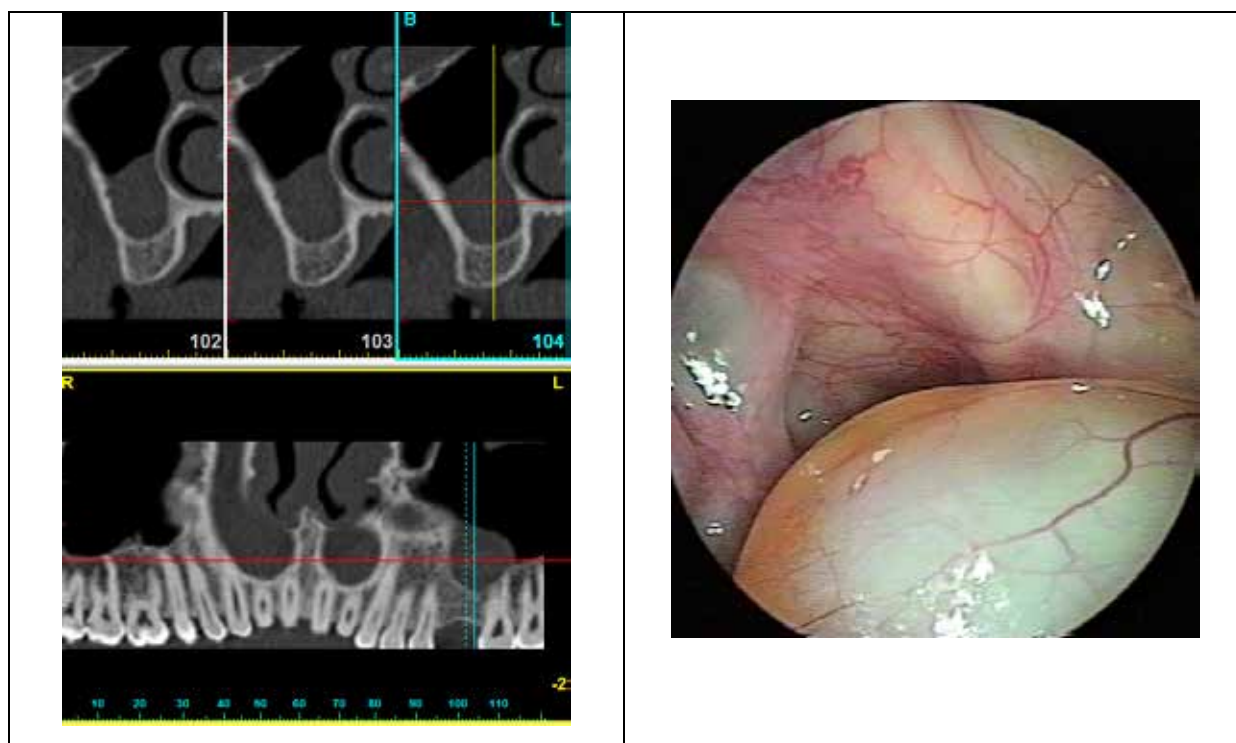


Рис. 7. Пацієнт П., 31 р., історія хвороби № 133. Кіста лівої верхньощелепної пазухи

Загалом зміни запального характеру нами виявлені у 101 синусі. Найчастіше вони були односторонніми, що на нашу думку вказує на їхній зв'язок із хронічними верхівковими перідонтитами вже видалених, або поряд розташованих зубів. Однак у певної кількості хворих зміни не мали такого зв'язку. Всі хворі не залежно від етіології змін були проконсультовані

оториноларингологом. Лише у такій співпраці приймалося рішення про комплекс заходів у зацікавленій ділянці.

Аналізуючи цифрові дані, слід вказати, що із 160 синусів, в ділянці яких планувалось оперативне втручання, з різних причин воно було виконане лише у 82 випадках. Так втручання не виконували у таких категорій пацієнтів:

- усіх з беззубими верхніми щелепами (було прийнято рішення на користь менш травматичних операцій, або відмова від дентальної імплантації);
- усіх з тотальним набряком пазух (через протипоказання);
- у решти – через протипоказання, відмову від підняття дна пазухи, застосування мостоподібних та знімних конструкцій протезів.

Висновки. Передімплантаційне комп'ютерно-томографічне дослідження верхніх щелеп дозволяє ретельно оцінити розміри кісткової тканини, встановити особливості архітекtonіки пазух та стан слизової оболонки. Планування оперативних заходів повинно відбуватись у співпраці з лікарем-оториноларингологом, який безпосередньо може усунути несприятливі фактори, що існують у максиллярному синусі. Лише такий комплексний підхід дозволить вибрати тактику для вирішення задачі зі збільшення об'єму кістки, проводити оперативні втручання на верхньощелепному синусі з найменшими ризиками ускладнень, та досягти прогнозованого результату.

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Morphological changes of the gastric and duodenum mucosa in children with erosive and ulcerative lesions

Abstract: This article is devoted to morphological changes of the gastric and duodenum mucosa in children with gastric erosions and ulcerative disease. Identified the Type and depth of lesions of the gastric and duodenal mucosa were identified.

Keywords: morphology, erosive gastroduodenitis, peptic ulcer.

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***Морфологические изменения слизистой оболочки
желудка и двенадцатиперстной кишки у детей
с эрозивно-язвенными поражениями***

Аннотация: Данная статья посвящена морфологическим изменениям слизистой желудка и двенадцатиперстной кишки при эрозивных гастродуоденитах и язвенной болезни у детей. Выявлены характер и глубина поражения слизистой оболочки желудка и двенадцатиперстной кишки.

Ключевые слова: морфология, эрозивный гастродуоденит, язвенная болезнь.

Наибольшую часть поражений органов пищеварения у детей составляют хронические воспалительные заболевания гастродуоденальной зоны при тенденции к росту эрозивно-язвенных поражений. Эти полиэтиологические заболевания характеризуются функциональными, морфологическими, метаболическими нарушениями и имеют определенные особенности в зависимости от формы поражения [2,3,4]. При проведении эндоскопического исследования по поводу диспепсических жалоб эрозии гастродуоденальной слизистой оболочки обнаруживаются у 2-15% больных, язвы желудка или ДПК – почти у 25% взрослых больных. На долю язвенной болезни у детей приходится от 1,7 до 16%. По данным зарубежных авторов, частота эрозивно-язвенных поражений у детей в Европе варьирует от 0,5 до 22%, по данным американских и английских исследователей, их частота составляет 1,7% [6].

Анализ работ, посвященных изучению деструктивных поражений верхних отделов пищеварительного тракта, свидетельствует о том, что эрозии желудка и ДПК во многом схожи с ЯБ ДПК, но имеют и свои особенности, требующие дополнительного изучения как в отношении клинических проявлений, так и параклинических характеристик с учетом морфологических изменений слизистой оболочки желудка и двенадцатиперстной кишки [1,5,7].

Цель работы – выявить и сравнить частоту и характер морфологических изменений слизистой желудка и 12-перстной кишки при эрозивно-язвенных поражениях гастродуоденальной зоны у детей для своевременной диагностики и прогнозирования заболевания.

Для определения характера и глубины поражения СОЖ и ДПК проводилось морфологическое исследование биоптатов тела, антрального отдела желудка и луковицы ДПК из наиболее измененных участков слизистой у 66 пациентов: 45 детей с эрозивным гастродуоденитом и 21 ребенок с язвенной болезнью ДПК. Морфологические заключения были сделаны в соответствии с

Сиднейско-Хьюстонской классификацией хронических гастритов. В целом морфологические изменения, соответствующие хроническому гастриту, отмечались в пилороантральном отделе в 90,9% случаев, в теле желудка – в 77,1% наблюдений. У некоторых детей выявлена неизменная слизистая, хотя при эндоскопическом обследовании у всех больных в той или иной степени отмечались признаки воспалительного процесса СОЖ, а наличие деструктивных изменений при этом подтверждало обострение заболевания. Хронический дуоденит определялся у 100% больных.

В антральном отделе желудка неизменная морфологически слизистая выявлена у третьей части пациентов со смешанным и нодулярным гастритом. Хеликобактерассоциированный гастрит в антральном отделе у 20,9% пациентов был поверхностным (ПГ).

В половине случаев начальный атрофический гастрит (НАГ) преобладал над ПГ ($p < 0,001$) и умеренно выраженным атрофическим гастритом (УАГ) ($p < 0,01$). У 25,6% детей выявлен умеренно выраженный атрофический гастрит (УАГ).

В целом атрофические изменения СО антрального отдела (различной степени) достоверно превалировали над поверхностными именно у детей с хеликобактерассоциированным процессом ($p < 0,001$), в то время как при отсутствии инфицирования не было достоверных различий между поверхностными и атрофическими вариантами при НР-отрицательном гастрите.

В теле желудка при хеликобактерассоциированном гастрите почти с одинаковой частотой встречались поверхностный (50,0%) и начальный атрофический (46,9%) гастрит. При НР-варианте гастрита в теле желудка неизменная СО выявлена чаще, чем ПГ и НАГ – $p < 0,05$; $p < 0,001$. У всех обследованных детей в теле желудка наиболее часто диагностирован поверхностный гастрит – у 43,8%, НАГ – у 33,3%, неизменная слизистая у 22,9% пациентов.

У детей с ГД с плоскими эрозиями и с ЯБ ДПК чаще встречались поверхностные активные изменения, что характеризовало остроту процесса.

У 36,4% больных с ГД с полными эрозиями выявлен НАГ, более характерный для хронического процесса, иногда в стадии активного; одновременно неизменная СО диагностирована почти у половины пациентов (45,4%).

Для пациентов с деструктивными поражениями наиболее характерным являлся НАГ (43,9%) и ПГ (28,8%), УАГ отмечен у 18,2% детей, а неизменная слизистая – у 9,1%.

У больных с плоскими эрозиями поверхностные и начальные атрофические изменения СОЖ встречались с одинаковой частотой (38,5%), умеренно выраженные атрофические – у 15,4%. Однако в сумме атрофические изменения в антральном отделе не преобладали над поверхностными.

Более выраженные атрофические явления (НАГ и УАГ) отмечены у детей с полными эрозиями ($p < 0,05$) и язвенной болезнью ($p < 0,001$): здесь преобладал НАГ (у 42,1% и 52,4% детей), встречались умеренно выраженные атрофические изменения (у 15,8% и 23,8% пациентов), реже – поверхностные изменения ($p < 0,05$) и неизменная слизистая ($p < 0,001$).

Преобладание атрофических и поверхностных изменений при полных эрозиях и язвенной болезни свидетельствует о прогрессировании процессов атрофии и кишечной метаплазии СО антрального отдела желудка при длительно текущем воспалительном процессе, особенно при продолжительной персистенции НР.

Следует отметить, что у детей активный гастрит встречался чаще в антральном отделе (72,7%). При плоских эрозиях он выявлен почти у 2/3 пациентов, при полных – у 3/4-х больных морфологически отмечался активный антрум-гастрит. Частота активных форм увеличивалась в соответствии с выраженностью деструктивного процесса и наиболее часто встречалась при язвенной болезни (у 81,0%).

В теле желудка активный и неактивный процессы были отмечены одинаково часто, при язвенной болезни активные изменения также не преобладали над неактивными. Во всех отделах желудка активный гастрит был преимущественно НР-ассоциированным и соотносился с НР-отрицательным вариантом в антральном отделе как 5:1, в теле желудка – 23:1. Неактивный гастрит был чаще нехеликобактерным ($p < 0,001$).

Эрозивный процесс лишь у половины детей был связан с хеликобактерной инфекцией, в то время как при язвенной болезни ДПК процент НР+ вариантов значительно возрастает ($p < 0,001$), достигая 85,7% по результатам гистологического метода. Кроме того, мы не выявили статистических различий между частотой НР-инфицированности и характером эрозии. И при плоских, и

при полных эрозиях процент НР+ форм был примерно одинаков (53,8% - 57,9%). Однако в целом преобладали НР-ассоциированные деструктивные процессы ($p < 0,001$).

Эндоскопической картине деструктивного процесса соответствовали определенные морфологические изменения. В антральном отделе при эндоскопически поверхностном гастрите встречался ПГ – у 40,0% больных, атрофические изменения (НАГ и УАГ) выявлены в $56,0 \pm 10,1\%$ случаев. При нодулярном варианте превалировал НАГ ($p < 0,001$), встречаясь в 4 раза чаще ПГ и УАГ.

В целом в антральном отделе желудка преобладали атрофические изменения (НАГ и УАГ) ($p < 0,001$), в 1,5 раза реже встречались поверхностные (28,8%), а УАГ определялся лишь у 18,2% пациентов, подвергшихся морфологическому исследованию.

В теле желудка при поверхностном гастрите также выявлен ПГ (у 44,4%) и НАГ (у 33,3%). При нодулярном гастрите определялся ПГ (52,2 %) – в 1,5 раза чаще, чем НАГ (34,8%), однако эти данные были недостоверны. У всех детей со смешанным гастритом и у 22,2% детей с поверхностным гастритом морфологически выявлена неизменная слизистая.

Полученные данные свидетельствуют о более глубоких поражениях СО в антральном отделе, нодулярные эндоскопические изменения чаще ведут к тотальным начальным атрофическим изменениям, которые выявляются при гистологическом исследовании, в том числе с преобладанием более выраженной умеренной атрофии в антруме.

В биоптатах из луковицы ДПК патологический процесс был активным у большинства пациентов (97,2%), и лишь у одного – неактивным. У детей одинаково часто выявлены поверхностный (38,9%) и диффузный дуоденит (38,9%), несколько реже встречался субатрофический процесс (19,4%) и в одном случае (2,8%) – эрозивный дуоденит. Гистологически при плоских эрозиях в подавляющем большинстве случаев был выявлен диффузный дуоденит, он преобладал над другими вариантами ($p < 0,001$), при полных эрозиях с одинаковой частотой встречались поверхностные и диффузные изменения. Язва луковицы ДПК возникала преимущественно на фоне поверхностного дуоденита ($p < 0,01$). Данные морфологические изменения в

большинстве случаев – у $94,4 \pm 3,9\%$ детей - соответствовали эндоскопической картине поверхностного дуоденита.

Проведя морфологические исследования, мы установили, что более выраженные изменения выявлялись в антральном отделе желудка. По мере нарастания тяжести основного заболевания увеличивается число атрофических процессов слизистой оболочки желудка. Частота активных форм гастрита также возрастает в соответствии с выраженностью деструктивного процесса. Эндоскопические нодулярные изменения СОЖ чаще ведут к атрофическим изменениям. В луковице ДПК активный воспалительный процесс выявлен в $97,2 \pm 2,8\%$ случаев.

Таким образом, для верификации диагноза хронического гастродуоденита, который сопровождает деструктивные заболевания у детей, необходимо учитывать и сопоставлять эндоскопические характеристики с гистологическим заключением о состоянии различных отделов желудка и ДПК. Наиболее часто встречающиеся начальные атрофические изменения носят преходящий характер, служат морфологическим отражением остроты процесса и могут быть использованы в качестве морфологического критерия эффективности терапии.

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Peroxosolvates of Magnesium and Zinc Silicates. Obtaining, structure and stability studies

Abstract: This article is devoted to methods of obtaining peroxosolvates of magnesium and zinc silicates are developed under laboratory conditions. It is established that the content of hydrogen peroxide in the peroxosolvates of magnesium and zinc silicates accounts for 14.5 wt.% and 30 wt.%, respectively. It is established that crystalline state is characteristic for the peroxosolvate of magnesium silicate, while peroxosolvate of the zinc silicate is amorphous.

Keywords: peroxosolvate, magnesium, zinc, silicate, hydrogen peroxide.

Peroxosolvates of the salts of organic and inorganic acids, some organic compounds of basic nature, as well as peroxides of the alkaline-earth metals have special importance in the chemistry of hydrogen peroxide [1-4]. Chemical reactions yielding peroxosolvates make up the only field in the chemistry of hydrogen peroxide, where the molecules of hydrogen peroxide remain stable and transform from the inherent liquid form into the solid, despite their capability to decompose rapidly in the presence of small amounts of different catalysts.

A distinctive feature of hydrogen peroxide implies that coordination with salts takes place unlike the normally expected case with the participation of two oxygen atoms containing in its molecule, by means of which hydrogen peroxide could enter into the coordination sphere of a cation, similar to water. Solvation of salts by hydrogen peroxide occurs through another mechanism: the formation of hydrogen bonds between H₂O₂ and salt anions [1-6].

Currently water-soluble peroxosolvates of salts of inorganic acids have been much studied [1,4]. Certain of those found practical application. For example, peroxosolvate of sodium carbonate is widely using in detergents as bleaching agent under the name "persalt". Peroxosolvate of carbamide under the name "hydroperit" finds use in the medicine and home as an antiseptic and the source of hydrogen peroxide. In recent years a method for production of the peroxosolvate of potassium fluoride and a disinfectant on its basis was developed [2,3].

In the literature, unlike the water-soluble peroxosolvates of alkaline metals researches are unavailable devoted to obtaining peroxosolvates of alkali-earth metals' salts and water-insoluble peroxosolvates and examinations of their structures. It is well known [1,2] that peroxide compounds of alkali-earth metals (for example, peroxides of calcium and magnesium) exhibit better thermal stability, and are less prone to the effect of moisture and atmospheric carbon dioxide as compared to those of alkaline metals. This fact made it possible to use these compounds in the metallurgy, pyrotechnics, chemistry of polymers, medicine and food industry, as well as for the treatment of sewage water [1]. Peroxosolvates of calcium and magnesium peroxides act as rich sources of active oxygen [2], however a very few studies were devoted to obtaining and studying their properties, and application fields are not yet established.

Water-insoluble peroxosolvates show interesting properties [8,9]. If at the solution of various water-soluble peroxosolvates whole hydrogen peroxide immediately passes into the liquid state, then in the case of water-insoluble peroxosolvates this transfer takes place gradually with the measurable rates typical for different peroxosolvates [8,9]. At the same time, these rates can be determined quantitatively, which is of practical importance from the viewpoint of hydrogen peroxide time dosage in the solution. So, quantitative measuring and controlling the rate of hydrogen peroxide transfer from the solid peroxosolvate into the solution is an urgent issue.

The basic objective of this research is to study the possibility of obtaining peroxosolvates of water-insoluble compounds: magnesium and zinc silicates (MgSiO_3 , ZnSiO_3); to determine the quantity of solvated hydrogen peroxide; to study structural features of peroxosolvates; to evaluate the stability, as well as the rates of molecular oxygen liberation from the suspensions of peroxosolvates.

Experimental

Several synthetic methods were tested under laboratory conditions to obtain peroxosolvates of magnesium and zinc silicates. From the viewpoint of maximum yield of the target product the most optimal method is as follows. 30% solution of hydrogen peroxide is poured into a flat-bottom flask equipped with a stirrer and the flask is cooled up to 0°C. Then an insoluble salt is added into the flask at stirring (with the amount of 14 times less than that of hydrogen peroxide in the solution), kept for 40 min and poured into a flat-bottom flask, cooled up to -5°C and kept for 2 hrs at this temperature. The precipitate is filtered and dried by air flow in a drying oven at 50°C. The yield of final products is 88-90% for magnesium silicate and 92-95% for zinc silicate.

The content of hydrogen peroxide in the products obtained was determined by the permanganometry. For this purpose the products were mixed with distilled water and the content of hydrogen peroxide in the suspension was determined by titration of the liquid phase. During this procedure gradual transition of hydrogen peroxide into the solution was observed. Such behavior was detected by the following feature. After titration of the first portion of hydrogen peroxide in the solution no decoloration was registered. However, after the certain period (5-10 min) decoloration takes place, which testifies to continuous transfer of peroxosolvates' hydrogen peroxide into the solution. Decoloration after titration of the first portion of the solution during 15-30 minutes is a conditional indicator of the second stage of hydrogen peroxide transfer into the solution. If decoloration does not occur during 30 min and more the titration is considered to be completed, thus total amount of hydrogen peroxide from the peroxosolvates of magnesium and zinc passed into the solution is determined.

Hydrogen peroxide transfer from the peroxosolvate of magnesium silicate into solution was observed to be taking place through three stages. 0.12 mol hydrogen peroxide passes into the solution during the first stage, and 0.17 mol and 0.21 mol for the second and third stages, respectively. Thus, total amount of hydrogen peroxide of 0.5 mol per one mol of magnesium silicate was determined, that is the content of hydrogen peroxide in the peroxosolvate of magnesium silicate accounts for 14.5 wt.%.

In the case of peroxosolvate of zinc silicate two stages of hydrogen peroxide transfer into the solution were registered. 0.5 mol and 1.5 mol of hydrogen peroxide

is transferred into the solution at the first and second steps, respectively. Thus, total amount of hydrogen peroxide in the peroxosolvate of zinc silicate is 30.0 wt.%.

Stability of the peroxosolvates under consideration was determined on the basis of titration results, presented in the Tables 1 and 2.

Table 1. Stability of the peroxosolvate of magnesium silicate at 22±2°C

<i>T, days</i>	<i>Hydrogen peroxide content in the solvate, wt. %</i>	<i>Degree of hydrogen peroxide decomposition, η, %</i>
0	14,50	0,00
2	14,50	0,00
3	14,45	0,20
4	14,43	0,20
7	14,35	0,50
14	14,32	0,50
22	14,30	0,80
28	14,23	0,80
35	14,11	0,70
45	14,02	0,80
50	13,93	1,70

Table 2. Stability of the peroxosolvate of zinc silicate at 22±2°C

<i>T, days</i>	<i>Hydrogen peroxide content in the solvate, wt. %</i>	<i>Degree of hydrogen peroxide decomposition, η, %</i>
0	30,00	0
2	30,00	0
3	29,87	0,20
4	29,86	0,50
7	29,85	0,50
14	29,81	0,50
22	29,78	0,50
28	29,72	0,80
35	29,60	1,00
45	29,01	1,40
50	28,83	1,60

The volume of liberated oxygen was measured by the gasometry [7] and based on the obtained data the rate of active oxygen release at decomposition of hydrogen peroxide in the suspensions (particle size in the suspension is less than 10^{-5} mm) of peroxosolvates of magnesium and zinc silicates was calculated. Average rates of

oxygen release from the suspensions of magnesium and zinc silicates' peroxosolvates were measured to be $6.9 \cdot 10^{-7} \text{ mol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$ and $6.8 \cdot 10^{-7} \text{ mol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$, respectively. That is oxygen liberation from both the suspensions takes place practically with the same rate.

To study structural features of the peroxosolvates considered diffraction patterns of these compounds were obtained (Fig. 1) using a DRON-3 diffractometer.

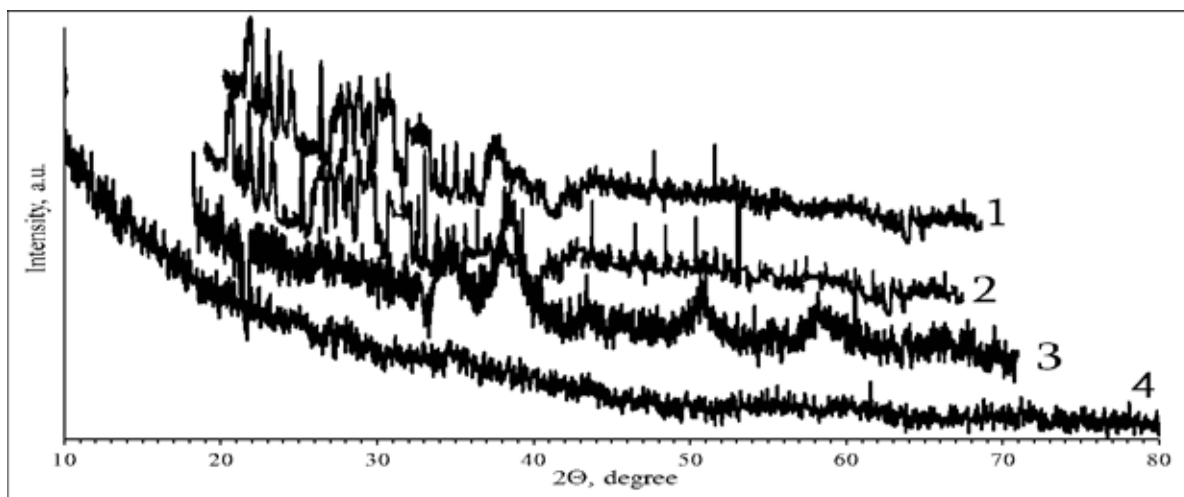


Fig. 1. Diffraction patterns of the magnesium silicate - 1; peroxosolvate of magnesium silicate - 2, zinc silicate - 3 and the peroxosolvate of zinc silicate - 4

IR spectra of magnesium silicate and its peroxosolvate were obtained using the Nicolet/FTIR NEXUS spectrometer (Fig. 2).

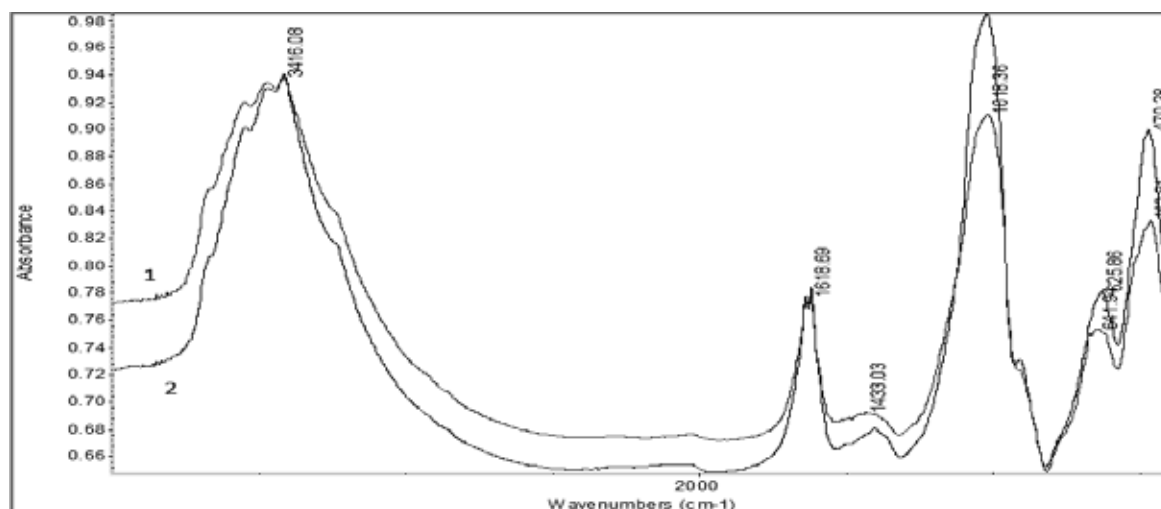


Fig. 2. FTIR spectra of magnesium silicate (1) and its peroxosolvate (2)

It is obvious from X-ray patterns that the compound obtained by interaction of magnesium silicate with hydrogen peroxide and then dried, is characterized by crystalline state. In the case of the peroxosolvate of zinc silicate the obtained product is amorphous. Similar results were presented recently at examination of a compound obtained by interaction between the zinc carbonate and hydrogen peroxide [8].

The diffractograms (Fig. 1) indicate also that main characteristics of the obtained compounds fit to those of both the initial metal silicates, as well as zinc and magnesium peroxides [9].

Analysis of IR spectra (Fig. 2) indicates that changes in the frequency of valence vibrations of the Si-O ($400\text{-}650\text{ cm}^{-1}$) and Si-OH ($3300\text{-}3400\text{ cm}^{-1}$) groups in the compound obtained at interaction between magnesium silicate and hydrogen peroxide contains hydrogen peroxide in the bound state, thus testifying about the peroxosolvate formation.

Combination of IR and X-ray analyses data indicates that reactions of magnesium and zinc silicates with hydrogen peroxide yield two substances: peroxide of the corresponding metal and peroxosolvate of the metal silicate.

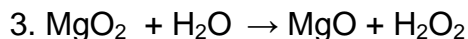
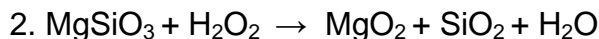
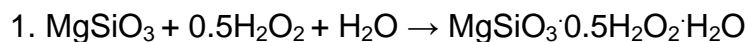
Discussion and Conclusion

The obtained experimental results have shown that interaction between hydrogen peroxide and magnesium and zinc silicates yields water-insoluble complex compounds: peroxosolvates. Stability of dry magnesium and zinc peroxosolvates and the rate of oxygen liberation from suspensions differ insignificantly. Peroxosolvates differ by the content of hydrogen peroxide: amorphous zinc peroxosolvate contains hydrogen peroxide in amount of 30,0 wt.% and the magnesium peroxosolvate – 14.5 wt.%. At the same time, as the data of X-ray and FTIR analyses have shown, peroxides of metals and water enter into the composition of these peroxosolvates.

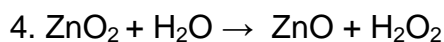
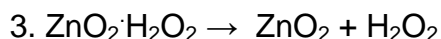
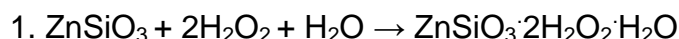
Formation of molecular complexes with participation of hydrogen peroxide may be conceived as follows. Oxygen atoms in the molecules of magnesium and zinc silicates, hydrogen peroxide and water can form weak donor-acceptor bonds via unshared paired valence p-electrons, while magnesium and zinc atoms act as acceptors of these paired electrons. Peroxosolvates represent the most probable models of complexes in which such complex compounds are formed due to above-mentioned donor-acceptor bonds between the molecules of zinc or magnesium silicates and those of hydrogen peroxide and water.

Presumable mechanisms of the formation of peroxosolvates taking into account their composition may be presented as follows:

a) in the case of magnesium silicate



б) in the case of zinc silicate



A question was raised as to how many molecules inter into the composition of these peroxosolvates. It was found that this depends on reaction conditions, in particular, on temperature, the concentration ratio of silicates and hydrogen peroxide in the solution.

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The efficiency of using adaptogenic preparations influencing on dental fluorosis manifestation in children with dysplastic scoliosis in the area of endemic fluorosis

Abstract: The dental fluorosis prevalence was $56,83 \pm 2,79\%$ in children with dysplastic scoliosis that in two times more than healthy children ($27,97 \pm 2,92\%$) in the area of endemic fluorosis. There was revealed a direct dependence between the manifestations basic disease and its severity.

The preventive and treatment complex "Biotrit-C" - "EKSO" - "Calcite" has a reliable prolonged preventive effect on dental hard tissues with fluorosis in children with dysplastic scoliosis.

Keywords: children, fluorosis, dysplastic scoliosis, prevention, treatment.

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Эффективность действия адаптогенных препаратов на течение флюороза зубов у детей с диспластическим сколиозом в зоне эндемического флюороза

Аннотация: В зоне эндемического флюороза флюорозные поражения зубов у детей с диспластическим сколиозом встречаются в $56,83 \pm 2,79\%$, что в два раза чаще, чем у здоровых детей ($27,97 \pm 2,92\%$). Выявлена прямая зависимость степени его тяжести от проявлений основного заболевания.

Применение у детей с диспластическим сколиозом лечебно-профилактического комплекса: «Биотрит-С»-«ЭКСО»-«Кальцит» привело к выраженному пролонгированному профилактическому влиянию на твердые ткани зубов, пораженных флюорозом.

Ключевые слова: дети, флюороз, диспластический сколиоз, лечение, профилактика.

Актуальность. Проблема, связанная с влиянием фтора на организм человека, уже много лет является предметом научных исследований и дискуссий. Такое внимание к различным аспектам биологического действия фтора на организм обусловлено очень широкой распространенностью этого галогена в природе, способностью включаться в обменные процессы и влиять на минерализацию костей и зубов [1, 2, 3, 4].

Важность данного вопроса обусловлена также и тем, что в Украине определены ряд регионов эндемического флюороза, где проживает значительная часть населения, у которых наблюдается высокое поражение твердых тканей зубов некариозного происхождения [3, 5, 6, 7].

Однако флюороз - это не только избирательное повреждение зубов, ведь токсическое влияние избыточного поступления в организм фтора и его соединений приводит к торможению синтеза белка, снижению активности

ферментов, нарушению метаболических процессов. Отмечено, что пребывание детей в условиях длительной фтористой интоксикации приводит к снижению неспецифической резистентности организма, задержке формирования белковой матрицы эмали и дентина зубов, нарушению процесса минерализации, расстройству кровообращения в тканях пародонта и пульпе зуба, что способствует возникновению гипоплазии эмали и развитию заболеваний тканей пародонта [5, 6, 7, 8].

Нарушается также минерализация костей, что проявляется обеднением их кальцием, магнием, накоплением натрия, калия, что приводит к развитию дистрофических изменений в костях, даже к остеопорозу [4, 8]. Наиболее чувствительны к фтористой интоксикации дети, особенно в периоды интенсивного роста, когда процессы моделирования костной ткани максимально напряжены и фтор активно включается в ее метаболизм. В эндемичных очагах увеличивается процент детей с дисгармоничным физическим развитием, а также растет количество ортопедических заболеваний, в том числе и диспластический сколиоз [9, 10, 11, 12].

Проведенное нами ранее изучение особенностей распределения химических элементов в эмали постоянных зубов у детей с диспластическим сколиозом выявило достоверное уменьшение количества кальция и увеличение содержания фосфора, что привело к падению кальций-фосфорного коэффициента и снижению ее резистентности. Повышение же процентной количества калия и серы в эмали свидетельствовало о замедлении процессов ее "созревания", что является весьма важным фактором риска кариозного и некариозного повреждения зубов у детей с диспластическим сколиозом, проживающих в зонах эндемического флюороза [13].

Проведенные исследования позволили установить высокую эффективность адаптогенных препаратов растительного происхождения при включении их в состав комплекса лечебных мероприятий у данной категории детей [14]. Будучи продуктом активной функциональной деятельности живых систем, они играют роль индукторов приспособления организма к хроническим интоксикациям, начиная с клеточного уровня, снижая их негативное влияние и повышая неспецифическую резистентность. Эффективность действия адаптогенов доказана и при хронической фтористой интоксикации организма, одним из проявлений которой является флюороз зубов [15, 16].

Реодонтографический контроль позволил засвидетельствовать при этом улучшение функционального состояния кровеносных сосудов пульпы зуба, уменьшение ТЕР теста, повышение показателей белизны зубов на 5-10%, что свидетельствует об улучшении состояния минерализации зубов [15].

Таким образом, исследование эффективности влияния адаптогенных препаратов и их комплексов на стоматологический статус у детей в зоне эндемического флюороза, является актуальной задачей для стоматологии детского возраста.

Цель исследования - повышение резистентности твердых тканей зубов у детей с диспластическим сколиозом, проживающих во фтористой провинции, за счет применения комплекса лечебно-профилактических мероприятий.

Материалы и методы исследования. Для решения поставленных задач нами обследовано 315 детей в возрасте от 7 до 15 лет, больных диспластическим сколиозом I-II степени тяжести (основная группа) и 236 практически здоровых аналогичного возраста. При обследовании дети основной группы находились на лечении в Полтавском областном санатории для детей с нарушениями опорно-двигательной системы, которое включало: дозированную разгрузку позвоночника путем лежания на клиновидной подставке, массаж мышц спины и лечебную гимнастику. Контрольную группу составили учащиеся средних школ № 31, 38 г. Полтавы.

Анализ пораженности зубов флюорозом проводился на основе обследования по методике, рекомендованной ВОЗ (1989), учитывали распространение флюороза (%), степень флюорозного поражения согласно критериям Dean [17].

Результаты исследования и их обсуждение. В ходе анализа результатов исследования установлено, что флюорозные поражения зубов у детей с диспластическим сколиозом встречаются в $56,83 \pm 2,79\%$, что в два раза чаще, чем у здоровых детей ($27,97 \pm 2,92\%$). Данные о распространности флюороза в зависимости от тяжести заболевания и от возраста представлены в таблице 1.

В частности, в 7-9-ти летних детей, то есть в первые годы после прорезывания постоянных зубов, наибольшая доля флюорозных поражений приходится на очень легкую форму ($35,71 \pm 5,73\%$ против $16,00 \pm 4,23\%$ у здоровых детей), легкая и умеренная формы встречались одинаково часто, что в целом составило $18,57 \pm 4,65\%$ против $10,67 \pm 3,56\%$. Умеренные формы

флюороза отмечались в 4,4 раза реже, чем начальные ($10,00 \pm 3,58\%$ против $44,28 \pm 5,94\%$). Тяжелые формы флюороза не обнаружены ни у одного ребенка.

Начиная с 10 лет, у детей со сколиозом нами выявлены тяжелые формы флюороза, причем процент распространенности его тяжести с возрастом растет от $3,85 \pm 3,77\%$ в 10 лет до $7,69 \pm 5,22\%$ в 15 лет.

В 12 летних детей очень легкая степень флюороза выявлена в $24,32 \pm 4,98\%$, что в 1,5 раза реже, чем у детей младшего школьного возраста. Вместе с тем выросла доля детей с флюорозом легкой и умеренной форм, что составило $27,02 \pm 5,16\%$. Умеренная и тяжелая формы флюороза в 12 летних детей встречаются уже в 1,5 раза реже, чем начальные - $22,97 \pm 4,89\%$ против $35,14 \pm 5,55\%$.

В 15 летнем возрасте процент детей с умеренными и тяжелыми формами флюороза начинает превалировать над количеством детей с легкими формами - $30,77 \pm 9,05\%$ против $26,92 \pm 8,69\%$, соответственно.

Итак, с увеличением возраста детей очень легкие и легкие формы флюороза встречаются реже, а умеренный и тяжелый флюороз диагностируется значительно чаще. Такие возрастные различия в распространенности флюороза различных степеней тяжести, при сохранении почти одинаковой общей частоты его в различные возрастные периоды (от $52,00 \pm 9,99\%$ до $58,11 \pm 5,73\%$), является следствием перехода с течением времени очень легких и легких форм в более тяжелые.

Вместе с тем, нами проведен анализ распространенности флюороза у детей с диспластическим сколиозом и в зависимости от степени тяжести сколиоза (табл. 2). Так, распространенность флюороза у детей со II степенью тяжести несколько выше, чем у детей с I степенью тяжести - $63,41 \pm 5,31\%$ против $54,07 \pm 3,26\%$. Легкие формы флюороза у детей со сколиозом I степени встречаются чаще, чем у детей со II степенью - $38,19 \pm 3,18\%$ против $34,15 \pm 5,24\%$. Умеренные и тяжелые формы, наоборот, превалируют у детей со II степенью сколиоза - $29,27 \pm 5,02\%$ против $15,88 \pm 2,39\%$.

Таким образом, проведенные исследования установили высокую распространенность флюороза постоянных зубов у детей с диспластическим сколиозом и обнаружили прямую зависимость степени его тяжести от проявлений основного заболевания. Значимость данной проблемы возрастает в связи с тем, что флюороз зубов сопровождается параллельными наруше-

ниями структуры других костей скелета, что ухудшает состояние общесоматического статуса детского организма, ослабляя его компенсаторные возможности.

Поэтому становится вполне очевидным, что профилактика прогрессирующего начальных форм флюороза у этой категории больных требует комплексного подхода.

В связи с этим по результатам исследования клинико-лабораторных особенностей течения стоматологических заболеваний у детей с диспластическим сколиозом [6] нами в содружестве с сотрудниками Государственного учреждения «Институт стоматологии НАМН Украины» (г. Одесса) разработан лечебно-профилактический комплекс, который включал:

- диспансерное наблюдение у детского ортопеда-травматолога;
- лечение кариеса и его осложнений;
- обучение индивидуальной гигиене полости рта с применением для чистки зубов пасты «Жемчуг» 2 раза в сутки;
- профессиональную гигиену полости рта с последующим ее контролем;
- пероральное употребление витаминизированного препарата с адаптогенными свойствами "Биотрит - С" по 1 т. 3 раза в сутки;
- пероральное применение (сублингвально) препарата "Кальцит", как источника поступления растворимого кальция с высокой степенью усвоения - по 1 т. 3 раза в сутки;
- пероральное употребление препарата остеотропного, противовоспалительного и антиоксидантного действия "Эксо" по 1 т. 2 раза в сутки.

Применение лечебно-профилактического комплекса предусматривает его назначение в течение 1 месяца 2 раза в год. Результативность данных мероприятий определяли путем динамического наблюдения за 105 больными детьми с диспластическим сколиозом 11-12 лет.

Для установления эффективности разработанных лечебно-профилактических мероприятий были созданы две группы сравнения. В первую - опытную включены 50 детей, получавших предложенный комплекс в течение 2 лет, ко второй - контрольной группе привлечено 55 детей, которые в течение 2-х лет выполняли лишь тщательные гигиенические мероприятия по уходу за полостью рта.

Применение лечебно-профилактического комплекса в течение указанного периода благоприятно влияло на течение флюороза зубов. Через 1 год ни у одного больного опытной группы не выявлено увеличения степени тяжести флюороза, в то время как в контрольной группе доля детей с очень легкой и легкой степенями флюороза уменьшилась с $32,73 \pm 6,32\%$ и $12,72 \pm 4,49\%$ до $29,09 \pm 6,12\%$ и $10,91 \pm 4,20\%$ соответственно ($p > 0,05$). В то же время выросла распространенность умеренной и тяжелой форм флюороза (табл. 3).

Через 2 года наблюдения только у одного больного опытной группы очень легкая форма флюороза перешла в легкую, в то время как количество детей с очень легкой и легкой формами в контрольной группе уменьшилась в 1,25 раза.

Таким образом, проведенные клинические исследования свидетельствуют о высокой профилактической эффективности предложенного нами комплекса при флюорозе зубов у детей с диспластическим сколиозом, проживающих в зоне эндемического флюороза.

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Таблица 1. Распространенность флюороза постоянных зубов различных степеней тяжести у детей с диспластическим сколиозом

Возраст годы	Группа	Степень тяжести флюороза												Всего	
		Очень легкая форма		легкая форма		умеренная форма		тяжелая форма		абс		%			
		абс	%	абс	%	абс	%	абс	%	абс	%	абс	%	абс	%
1	2	3	4	5	6	7	8	9	10	11	12				
7	контроль-25	5	20,00±8,00	1	4,00±3,91	1	4,00±3,91	-	-	7	8	9	10	11	12
	опытная-23	9	39,14±10,17	2	8,69±5,87	2	8,69±5,87	-	-	2		-		13	56,52±10,33*
8	контроль-25	4	16,00±7,33	2	8,00±5,42	1	4,00±3,91	-	-	1		-		7	28,00±8,97
	опытная-22	8	36,36±10,25	2	9,09±6,12	2	9,09±6,12	-	-	2		-		12	54,54±10,61
9	контроль-25	3	12,00±6,49	2	8,00±5,42	1	4,00±3,91	-	-	1		-		6	24,00±8,54
	опытная-25	8	32,00±9,32	2	8,00±5,42	3	12,00±6,49	-	-	3		-		13	52,00±9,99*
10	контроль-26	4	15,38±7,08	2	7,69±5,22	1	3,85±3,77	-	-	1		-		7	26,93±8,69
	опытная-26	8	30,77±9,05	2	7,69±5,22	3	11,54±6,26	1	3,85±3,77	3		1	3,85±3,77	14	53,85±9,77*
11	контроль-24	4	16,67±7,60	2	8,33±5,64	1	4,16±4,07	-	-	1		-		7	29,16±9,27
	опытная-64	18	28,12±5,62	6	9,37±3,64	10	15,64±4,54	3	4,68±2,64	10		3	4,68±2,64	37	57,81±6,17**
12	контроль-41	5	12,19±5,10	4	9,75±4,63	3	7,32±4,06	-	-	3		-		12	29,26±7,10
	опытная-74	18	24,32±4,98	8	10,81±3,61	12	16,22±4,28	5	6,76±2,91	12		5	6,76±2,91	43	58,11±5,73***

Продолжение табл.

1	2	3	4	5	6	7	8	9	10	11	12
13	контроль-25	2	8,00±5,42	3	12,00±6,49	2	8,00±5,42	-	-	7	28,00±8,97
	опытная-30	7	23,33±7,72	3	10,00±3,11	5	16,67±6,80	2	6,67±4,55	17	56,67±9,05*
14	контроль-23	2	8,69±5,87	3	13,04±7,02	2	8,69±5,88	-	-	7	30,43±9,59
	опытная-25	4	16,00±7,33	4	16,00±7,33	5	20,00±8,00	1	4,00±3,92	14	56,00±9,93
15	контроль-22	1	4,54±4,43	3	13,64±7,32	2	9,09±6,12	-	-	6	27,27±9,49
	опытная 26	3	11,54±5,83	4	15,38±7,07	6	23,07±8,26	2	7,69±5,22	15	57,68±9,68*
	контроль-236	30	12,71±2,17	22	9,32±1,89	14	5,94±1,54	-	-	66	27,97±2,92
Всего:	опытная-315	83	26,35±2,48	34	10,80±1,75	48	15,25±2,01	14	4,44±1,16	17	56,83± 2,79****

Примечание: вероятность отличия показателей опытной и контрольной групп:

* - $p < 0,05$; ** - $p < 0,02$; *** - $p < 0,01$; **** - $p < 0,001$.

Таблица 2. Распространенность флюороза постоянных зубов у детей с диспластическим сколиозом в зависимости от степени тяжести сколиоза

Возраст годы	Степень тяжести сколиоза	Степень тяжести флюороза												Всего	
		Очень легкая форма			легкая форма			умеренная форма			тяжелая форма				
		абс	%		абс	%		абс	%		абс	%		абс	%
1	2	3	4	5	6	7	8	9	10	11	12				
	контроль-25	20,00±8,00	1	4,00±3,91	1	4,00±3,91	-	-	-	7	8	9	10	11	12
	I степень-19	31,57±10,66	1	5,26±5,12	2	10,53±7,04	-	-	-	2	10,53±7,04	-	-	9	47,36± 11,45 ^{ooo}
7	II степень-4	75,00±21,65	1	25,00±21,65	-	-	-	-	-	-	-	-	-	4	100,00± 0,00 ^{****}
	контроль-25	16,00±7,33	2	8,00±5,42	2	8,00±5,42	1	4,00±3,91	-	-	-	-	-	7	28,00±8,97
	I степень -18	33,33±11,11	2	11,11±7,40	-	-	-	-	-	-	-	-	-	8	44,44± 11,70 ^{ooo}
8	II степень-4	50,00±25,00	-	-	-	-	50,00±25,00	-	-	-	-	-	-	4	100,00± 0,00 ^{****}
	контроль-25	12,00±6,49	2	8,00±5,42	2	8,00±5,42	1	4,00±3,91	-	-	-	-	-	6	24,00±8,54
	I степень-20	35,00±10,66	2	10,00±6,70	2	10,00±6,70	3	15,00±7,98	-	-	-	-	-	12	60,00±10,95 ^{**}
9	II степень-5	20,00±17,88	-	-	-	-	-	-	-	-	-	-	-	1	20,00±17,88
	контроль-26	15,38±7,08	2	7,69±5,22	2	7,69±5,22	1	3,85±3,77	-	-	-	-	-	7	26,93±8,69
	I степень-21	28,57±9,85	2	9,52±6,40	2	9,52±6,40	2	9,52±6,40	-	-	-	-	-	10	47,61±10,89 [*]
10	II степень-5	40,00±21,90	-	-	-	-	20,00±17,88	1	20,00±17,88	1	20,00±17,88	1	20,00±17,88	4	80,00±28,28
	контроль-24	16,67±7,60	2	8,33±5,64	2	8,33±5,64	1	4,16±4,07	-	-	-	-	-	7	29,16±9,27
	I степень-47	34,04±6,91	4	8,51±4,07	4	8,51±4,07	8	17,02±5,48	2	4,25±2,94	2	4,25±2,94	30	63,82±7,01 ^{***}	
11	II степень-17	11,76±7,81	2	5,89±5,71	1	5,89±5,71	3	17,64±9,24	1	5,89±5,71	1	5,89±5,71	7	41,18±11,93	

Продолжение табл.

1	2	3	4	5	6	7	8	9	10	11	12
12	контроль-41	5	12,19±5,10	4	9,75±4,63	3	7,32±4,06	-	-	12	29,26±7,10
	I степень-54	14	25,93±5,96	8	14,81±4,83	9	16,66±5,07	2	3,70±2,56	33	61,11±6,63***
	II степень-20	4	20,00±8,94	2	10,00±6,70	1	5,00±4,87	3	15,00±7,98	10	50,00±11,18
13	контроль-25	2	8,00±5,42	3	12,00±6,49	2	8,00±5,42	-	-	7	28,00±8,97
	I степень-21	6	28,57±9,85	-	-	4	19,05±8,57	-	-	10	47,62±10,89
	II степень-9	1	11,11±10,47	3	33,33±15,71	1	11,11±10,47	2	22,22±13,85	7	77,77±13,85***
14	контроль-23	2	8,69±5,87	3	13,04±7,02	2	8,69±5,88	-	-	7	30,43±9,59
	I степень-17	3	17,64±9,24	2	11,77±7,81	2	11,77±7,81	-	-	7	41,18±11,93°
	II степень-8	1	12,50±11,69	2	25,00±15,30	3	37,50±17,11	1	12,50±11,69	7	87,50±11,69***
15	контроль-22	1	4,54±4,43	3	13,64±7,32	2	9,09±6,12	-	-	6	27,27±9,49
	I степень-16	1	6,25±6,05	3	18,75±9,75	2	12,50±8,27	1	6,25±6,05	7	43,75±12,40°
	II степень-10	2	20,00±12,64	1	10,00±9,48	4	40,00±15,49	1	10,00±9,48	8	80,00±12,64***
Всего:	контроль-236	30	12,71±2,17	22	9,32±1,89	14	5,94±1,54	-	-	66	27,97±2,92
	I степень-233	65	27,89±2,93	24	10,30±1,99	32	13,73±2,25	5	2,15±0,95	12	54,07±3,26***
	II степень-82	18	21,95±4,57	10	12,19±3,61	15	18,30±4,27	9	10,97±3,45	52	63,41±5,31***

Примечание:

1. * - вероятность отличий показателей опытной и контрольной групп:

* - $p < 0,05$; ** - $p < 0,02$; *** - $p < 0,01$; **** - $p < 0,001$;

2. ° - вероятность отличий показателей I и II степеней тяжести сколиоза:

° - $p < 0,05$; °° - $p < 0,02$; °°° - $p < 0,001$.

Таблица 3. Распространенность флюороза постоянных зубов различных степеней тяжести в динамике лечения

Группы детей	Порядок обследования	Степень тяжести флюороза											
		Очень легкая форма			легкая форма			умеренная форма			тяжелая форма		
		абс.	%		абс.	%		абс.	%		абс.	%	
здоровые дети n=65	до лечения	8	12,31±4,07	6	9,23±3,59	4	6,15±2,97	-	-	-	-	-	-
	через 1 год	5	7,69±3,30	8	12,31±4,07	5	7,69±3,30	-	-	-	-	-	-
	через 2 года	4	6,15±2,97	8	12,31±4,07	6	9,23±3,59	-	-	-	-	-	-
1 группа n=50	до лечения	12	24,00±6,03	5	10,00±4,24	8	16,00±5,18	5	10,00±4,24	5	10,00±4,24	5	10,00±4,24
	через 1 год	12	24,00±6,03	5	10,00±4,24	8	16,00±5,18	5	10,00±4,24	5	10,00±4,24	5	10,00±4,24
	через 2 года	11	22,00±5,85	6	12,00±4,59	8	16,00±5,18	5	10,00±4,24	5	10,00±4,24	5	10,00±4,24
2 группа n=55	до лечения	18	32,73±6,32	7	12,72±4,49	10	18,18±5,20	1	1,82±1,80	1	1,82±1,80	1	1,82±1,80
	через 1 год	16	29,09±6,12	6	10,91±4,20	12	21,82±5,56	2	3,63±2,52	2	3,63±2,52	2	3,63±2,52
	через 2 года	12	21,82±5,56	8	14,54±4,75	13	23,64±5,73	3	5,45±3,06	3	5,45±3,06	3	5,45±3,06

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Comparative study of basic morphological and anatomical features the leaves of Ukrainian Hawthorn species

Abstract: The morphological and anatomical study the leaves of representatives of *Crataegus* genus from Pentagynae (*C. pseudomelanocarpa* M. Pop.) and Oxyacanthae (*C. subrotunda* Klok., *C. leiomonogyna* Klok. and *C. fallacina* Klok.) sections distributed in Ukraine has been carried out. Its basic morphological and anatomical features have been established.

Keywords: hawthorn, leaves, microscopy, morphological characteristic, anatomical features.

Introduction

Hawthorn (*Crataegus* L.) genus belongs to the subfamily Maloidaceae Focke. family Rosaceae Juss. Is one of the oldest members of this family.

According paleobotanical data Hawthorn encountered on Earth in the Cretaceous-Tertiary period of the Mesozoic era. Genus is very polymorphic and has more than 1000 species are distributed in temperate, subtropical regions of northern hemisphere - in Europe, Asia and North Africa. Homeland the species is North America, mostly from the eastern part of New Foundlenda to the mountains of Northern Mexico [1].

Hawthorn mostly trees, the height 5-7 m. There are bush growing species, 1.5-4 m height. Hawthorn leaves are alternate, simple, entire, blade or dissected, with stipules. Petioles from 2-4 mm to 2-3 cm long, winged, in some species glandular. Leaves at blooming light green, sometimes reddish, old leaves a dark green, lighter from below, sometimes shiny, leathery.

Hawthorn preparations are used as antihypertensive, cardi tonic, sedative, antiarrhythmic drugs. They practically non-toxic and used for treatment of chronic

diseases the cardiovascular system [2]. The European Pharmacopoeia included raw material «Hawthorn leaf and flower» (*Crataegi folium cum flore*) of species such as *Crataegus monogyna* Jacq. (Lindm.), *C. laevigata* (Poir.) DC. (synonyms: *C. oxyacantha*) or their hybrids or, more rarely, other European *Crataegus* species (*C. pentagyna* Waldst. Et Willd., *C. nigra* Waldst. Et Willd., *C. azarolus* L.) [3].

In Ukraine there are over 30 species of Hawthorn, which according to the features of morphological structure of vegetative and generative organs belong to different botanical sections [4, 5, 6]. Previously, we examined the major biologically active compound (BAC) of leaves and flowers of Hawthorn unpharmacopoeia species: phenolic compounds, aminoacids, essential compounds, organic acids [7, 8, 9]. The obtained results prove the prospects of further study of these species as additional sources of BAC.

The aim of this work is to study the general and individual morphological and anatomical features of species of Ukrainian Hawthorns leaves.

Materials and methods

The object of the study was the dried leaves of *C. pseudomelanocarpa* M. Pop., *C. subrotunda* Klokk., *C. leiomonogyna* Klokk. and *C. fallacina* Klok. Studied species belong to the section *Pentagynae* (*C. pseudomelanocarpa* M. Pop.) and section *Oxyacanthae* (partition *Kyrtostylae* A.Pojark. - *Crataegus subrotunda* Klok. and *C. fallacina* Klok.; partition *Monogynae* A.Pojark. - *C. leiomonogyna* Klokk.).

Raw materials is collected in the nature (different regions of Ukraine) and in Botanical Garden of V.N. Karazin Kharkiv National University. Identification of the species carried out using the Determinant of higher plants of Ukraine. In order to avoid errors during identification, conducted the study morphological features of plants in various phases of growing season [6].

For a morphological examination pay attention to the size and color of the leaves; the presence the stains on the surface; shape of leaves; number of lobes; character of apex and bases; character of leaves edge; petiole size and pubescent.

For microscopical study the leaves are boiling in 3% aqueous solution of sodium hydroxide. Preparation the 3% alkali solution: 3 g of sodium hydroxide was weighed on the scale, were placed in the cylinder, the volume was adjusted with distilled water to 100 ml. The resulting solution was filtered through a funnel with a paper filter [10].

The microslides was examined in the solution of chloral hydrate. The diagnostic features were determined using a МБР-1 and МБР-2 microscope.

Results and discussions

As result of morphological study determined the main features of Hawthorn leaves from Ukrainian flora.

C. pseudomelanocarpa M. Pop. - at the top leaves are cuneate with circular base, a shallow 3-lobed; others leaves are oval, with a truncated base, 5-7 lobed, lobes are weakly serrated; glabrous or with pubescent from below, in long shoots more deeply separated.

C. fallacina Klok. – leaves are leathery, green above, bottom lighter, gray-green, with dispersed hairy petiole and ciliary edges of the leaf blade, oblong-obovate, shallowly 3-lobed, with wedge-base; lower - 5 blade, rhombic-ovate.

C. subrotunda Klok. – leaves in fertile and infertile branches are almost identical: thick, leathery, green above, lighter from below, with a glaucous bloom, with a naked petiole and leaf blade. Lower leaves entire, obovate, the upper - 5-9-lobed, lobes are close together.

C. leiomonogyna Klok. - the top of the leaves is green, bottom light, gray, slightly hairy petioles and naked leaf plate; in fertile branches the leaves 1-5 cm long; lower leaves are entire, elliptical, small, with short petioles, 3-blade, inversely ovoid; 5-7 lobed upper leaves, ovate-rhombic with wedge-base.

It was established some differences in plants morphology of the same species growing in different regions.

So, the species of *C. subrotunda* Klok., collected in nature, different from the same species collected in the botanical garden the more leathery leaves and the more pubescens leaf blade.

The leaves of *C. leiomonogyna* Klok. collected in the East part of Ukraine different from the Western species - wooly petioles and more large inverse-ovate leaves.

The species of *C. fallacina* Klok. are differing by the presence (or absence) of pubescence on the leaves vein and color of the upper and lower surfaces.

For the studied species were established the basic anatomical diagnostic features.

C. pseudomelanocarpa M. Pop. leaves. The epidermal cells are elongated, thickened. Across the surface of the leaf blade there are simple, short, single-celled

hairs. The stomata are large, anomocytic type. Veins are intensely colored, with a prismatic crystals of calcium oxalate. The glands are large, multicellular, immersed in mesophyll, that contains small gray druses. The petiole with a single hairs.

C. fallacina Klok. *leaves*. The epidermal cells are wavy walls. Stomata are small, numerous, anomocytic type. Glands are multicellular. The veins with a dark content. Long, unicellular hairs are single. The petiole with a simple, numerous hairs.

C. subrotunda Klokk. *leaves*. The epidermal cells with thick cuticle. It is marked the numerous of stomata. Veins are covered by crystals of calcium oxalate. The glands are located on the edge of leaf. On the edge of the leaf blade is situated long thin hairs. The petiole with a simple, single hairs.

C. leiomonogyna Klok. *leaves*. The epidermal cells are straight. The noted the presence of long-celled hairs with swollen base, located across the blade of the sheet and on the edge. Veins with crystals of calcium oxalate. Small multicellular glands are located in the edge of leaf. The petiole with elongated cells.

In epidermal cells of all studied species contained the brown contents. Histochemical study by used the reaction with iron ammonium alums showed, that the epidermis cells of Hawthorn leaves are colored in black-green color, which indicates the presence of tannins in leaves.

Conclusions

For all established species of Hawthorn founded a number of similar features: the presence of simple hairs and single multicellular glands; anomocytic type of stomata; wavy wall epidermal cells; simple hairs in petiole.

There were also established individual anatomical features for each species. In mesophyll of *C. pseudomelanocarpa* M. Pop. leaves are detected the numerous of multicellular glands. In *C. subrotunda* Klokk. edge of the leaf blade was founded long, thin, simple hairs. In *C. leiomonogyna* Klok. *leaves* presence the long-celled hairs with swollen base, located in blade and on the edge. *C. fallacina* Klok. leaves are characterized by the veins with a dark content and long, unicellular hairs.

For species of *Oxyacanthae* section, partition *Kyrtostylae* A. *Pojark.* (*Crataegus subrotunda* Klok., *C. fallacina* Klok.) are most character the glands, located on the edge of leaf and simple hairs in epidermis. For partition *Monogynae* A. *Pojark.* (*C. leiomonogyna* Klokk.) established the presence of long-celled hairs with swollen base, located across the blade of the sheet and on the edge and veins with crystals of calcium oxalate and the petiole with elongated cells.

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Prospects of creating a new medicine with the hypoglycemic action from cowberry leaves

Abstract: The article is devoted to the study of the phenolic composition and the pharmacological activity of the extract from cowberry (*Vaccinium vitis-idaea*) leaves with addition of arginine. In the extract arbutin; 2 phenolcarboxylic acids – gallic and ellagic acids; 3 hydroxycinnamic acids – chlorogenic, coumaric and ferulic acids; 4 coumarins; 3 flavonoid aglycones – luteolin, kaempferol and quercetine; gallo- and ellagotannins have been identified. The prospects of creating a medicine with the hypoglycemic effect on the basis of the extract obtained have been confirmed.

Keywords: cowberry, leaves, dry extract, arginine, hypoglycemic effect.

In traditional medicine a decoction of cowberry (*Vaccinium vitis-idaea*; other English names are lingonberry, mountain cranberry, foxberry, etc.) leaves is widely used for treating urological diseases. Cowberry possesses the uroseptic, astringent and diuretic action [1]. However, other pharmacological actions have been insufficiently studied. Another plant of the *Ericaceae* family, bilberry (*Vaccinium myrtillus*), is an effective hypoglycemic agent, and it is part of “Arphasetinum” herbal medicinal product. Taking this into consideration it can be reasonable to create a new hypoglycemic medicine based on cowberry leaves.

In the literature the chemical composition of phenolic compounds of *Vaccinium vitis-idaea* has been described. The basic biologically active substances (BAS) of

cowberry leaves are such phenolic compounds as simple phenols, phenolcarboxylic and hydroxycinnamic acids, flavonoids and tannins [1].

The aim of our research was to find the possibility of creating a new medicine with the hypoglycemic action from cowberry leaves based on the study of the chemical composition and the pharmacological activity of the dry extract.

The study object is the dry extract obtained in the following way: place 500 g of cowberry leaves crushed to a particle size of 2-3 mm in a flask, pour with three litres of 50% solution of ethyl alcohol, extract within one day at room temperature. Repeat the extraction three times with new portions of the extractant (1.0 L). Combine the extracts obtained, allow to stand within 24 hours, filter and sterilize. Evaporate the filtrate using a rotary vacuum evaporator with addition of arginine in the triple equimolar quantity in relation to the total amount of phenolic compounds calculated with reference to gallic acid. Prepare the dry extract from the resulting solution and triturate. The yield of the dry extract is 11%.

The choice of arginine is due to the fact that formation of complexes of phenolic compounds with amino acids increases their solubility, improves bioavailability and affects the overall pharmacological effect. In addition, in the pathogenesis of diabetes mellitus an important role is played by dysfunction of the vascular endothelium. The key factor that regulates the tonus of the vascular endothelium is an important physiological vasodilator – nitrogen monoxide. This mediator is formed from arginine under the action of Ca^{2+} -dependent enzyme of NO-synthase (NOS), and therefore, arginine was selected as a complexing agent.

The preliminary chemical analysis of the extract obtained was carried out by the generally accepted methods such as paper chromatography and thin-layer chromatography (TLC). Arbutin; 2 phenolcarboxylic acids – gallic and ellagic acids; 3 hydroxycinnamic acids – chlorogenic, coumaric and ferulic acids; 4 coumarins; 3 flavonoid aglycones – luteolin, kaempferol and quercetine; gallo- and ellagotannins were identified.

For further standardization it was important to determine the quantitative composition of the main groups of BAS and phenolic compounds. The quantitative determination of hydroxycinnamic acid derivatives, flavonoids and polyphenolic compounds was conducted by the spectrophotometric method. The optical density was measured in a cell with the layer thickness of 10 mm on a Specol 1500

spectrophotometer (Switzerland) at the corresponding wavelength [2]. Measurements were performed 5 times. Statistical processing of the results was performed according to the requirements of the State Pharmacopoeia of Ukraine.

Hydroxycinnamic acid derivatives. The content of derivatives of hydroxycinnamic acids was determined by spectrophotometry calculated with reference to chlorogenic acid. The absorption maximum of chlorogenic acid *RS* is at 327 nm, therefore, measurements were performed at this wavelength [1, 2]. After statistical processing it has been found that the extract contains $2.17 \pm 0.02\%$ of hydroxycinnamic acid derivatives.

Flavonoids. The total amount of flavonoids was determined by spectrophotometry calculated with reference to rutin after formation of the complex with AlCl_3 since the previous studies had shown the presence of quercetine derivatives in the raw material of flavonoid compounds [1, 2]. After statistical processing it has been found that the extract contains $3.36 \pm 0.01\%$ of the total amount of flavonoids.

Polyphenolic compounds. The total amount of polyphenolic compounds was determined by spectrophotometry calculated with reference to gallic acid because it is their main component. The absorption maximum of gallic acid *RS* is at 214 and 270 nm. It is expedient to perform measurements at 270 nm since under these conditions the impact of related substances on the measurement results is less [1, 2]. After statistical processing it has been found that the extract contains $20.48 \pm 0.01\%$ of polyphenolic compounds.

The hypoglycemic activity of the dry extract from cowberry leaves was studied on 18-month-old Wistar male rats. Insulin resistance was modelled by keeping animals on a fructose-enriched diet (60.3% of fructose, 18.3% of protein and 5.2% of fat) [3]. The experimental animals were divided into three groups: 1) intact animals kept on a standard diet in the vivarium of the National University of Pharmacy; 2) animals kept on the fructose diet for six weeks; 3) animals kept on the fructose diet for four weeks and additionally for two weeks on this diet with a daily introduction of the dry extract from cowberry leaves with addition of arginine in the dose of 2.5 mg per 100 g of the body weight.

Animals were decapitated under chlorazol urethane anesthesia. The study object the blood serum. When performing experiments the "General ethical principles of experiments on animals" (Ukraine, 2001) harmonized with the "European

Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes (Strasbourg, 1986)" were observed.

The content of glucose, insulin, free fatty acids (FFA) and triacylglycerols (TAG) were determined using standard kits of "Felicity-Diagnostics" company (Ukraine) and "Lachema" company (Czech Republic). Previously dividing lipoprotein fractions by the turbidimetric method [4] the concentrations of α -cholesterol (α -CS) and β -cholesterol (β -CS) were determined using standard enzymatic cholesteroloxidase kits of Boehringer Mannheim GmbH Diagnostica company (Germany).

The following results have been obtained (* – a significant difference in relation to the intact group ($p \leq 0.05$), # – a significant difference in relation to "Diets" ($p \leq 0.05$)):

The content of the blood glucose. The indicator of the content of the blood glucose in the intact group was 4.7 ± 0.1 mmol/L, in the group kept on a standard diet – $14.5 \pm 0.2^*$ mmol/L, and in the group kept on a diet with the dry extract – $8.2 \pm 0.4^{* \#}$ mmol/L.

The content of insulin in the blood. The indicator of the content of insulin in the blood in the intact group was 1290 ± 34 pg/ml, in the group kept on a standard diet – $2920 \pm 41^*$ pg/ml, and in the group kept on a diet with the dry extract – $1987 \pm 45^{* \#}$ pg/ml.

The content of free fatty acids in the blood. The indicator of the content of free fatty acids in the blood in the intact group was 0.40 ± 0.05 mmol/L, in the group kept on a standard diet – $0.69 \pm 0.04^*$ mmol/L, and in the group kept on a diet with the dry extract – $0.54 \pm 0.03^{* \#}$ mmol/L.

The content of triacylglycerols in the blood. The indicator of the content of triacylglycerols in the blood in the intact group was 0.84 ± 0.06 mmol/L, in the group kept on a standard diet – $2.59 \pm 0.11^*$ mmol/L, and in the group kept on a diet with the dry extract – $1.65 \pm 0.08^{* \#}$ mmol/L.

The content of α -cholesterol in the blood. The indicator of the content of α -cholesterol in the blood in the intact group was 1.36 ± 0.04 mmol/L, in the group kept on a standard diet – $0.82 \pm 0.04^*$ mmol/L, and in the group kept on a diet with the dry extract – $1.14 \pm 0.06^{* \#}$ mmol/L.

The content of β -cholesterol in the blood. The indicator of the content of β -cholesterol in the blood in the intact group was 2.53 ± 0.05 mmol/L, in the group kept

on a standard diet – $3.73 \pm 0.07^*$ mmol/L, and in the group kept on a diet with the dry extract – $3.16 \pm 0.06^{*\#}$ mmol/L.

Analysis of the results of the study shows that keeping rats on a fructose-enriched diet causes more than triple increase in the level of glucose in the blood serum. At the same time, hyperinsulinemia is observed. With simultaneous hyperglycemia it shows insensitivity of cells to insulin, i.e. development of insulin resistance. The increase in the concentration of TAG observed in six weeks of the experiment is a consequence of mobilization of fat from the adipose tissue, as well as the increased endogenous synthesis of TAG and very low density lipoproteins by the liver due to weakening of the inhibitory effect of insulin on lipolysis. A significant decrease in the level of α -cholesterol and the increased content of β -cholesterol in this group of rats are associated with increased transfer of cholesterol esters from HDL to atherogenic apoB-lipoproteins, and it occurs due to accumulation of TAG. As a result of these changes atherogenic dyslipidemia that is typical for metabolic syndrome develops [4].

Moreover, in animals of the third group taken the dry extract from cowberry leaves a significant decrease of the glucose level by 43% and insulin by 32% was observed compared to the group of animals with the high fructose diet. It proves the hypoglycemic activity of the extract.

It has been determined that introduction of the dry extract from cowberry, leaves in combination with arginine exhibits the normalizing effect on metabolic disorders on the background of the high fructose diet. Thus, the concentrations of α -cholesterol, β -cholesterol and triacylglycerols significantly reduce, and it indicates the hypolipidemic activity of the extract.

Therefore, the prospects of creating a medicine with the hypoglycemic effect from cowberry leaves have been confirmed.

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Antimicrobial drugs and immunomodulators action in pyo-inflammatory processes caused by *Klebsiella pneumoniae*

Abstract: The study of antimicrobial agents and immunomodulators effect in pyo-inflammatory processes caused by *K. pneumoniae* in order to increase the effectiveness of therapy was provided. It was found that in treatment either localized or generalized inflammatory processes caused by *K. pneumoniae* the most effective is a combine therapy with Cefoperazonum+Sulbactamum and Glutoximum. This therapy in localized necrotic process lead to healing of wound during 5 days, and in generalized process caused by *K. pneumoniae* the total life expectancy of laboratory animals was 95.5 %. Thus, the combined use of mentioned drugs has a high therapeutic effect.

Keywords: pyo-inflammatory process, *Klebsiella pneumoniae*, antimicrobial drugs, immunomodulators.

Introduction. Researchers have noted the growing importance of the family *Enterobacteriaceae* as an etiological factor in the occurrence of septic postoperative complications [1, 2], and 92.5 % of all strains of the family are *P.mirabilis*, *P. ae-*

ruginosa, E. coli, K. pneumoniae. Among these causative agents an increased role of K. pneumoniae was marked in the etiology of septic processes in injuries, burns, radiation injuries, otitis, osteomyelitis, abscesses, cystitis, meningoenzephalitis, conjunctivitis, peritonitis. A special place is occupied by inflammatory processes, as a complication after surgery, in people with impaired immune state, as well as after a prolonged and uncontrolled use of antibiotics [3, 4].

K. pneumoniae become the bacteria of particular importance due to the presence of nosocomial infections in surgical departments, which by their importance among nosocomial infections occupy one of the first places. A role in the spread of these infections is played by various manipulations, produced with therapeutic and diagnostic purposes. In recent years increased use of a variety of instrumental methods, especially with difficult-to-sterilize instruments, contribute to the growth of pyo-inflammatory processes caused by *K. pneumoniae* [5]. The difficulties in treatment of *K. pneumoniae* inflammatory processes exist due to many factors. The introduction of endoscopic interventions (both therapeutic and diagnostic), and high-tech surgical practice, in addition to the positive aspects, has made a number of problems have opened the new sites of entrance for infection. Constant drains, catheters serve as targets for *K. pneumoniae* colonization. Despite the variety of drugs used for antibiotic therapy in *K. pneumoniae* inflammatory processes, purulent complications after surgery until now occupy the first place among all hospital infections.

Considering mentioned above it is advisable to study the use of combined treatment in *K. pneumoniae* pyo-inflammatory processes for the successful treatment of inflammatory diseases at the present time.

The aim was to study the action of antimicrobial agents and immunomodulators in pyo-inflammatory processes caused by *K. pneumoniae*.

Materials and methods. The experimental part was done on inbred white mice of BALB/c JLaC Sto line, female, with 20-22 g of weight. Experimental pyo-inflammatory process was done by septic-toxicological model [6] adapted for *K. pneumoniae* reference-strain in accordance with national «General ethical principles of animal experiments» (Ukraine, 2001) which are consistent with the thesis of «The European Convention for the protection of vertebrate animals used for experimental and other scientific purposes» (Strasbourg, 18.03.1986) [7]. Laboratory

animals were divided to such groups as: 1st – positive control (infected mice); 2nd – infected mice with cefoperazonum+sulbactanum therapy; 3rd – infected mice with glutoxinum therapy; 4th – infected mice with cefoperazonum+sulbactanum and glutoxinum therapy; 5th – negative control (mice that obtained saline injections); 6th – infected mice with meropenemum therapy; 7th – infected mice with ronkoleukinum therapy; 8th – infected mice with meropenemum and ronkoleukinum therapy; 9th – infected mice with meropenemum and glutoxinum therapy; 10th – infected mice with cefoperazonum+sulbactanum and ronkoleukinum therapy.

Infection of mice was performed intracutaneously according to the model of localized necrotic infection (the infection dose - 300 million bacterial cells in 0.1 ml, the next day in resulting infiltration a half dose was injected. Doses were prepared based on the species indicator [8]. For statistics of results the programs “Exel” and “Biostat” for the PC were used [9, 10].

Results and discussions. The diameter of the lesion was fixed every day (table 1).

Table 1. The rate of necrotic lesions healing in infected animals (only 1st group)

№	n	Day of experiment														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	12	-	infiltrate rate	+	++	++	+++	+++	+++	++	++	+	+	+	+	+

Notes: the character and intensity of lesions: first degree of damage (+) - dot and small necrosis in diameter under 2 mm or infiltrates not accompanied by necrotic processes; second degree (++) - necrosis in diameter of 3 to 5 mm; third degree (+++) - necrosis in diameter more than 6 mm; no damage (-)

On day 6, when the necrotic lesion reaches the maximum size of 5-6 mm in diameter mice in experimental groups were treated according to the mentioned schemes. The diameter of necrotic lesion was daily recorded (Table. 2). Wound healing in the treatment with cefoperazonum+sulbactanum was fixed on 8th day of treatment (2nd group), with meropenemum on 9th day (6th group). With treatment of immunomodulators glutoximum or ronkoleukinum wound healing was not fixed even on 10 day.

Table 2. The rate of wound healing in mice with experimental therapy of localized necrotic infections

Therapy with	Day of experiment (since start of treatment)									
	1	2	3	4	5	6	7	8	9	10
cefoperazonum+ sulbactanum (2 nd group)	+++	+++	+++	++	++	++	+	<u>±</u>	-	-
glutoximum (3 rd group)	+++	+++	++	+	+	+	+	+	+	+
cefoperazonum+sulbactanum and glutoximum (4 th group)	+++	++	++	+	<u>±</u>	-	-	-	-	-
meropenemum (6 th group)	+++	+++	+++	++	++	++	+	+	<u>±</u>	-
ronkoleukinum (7 th group)	+++	+++	+++	++	++	++	+	+	+	+
meropenemum and ronkoleukinum (8 th group)	+++	+++	++	++	+	+	+	<u>±</u>	-	-
meropenemum and glutoximum (9 th group)	+++	+++	++	+	+	<u>±</u>	-	-	-	-
cefoperazonum+ sulbactanum and ronkoleukinum (10 th group)	+++	+++	++	++	+	+	<u>±</u>	-	-	-

In the combined treatment of cefoperazonum+sulbactanum and meropenemum with glutoximum fundamental differences in the rate of healing of purulent focus was not revealed. In the first case, wound healing was recorded on 5th day, and in the second on the 6th day. A similar result was observed in the combined treatment of antimicrobials and ronkoleukinum. However, the rate of wound healing was reduced: scar in the center appeared in the first case on the 7th day, in the second on 8th day.

Comparative analysis of combined treatment between cefoperazonum+sulbactanum+glutoximum and cefoperazonum+sulbactanum+ronkoleukinum marked difference in the rate of pyonecrotic focus scarring in side of the first combination that is associated with the mechanism of action of the immunomodulator and cytokinocorrector.

By recording the dynamics of wound healing in the treatment of mice with localized necrotic infection can be concluded that the most efficient in terms of healing speed and the cost of treatment is a combination of cefoperazonum+sulbactanum and glutoximum. However, it is important to assess the impact of the drugs combination on immunological, bioenergy and pathomorphology processes in macroorganism.

In a second series of experiment it was taken the same number of animals, as in the first series of experiments. Preparations and groups of mice were identical, dose calculation performed similarly.

For modeling of generalized inflammatory processes mice were infected intraperitoneally. Infecting dose was administered as a suspension in physiological saline - 600 million microbial cells in 0.5 ml. Based on the data presented in table 3 the total life expectancy of laboratory animals in generalized inflammatory processes caused by *K. pneumoniae* and therapy, with an estimate of the degree of activity of drugs taken into the experiment can be estimate.

Based on the criteria of the degree of activity of drugs, it may be concluded that the highly active is the combined use of antimicrobial agents and immunomodulators (total life expectancy of mice was 90.5 - 95.5 %).

As can be seen from table 4, depending on the therapy mortality varies in mice. So, during monotherapy with cefoperazonum+sulbactanum mortality rate was 45 %, which coincided with the percentage of mortality of mice in the group, which was treated with meropenemum. Monotherapy with immunomodulator showed that the treatment with glutoximum increases the survival rate of mice to 75 % and with ronkoleukinum to 70 %.

Table 3. Survival of animals in the treatment of generalized inflammatory processes caused by *K. pneumoniae*

№	Laboratory animal groups	Mortality		Quantity of survive animals, day										
		absolute	%	1	2	3	4	5	6	7	8	9	10	11
1	1 group	20	100	20	17	14	10	6	1	-	-	-	-	-
2	2 group	9	45	20	17	14	12	11	11	11	11	11	11	11
3	3 group	5	25	20	18	16	15	15	15	15	15	15	15	15
4	4 group	3	15	20	18	17	17	17	17	17	17	17	17	17
5	5 group	-	-	20	20	20	20	20	20	20	20	20	20	20
6	6 group	9	45	20	17	15	13	11	11	11	11	11	11	11
7	7 group	6	30	20	18	16	14	14	14	14	14	14	14	14
8	8 group		20	20	19	17	16	16	16	16	16	16	16	16
9	9 group	3	15	20	18	17	17	17	17	17	17	17	17	17
10	10 group	4	20	20	17	16	16	16	16	16	16	16	16	16

There are quite high indexes, but in combine therapy, these figures are rather higher and are in 4th group 95,5 % and in 10th group 80 %, which allows us to

recommend the combined treatment in generalized inflammatory processes, caused by *K. pneumoniae*.

A comparative analysis of the quality of treatment per se and in combination with the mice survival rates in generalized purulent process caused by *K. pneumoniae*, it was noted that the lowest mortality was recorded in the 4th group with combination of cefoperazonum+sulbactanum and glutoximum compared to monotherapy and the positive control, where mortality reached 100 % on 5th day.

Table 4. Evaluation of drugs activity in experimental generalized inflammatory processes caused by *K.pneumoniae*

Laboratory animals groups	n	Survived mice	Dead mice	Total life expectancy		
				absolute	%	ρ
1 group	20	-	20	68/200	34	<0,01
2 group	20	11	9	140/200	70	<0,001
3 group	20	15	5	174/200	87	<0,001
4 group	20	17	3	191/200	95,5	<0,001
5 group	20	20	-	200/200	100	<0,001
6 group	20	11	9	142/200	71	<0,001
7 group	20	14	6	166/200	83	<0,001
8 group	20	16	4	184/200	92	<0,001
9 group	20	17	3	191/200	95,5	<0,001
10 group	20	16	4	181/200	90,5	<0,001

Tracing and analyzing the dynamics of mortality in experimental animals under treatment of generalized purulent inflammation caused by *K. pneumoniae*, it can be concluded that the most effective is a combination of cefoperazonum+sulbactanum and glutoximum.

Summary. Thus, in the treatment either of localized or generalized inflammatory processes caused by *K. pneumoniae*, it was found that the most effective is a combination therapy with antimicrobial agents and immunomodulators, and the most efficient is the use of cefoperazonum+sulbactanum and glutoximum: for localized necrotic process healing dynamics was 5 days, and in *K. pneumoniae* generalized inflammatory processes total life expectancy under given combination of drugs was 95.5 %. Thus, the combined use of mentioned drugs has a high therapeutic effect.

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