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ECONOMICS

ORGANIZATION OF THE TECHNOLOGICAL PROCESS OF MANUFACTURING «GOLDEN MAGIC» PANCAKES WITH IMPROVED BIOLOGICAL VALUE

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Annotation. *The article proposes the technology of «Golden magic» pancakes using orange juice, orange peel and kelp. The results of studies of the organoleptic parameters of the developed dish are presented. The recipe composition of pancakes using orange juice, orange peel and kelp was theoretically justified and experimentally developed. It has been proven that the developed pancakes contain an increased amount of essential nutrients, vitamins and minerals, especially iodine and selenium.*

Keywords: *pancakes, orange peel, kelp, iodine deficiency.*

Formulation of the problem. Recent decades have been characterized by a rapid growth of environmental diseases in many countries of the world. WHO specialists recognize the existence of «epidemic of cardiovascular, oncological diseases, metabolic pathology» etc. One of the important problems of modern medicine are diseases associated with nutritional disorders, in particular with a deficiency of iodine and other trace elements in the human diet.

Among non-infectious diseases, iodine deficiency pathology is a serious medical and social problem worldwide due to its high prevalence and wide range of clinical manifestations and consequences [1,2].

Currently, the most important violations of the nutritional status of the population of our country are noted: excessive consumption of animal fats and a deficiency of polyunsaturated fatty acids, complete proteins, vitamins (C, B1, B2, E, folic acid, retinol, β -carotene, etc.), minerals (Ca, Fe), trace elements (I, F, Se, Zn), dietary fibers. This is due to the fact that industrially prepared and mostly refined products prevail in the food system [3].

However, the diets of people living in ecologically unfavorable areas should include products enriched with plant fibers and biologically active substances that contribute to the improvement of immunity and play a huge physiological role in the human body. A promising object of enrichment is the products of regular consumption – in particular, flour dishes, the consumer demand for which is constantly increasing. When creating resource-saving technologies for flour dishes, one of the promising directions is the

use of citrus and seaweed. The use of organic iodine in the diet of the population will significantly reduce the risk of iodine deficiency diseases [4].

Presenting main material. The purpose of the work is to develop the latest technologies of flour dishes of increased biological value.

Object of research: pancake technology using orange juice, orange peel, kelp.

Subject of study: Pancakes with caramelized apples [5], orange juice, orange peel, kelp (TU U 00382119-01-97), «Golden magic» pancakes.

Research methods: organoleptic, physicochemical, mathematical data processing and using computer technologies.

Modern and standard research methods were used in the work, which made it possible to determine the technological, chemical, and physical properties of additives, raw materials, and ready meals. Repeatability of experiments – five times, analyzes – three times. The obtained experimental data are presented in SI units.

To objectively determine the rational number of additives, changes in the complex quality indicator (CQI) depending on the number of additives were determined using a system of equations. We determined the coefficient at which the maximum value of CQI is reached, determined the derivative, equated it to zero, solving the equation, determined the rational amount of additives.

Physico-chemical indicators of new dishes were determined according to the following methods: dry matter content – drying the sample to a constant mass at a temperature of $103\pm 20\text{C}$; the content of mineral substances was determined by the atomic absorption method on a Techtron-AA-4 spectrophotometer (Austria), iodine – by the inversion voltammetry method (ABA-3 device); determination of water-soluble vitamins by the method of high-performance liquid chromatography [6,7]; carbohydrates and fats – calculated.

Oranges are probably the most popular citrus fruit, one of the favorite treats for both children and adults. Oranges are rich in ascorbic acid (vitamin C), B vitamins. One cannot fail to mention such a feature of this fruit as the high content of citric acid in it, which prevents the formation of nitrates and nitrites. Also, oranges are a source of phytoncides, which contribute to the removal of harmful toxins and waste products from the body. It is believed that the benefit of oranges is that they have natural antibiotic properties.

A small number of calories in an orange allows overweight people to consume these fruits without fear of gaining extra pounds. Moreover, orange is often used as part of diets for weight loss. Of course, we are talking about fresh fruits. An orange prepared in a certain way can have a significantly higher number of calories. In addition, oranges will be useful for diseases of the cardiovascular system and hypertension [8,9].

Equally important are orange juice and orange peel.

Freshly squeezed orange juice is a tasty, sweet and very healthy drink, all the useful properties of an orange are completely preserved in the juice, giving this drink a special value and attractiveness. The benefits of orange juice have been confirmed by nutritionists, therapists and supporters of healthy eating. It should be noted that the calorie content of

the juice is low – 60 calories per 100 ml. Thanks to its rich composition, orange juice is an excellent tonic for the body. Ascorbic acid together with carotene and tocopherol have strong antioxidant properties, cleanse the blood of cholesterol, strengthen the walls of blood vessels, increase their elasticity, and reduce permeability. At the same time, they have a positive effect on cells, significantly prolonging their vital activity, thereby rejuvenating the body. Antioxidants also fight the development of tumor cells, that is, orange juice is a preventive measure against cancer.

The outer orange part of an orange is widely used for the preparation of bakery and confectionery products, and is used in the production of alcoholic products. The benefits and harms of orange peel are assessed by the content of essential oils in it, which give the fruit its aroma and contain nutrients. There is fiber in the peel that increases work capacity, lowers cholesterol, and reduces the likelihood of gallstone formation. Another benefit of orange peel is its ability to fight colds, which is due to the vitamin C that is part of it. In addition, it contains vitamin A, which is responsible for the appearance of the skin, heals damage to the dermis, and neutralizes toxic compounds.

The peel is popularly considered a heart-healthy product; such an opinion has a strong foundation. The benefits of orange peel depend on the amount of flavonoids included in its composition; these substances neutralize excess cholesterol, stimulate heart activity, and have anti-inflammatory properties [8,9].

Recipes using oranges, orange juice, and orange peel are widely represented in the cuisine of different countries around the world [10]. However, there are still unused opportunities to expand the range of such dishes, in particular at the expense of flour dishes.

Table 1 shows the chemical composition of orange juice and orange peel, which will make it possible to more rationally determine the feasibility of using the above-mentioned ingredients during the production of flour dishes, in particular pancakes.

Table 1

Chemical composition of orange juice and orange peel, per 100 g [11,12]

Name	Orange juice	Orange peel
Proteins, g	0,7	1,5
Fats, g	0,1	0,2
Carbohydrates, g	13,2	14,4
including dietary fiber, g	0,2	10,6
Vitamins		
A, mkg	8	21
B ₁ , mg	0,04	0,12

B ₂ , mg	0,02	0,09
B ₅ , mg	0,3	0,49
B ₆ , mg	0,06	0,176
B ₉ , mkg	5	30
C, mg	40	136
E, mg	0,2	0,25

Microelements

Iron, mg	0,3	0,8
Zinc, mg	0,2	0,25
Iodine, mkg	2	-
Copper, mkg	67	92

Macroelements

Calcium, mg	18	161
Magnesium, mg	11	22
Sodium, mg	10	3
Potassium, mg	179	212
Phosphorus, mg	13	21

So, according to the data in Table 1, we conclude that orange juice and peel are low-calorie products, since they contain a small amount of fat. Orange peel and orange juice contain a lot of vitamin C, dietary fiber, B vitamins, micro- and macroelements, which will make it possible to significantly improve the nutritional and biological value of flour dishes.

A promising product for enriching food rations with iodine and other minerals is kelp (TU U 00382119–01–97) – a product of seaweed processing using a technology that allows to preserve its natural composition as much as possible.

Kelp is saturated with proportionally balanced biologically active substances, vitamins, micro- and macroelements (59 in total). The nutritional and dietary value of seaweed is determined by its chemical composition. It has a large content of organic iodine, which affects the functioning of the thyroid gland. At the same time, it also contains biologically active substances that help absorb this iodine, so no artificially created product with a high iodine content can compete with kelp.

In addition to iodine and iodine-containing nitrogenous substances, sea cabbage contains a certain amount of inactive hormonal substances that are included in the tissues of the thyroid gland, so it is a preventive measure against goiter, basal disease, atherosclerosis, as well as diseases associated with thyroid gland dysfunction.

Kelp removes slags, radioactive salts (radioactive iodine-131 up to 40%, cesium-137 – up to 60%, radioactive strontium – up to 85%), toxins, poisons. Provides the body with all necessary micro- and macroelements, vitamins, fats and carbohydrates; activates the immunobiological defense of the body; has a stimulating effect in the treatment of oncological and cardiovascular diseases. Sea cabbage is a multivitamin carrier, contains vitamins of groups B, A, C, D, K, PP and others. Kelp is rich in potassium, calcium, magnesium, iron, iodine, selenium, cobalt, copper, manganese [13,14]. The recommended dose of kelp in the zone of strict radioactive control is 16-20 g per day. In other areas, the daily dose is recommended in the amount of 2-4 g.

It is planned to use dry kelp in the production technology of flour dishes. Kelp (dry) is rich in vitamins, macro- and microelements; this makes it possible to enrich dishes with nutrients necessary for the human body.

Research was conducted on a new flour dish in which a certain part of the milk was replaced with orange juice and orange peel, and apples were replaced with kelp

Preparation of pancakes:

- experiment 1 – 20% of milk was replaced by 17% of orange juice and 3% of zest;
- experiment 2 – 35% of milk was replaced by 30% of orange juice and 5% of zest;
- experiment 3 – 50% of milk was replaced by 40% of orange juice and 10% of zest

Preparation of caramelized apples:

- experiment 1 – 1% of apples on kelp;
- experiment 2 – 2% of apples on kelp;
- experiment 3 – 3% of apples on kelp;

The model food composition of the new flour dish is given in Table 2.

Table 2

Model food compositions of pancakes «Golden magic»

Number in order	Name of the product	Control	Experiment 1	Experiment 2	Experiment 3
1	Wheat flour	41,6	41,6	41,6	41,6
2	Milk	104,0	83,2	67,8	52,0
3	Orange juice	-	17,68	31,2	41,6

4	Orange peel	-	3,12	5,2	10,4
5	Eggs	83	83	83	83
6	Sugar white	25	25	25	25
7	Salt	8	8	8	8
8	Sunflower oil	16	16	16	16
Output of semi-finished products		100	100	100	100
8	Apples	57	56,43	55,86	55,29
9	Sugar white	5	5	5	5
10	Butter	5	5	5	5
11	Cinnamon	0,1	0,1	0,1	0,1
12	Kelp	-	0,57	1,14	1,71
Output of caramelized apples		50	50	50	50
Output of flour dish		150	150	150	150

The organoleptic indicators of the experimental flour dish and the control sample were determined on a 5-point scale, according to the following indicators: appearance, taste, smell, color, consistency (Table 3).

Table 3

Organoleptic evaluation of «Golden magic» pancakes

Flour dishes	Evaluation by quality indicators					Average score
	Appearance	Taste	Smell	Color	Consistency	
	Weighting factor					
	2	3	2	1	2	
Control sample	4,5	4,65	4,6	4,5	4,7	4,61
Experiment №1	4,6	4,7	4,7	4,7	4,75	4,69

Experiment №2	4,8	5,0	5,0	4,8	4,9	4,92
Experiment №3	4,5	4,6	4,6	4,5	4,7	4,59

Based on the conducted organoleptic evaluation of the control and experimental samples of the flour dish, it was determined that with the addition of fresh orange and orange peel, the taste indicators are significantly improved: taste, smell, color. The dish has a delicate orange flavor and aroma.

With an increase in the content of kelp, the indicators deteriorate, so it is determined that it is advisable to use 0.3 g of kelp during the preparation of caramelized apples; as well as 31.2 g of orange juice and 5.2 g of orange peel. The technological scheme for the production of the new «Golden magic» dish using fresh orange, orange peel, and kelp is shown in Fig. 1.

According to Fig. 1, orange juice and orange peel are added directly during the kneading of the pancake dough, and kelp, which is previously crushed, is added during the preparation of the mixture for caramelizing apples. In general, we can conclude that the use of orange juice, orange peel and kelp does not in any way complicate the production process of the «Golden magic» flour dish. Adding certain ingredients to the flour dish, taking into account their chemical composition, significantly improves the nutritional value of the developed products. Comparative characteristics of the control and experimental samples of flour dishes are given in Table 4

Based on the data in Table 4, we conclude that replacing part of the milk with orange juice and orange peel significantly improves the content of vitamins: A – 19.68 times; B1 – by 16.36%; B5 – by 95%; B6 – by 21.66%; B9 – by 19.73%; C – by 94%; the content of iron trace elements increases – by 11.16%; iodine - 18.75 times; copper – by 29%; manganese – by 40%; selenium – by 100%; the content of macroelements: calcium – by 14.31%; magnesium – by 20.4%; potassium – by 12.21%. Thanks to the use of orange peel in the dish, the content of dietary fiber increases – by 77.39%.

Therefore, the addition of orange juice, orange peel, and kelp to the flour meal recipe causes the following positive changes: improvement of the organoleptic evaluation of the flour meal; increasing the content of dietary fiber; increase in iodine content; increase in the content of other trace elements (iron, copper, manganese); increase in vitamin C content; increasing the content of vitamins (A, E, PP, group B).

On the basis of the above indicators, a comprehensive quality indicator was calculated (Table 5) and a quality model was built (Fig. 2) of the control and experimental flour dish.

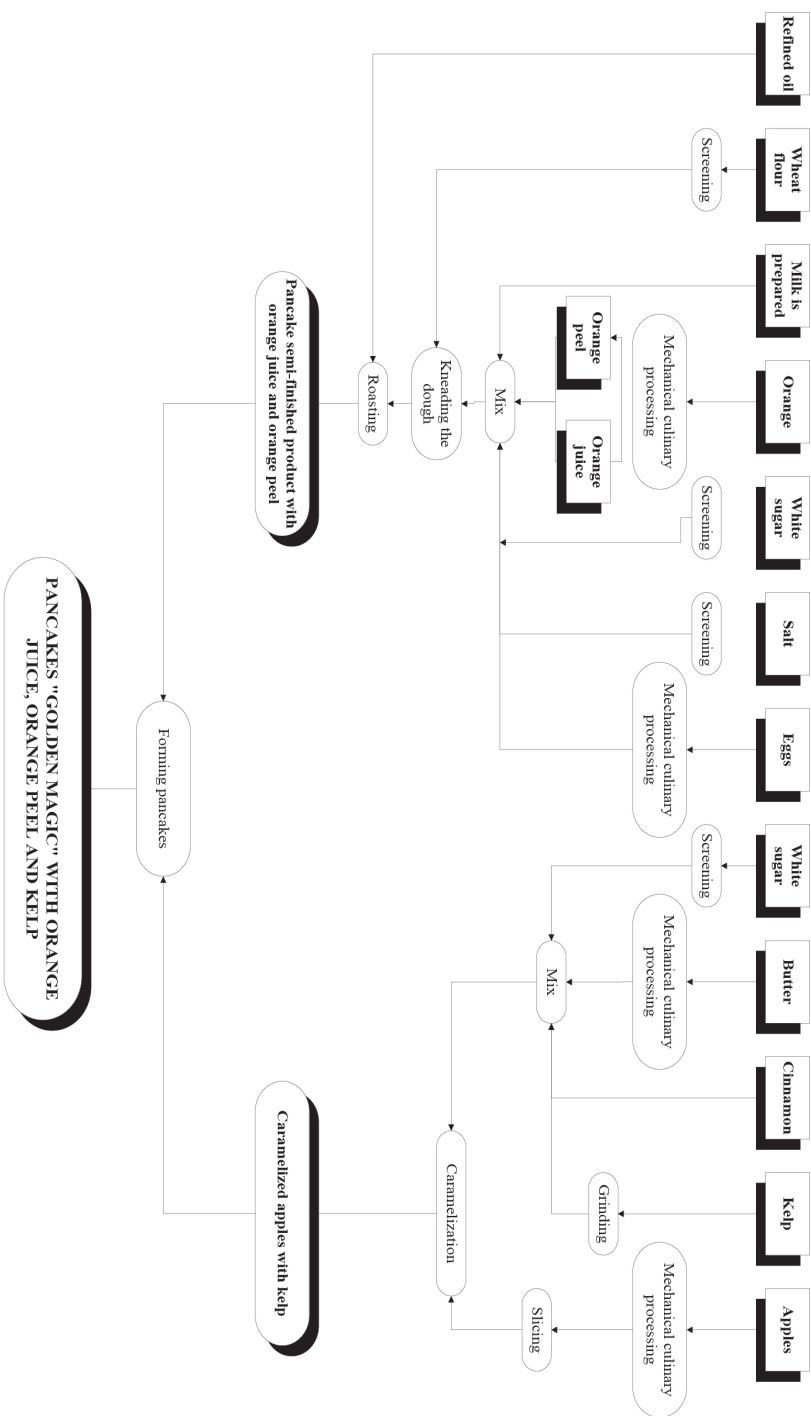


Fig. 1. Technological scheme for the production of a flour dish – Pancakes «Golden magic»

Table 4

**Comparative characteristics of control and experimental samples
of flour dishes**

Indicators	Control sample	Experimental sample	Difference, +/-	Deviation, %
Proteins, g	15,6	15,4	0,2	1,29
Fats, g	16,1	15,8	0,3	1,89
Carbohydrates, g	54,3	58,7	4,4	8,1
including dietary fiber, g	1,15	2,04	0,89	77,39
Macroelements				
Calcium, mg	157,2	179,7	22,5	14,31
Magnesium, mg	29,4	35,4	6,0	20,4
Potassium, mg	265,2	297,6	32,4	12,21
Microelements				
Iron, mg	2,15	2,39	0,24	11,16
Iodine, mkg	8,0	158	150	18,75 tames
Selenium, mkg	-	20	20	100
Copper, mkg	86,2	111,2	25	29
Manganese, mg	0,15	0,21	0,06	40
Vitamins				
A, mkg	0,16	3,15	2,99	19,68 tames
B ₁ , mg	0,11	0,128	0,018	16,36
B ₅ , mg	0,181	0,295	0,114	95
B ₆ , mg	0,12	0,146	0,026	21,66
B ₉ , mkg	15,2	18,2	3,0	19,73
C, mg	0,2	18,8	18,6	94
E, mg	15,4	15,47	0,07	0,45
PP, mg	0,62	0,621	0,001	0,16

Table 5

Comparative characteristics of control and experimental samples

Indicators	The weight of the indicator	Control sample	Experimental sample
Organoleptic assessment, points	0,2	4,61	4,92
Food fibers, g	0,2	1,15	2,04
Iodine, mkg	0,2	8,0	150
Microelements (iron, copper, manganese), mg	0,1	2,308	2,6
Vitamin C, mg	0,2	0,2	18,8
Vitamins A, E, PP, of group B	0,1	16,43	16,66
Sum	1,0		

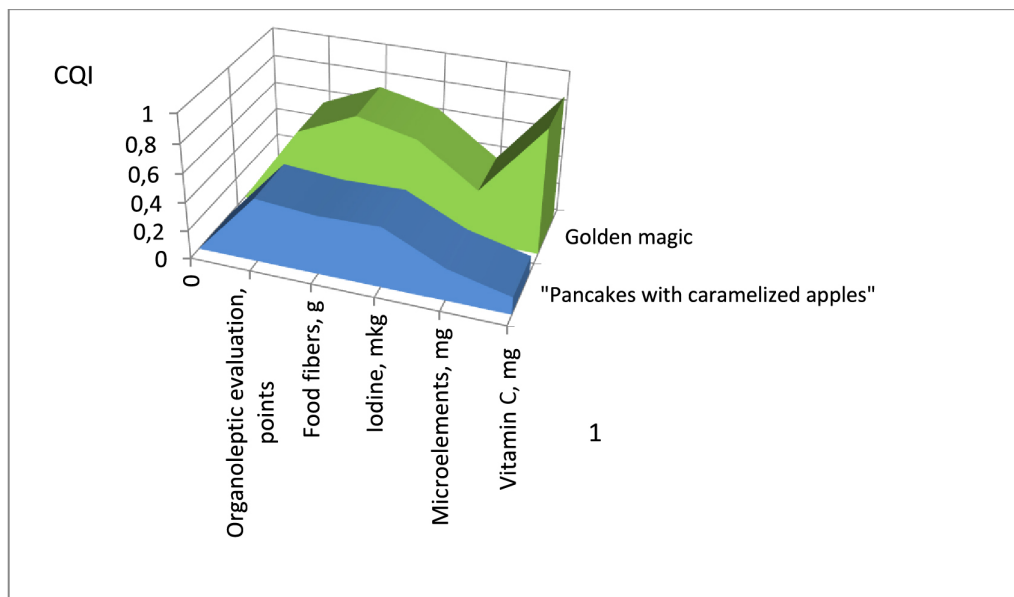


Fig. 2 Model of the quality of the flour dish «Pancakes with caramelized apples» and «Golden magic»

Conclusions. The conducted studies confirmed the feasibility of using orange juice, orange peel, and kelp, which made it possible to improve the nutritional and biological value of the flour dish – «Golden magic» pancakes, which increased the content of dietary fibers, trace elements, especially iodine and selenium, as well as vitamin C.

The socio-economic effectiveness of the introduction of the latest technologies of flour dishes using orange juice, orange peel and kelp consists in the enrichment of food products with biologically active substances that significantly improve human immunity and contribute to the prevention of iodine deficiency diseases.

References:

1. Ecology and diseases of the thyroid gland: monograph; 2nd edition, supplement. And revision./V.N. Korzun, T.O. Vorontsova, I.Yu. Antonyuk; in general Ed. Dr. Med. Sciences, Prof. V. N. Rozuna. - K.: Department, 2020. – 740p.
2. Iodine deficiency is a problem that should not exist. — URL:<https://www.medcv.gov.ua/archives/25859>
3. Human nutrition: present and future — URL: <http://amnu.gov.ua/harchuvannya-lyudyny-sogodennya-ta-majbutnye/>
4. What is the danger of iodine deficiency and how to protect yourself — URL: <https://moz.gov.ua/article/health/chim-nebezpechnij-jododeficit-i-jak-uberegtisja>
5. Pancakes with apples — URL: <https://lasunka.com/blog/mlinczy-z-yablukamita-morozivom/>
6. Tomcik P. Voltammetric determination of iodide by use of an investigated microelectrode array / P. Tomcik, D. Bustin // Fresenius J. Anal. Chem. — 2001. — Vol. 371. — P. 362—364.
7. Chromatography of amino acids. Chemist's Handbook 21. — URL : <http://chem21.info>.
8. Benefits of oranges — URL: <https://medfond.com/korysni-produkty/korist-apelsiniv.html>
9. Proper nutrition for the day — URL: <https://mir3d.org.ua/korochka-apelsina-poleznye-svojtva/>
10. Recipes for dishes with oranges — URL: <https://smachnoho.com.ua/ingredients/apelsyn/>
11. Composition and calorie content of orange peel — URL: <https://cook.net.ua/cedra-apelsina-sklad-kalorijnist-korist-recepti/>
12. Orange: chemical composition, calorie content, useful properties — URL: <https://dovidka.biz.ua/apelsin-himichnij-sklad-kaloriynist-korisni-vlastivosti>
13. Sytnyk I.P., Udvorgeli L.I., Drobot V.I. «Algae as a source of biologically active substances»/ National University of Food Technologies. m. Kyiv. – 2016.– p1. URL: <http://dspace.nuft.edu.ua/jspui/bitstream/123456789/7937/1/dvivydbar.pdf>
14. Kelp is the most useful seaweed — URL: <https://sayyes.com.ua/ua/laminariya-samaya-poleznaya-vodorosl/>

TRENDS IN TECHNOLOGIES AND QUALITY ASSESSMENT OF DESSERTS

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Annotation. *The article presents the theoretical background and experimental research into the development of technology for whipped desserts based on secondary protein-carbohydrate milk and licorice root extract; determines the properties of developed products, their energy and biological value, organoleptic properties, which condition the quality of food products.*

Keywords: *semi-finished product, quality, dessert, complex quality indicator, nutritive value.*

Relevance of research topic. The restaurant industry widely uses foaming agents and emulsifiers, which form the structural and mechanical properties of the finished product and determine its organoleptic characteristics. The use of natural plant raw materials for structure formation allows not only to expand the range of food products, but also to dispense with chemical food additives and rationally exploit local resources. The use of various surfactants in plant raw materials as structuring is of great practical interest because they have significant advantages over artificial additives and their mixtures, since all their valuable components are natural compounds which are better absorbed by the body.

Formulation of the problem. The issue of food quality and safety is very crucial today. The problem of poor quality food contributes to a significant deterioration of human health. At present, almost every consumer encounters problems with the quality of dairy products. Especially now, when in a difficult economic situation, production is focused mainly on a tangible and rapid economic effect. Therefore, there is a pressing need to preserve domestic practicing dairy production. Moreover, the dairy industry currently faces an urgent issue of developing new, cutting-edge technologies of semi-finished products with high biological value and low caloric content, extended shelf life, and improved quality and structure.

Analysis of recent research and publications.

These days, there is a whole new field in nutritional science focused on manufacturing and consumption of foodstuffs based on plant materials, most of which are designed to improve their nutritional value and affordability to the general public.

Some aspects of the theory and practice of dairy-based product development are studied in the works of domestic and foreign scientists, such as N.A. Didukh, H.V. Deinychenko, N.N. Lipatova, O.Y. Prosekova, P.A. Rebinder, A.H. Khramtsov [2-6]. The complex of experimental and theoretical research served as a precondition for development of new kinds of semi-finished products, desserts and products with a foamy structure based

on skim milk. The factor that has influenced on the combination of the range is the technology of culinary products, the structure of which is a dispersed system with a highly developed surface of phase.

Setting objectives. One of the ways this issue could be resolved is through the use of a multifunctional semi-finished product based on skim milk with licorice root extract, which provides high-quality desert products with a fairly low production cost and shortens the production process [1].

Therefore, the task is to develop the technology of whipped dessert products and determine the quality of these dishes.

Presenting main material. By adopting a systemic approach, this research developed a technology of semi-finished product based on skim milk (SM powder) with licorice root extract (LRI). The model of this production process is presented in Fig. 1

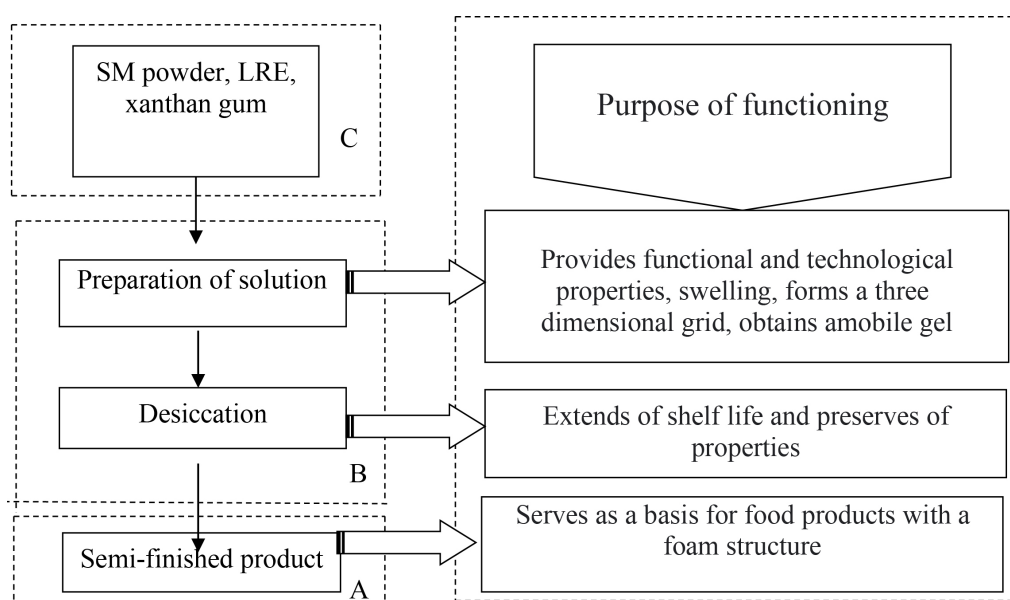


Fig. 1 Model of the technological process of obtaining a semi-finished product

This model involves the use of SM powder, xanthan gum and LRE (subsystem C). Subsystem B provides reasoning, adjustment and regulation of functional and technological properties (FTP) of the semi-finished product. Subsystem A determines the possibility and ways of using the obtained semi-finished product in foodstuffs, particularly in desserts with a foam structure.

The complex of experimental and theoretical research served as a prerequisite for development of new kinds of desserts on the basis of a semi-finished product. General ways of use of the semi-finished product are presented in Fig. 2.

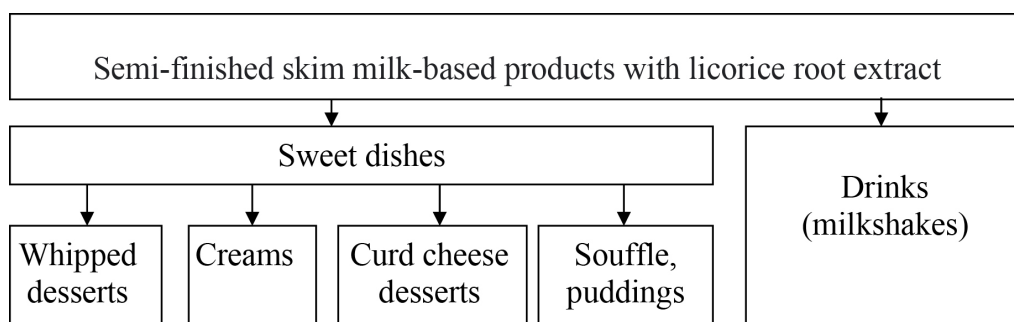


Fig. 2 Production process of semi-finished product usage

The technological process of products production based on semi-finished goods is carried out in the following order:

- reconstitution of the semi-finished product with juices (or dairy products);
- maturation of the mixture until complete dissolution of its components;
- cooling;
- addition of other recipe components;
- whipping the resulting mixture.

The usage of the developed semi-finished product will allow to remove structure-forming components, such as gelatin, egg white, and sugar from the dessert recipes due to the content of the stabilizer of xanthan gum of LRE in the semi-finished product.

Studies of the chemical composition of the whipped desserts based on this developed semi-finished product were carried out with the results shown in Table 1.

Table 1

Chemical composition of desserts based on semi-finished products (per 100 g)

Test type, measure	Control	Innovative technologies		
		Vanilla Dessert	Dessert "Special"	Fruit Dessert
Proteins, g	3,36	8,92	4,21	3,57
Fats, g	1,03	0,21	0,11	0,8
Carbohydrates, g	34,5	19,8	15,6	16,9
Minerals, mg				
Ca	35,2	94,9	50,6	13,5
Mg	13,2	11,3	10,1	8,8

P	26,5	71,5	37,7	13,9
Fe	1,1	9,1	5,6	5,7
Vitamins, mg	traces			
A		0,003	0,022	0,365
B ₁	0,69	0,112	0,063	0,06
B ₂	0,79	0,57	0,27	0,25
PP	0,65	0,38	0,29	0,63

The data presented in Table 1 indicate that desserts based on the developed semi-finished products have a high content of protein and minerals, a low content of fats and carbohydrates, compared to the control, which is very important from the perspective of satisfying the body's needs for adequate proteins.

Previous studies of structural and mechanical characteristics indicate an improvement in the foaming ability and foam stability of products based on semi-finished skimmed milk with licorice extract by 17 ... 34%.

The study of microbiological indicators demonstrates that, in case of compliance with sanitary rules and hygienic regulations and the requirements which regulate the production process, microorganisms from sanitary indicative and opportunistic groups and groups of pathogenic microorganisms were not found in the developed products under controlled terms and conditions of storage [6].

In addition to nutritional value and compliance with the requirements of a balanced nutrition formula, the quality of products is determined by organoleptic indicators (Table 2).

Table 2

Characteristics of organoleptic indicators in desserts

№ i/o	Indicators	Semi-finished product characteristics
1	Appearance, consistency	Lush mass with a velvety surface, porous, homogeneous throughout the mass, non-flowing, stable
2	Color	Slightly creamy, typical of this product. Minor inclusions of fruit slices without impurities are allowed.
3	Smell	Clean, bright aroma free of foreign smell
4	Taste	Pure, pronounced, typical of this kind of dish and the raw materials used in it, free of any foreign taste

The analysis of organoleptic indicators, which are provided in Table 2, shows the high-quality characteristics of desserts made of semi-finished products.

Based on previous studies, a comprehensive indicator of product quality was calculated. The calculations of Ki quality scores of individual properties were determined using a graph of the Harrington desirability function for properties of groups A, B, C, D, E. The obtained calculation results are shown in Table 3.

Table 3

**Determination of relative quality indicators of desserts
(in the first column – conventional signs)**

Measure	Quantitative indicators of quality					Relative quality indicators				
	code	Vanilla Dessert	Dessert "Special"	Fruit Dessert	Control	code	Vanilla Dessert	Dessert "Special"	Fruit Dessert	Control
%	PA ₁	8,72	4,57	3,67	3,48	KA ₁	0,996	0,651	0,541	0,504
%	PA ₂	0,19	0,09	0,07	1,02	KA ₂	0,396	0,822	0,876	0,056
%	PA ₃	19,85	15,9	16,74	34,68	KA ₃	0,961	0,978	0,985	0,421
%	PA ₄	0,014	0,01	0,012	0,02	KA ₄	0,233	0,230	0,234	0,394
%	PA ₅	1,9	1,1	0,5	0,8	KA ₅	0,985	0,787	0,423	0,624
(mg / eq%)	PB ₁	147,3	139,3	142,1	91,5	KB ₁	0,975	0,985	0,974	0,389
g	PB ₂	10,4	5,2	4,33	4,17	KB ₂	0,982	0,572	0,385	0,462
%	PC ₁	322	281	300	240	KC ₁	0,985	0,911	0,951	0,739
%	PC ₂	96	97	99	97	KC ₂	0,762	0,923	0,981	0,748
std.u	PD ₁	48	49	49	48	KD ₁	0,987	0,995	0,992	0,985
std.u	PD ₂	47	46	47	45	KD ₂	0,967	0,947	0,967	0,921
std.u	PD ₃	48	49	49	47	KD ₃	0,982	0,993	0,993	0,967
std.u	PD ₄	46	48	47	46	KD ₄	0,947	0,982	0,967	0,947
std.u	PD ₅	46	48	48	45	KD ₅	0,947	0,982	0,982	0,921
CFU/ g	PE ₁	3,5×10 ²	4,7×10 ²	3,8×10 ²	5,0×10 ³	KE ₁	0,921	0,845	0,904	0,821

To compile quality assessments of individual properties, an additive model of complex assessment in the form of weighted arithmetic means was used, with the results of the analysis presented in Table 4.

Table 4

Complex assessment of the quality of desserts

Sample	Quality values by groups of properties					Complex assessment
	KA ₀	KB ₀	KC ₀	KD ₀	KE ₀	
Vanilla dessert	0,791	0,995	0,873	0,957	0,923	0,911
Dessert “Special”	0,711	0,762	0,911	0,982	0,847	0,842
Fruit	0,623	0,671	0,962	0,979	0,902	0,821
Control	0,424	0,423	0,743	0,944	0,826	0,684

The analysis of the obtained data shows that the complex quality indicator of products based on the developed semi-finished goods is 0.909...0.825 units, compared to the control (0.681 units), which allows to position them in the range of “good” quality.

Conclusions. Thus, the main areas of use of the semi-finished product based on skim milk and licorice root extract were determined, the technology of whipped desserts was developed. According to the complex quality indicator, which includes energy, biological value, structural, mechanical, organoleptic and microbiological properties, the high quality of the developed products and the expediency of their use are confirmed.

References:

1. Gnitsevykh, V.A., Volnova, N.V. (2010). Development technology of milk intermediate product is for production of sweet foods with foamy structure, *Obladnania ta tekhnolohii kharchovykh vyrobnytstv*, Vol. 25, pp. 64-69.
2. Gnitsevykh, V., YudinaT. (2016). Analiz i perspektyvy vykorystannia bilkovovuhlevodnoi molochnoi syrovyny v Ukraini. *Hlobalizatsijni vyklyky rozvytku natsional'nykh ekonomik*. Vol. 3. Kyiv: KNUTE. pp. 673-684.
3. Gnitsevykh, V., YudinaT., HoncharY.(2018). Tekhnolohiia napivfabrykatu na osnovi nyz'kolaktoznoi molochnoi syrovatky ta m'iakoti harbuza. *Tovary i rynky*. Vol. 4 pp. 105–114.
4. Molochnyj rynek – zrostannia, tendentsii ta prohnoz (2019-2024) (2020). *Analychnyj vidil AVM za materialamy Mordor Intelligence*. Retrieved from: <http://milkua.info/uk/post/molocnij-rinok-zrostanna-tendencii-ta-prognoz-2019-2024>
5. Obzor myrovoho molochnoho rynku (2019). *Analytycheskyj otdel AVM podannym IFCN, Rabobank, USDEC, EuropeanCommission, CLAL, Dairy Australia, Milknews*. Retrieved from: <http://milkua.info/ru/post/obzor-mirovogo-molocnogo-rynka-avgust-2019>
6. Stepanchuk S., Yefis'ko Y. Stan ta perspektyvy rozvytku molochnoho rynku Ukrainy (2017). *Ekonomika ta derzhava*. Vol. 5. 24 p. Retrieved from: http://www.economy.in.ua/pdf/5_2017/24.pdf

INSTRUMENTS FOR MONITORING THE TRANSPARENCY OF FISCAL AND BUDGETARY RELATIONS

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Annotation. *The article explores the essence of the concept of fiscal and budgetary relations' transparency. The importance of ensuring a high level of fiscal and budgetary relations transparency is described. The role of transparency in fiscal and budgetary relations in Ukraine in post-war conditions has been determined. Official instruments on transparency of tax and budgetary relations in a world practice are described.*

The main part of the article is devoted to the coverage of the components of fiscal and budget transparency and their basic principles. Ukraine's fiscal transparency was also assessed on the basis of a comparative analysis of the country's position in world rankings. It was found that public engagement is the weakest link in accountability systems. This conclusion is particularly troubling in light of the closure of civil space and democratic regression in countries around the world.

The conclusions suggest ways to improve the transparency of tax and budgetary relations at this stage and after military reconstruction in Ukraine. An urgent priority for the transparency of tax and budgetary relations in Ukraine is to ensure the transparency and integrity of the reconstruction plan

Keywords: *tax and budgetary relations, transparency, analysis, advantages, recommendations.*

Over the past two decades, both practitioners and scientists have had a growing interest, in promoting the openness of the formation of tax and budgetary relations. This new perspective has led to a number of initiatives aimed at promoting transparency, accountability and public participation in the budget process.

At a time when global financial conditions in the world have deteriorated markedly from the crisis caused by the COVID-19 pandemic, and the risks of deteriorating economic prospects have increased as a result of Russia's invasion of Ukraine, it is imperative to ensure that disclosure is adequacy and compliance with transparency standards to support comprehensive risk management and ensure a reliable level of tax and budgetary relations. It is fiscal transparency that can lead to better budgetary outcomes by reducing budget manipulation, and misuse of resources, and promoting smart, accountable, and equitable allocation of resources.

The problem of transparency of tax and budgetary relations is investigated in detail by the following domestic and foreign scientists: Igolkin I.V., Barych-Tinovskaya L.P.,

Durman, O.L., Pekonnen A., Malena K., Trenovsky B. and others. Despite a sufficient number of publications on this topic, it remains relevant and needs new further research, as the world is constantly changing in order to ensure a proper system of fiscal transparency and be financially stable.

It is necessary to respond in time to the changes that occur.

The purpose of the article is to reveal the role of transparency of tax and budgetary relations in modern and post-war conditions, to analyze Ukraine's fiscal transparency in the context of global trends and to develop ways to improve the transparency of the tax and budget system.

Russia's invasion of Ukraine on February 24, 2022, and its attacks on civilians are a shocking act of aggression against the population, which has demonstrated a strong commitment to open government and open budget reforms. With these actions, the Russian leadership makes it clear that it will continue to openly punish its neighbours for striving for a freer and more democratic future. Now there are many brave activists in Ukraine, journalists, officials advocating for reforms, and many others who, despite all the difficulties, are trying to promote a more transparent and accountable way of government.

Today, an important task for the state is to develop and implement an effective system for responding to new challenges, to solve in time the problems brought by the ongoing war and to think about post-war reconstruction, as well as how to rethink the future of the nation.

In post-war reconstruction, political weight based on openness and transparency will be of great importance. This is a signal of leadership, which in this case is the ability to rally post-war Ukraine for better reconstruction and inspire trust among the public.

Ukraine is one of the most corrupt countries in the world according to Transparency International (122nd place out of 180 in 2021). In May 2022, at the World Economic Forum in Davos, young people Ukrainians loudly swore to society that people would no longer tolerate the terrible corruption that permeated the country, so transparency of tax and budgetary relations, is extremely necessary. increase public confidence in the government, allow civil society to conduct independent budget analysis, track and monitoring of expenditures and thus prevent mismanagement and corruption, and be informed and confident that state budget funds are spent for the benefit of Ukraine and its citizens [11, 17, 19].

At present, given the strong public support of President Volodymyr Zelenskyy and his team after February 24, 2022, and the need to plan the reconstruction of the country in a transparent and accountable institutional environment, Ukraine may have a historic chance to break out of the vicious circle of corruption and introduce a more stable and transparent system of tax and budgetary relations.

The role of fiscal transparency became central to the IMF's oversight following a wave of crises affecting emerging market economies in the late 1990s, and the ongoing COVID-19 pandemic increased the importance and urgency of increased fiscal transparency.

The importance of fiscal transparency has been known at least since the time of Aristotle, who noted in his book *Politics*: “to protect the treasury from deception, let all money be issued openly to the whole city, and copies of accounts will be placed in different chambers” [20].

- The U.S. Department of State’s tax and budget transparency is defined as “a critical component of effective public finance management that helps build market confidence and creates the preconditions for more sustainable economic development. Transparency also ensures the availability of the state budget for ordinary citizens and thus helps to ensure accountability of the country’s leadership” [3].
- Currently, the following official instruments for transparency of tax and budgetary relations are in force, namely: the International Monetary Fund (IMF) [10], the Global Fiscal Transparency Initiative (GIFT) [18], the International Budget Partnership (IBP) [8], the International Federation of Accountants (IFAC)[9], the Organization for Economic Cooperation and Development (OECD)[14], Government spending and financial reporting (PEFA)[16], the World Bank Group and other relevant organizations.
- The main international standards and guidelines for fiscal transparency provided by the above-mentioned official organizations are the following documents:
 - official standards (legal documents): IMF (2014), Code of Fiscal Transparency; OECD (2015) Recommendation of the Council on Budget Management;
 - Other key reference materials: GIFT (2012), Principles of High Fiscal Transparency, Participation and Accountability; IBP (2017), Open Budget Questionnaire Guide; OECD (2002), Budget Transparency Best Practices; PEFA (2016), Public Finance Management Assessment Structure;

Other key international guidelines, tools and professional standards: Commonwealth Parliamentary Association (2015), Recommended benchmarks for democratic legislatures; EITI (2016), EITI Standard 2016; GIFT (2015), Principles of Public Participation in Fiscal Policy; G20 (2015), G20 Open Data Anti-Corruption Principles; IMF (2014), Guide to Public Finance Statistics; IPSASB (2016), International Accounting Standards for the Public Sector; OECD (2014), Council Recommendations on Digital Government Strategies and others [5].

The most recognized international standard for disclosure of public finances is the IMF Fiscal Transparency Code, which contains generally accepted principles of tax and budget transparency, which must be followed to ensure a high level of fiscal transparency (Table 1).

Ensuring a high level of transparency in tax and budgetary relations has a number of advantages, namely:

- The legislature, the media, civil society, and the general public will have more opportunities to hold the executive branch accountable if it has the authority to information about how it distributes and uses public resources.
- Elected officials and civil servants can act more responsibly if their decisions

- and actions are open to public scrutiny.
- Provides fairer government spending. Fiscal transparency can limit the divergence of resources to special interests, leading to fairer government funding.
 - Improves the quality of public debate and the ability of citizens to participate in policy-making and budgeting processes.
 - Early identification of weaknesses and strengths in fiscal policy can reduce risks and contribute to fiscal and macroeconomic stability.
 - Increased transparency can increase trust in governments and public perception of inevitable compromises.

Table 1

Components of tax and budget transparency and their basic principles

1. Fiscal reporting
<ul style="list-style-type: none"> – Coverage: fiscal reports should provide a comprehensive overview of the fiscal performance of the public sector and its under-sectors in accordance with international standards – Frequency and timeliness: fiscal reports should be published frequently, regularly and on time – Quality: the information in fiscal reports should be relevant and comparable internationally – Integrity: fiscal statistics and financial statements must be reliable, subject to external scrutiny and promote accountability
2. Fiscal forecasting and budgeting
<ul style="list-style-type: none"> – Completeness: Fiscal forecasts and budgets should provide a comprehensive overview of the fiscal outlook – Orderliness: the powers and responsibilities of the executive and legislative branches of power in the budget process must be determined by law, and the budget must be submitted, discussed and approved in a timely manner – Political orientation: fiscal forecasts and budgets should be presented in such a way as to facilitate policy analysis and reporting – Reliability: Economic and fiscal forecasts and budgets should be trustworthy
3. Analysis and management of fiscal risks
<ul style="list-style-type: none"> – Risk Disclosure and analysis: governments should publish regular summary risk reports – Risk management: Specific risks to public finances should be regularly monitored, disclosed and managed – Fiscal coordination: fiscal relations and indicators in the public sector should be analyzed, disclosed and coordinated

4. Manage add-ons from resources

- | |
|--|
| <ul style="list-style-type: none">– Property rights and rights to resources: rights to resources must be clearly defined with open and transparent procedures for their distribution– Resource revenue mobilization: the receipt and collection of resource revenues should be governed by clear and published rules and procedures– Use of resource revenues: resource revenues should be managed within the budget and macro-fiscal system in accordance with clear fiscal policy objectives, and any natural resources fund should be managed in a consistent and transparent way– Disclosure of information on natural resource use activities: financial and operational, environmental and social aspects of natural resource projects should be regularly reported and published |
|--|

Source: formed and systematized by the author on the basis of [7].

Ensuring a high level of transparency in tax and budgetary relations has a number of advantages, namely:

- The legislature, the media, civil society, and the general public will have more opportunities to hold the executive branch accountable if it has the authority to information about how it distributes and uses public resources.
- Elected officials and civil servants can act more responsibly if their decisions and actions are open to public scrutiny.
- Provides fairer government spending. Fiscal transparency can limit the divergence of resources to special interests, leading to fairer government funding.
- Improves the quality of public debate and the ability of citizens to participate in policy-making and budgeting processes.
- Early identification of weaknesses and strengths in fiscal policy can reduce risks and contribute to fiscal and macroeconomic stability.
- Increased transparency can increase trust in governments and public perception of inevitable compromises.
- It can help increase the collection of income from local sources. People would be more willing to pay thanks to a better understanding of how and for what purposes their taxes would be used.
- Promotes a more stable and predictable environment for investment decisions. With a clearer understanding of government policies and actions, international and local investors may want to invest more resources in the country [4, 6, 15].

In the course of our work, we carried out the analysis of transparency and tax of budgetary relations at the global level and Ukraine, in particular, which was based on the study of budget openness (OBS) [12], which since 2006 has been conducted by the International Budget Partnership (IBP) every six months. OBS is a unique, global, independent and comparable measurement of government practices using internationally accepted criteria for budget transparency, public participation in fiscal policy, and

oversight of official institutions to understand, monitor, and influence how public resources are collected and spent. The score for each of the three indicators given is carried out on a scale from 0 to 100 (0-40 Insufficient level; 41-60 Limited level; 61-100 Adequate level).

OBS 2021 shows that most countries have maintained and, in some cases, expanded previous gains in accountability, despite disruptions caused by the pandemic. The overall picture of accountability has changed very little. For the 117 countries that were assessed in both OBS 2019 and OBS 2021, the global GPA for transparency increased by 1 point, the global GPA for supervision decreased by 2 points, and the global GPA for participation remained unchanged» (Fig. 1).

As you can see, public engagement is the weakest link in accountability systems. This conclusion is particularly troubling in light of the closure of civil space and democratic regression in countries around the world. No country under OBS 2021 provides opportunities for citizen participation in fiscal policies that are considered sufficient (61 or higher). Only four countries offer moderate opportunities for public participation in budget processes with a score of 41 to 60 points, these are South Korea (59 points), the United Kingdom (54 points), New Zealand (48 points) and Georgia (44 points). 23 countries out of the estimated 120 in 2021 for public participation in budget processes have a score of 0 points, of which China, Hungary, Turkey, Venezuela and others.

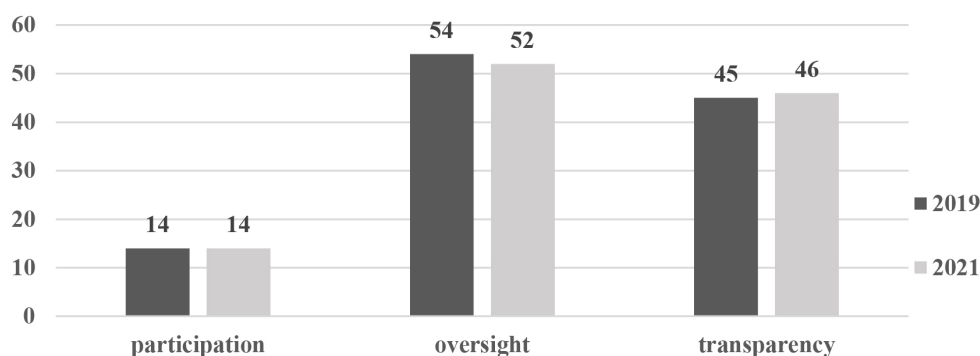


Fig. 1. Global Participation, Oversight and Transparency Assessments, OBS 2019-2021

Source: formed by the author on the basis of [12]

To improve this situation, countries need to create meaningful, inclusive opportunities to engage the public in the budget process, which will help strengthen public confidence in the government and strengthen democracy.

The decrease in the assessment of legislative oversight indicates that, on average, the role and effectiveness of legislatures in 2021 has slightly decreased compared to 2019, namely from 54 to 52 points.

To address this problem, it is necessary to reduce the redundancy and abuse of

executive power by improving oversight by legislatures and independent auditors. Enhanced oversight, especially in budget execution, can help governments make wise use of public resources, deliver on promises reflected in national budgets, and ultimately increase public confidence.

The highest scores of legislative oversight of OBS 2021 are given to the following countries: Germany (91 points), Norway and South Korea (87 points each), France and Sweden (85 points each), the Czech Republic, Slovenia and the United States (83 points each) and Poland and Ukraine (82 points each). The lowest are Sudan, Qatar and Yemen with a score of 6 points.

The average global budget transparency indicator for 2021 is 46 out of 100 and indicates that public availability of budget information is limited in most countries and is sharply limited in too many. Only 35 out of 120 countries surveyed have a sufficient level of budget transparency. The top countries in the OBS 2021 ranking according to budget transparency estimates are: Georgia (87 points), South Africa (86 points), Sweden and New Zealand (85 points each), Mexico (82 points) and Norway (81 points). The lowest transparency is observed in the Comoros, Equatorial Guinea, Venezuela and Yemen, with a score of 0 points.

To improve transparency indicators, it is necessary to disclose more and better information about planned and executed budgets, debt and fiscal risks. Ensuring an adequate level of transparency is essential for effective public participation in the budget process, as well as for legislatures and auditors to perform their supervisory functions.

In Ukraine, the progress of reforming the financial system and ensuring transparency of tax and budgetary relations were:

- Law of Ukraine «On Access to Public Information» of 13.01.2011;
- Law of Ukraine «On openness of use of public funds» of 11.02.2015;
- Adoption by the Cabinet of Ministers of Ukraine of the order «On approval of the Strategy for reforming the public finance management system for 2017-2020» of 8.02.2017;
- «Public Finance Management Strategy for 2022-2025» with its corresponding action plan, dated 29.12. 2021;
- «Strategy of digitalization of the public finance management system», dated 17.11.2021;
- Creation during 2018-2020 of a generalizing information and analytical system (IAS) «Transparent Budget», designed to inform in an accessible form to a wide range of the public about the financial and budgetary policy of Ukraine. IAS «Transparent Budget» combines three large key open data modules in the field of tax and budgetary relations:
 - 1) The unified web portal for the use of public funds is the largest database of open data of Ukraine in the field of public finance.
 - 2) The budget for citizens is the largest database of knowledge about the budget, which contains key budget terms and terms of the budget process, indicators of state and local budgets in the form of open data.

3) Register of projects of international financial organizations implemented on the territory of Ukraine [1, 2].

Let's review how the transparency of tax and budgetary relations in Ukraine changed from 2017 to 2021 according to OBS [13] (fig.2).

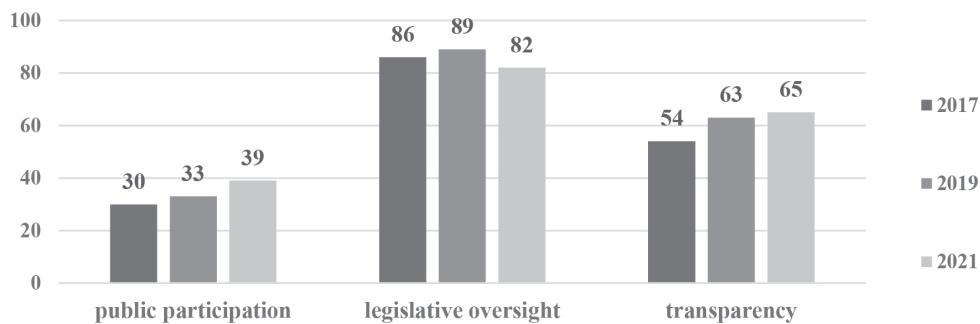


Fig. 2. Public Participation, Legislative Oversight and Transparency Assessments, Ukraine 2017-2021

Source: formed by the author on the basis of [13]

Public participation and transparency tend to increase between 2017 and 2021, and legislative oversight, on the contrary, decreased from 86 to 82 points in the specified period.

Comparing Ukraine with global indicators (according to OBS 2021), we see that it has higher global scores for all assessed indicators and occupies quite decent positions among the 120 countries evaluated. Namely, for public participation in 2021, it is in 5th place with a score of 39 points, and despite the high position in the rating, this assessment indicates an insufficient level of public participation in budget processes. Budget supervision is in 10th place in the ranking, but in terms of the number of points, namely 82, also by 5, since some countries have the same number of points and this is a sufficient level. In terms of transparency of budget processes, Ukraine ranks 26th out of 120 assessed countries and has a score of 62, which is a moderately sufficient level. To improve these indicators, we offer the following recommendations (Table 2).

As noted earlier, an urgent priority for the transparency of Ukraine's tax and budgetary relations is to ensure the transparency and integrity of the reconstruction plan, both its development and implementation, so we propose several recommendations for post-war reconstruction in order to ensure public confidence in the government and increase the transparency of tax and budgetary relations. Namely, it is necessary:

- develop a platform that will monitor the integrity and ensure full transparency over reconstruction funds that will be provided from the state budget and the international community;
- pay attention to decision-making processes involving and promoting and protecting civil space, as well as reliable and independent information ecosystems;

- the government should significantly strengthen public integrity and create a mechanism to ensure the transparency and integrity of the reconstruction plan;
- to fully implement the National Anti-Corruption Strategy of Ukraine, developed during the previous two years and approved by the Parliament in June 2022;
- to introduce a robust public finance management system, including public procurement and external audit, as well as infrastructure management, which will be a key prerequisite for the successful implementation of the recovery program by ensuring transparency, and competition and minimizing the risks of fraud and corruption at all levels of government.

Table 4

Recommendations for improving the criteria for tax and budgetary relations

Public participation	<p>To strengthen public participation, the Ministry of Finance of Ukraine and the Verkhovna Rada should prioritize the following actions:</p> <ul style="list-style-type: none"> - Expand budgeting mechanisms to involve any civil society organization or member of the public who wishes to participate. - Actively engage with vulnerable and underrepresented communities directly or through the civil society organizations that represent them. - Allow any representative of the public or any civil society organization to testify during hearings on the budget proposal before it is approved. - Allow members of the public or civil society organizations to testify during auditing hearings.
Budget supervision	<p>The Parliament of Ukraine ensures proper supervision at the planning stage of the budget cycle and proper supervision at the implementation stage. To further improve oversight, the following measures should be prioritized:</p> <ul style="list-style-type: none"> - Parliament should discuss budget policy before submitting a budget proposal to the executive branch and approve recommendations for the future budget. - To strengthen the independence and improvement of audit supervision by the Accounting Chamber of Ukraine, it is recommended to ensure the verification of audit processes by an independent agency
Transparency	<p>Ukraine should prioritize the following actions to increase budget transparency:</p> <ul style="list-style-type: none"> - Improve the comprehensiveness of the executive branch's budget proposal by including detailed information on expenditures and revenues over a multi-year period, increasing fiscal risk information, and providing information on financial and non-financial assets.

Source: formed by the author

Conclusions. Thus, the main areas of use of the semi-finished product based on skim milk and licorThus, fiscal transparency is a fundamental prerequisite for accountability and public participation in governance processes. Ensuring a high level of fiscal transparency is a critical element for effective fiscal governance. This helps ensure that economic decisions by governments are based on a common and accurate assessment of

the current fiscal situation, costs and benefits, any policy changes, and potential risks to fiscal prospects.

Based on the research, it was revealed that despite the importance of ensuring a high level of transparency in tax and budgetary relations, many countries do not have an adequate level of transparency in this direction. Therefore, the task of developing further directions for strengthening the transparency of tax and budgetary relations, both at the global level and in Ukraine, in particular, remains relevant. And also, relevant for Ukraine, at the moment is the planning of post-war reconstruction in a transparent and accountable an environment that will help to reach a new level of public administration, get rid of corruption and build your country in such a way as to ensure maximum public confidence in the government and a high level of financial stability.

References:

1. Barych-Tinovska L.P., Durman, O.L. Modern digital tools to increase the transparency and efficiency of the use of public funds. *Tauride Scientific Herald. Series: Public Administration and Administration*. 2022. №3. pp. 14-22. URL: <https://doi.org/10.32851/tnv-pub.2022.3.2>
2. Verkhovna Rada of Ukraine. Official web-portal of the Parliament of Ukraine. URL: <https://www.rada.gov.ua/>
3. Igolkin I.V. The role of transparency of budgetary relations in the system of public finance management. *Budget policy. Scientific works of NDFI*. 2016. № 1 (74). pp. 50-67.
4. Best Practices for Budget Transparency. OBCD. 2002. URL: <https://www.oecd.org/governance/budgeting/Best%20Practices%20Budget%20Transparency%20-%20complete%20with%20cover%20page.pdf>
5. Budget Transparency Toolkit. OECD 2017. URL. <https://www.oecd.org/gov/budgeting/Budgeting-Transparency-Toolkit.pdf>
6. Improving Fiscal Transparency to Raise Government Efficiency and Reduce Corruption Vulnerabilities in Central, Eastern, and Southeastern Europe. European Department. International Monetary Fund. No. 20/06. 2020. URL: <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2020/05/10/Improving-Fiscal-Transparency-to-Raise-Government-Efficiency-and-Reduce-Corruption-46863>
7. International Monetary Fund. (2019). The Fiscal Transparency Code. URL: <https://www.imf.org/external/np/fad/trans/Code2019.pdf>
8. International Budget Partnership (IBP). URL: <https://internationalbudget.org/>
9. International Federation of Accountants (IFAK). URL: <https://www.ifac.org/>
10. International Monetary Fund (IMF). URL: <https://www.imf.org/en/Home>
11. Jeglinskas. G. The ambition is there to rebuild Ukraine. Here's how to make it work. 2022. URL: <https://www.atlanticcouncil.org/blogs/new-atlanticist/the-ambition-is-there-to-rebuild-ukraine-heres-how-to-make-it-work/>
12. Open Budget Survey 2021. 8 Edition. International Budget Partnership. URL: <https://internationalbudget.org/wp-content/uploads/Open-budget-survey-2021-1.pdf>

13. Open Budget Survey Ukraine 2021. International Budget Partnership. URL: <https://internationalbudget.org/open-budget-survey/country-results/2021/ukraine>
14. Organisation for Economic Cooperation and Development (OECD). URL: <https://www.oecd.org/>
15. Pekkonen A., Malena C. Budget Transparency. Civicus and PG exchange. URL: https://www.civicus.org/documents/toolkits/PGX_G_Budget%20Transparency.pdf
16. Public Expenditure and Financial Accountability (PEFA). URL: <https://www.pefa.gov.np/en>
17. Public governance in Ukraine Implications of Russia's war. OECD. 2022. URL: <https://www.oecd.org/ukraine-hub/policy-responses/public-governance-in-ukraine-c8cbf0f4/>
18. The Global Initiative for Fiscal Transparency (GIFT). URL: <https://aftx.learning.fiscaltransparency.net/>
19. Transparency International Ukraine. URL: <https://www.transparency.org/en/countries/ukraine>
20. Trenovski B. Monitoring report on the transparency and accountability of the budget users. Center for economic analyses (CEA). 2014. 33 p. URL: https://www.researchgate.net/publication/309537954_Monitoring_report_on_the_transparency_and_accountability_of_the_budget_users

THE PHENOMENON OF PROSUMPTION IN THE CONTEXT OF THE CONCEPTUAL FOUNDATIONS OF THE INFORMATION SOCIETY

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Annotation. *The development of a global information industry has an impact on all areas of the economy, human activity, and social processes, and it changes the social structure of society as a whole, requiring new institutions, relationships, and values.*

There is a need for a new scientific understanding of the 'producer-consumer' and 'individual-information technology' relationships. These relationships undergo significant transformations in the information economic space which contributes to the emergence and development of a new phenomenon – prosumption.

The conceptual foundations of the new stage of socio-economic life have already been studied by well-known world-class scientists. The peculiarities of the transformation of socio-economic relations in the conditions of the formation of a modern information society have become the object of research by many modern scientists. The issue of prosumption has become a significant topic in academic research among a narrow circle of specialists.

The economic issues of the impact of prosumption on real economic processes in the information society, the sources of prosumption, and the potential for the spread of this phenomenon in public processes have not been sufficiently disclosed. The article attempts to comprehensively analyze the manifestations of prosumption in society and the economy.

The article explicates prosumption as an essential socio-economic phenomenon of the information society. The main forms of prosumption functioning are identified and analyzed. It is shown that DIY practices, 'participatory culture', fandom communities, and freelancers are expressions of prosumption, its variants, and manifestations. Such social communities and forms of work organization require the implementation of individual abilities, creativity, and creative freedom.

There is a need for a creative approach to the use of information resources, the Internet space, media space, and the formation of a new consumer culture based on prosumption principles.

Keywords: *prosumerism, information society, DIY-practices, "culture of participation", fandom communities, freelancing.*

Conceptualization of the information stage of socio-economic development.

The theories that form the basis of the methodology of modern economic development are based on the perception of knowledge, information, information technologies, and their interpretation. These theories are formed in conditions when information technologies are the basis for the growth of the potential of the global and national economies. Such theories include the theory of post-industrial society, the theory of

information economics, and the theory of knowledge economics. According to their postulates, services, information, and knowledge are the basis for the development of society and the economic prosperity of its members. The modern state of economic development of humanity is characterized by the concepts of post-modernity, post-industrial society, postmodernism, information society, and information economy, and is a real, comprehensive, unfinished process of permanent cardinal shifts. Society has entered a new era in which technology and digitization of the world significantly determine the general tendencies of human existence and the foundations of socio-economic development. The emergence of a global information industry affects all areas of the economy, human activity, social processes, and changes the social structure of society as a whole, requiring the formation of new institutions, relationships, and values. Information corporations themselves become influential institutions, in which, according to Z. Valiullina, the nature of workers' labor changes fundamentally and which change the structure of the functioning of the economy at the global level (Valiullina, 2018).

Today, a new person is a member of the information society and is being formed, that is a consequence of the transformation of the external environment of the individual as a producer of goods and services and as a consumer. Based on the changing nature of economic activity in society, the management systems in corporations are being rationalized, the organization of work in commercial, financial, and manufacturing companies is being restructured, as well as in the activities of entrepreneurs. At the same time, the sphere of leisure and worldview orientations of the individual change their character. To a large extent, the character of personal priorities and interests coincides with the managerial priorities of business structures. The new perception of the world encourages the emergence of a new paradigm of thinking, in which the interests of the individual and the interests of business are combined. This leads to the emergence of a new socio-economic phenomenon as prosumption. Prosumption becomes another component of modern socio-cultural and economic development.

The conceptualization of a new stage of socio-economic development, in which the information sector of the economy takes on a priority role, belongs to such theorists of the information society as R. Aron, Z. Bauman, D. Bell, E. Giddens, T.-H. Erikson, M. Castells, J.-F. Lyotard, I. Masoudi, A. Toffler, and others. At the same time, the peculiarities of technological, economic, political, and socio-cultural transformations in the context of the formation of a modern information society are the subject of research by many scientists, including V. Andrushchenko, L. Hubersky, A. Zhubinskyy, M. Zgurovsky, I. Karpenko, N. Kozlovtsa, M. Pidlisnyy, N. Pustovita, O. Sazonets, V. Skalatskyy, and others.

However, the issue of prosumption gains significant relevance in academic research by D. Wolf (DIY practices), S. Samygina, D. Krotov, and N. Shilina ('culture of participation'), N. Samutina (fandom communities), L. Beztelna (freelancers), and others.

Despite the significant creative groundwork of the authors who worked on this issue, purely economic questions, the influence of informatization on real economic processes

in post-industrial society, the sources of presumption, and the potential for the spread of this phenomenon have not been sufficiently disclosed. This is due to the multidisciplinary (multidisciplinary) nature of the phenomenon, as well as the complexity of studying trends that are determined by the information asymmetry of the world and its regions. In today's economic reality, this phenomenon is typical only for highly developed countries and countries with a high scientific and technological potential and scientific traditions. In addition, as noted by Sazonets I.L., the penetration of information technology into all spheres of human activity requires combining engineering, economic knowledge, and skills in working in the information space in one specialist (Sazonets, 2018).

An important scientific task in this field is to solve problems related to the explication of presumption as a global phenomenon of the information society of the late 20th and early 21st centuries. Based on the analysis of the theoretical doctrine of the third wave of A. Toffler, we will determine the main forms of presumption functioning in the context of understanding the relationships between 'individual - information technology' and 'producer – consumer'. These relationships undergo significant transformations in the modern information space.

Consumerism of social communities and the streams of education in the information space. In the information society, the main object of activity becomes information - its acquisition, storage, redistribution, as well as the management of information flows. In particular, D. Bell [Bell, 1986] calls the information society a post-industrial society at the stage of its development during the information revolution. It is the information resource that acquires the character of an all-encompassing phenomenon, creating an information-communicative infrastructure on a global scale. The concept of 'global informatization' is introduced into scientific circulation in the context of the determining factor of socio-cultural development, which significantly determines the direction of economic development of humanity from the industrial to the post-industrial era. Such characteristic features of the industrial era as standardization, concentration, stability, and centralization are replaced by antinomic principles of diversity, which manifest themselves in fragmentation, decentralization, fluidity, instability, and so on.

It is precisely this fleetingness of life in the process of accelerating the pace of information and communication flows that Z. Bauman expresses through the metaphor of 'liquid reality'. 'Liquid reality' means a plastic, barrier-free world, comparable to a liquid that, unlike solid bodies, can easily take shape but cannot retain it. Postmodernity, with its extremely accelerated variability, turns out to be a liquid present, incomprehensible and uncontrollable. The attributes of the information age are proclaimed to be plasticity, pervasiveness, speed, instability, fluidity, which are extremely difficult to understand and therefore often go beyond any formal understanding. This ability to flow and the inability to maintain form is expressed in the 'weakness of connections between subjects' (Bauman, 2008. P.161) both at the level of their superficiality and instability and at the level of short-term collisions between people, making it difficult to deeply communicate economic processes. The fleetingness of changes and instability takes on special significance in the public space for the freedom of the autonomous individual-

worker. The desire of a person to master time and realize the temporal significance is declared the main value.

At the same time, theorists of the information society such as D. Bell (Bell, 1986), A. Toffler (Toffler, 2000), and M. Castells (Castells, 2000) focus on the shift in the dominant system of labor from agrarian and industrial production towards an emphasis on scientific resources, artistic and social creativity. These new resources develop in the field of information technology and mass communications. A. Toffler describes radical shifts in science and technology that lead to significant changes in the life of society as waves. As a result of the information revolution, according to him, the third wave emerges, which manifests itself in the reduction of the role of material production processes as the material basis of social existence and distancing from the dominance of the material system of values in opposition to the totality of information technologies. That is, in the last third of the 20th century, a noticeable change in societal priorities occurs, in the context of which there is a radical strengthening of the place and role of information, information exchange, and information services at all levels of human activity. The affirmation of the value of information becomes the main characteristic of the modern era, as information goes beyond the factor of cognitive activity and becomes a weighty basis for the functioning of economic processes and society as a whole. The emergence of the Internet space and social networks contribute to the emergence of new forms of information interaction that require variable activity, creativity, and freedom of creativity. These transformative shifts largely account for the emergence of a phenomenon in economic life called 'prosumption'. This concept is introduced by A. Toffler, interpreting it as the combination of producer and consumer in one person, as it implies people who 'consume what they themselves produce', 'producer-consumers' (Toffler, 2000, p. 238). In fact, 'prosumer' arises as a result of the synthesis of two words 'professional' and 'consumer' and acts as a professional user.

The fact that A. Toffler (Toffler, 2000) considers a person's ability to solve many problems on their own as a significant characteristic of the information society symbolizes significant shifts in the change of values in the social and economic space. In this context, the American sociologist identifies the main priorities of the economy that correspond to the conceptualization of the three-stage doctrine of social development. In particular, during the first wave, the foundation of agrarian production was the 'producer for oneself'. The basis of this system was predominantly 'Sector A', based on self-production for consumption, while 'Sector B' involves the sale of goods and services through an exchange network. The industrial revolution, thanks to the application of machine production based on division of labor and narrow specialization, polarizes the functions of production and consumption. 'Production for consumption' gives way to 'production for exchange', and the visible economy of 'Sector B' completely displaces the goods and services of 'Sector A - the invisible economy' in the plane of 'production for oneself.'

In his research, A. Toffler raises an important question about whether to ignore 'Sector A' and consider it a non-economic phenomenon. To justify the answer, the American

sociologist and futurist conducts an analytical review of such phenomena as: the daily work of housewives; the activities of united groups of individuals, which manifest themselves in movements of international level such as 'Self-help'; the desire to do certain types of work with one's own hands, guided by the principle of 'Do it yourself'; self-service processes and involving customers in complex production technologies. It is worth noting that the scientist also includes household chores related to child-rearing, cleaning, laundry, and so on in 'Sector A'.

However, according to the thinker, a significant impetus for overcoming the diametrical opposition of the above-mentioned sectors of the economy is the emergence of a number of public associations, communities, groups, and interest-based associations that exchange advice and personal experience. At the same time, they abstract from the professional help of specialists ('Union of Phobia Sufferers', 'Association of Depression Sufferers', 'Association of Tuberculosis Patients', etc.) (Toffler, 2000. P. 238-239). The characteristic features of new associations include emerging distrust of specialists, reliance on advice based on personal experience, support for people in distress, lobbying for political, economic, legal interests, and the like.

Essentially, a new social environment is being formed, a movement of voluntary non-profit group associations, social communities, which create a network of diverse organizations based on their content and functions, thereby modifying the passive consumer into an active 'producer for oneself.' The replacement of the producer with the consumer occurs within the formation and development of the self-service system in various economic sectors, and is carried out by the consumer independently without the help of support staff. Performing a number of actions and operations (refueling cars with fuel at gas stations, servicing in supermarkets, cafes, photo services, purchasing tickets) consolidates the increase in the consumer's labor share and affects the reduction in the cost of goods and services.

A significant step in the development of prosumption is the phenomenon of DIY practices (Do It Yourself), which are filled with socio-economic content in the theoretical doctrine of A. Toffler. There is an activity that allows for the independent production of goods, repairs and construction work, improvement of furniture, equipment. All types of activities are carried out on the basis of personal knowledge and experience, or in accordance with the recommendations and instructions of the media and Internet sites. However, the modification of purchased items according to the consumer's tastes and preferences also falls into this category of practices. Such a process acts as a kind of 'cooperation,' containing elements of DIY. In this case, the principle of 'Do It Yourself' (DIY practices) acquires significant value, and the result of self-made work is a significant object of pride. That is, the spread of DIY practices does not always contain elements of economic feasibility, but may be based on the demonstration of creative abilities, creative thinking, and an individual approach to the matter. Thanks to such approaches, the unique principle of 'Do It Yourself' becomes prestigious and fashionable, even for financially affluent consumers (Toffler, 2000, p. 241-243). In this case, a connection with the currently gaining social trends of downshifting and enafism can also be seen in

countries with a high standard of living.

Modern researcher D. Wolf, analyzing DIY practices in artistic culture, considers them a ‘significant phenomenon of world culture of the late 20th - early 21st century’ (Wolf, 2015, p. 164), the development of which occurs as a result of ‘dehumanization and depersonalization caused by the alienation of man from the objects of his labor and from his personal creative element’ (Wolf, 2015, p. 166). According to her, creating things with one’s own hands as material and media...

The future of the Third Wave, according to Alvin Toffler, lies in the direct involvement of consumers in the production process of certain types of goods. In order to adapt production to consumer needs, manufacturers produce products by involving consumers in the development of products and their key features. Specifically, Toffler demonstrates the idea of complete automation in the individual production of individual parts through the project developed by Professor Anjong Game from the Department of Industrial Engineering Systems at Pennsylvania State University. The idea is that the computer can not only predict customer preferences but also select production processes, launch the necessary machines for production, establish a sequence of steps, and record necessary programs. In his work ‘The Third Wave,’ Toffler notes that ‘the customer will not only be able to dictate technical specifications but also activate the entire process by pressing buttons, thus becoming as much a part of the production process as a worker on a complex conveyor belt’ (Wolf, 2015, p. 245). As we can see, the ‘producer for oneself’ of the first wave once again takes center stage and plays a leading role in the information society, serving as the foundation of the economic system. In this context, goods and services of the ‘B Sector’ can largely be replaced by the ‘A Sector,’ thus significantly influencing production efficiency and gross national product indicators. At the same time, thanks to the Internet, individuals in the third wave become more active in choosing information, which expands their creative possibilities in the use of necessary communication and information tools.

The process of ‘demassification’ is being tracked in a certain way, as the loss of the universal influence of the media on the individual. It should be noted that the purposeful and uniform set of media discourses in the industrial society made it impossible for individuals to independently choose sources and content of information, leading to the phenomenon of standardization of behavior and thinking. That is, the feeling of stability was provided by the uniformity of communicative information sources, the limited number of which restricted individual choice. Reinterpreting the transformational shifts of the information age, Toffler notes that ‘people of the third wave, on the contrary, feel calm under this bombing of education...they learn to make and form their own ‘chains’ of material shot at them by new means of information’ (Toffler, 2000, p. 150).

As we can see, the scientist is quite close to another form of manifestation of consumerism, namely ‘participation culture,’ which expresses the individual not only as a consumer of media products but also as a direct producer, author of media artifacts. An interesting phenomenon occurs in the development and modeling of new cultural products based on information. The use of Internet software and network resources leads

to the creation of media streams (media content, blogs, websites, etc.), which allows individuals to write an extra chapter to their favorite book, draw a picture or collage, create an archive of amateur texts, and so on. 'Participation culture' (Samygin, Krotov, Shilina, 2017) emerges as a kind of online community communication practice, as 'receptive and creative work carried out by active readers/listeners/viewers/users of the modern communication space in communication with each other' (Samutina, 2015, p. 1). Fandom communities, which bring together supporters of specific works – 'Potterheads' for Harry Potter books, 'Sherlockians' and 'Trekkies' for movies, 'Tolkienites' for the works of English author J.R.R. Tolkien, and others - occupy a special place in such communities. Members of fandom communities participate in discussions on topics that unite them based on common interests, exchange news and impressions, and express themselves by creating their own articles or interpretations of the media activities of other participants. In this context, A. Zaluzhna emphasizes the formation of the phenomenon of 'game consciousness in modern culture when 'a concerned attitude towards the world replaces a playful attitude towards texts, meanings, values, which leads to the destruction of boundaries between life and art' (Zaluzhna, 2012, p. 21). These processes are not only entertaining but also contribute to acquiring the necessary skills for existence in an information society, conducting a range of actions with information resources, realizing freedom of creativity, and more.

Consumerism and changing the style of economic life. One well-known phenomenon resulting from the development of the post-industrial economy and informatization is the spread of freelancing. Freelancers work in the information sphere, taking orders in IT corporations, in the design, architecture, and other service sectors. The economy has created a whole industry of human activity - outsourcing - which is partially based on the activities of freelancers. The development of communications makes it possible to spread contractual relations based on remote access work and flexible schedules in industries such as construction, journalism, media services, design, and others. At present, the practice of working for one or two days a week at home, the so-called 'home office' mode, is widely used in financial corporations in the United States and Europe. In our opinion, this new phenomenon is also a form of freelancing. It has been formed on the basis of the development of information technology and communication systems. This phenomenon combines traditional forms of office work organization with new forms of work organization for employees in the financial sector. Economic science has already classified the advantages and disadvantages of freelancing for both workers and corporations and clients. Research and practice in the development of this phenomenon show that the advantages outweigh the disadvantages, and they are more significant.

At the same time, in the modern world of rapid economic shifts, the problem of the value of time begins to acquire a special resonance, the need for accelerated action, the choice of thinking in the field of the rapid flow of information, the course of events, social processes. This leads J.-F. Lyotard to the idea of the dehumanization of time, its deficit, and constant competition with it. In his opinion, modern man is not only unable to keep pace with the times, he always lags behind it. In the work 'Note on the Meaning

of the 'Post,' the scientist asserts: 'It can be said that humanity finds itself today in such a state that it has to catch up with the process of accumulating ever new objects of practice and thought, which surpasses it' (Lyotard, 1994, p. 58). At the same time, under the influence of the latest information technologies, the process of 'timelessness of time,' its annihilation, compression into instant random events is traced. Thus, the temporal structure of consciousness is destroyed because the swift invasion of fast time into the world of life destroys the integrity of the person, making this integrity akin to empty moments in which nothing happens. Time is no longer duration but a moment that is absorbed by another moment. T.-H. Eriksen, studying the influence of the information society on human life, notes: 'Information technologies are characterized by their ability to compress and transmit information quickly, breaking the boundaries of time and space. As a result, human life is transformed into a series of moments that are similar to the contents of the screen, and these moments are interwoven into an endless chain' (Eriksen, 2001, p. 168).

The flow of information without internal interconnectedness and direction often disorients the subject. As information is transmitted from one carrier to another, it loses its connection to the primary reality of the object. It becomes an end in itself, a self-contained, self-sufficient substance that can be used for economic gain. This is usually only a version, and the event depends on commercial components, political preferences, moral values, and is capable of turning into a commodity. The increased amount of variables causes a crisis of adaptation to it, giving rise to the 'disease of change' (A. Toffler). People do not have enough time for orderly understanding of information, and very often the primary information is displaced by secondary information. This is usually manifested in an unconscious need to watch television programs. Thus, in one hour a person receives more images that can serve as a creative impetus for individual realization in the economic sphere than a person in a pre-industrial society receives in a lifetime. In particular, T. Erikson emphasizes the need to form decisiveness and perseverance in a modern person in order to discard unnecessary information from the flow, which, according to the scientist, is most of it.

The increasing role of information and communication environment is not only a determining factor of the socio-economic development of the global economy, but also a determinant of a number of problems caused by the rapidity but not controllability of information flows, manipulation of consciousness, reduction of direct social interactions, and the replacement of the real world with virtual reality. The information and communication space of modern human existence completely changes the style of economic life, the nature of interpersonal relationships, work and leisure, transforming all traditional structures of communication experience. It is in this context that there is a need for a creative and at the same time rational approach to the use of Internet information resources, media space, and the application of skills of conscious perception of the content of presented information in the process of creative self-realization of the individual. This entails a transformation of the passive consumer into an active prosumer - a producer, author, freelancer. The information and communication space of modern

human existence is used by him not only for self-realization and satisfaction of creative needs, but also for creating new goods and consequently earning money.

Consumerism is developing both in terms of economic feasibility in the context of creating new material and non-material resources and media products, and in terms of the domination of motives for creative self-building and self-realization of a creative personality. Discovered manifestations of consumerism such as DIY practices, 'culture of participation,' fandom communities, freelancers, and 'Home office' practices are expressions of creative abilities, creative thinking, an individual approach to work, and a way of forming one's own lifestyle in the process of realizing creative abilities and new ways of earning in income.

References:

1. Bauman Z. (2008). Fluid reality. SPb.: Peter. 2008. 240 p.
2. Bell D. Social framework of the information society. New technocratic wave in the West]. Moscow: Progress, 1986. Pp. 330-346
3. Volf D. V. The evolution of DIY practices in the middle of the XX - early XXI centuries]. Theory and practice of social development, 2015. No 3. Pp. 164-166.
4. Zaluzhna A. YE. Moral and aesthetic principles of the human life world. Monograph. Rivne: NUWMEE, 2012. 238 p/
5. Liotar Zh.-F. A note on the meaning of "post". Foreign literature, 1994. No 11. Pp. 56-59.
6. Kastels M. Information Age. Economy, Society and Culture. Moscow: GU VShE, 2000. 458 p.
7. Samyigin S. I., Krotov D. V., Shilina N. A. Subcultures and participatory cultures - similarities and differences]. Scientific periodical online edition "Humanitarian, socio-economic and social sciences, 2017. <https://cyberleninka.ru/article/n/subkultury-i-kultury-souchastiya-shodstvo-i-razlichie>
8. Samutina N. Participatory culture (participatory culture) in the digital underground: communicative practices of Russian-speaking fandom communities]. Conference "Independent from whom? Paris, 2015. Pp. 1-4.
9. Toffler E. The third wave. Kyiv, Vsesvit, 2000. 452 p.
10. Eriksen T. H. Tyranny of the moment. Time in the information age. Pluto Press, 2001. 180 p.
11. Sazonets I.L. Innovative methods of managing the activities of enterprises in the conditions of information economy. Investytsii: Investments: practice and experience]. 2018. To. 5. Pp. 10 – 13.
12. Valiullina Z.V. Conceptualization of corporations activity in the informational-institutional environment. Rivne:Volyn. Oberchy, 2018. 232 p.

ACCEPTANCE OF ECONOMIC DECISIONS UNDER CONDITIONS OF RISK AND UNCERTAINTY WHEN USING A GAME WITH NATURE

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Annotation. *The article considers the essence and history of game theory, the concept of playing with nature and the conditions of its application in modeling socio-economic processes. Methods for determining the optimal strategy in conditions of risk and complete uncertainty are also characterized and considered on a specific example.*

Situations in economic practice may not be fully adequate to reality, since the implementation of the model involves multiple repetitions of actions (decisions) made in similar conditions. In reality, the number of economic decisions made under constant conditions is strictly limited.

Often, the economic situation is unique, and a decision in conditions of uncertainty must be made once. This creates the need to develop methods for modeling decision-making in conditions of uncertainty and risk.

Errors in the payment matrix cannot be compensated by any computational methods and will lead to an incorrect final result.

Traditionally, the next stage of such development is playing with nature. The formal study of the game with nature, as well as strategic ones, should begin with the construction of the payment matrix, which is, in fact, the most time-consuming stage of preparing for decision-making.

Keywords: *game theory, game with nature, optimal strategy, player, risk, complete uncertainty.*

Formulation of the problem. One of the branches of applied mathematics, which is widely used in economic sciences and real business activity, is game theory. Game theory is a mathematical apparatus that considers conflict situations, as well as situations of joint actions of several participants. The task of game theory is to choose the optimal strategy of a game participant, taking into account information about other participants and the size of one's winnings when choosing each of the strategies [1].

Taking into account the fact that real conflict situations are quite complex and are influenced by many insignificant factors, simplified models of conflict situations are built in practice.

In the absence of sufficiently complete information, uncertainty arises in the decision-making process. The reasons for such uncertainty are the impossibility of obtaining information before a decision is made, too high costs for obtaining information, the impossibility of eliminating uncertainty for reasons of an objective nature, and the random nature of many phenomena. In order to reduce adverse consequences, the degree

of risk and available information should be taken into account in each specific case. And here the person who has to make a decision enters into a game relationship with some abstract person, which can be conventionally called “nature”. In other words, the player must find a management solution, provided that nature does not consciously choose its optimal strategies. At the same time, we sometimes have at our disposal some probabilistic characteristics of the state of nature. Such situations are usually called games with nature.

Analysis of basic research and publications. Elements of game theory originated in the eighteenth century. A. Cournot and J. Bertrand considered optimal solutions in production under conditions of oligopoly. These problems later became examples of game theory. The official founder of game theory is the American mathematician John von Neumann. In 1928, he published the article “On the theory of social games”, in which the concept of “game theory” was used for the first time. After 12 years, game theory was systematically explained for the first time. In 1944, John von Neumann and Oskar Morgenstern published their scientific work “The Theory of Games and Economic Behavior”, in which the definition of “game” was formulated as an activity of two or more participants (players), which has conditions of some “win” and “loss”. ” and a mathematically described method of finding optimal strategies in the game that lead to a “win” with a certain probability. From the mid-1980s, the active practical use of game theory began, in particular in economics and management. In 1994, J. Harshani and R. Zelten received the Nobel Prize in Economics for their work in the field of game theory. The work “Conflict Strategy” by Nobel

laureate in economics in 2005 Thomas Schelling was a major contribution to the application of game theory. [2].

Methods of making optimal decisions under conditions of uncertainty are widely used in various fields: medicine, social planning and forecasting, economy, science and technology. However, there are certain problems that can be encountered in the practical application of game theory under the condition of complete uncertainty. Its mathematical apparatus is quite expensive, so it is used only for important and justified tasks: politics, economics of monopolies, etc.

The purpose of the article: to characterize the essence of the game with nature, the methods of determining the optimal strategy in conditions of risk and uncertainty, to consider the application of the game with nature in the economy as an example.

The main results of the study. Game theory models, in particular, games with nature, have a very wide application in the economy: modeling the tasks of organizing industry, trades and auctions, production behavior of firms, modeling the competition of countries, trade policy of states [3].

Of course, the application of game theory is not exhausted by this. The apparatus of equilibrium theory and game theory became the basis for the creation of modern theories of international trade, taxation, public good, monetary economy, and the theory of production organizations [4].

The difference between the game with nature is that in it only one participant

consciously chooses a strategy, the second player (nature) does not consciously act against the first, but acts as such a partner in the game that does not have a specific goal and randomly determines the next “moves”.

Let’s consider the general model of playing with nature. Let the first player have m possible strategies: A_1, A_2, \dots, A_m , and nature has n possible states (strategies): P_1, P_2, \dots, P_n , then the conditions of the game with nature are given by the matrix A of player A ’s winnings:

Table 1

Model of playing with nature

Strategies of player A	States of nature			
	P_1	P_2	...	P_n
A_1	a_{11}	a_{12}	...	a_{1n}
A_2	a_{21}	a_{21}	...	a_{2n}
...
A_m	a_{m1}	a_{m1}	a_{m1}	a_{mn}

There is also another way to assign the matrix of the game with nature: not in the form of a matrix of gains, but in the form of a so-called matrix of risks $R = ||r_{ij}||_{mn}$ or lost opportunity matrices. A risk r_{ij} the player when he uses the strategy A_i and at the state of the environment Π_j called the difference between his gain, assuming that he knew what the state of the environment would be Π_j , and the winnings that the player would receive without this information. Knowing the state of nature (strategy) Π_j , the player chooses the strategy according to which his profit is maximum, i.e. $r_{ij} = \beta_j - a_{ij}$, $\text{де } \beta_j = \max a_{ij}, 1 \leq i \leq m$ (1)

In cases where the probabilities of states of nature are known, the Bayes-Laplace criterion is used, provided that the uncertainty is associated with a complete lack of information about the probabilities of environmental states, the Laplace, Wald, Maximax, Savage, Hurvyts criteria are used to determine the best solutions.

Let’s consider in detail the methods of finding the optimal strategy in the game with nature using the example of a souvenir dealer.

Condition of the problem. A souvenir seller must decide how much of a batch of souvenirs he needs to purchase from a wholesale supplier in January in order to sell them in August.

He knows that the sales volume in August is highly dependent on the weather. A wholesale supplier supplies souvenirs at a price of 20 gr. unit per piece and only in three batches: 300 pcs., 850 pcs. and 1500 pcs. A souvenir seller sells souvenirs at the price of UAH 60. unit for one pc.

The seller of souvenirs assumes that when it is cold in August, the sales volume of souvenirs will be 300 pcs., if it is cold - 900 pcs., if it is warm - 1200 pcs. and if hot - 1500 pcs.

It is necessary to make a payment matrix of the souvenir seller, which will reflect his profit and loss, and a risk matrix. Determine what the optimal decision of the souvenir seller will be, using the Laplace criterion, the Wald maximin criterion, the maximin criterion, and the Savage minimax risk criterion for decision-making. Also, determine what the optimal decision of the souvenir seller will be, given the known probabilities of the weather conditions in August, for cold weather 0.1, for cool weather - 0.2, for warm weather - 0.6, and for hot weather - 0.1, if the seller uses the criterion maximum expected profit and build a decision tree and determine the optimal solution by the inverse calculation method.

Let's build a payment matrix of a souvenir seller, which reflects his profit and loss from the sale of souvenirs. Suppose the seller buys a batch of 300 pcs. from the supplier. Then, in any weather, the volume of sales will be 300 souvenirs and the profit will be: $\Pi=300 \cdot (60-20)=12000$ гр.од.

Suppose that the seller buys a batch of 850 pieces from the supplier.

If it will be cold, then the volume of sales will be 300 souvenirs and the profit will be: $P=300 \cdot (60-20)-(850-300) \cdot 20=1000$ gr. units.

In any other weather, the volume of sales will be 850 souvenirs and the profit will be: $P=850 \cdot (60-20)=34,000$ units.

Suppose that the seller buys a batch of 1,500 pcs. from the supplier.

If it will be cold, then the volume of sales will be 300 souvenirs and the seller will have a loss in the amount: $P=300 \cdot (60-20)-(1500-300) \cdot 20=$

$=-12000$ gr. units. If it will be cool, then the volume of sales will be 900 souvenirs and the profit will be: $P=900 \cdot (60-20)-(1500-900) \cdot 20=24000$ units.

If it will be warm, then the sales volume will be 1200 souvenirs and the profit will be: $P=1200 \cdot (60-20)-(1500-1200) \cdot 20=42000$ units.

If it will be hot, the volume of sales will be 1,500 souvenirs and the profit will be: $P=1,500 \cdot (60-20)=60,000$ den. units.

Table 2

Profit matrix

Lot volume	Expected weather in August			
	Cold	Cool	Warm	Hot
	300	900	1200	1500
300	12000	12000	12000	12000
850	1000	34000	34000	34000
1500	-12000	24000	42000	60000

We will build a risk matrix, for which we will subtract its maximum element from each element of the corresponding column.

Table 3

Risk matrix

Lot volume	Expected weather in August			
	Cold	Cool	Warm	Hot
300	0	-22000	-30000	-48000
850	-11000	0	-8000	-26000
1500	-24000	-10000	0	0

We will find the optimal solution of the souvenir seller, if it is not known what the weather will be like in August.

The optimal solution according to the Laplace criterion is determined by the formula:

$$K_{opt} = \max\left(\frac{\sum x_{ij}}{n}\right)$$

Let's find the average expected profit for each strategy and choose the maximum value.

Table 4

Laplace Criterion

Lot volume	Expected weather in August				max {a _{ij} }
	Cold	Cool	Warm	Hot	
300	12000	12000	12000	12000	12000
850	1000	34000	34000	34000	25750
1500	-12000	24000	42000	60000	28500

$$K_{opt} = \max(12000; 25750; 28500) = 28500$$

As we can see, according to the Laplace criterion, the optimal decision of the seller of souvenirs will be to purchase a batch of 1,500 pieces.

The optimal solution according to the Wald criterion is determined by the formula:

$$K_{opt} = \max(\min\{x_{ij}\})$$

Table 5

Wald criterion

Lot volume	Expected weather in August				max {a _{ij} }
	Cold	Cool	Warm	Hot	
300	12000	12000	12000	12000	12000
850	1000	34000	34000	34000	1000
1500	-12000	24000	42000	60000	-12000

$$K_{opt} = \max(12000; 1000; -12000) = 12000$$

According to Wald's criterion, the decision of the souvenir seller to purchase a batch of 300 pieces will be optimal.

The optimal solution according to the maxima criterion is determined by the formula:

$$K_{opt} = \max(\max\{x_{ij}\})$$

Table 6

Maximax criterion

Lot volume	Expected weather in August				$\max\{a_{ij}\}$
	Cold	Cool	Warm	Hot	
300	12000	12000	12000	12000	12000
850	1000	34000	34000	34000	34000
1500	-12000	24000	42000	60000	60000

$$K_{opt} = \max(12000; 34000; 60000) = 60000$$

According to the maximax criterion, the decision of the souvenir seller to purchase a lot of 1,500 pieces will be optimal.

The optimal solution according to the Savage criterion is determined by the formula:

$$K_{opt} = \min(\max\{r_{ij}\})$$

Let's find the maximum losses for each strategy and choose the minimum value.

Table 7

Savage criterion

Lot volume	Expected weather in August				$\min\{r_{ij}\}$
	Cold	Cool	Warm	Hot	
300	-11000	0	-8000	-26000	0
850	-24000	-10000	0	0	0
1500	-12000	-34000	-42000	-60000	-12000

$$K_{opt} = \min(0; 0; -12000) = -12000.$$

According to Savage's criterion, the decision of the souvenir seller to purchase a batch of 1,500 pieces will be optimal.

Let's determine what the optimal solution of the souvenir seller will be with known probabilities of weather conditions.

The optimal solution according to the Bayes-Laplace criterion is determined by the formula:

$$K_{opt} = \max(\sum x_{ij} \cdot q_j)$$

Table 8

Savage criterion

Об'єм партії	Очікувана погода у серпні				$\sum x_{ij} \cdot q_j$
	Cold	Cool	Warm	Hot	
300	12000	12000	12000	12000	12000
850	1000	34000	34000	34000	30700
1500	-12000	24000	42000	60000	34800
q_j	0,1	0,2	0,6	0,1	

$$K_{\text{opt}} = \min(0; 0; -12000) = -12000.$$

According to the Bayes-Laplace criterion, the optimal decision of the seller of souvenirs will be to purchase a batch of 1,500 pieces.

Let's build a decision tree and determine the optimal strategy using the inverse calculation method (Fig. 1).

$$E_1 = 1200 + 2400 + 7200 + 1200 = 12000$$

$$E_2 = 100 + 6800 + 20400 + 3400 = 30700$$

$$E_3 = -120 + 480 + 25200 + 6000 = 31560.$$

As you can see, the optimal solution for a souvenir seller is to purchase a lot of 1,500 pieces. souvenirs, because the average expected profit for this strategy has the maximum value and according to most criteria this strategy is optimal.

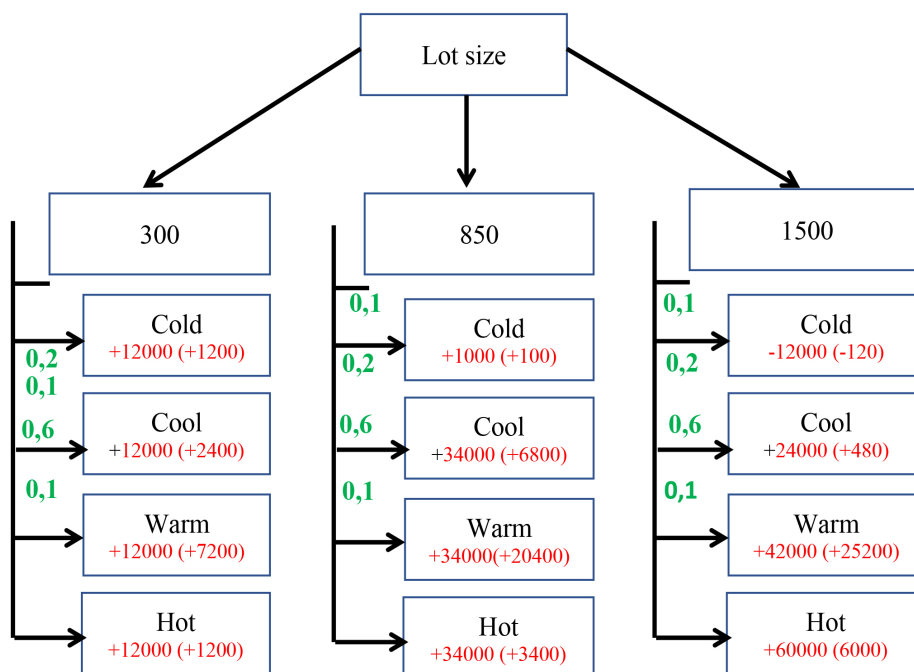


Fig. 1. Decision tree

Conclusions and proposals. Many sciences received their development largely thanks to mathematical methods, in particular - economics. The theory of games, in particular the game with nature, has undergone certain changes and modifications since its inception, but they continue to develop and today are quite relevant both in economics and in other sciences. Skillful application of the game with nature in the modeling of economic and social processes in the future can be quite effective both for entrepreneurial activity and for the economy of our state as a whole.

References:

1. Nakonechny S. I. (2005) Nakonechna S. S. Mathematical programming: Education. manual K.: KNEU, 452 p. [in Ukraine].
2. Gladkova L. A. (2019) Naumova M. A. Scientific notes: problems of the methodology of physical, mathematical and economic education. Issue 4(II). Kyiv, 2019. C 16-21.
3. Shiyani A. A. (2009) Game theory: basics and applications in economics and management / A.A. Shiyani // Study guide. Vinnytsia: VNTU, 164 p. [in Ukraine].
4. Operations research in the economy / Ed. I.K. Fedorenko, O.I. Chernyak K.: Znannia, 2007. 558 p. [in Ukraine].
5. Yegorshin O. O. (2006) Mathematical programming: Textbook / O. O. Yegorshin, L.M. Malyarets. Kharkiv: VD "INZHEK", 384 p. [in Ukraine].

PUBLIC ADMINISTRATION

IMPROVEMENT OF PUBLIC ADMINISTRATION IN THE SPHERE OF DEFENSE OF UKRAINE

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Annotation. *The article is devoted to the study of the peculiarities of the management of the country's defense sphere during the war period. Special attention is paid to the critical analysis of the role of strategic leadership in the field of defense. The qualities of a strategic leader are highlighted, which can be developed both during studies in educational institutions and throughout life, which is very important for current managers. An unequivocal conclusion was made about the need to improve public administration in various spheres, including defense.*

Keywords: *defense sphere, public administration, strategic leadership, management theories.*

Statement of the problem in its general form. New challenges before the state, related to the full-scale invasion of Russia in Ukraine, the need for high-quality performance of public administration functions in the field of defense require improvement of the leadership of the Armed Forces of Ukraine. First of all, it is the organization of training of strategic leaders in military education institutions according to Euro-Atlantic standards. The development and introduction of leadership issues into the theory of military management, the highlighting of best practices in the development of leadership competences of education seekers will make it possible to solve the complex issues facing our state.

Analysis of recent research. The study of strategic leadership, leadership potential is currently the subject of interest of scientists in various fields of knowledge. Domestic researchers do not stand aside. In particular, the problem of leadership in the military team was considered in the studies of domestic psychologists and teachers: O.K. Makovsky, who researched the formation of the qualities of a leader of a military team in cadets [6]; Yu.I. Serdyuk, who investigated the pedagogical conditions for the formation of leadership qualities of military education recipients [8]; Kalashnikova S.A., who studied issues of professionalization of management on the basis of leadership [5]; O. V. Boyko, who considered the issue of the formation of leadership competence of future officers of

the Armed Forces of Ukraine [3]. At the same time, the scientific problem of changing strategic leadership in the programs of military institutions has not yet been solved both at the scientific-theoretical and methodological-technological levels.

The aim of the study. Improving public administration in the field of defense through the formation of strategic leadership competencies during the training of military specialists.

Presentation of the main research material. In the Law of Ukraine "On Defense" the term "defense of Ukraine" is used in the following sense: "a system of political, economic, social, military, scientific, scientific and technical, informational, legal, organizational and other measures of the state regarding preparation for armed defense and its protection in case of armed aggression or armed conflict". The sphere of defense in Ukraine, as in democratic societies, is traditionally focused on protection from external military threats. The specifics of its public administration depend on the degree of threats. If the threat level is not high, then management is not too different from management in other areas, it is transparent and close to civilian. If the threat is high, the decision-making process becomes faster and less transparent, defense structures become more militarized.

Among scientists, there is no single approach to defining the concept of "defense." Thus, a large explanatory dictionary defines defense as "a set of means necessary for the security and protection of the country" [4], according to Bytyak Yu.P. defense is "a complex of political, economic, ecological, military, social and legal measures to ensure independence, territorial integrity, protection of the interests of the state and the peaceful life of the people of Ukraine" [2], V.B. Averyanov defines the sphere of defense of Ukraine as a complex of various social relations in the state to ensure its ability "to practically implement the military defense of the state, including the use of the Armed Forces of Ukraine, in the event of aggression against it, as well as during the performance of tasks stipulated by international contractual obligations languages of the state" [1], from a military point of view, defense is "a type of military action by the state's troops, which is used for the purpose of repelling the attack of the enemy's forces, creating an advantage over the enemy and creating conditions for the transition of its troops into a counteroffensive."

Thus, all scientists, civilians and military consider defense in the aspect of state activity and it is possible to determine the characteristic features of the defense sphere:

- a close connection with such a function of the state as protection of sovereignty, territorial integrity and inviolability of its territory;
- connection both with the use of military force if necessary, and with preparation for its use;
- its main goal is to achieve a level of defense capability sufficient to deter other states from using military force against Ukraine;
- readiness for an operational and coordinated transition of the state from a state of peace to a state of war, territorial defense and civil defense of Ukraine.

Public administration in the field of defense is located between the processes of

defense policy formation and the processes of military management. It covers the management of defense resources, personnel management, the creation of new military posts, and the implementation of defense policy. During the war, the processes of public administration in the field of defense require flexibility and adequate decision-making regarding unexpected problems that may arise. In the conditions of full-scale military aggression in Ukraine, from the observation of management processes, it can be concluded that the management system is being improved during its operation. For a state that seeks to improve the efficiency of its defense sector, it is important to implement strategic leadership and develop leadership competencies during the training of military specialists.

The peculiarity of a military manager is how he can identify problems and how he can solve them. Every management decision must necessarily be aimed at some problem, and its correct solution provides maximum benefits for the person who makes this decision. It is important to define the goal of management. In wartime, goals require quick identification of problems and management decisions to solve them. For a manager, the main task is to improve his abilities to make the right judgments, to correctly understand the real problems and to constantly focus on managing ahead of events. Identifying today's problems provides an opportunity to predict future problems, and therefore prevent unexpected problems and increase the time to prepare appropriate solutions. Therefore, identifying problems is an ongoing function of management. Without it, it is impossible to implement the principle of continuous improvement of public administration in the field of defense.

Solving management problems during the war requires greater clarity, organization in preparation for decision-making, creation of effective control, and consistency between the units involved in its resolution. The time aspect is important in these conditions. A decision for an urgent problem is usually made quickly and under conditions of greater uncertainty. No less important for the manager is the search for solutions for fixing ways to solve problems. A problem situation can be described by a model so that the best way to solve it can be quickly used. For this, it is necessary to accurately describe the situation, the solution found, the result of solving the problem. Next, formulate an idealized problem, express it in a model, describe the optimal solution, predict the future result. Sometimes, due to lack of time, it is more appropriate to find a rational solution for a real problem situation than to spend efforts on finding optimal solutions for unsolvable problems. Not only managers in the field of defense, but also students of military educational institutions should improve their professional competence in the conditions of war regarding the correctness of the chosen ways of solving problems.

To fulfill their role, military managers use terms such as "troop management", "staff work", "command", managers in the civilian sphere use concepts such as "public administration", "public management", "political leadership", "strategic leadership", "feedback". Taking into account these differences, it is necessary to recognize the existence of significantly different professional skills, leadership qualities and executive teams based on different norms and experience. The essence of the management of military

units is the purposeful activity of commanders and staffs. The main goal of management is "to ensure their comprehensive training and maximum efficiency in the use of combat capabilities, as well as to successfully solve the assigned tasks in combat operations within the specified time with minimal losses of their forces and means" [9]. In our opinion, this fully corresponds to the management approaches used in the study of disciplines under the "Public Management and Administration" educational program: identifying problems and finding solutions to these problems; finding solutions for improving ways to solve problems. To implement these approaches in the field of defense, a change in the role of strategic leadership must occur.

The introductory topic for training specialists in military leadership is the philosophy of leadership. Its task is to acquaint students with the basic concepts of leadership, management and leadership. Explanation of the role of public administration in the field of defense, application of classical and modern theories of management, disclosure of the phenomenon of strategic leadership. Modern public administration in its theories applies the principles and practices of administration, management and business. Based on classical views on management, modern theories tend to take into account peculiarities in the interpretation of rapid changes in the nature of today's organizational systems.

The theory of circumstances determines the need to consider all aspects of the current situation for decision-making managers, they should identify those that have the greatest impact on this situation. For example, determining the best leadership style in the defense field may lead to the conclusion that the best style depends on the specific situation. For a manager leading troops into battle, an authoritarian style may be best. For someone who rules in peacetime, a liberal style may be recommended.

Systems theory determines that a management system is a collection of individual parts united to achieve a final goal. The system has input, internal processes, output and product of activity. Resources will be supplied at the entrance, and the product of this activity will be at the exit in the form of certain capabilities, for example, increasing the state's defense level. Feedback will be society's perception of the level of security provided by the state.

The theory of complexity determines that the events inside a certain organization and its external environment are becoming more and more complex. This complication will continue until the system splits, merges with another system, or finally disintegrates.

These theories fully apply to public administration in the field of defense, as any defense organization is a large, complex structure, just like any civilian organization. In both types of organization, military and civilian, the manager determines the task that the members of the organization are to perform. The peculiarity of the defense organization is that plans in the event of war are always conditional, in peacetime - they are aimed at defining tasks that will be performed only during war. The manager in the civil sphere is preparing for real events that will probably take place in the near future. Their functions will be similar in the field of general readiness for war, that is, the preparation of troops and supplies. Each manager builds and supports his organization, determines the most economically beneficial combination of resources that would ensure the fulfillment of

planned tasks; manage subordinates, using various tools to increase their motivation, etc.

In order to adequately respond to the challenges associated with a full-scale Russian invasion of Ukraine, "as a result of the reform, it is necessary to obtain a new system of management of the Armed Forces of Ukraine, the basis of which will be managers-leaders" [7]. Among the qualities of a strategic leader, which should be inherent in a military leader, we can highlight: foresight, that is, the ability to formulate a "vision" of the future; the ability to ensure purposeful activity of the subordinate organizational structure. The ability to see the future can be tested only after a certain period of time, when assumptions about the choice of ways to overcome the problem will be compared with real changes in the situation. This ability can be defined in the manager as the ability to think critically. Such a skill can be developed both during studies in educational institutions and throughout life. What is very important for current managers.

The ability to ensure purposeful activity of the organizational structure can be checked through the analysis of the interaction of the manager with subordinates. A strategic leader does not have the opportunity to personally communicate with each executor and prove to him the tasks and the order of their execution. Instead, he should create or improve the existing system as a whole and determine the purpose of its main elements, allocate resources between them, formulate rules for the performance of tasks that should be clear and unambiguously interpreted by any performer, regardless of his previous experience, education or other personal characteristics [7].

Admiral Grace Hopper, one of the brightest figures of the 20th century, spoke best on the topic of strategic leadership, who became not only the first female flagship of the US Navy, but also participated in the development of the first computer language that is still used today. Determining the difference between management and leadership, she said: "You manage things, and you lead people." This means that every employee, even the one who occupies the lowest position, wants to feel that he is valued and that his manager knows and defends his interests. At the same time, the leader must remember that trust is a key element. If people don't trust him, they won't follow him.

In order to be a strategic leader, you must first gain trust. Trust is the factor through which people follow a leader, although some make the mistake of starting their activities by implementing their own policies without gaining proper trust. Next, it is necessary to determine the most important goals of the team, which everyone must accept in order to achieve success. People will be able to accept goals if they are important for them, so the leader should try to look at things from the position of subordinates. This is possible with sufficient communication with people. A person's level of responsibility increases when he feels that he has influenced the team's decisions to some extent. In every decision, people want to know that their opinions and perspectives have been heard, even if they have not been used. Confidence also increases when people are confident that they know exactly what is expected of them and that they will be evaluated for their work as soon as it is done. And of course, the leader should take care of the development of each member of the team, even if the person is not a beginner, but has considerable work experience. Everyone has room to grow: new members of the team update it, bringing fresh ideas, perspectives, demonstrating new skills, while experienced people transfer effective approaches and knowledge. A leader should provide everyone with the opportunity to

share their knowledge and experience with others.

Conclusions. Ukraine has been experiencing a full-scale war for more than a year. The hostilities made it necessary to modernize public administration in various spheres. Public administration in the field of defense is located between the processes of defense policy formation and the processes of military management. During the war, the processes of public administration in the field of defense require flexibility and adequate decision-making, as the management system is improved during its operation. For a state that seeks to improve the efficiency of its defense sector, it is important to implement strategic leadership and develop leadership competencies during the training of military specialists. Not only managers in the field of defense, but also students of military educational institutions should improve their professional competence in the conditions of war regarding the correctness of the chosen ways of solving problems. For the latter, familiarization with the basic concepts of leadership, management and leadership is important; explanation of the role of public management in the field of defense, application of classical and modern theories of management, disclosure of the phenomenon of strategic leadership. An effective strategic leader will be able to respond to the challenges facing the state at this crucial time.

References:

1. Averyanov V.B. (2005) Administrative law of Ukraine. Academic course. Legal opinion. Kyiv. Ukraine.
2. Bityak Y.P., Harashchuk V.M., Dyachenko O.V. (2006). Administrative law of Ukraine. YurinkomInter. Kyiv. Ukraine.
3. Boyko O.V. (2014). Theoretical and methodological problems of formation of leadership competence of future officers of the Armed Forces of Ukraine: [monograph]. ASV, Lviv, Ukraine.
4. Busel V.T. (2005). Large explanatory dictionary of the modern Ukrainian language. Perun, Irpin, Ukraine.
5. Kalashnikova S.A. (2010). Educational paradigm of professionalization of management on the basis of leadership. [monograph]. University named after B. Grinchenko, Kyiv, Ukraine.
6. Makovsky O.K. (2002). Formation of leadership qualities of future officers: autoref. thesis ... candidate ped. Sciences: spec. National Academy of Border Troops of Ukraine named after Bohdan Khmelnytsky. Khmelnytskyi, Ukraine.
7. Punda Y.V., Antonenko S. I. (2017). Training of a strategic leader as an investment in the reform of the military management system. Strategic priorities. №. 4, Kyiv, Ukraine.
8. Serdyuk Y.I., Ishchenko D. V. (2010). Pedagogical conditions for the formation of leadership qualities of VVNI cadets in the process of training general military disciplines. Pedagogical and psychological sciences. № 56.
9. Statutes of the Armed Forces of Ukraine. (2022). Professional, Kyiv. Ukraine. URL: <https://jurkniga.ua/contents/viyskovyi-statuti-zbroynikh-sil-ukrayini-.pdf>

PUBLIC MANAGEMENT OF THE SYSTEM OF TRAINING AND IMPROVEMENT OF PERSONNEL FOR THE PHARMACEUTICAL INDUSTRY IN UKRAINE

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Annotation. *The article examines the conceptual provisions of continuous education of pharmaceutical industry specialists from the point of view of implementing mechanisms for ensuring their continuous professional development in modern conditions. It was revealed that the pharmaceutical education system should be constantly improved in view of the dynamic development of the pharmaceutical industry and European integration processes. The process of birth and development of pharmaceutical education, pharmaceutical industry and their management in Ukraine is shown. It was emphasized that the training of specialists in the pharmaceutical industry should be aimed at their continuous self-development in order to realize the rights and legitimate interests of citizens in providing affordable and high-quality safe medicines.*

Keywords: *pharmaceutical industry, public administration, medical education, continuing education, principles of continuing European education.*

Statement of the problem in its general form. Under the difficult conditions of today and taking into account the forecasts of the necessary services of pharmacists of the future, the pharmaceutical industry especially needs highly qualified, competent specialists with related specialties, capable of independent actions, meaningful analysis and correction of their activities, self-education and self-improvement, and lifelong learning. The pharmaceutical industry is one of the most dynamically developing ones, which is largely facilitated by the development of pharmaceutical science and educational institutions, where the competences of its specialists are trained and improved. The proper functioning of the pharmaceutical industry in Ukraine is an important factor in combating various diseases, including those of a socially dangerous nature, an important factor in the survival of the people and the health of the nation. Therefore, public management of the system of training and improvement of personnel for the pharmaceutical industry in general is undoubtedly one of the priority issues of national security.

Analysis of recent research. The theoretical basis of this article was the works of scientists. The work of N.V. Volk is devoted to certain aspects of the problem of state

administration in pharmacy. and Svitlichny O.P. [13], who revealed the current state and main directions of state regulation of pharmaceutical activity in Ukraine and offered practical recommendations for improving bodies of public activity in the pharmaceutical sphere; S. V. Knysha [6], who summarized the foreign experience of administrative and legal regulation of relations in the field of health care, considered the possibility of its use in Ukraine, outlined the prospects for the modernization of public administration in the field of health care in Ukraine at the legislative and organizational levels in the context of European integration; Logvynenko B.O. [9], who singled out the external and internal components of the public administration of the industry, emphasizing the need to improve the current legislation in the field of medical activity. However, insufficient attention has been paid to issues of public management of the system of training and improvement of pharmaceutical industry specialists. Studies require the issue of their continuous professional development.

The purpose of the article is to analyze the mechanisms of public management of the system of training and improvement of personnel for the pharmaceutical industry in Ukraine.

Presentation of the main research material. Consideration of the mechanisms of public management of the system of training and improvement of personnel for the pharmaceutical industry should begin with clarifying the essence of public management of higher education in Ukraine in general. The essence of such management consists in the formation of purposeful interaction of public institutions with legal entities and individuals in the context of the implementation of regulatory documents related to the field of education and ensuring its functional activity. Public administration in the field of higher education today fully meets the expectations and requirements of modern Ukrainian society. It is known that the higher education of Ukraine in its formation went through a large number of modernization processes. Earlier, when considering the sphere of higher education management, it was said that it is subject to state management. Today we call this management public. State administration in the system of higher education was represented by a set of bodies of different hierarchies, all of whose activities were aimed at regulating the sphere of higher education in accordance with current legislative norms. Such management of higher education cannot exist in modern European society.

The main features that distinguish public management of higher education from state management are as follows [1]:

- transformation of the main principles of management from "command, check, punish" to "motivate, support and correct";
- change of outdated, static management approaches to flexible and those that correspond to the realities of functioning of the sphere of higher education;
- reducing the importance of bureaucratic norms and processes in favor of tactical and strategic solutions aimed at improving the field of higher education and meeting the interests and needs of all participants in the educational process;
- intensification of public control at all levels of public management in the field of higher education;

- delegation of part of the powers and management functions to public organizations and other institutions.

Public administration, like once state administration, covers all processes that arise as a result of educational and pedagogical activities of institutions of higher education. Its object is all aspects of higher school activity, including political, economic, socio-economic, and cultural elements. As for subjects, two groups act as it: civil society, non-governmental organizations and state authorities. Taking into account these differences, it is necessary to reassess the possibilities of public management of the sphere of higher education in general, and medical education in particular.

Medical professionals, including pharmacy specialists, need constant training and development in their chosen specialty. The concept of continuous medical education deserves special attention. This approach allows you to start forming the worldview and professional skills of a specialist during your studies in higher education and to continue throughout the entire period of professional activity. As for pharmaceutical personnel, the system of their training in combination with the system of use should perform the functions of providing the population with effective and safe medicines, creating and developing the production of domestic medicinal products, providing organizational and methodical support for the pharmaceutical business, developing a modern system of training pharmaceutical personnel in accordance with the needs of the population.

In the modern conditions of Ukraine's entry into European life, for a radical renewal of education, it is necessary to take into account not only the realities and prospects of the country's socio-economic development, the educational experience of developed countries, but also its own historical path. It is the multifaceted analysis of the accumulated experience over the long years of the historical development of pharmaceutical education that can be to some extent decisive in outlining the prospects and trends of its further development.

In the 18th century, special pharmaceutical educational institutions did not yet exist. Remnants of the medieval guild system were preserved in the pharmacy. The pharmacy enrolled young people who, after three years of work experience as a pharmacy apprentice, took the exam for the title of pharmacy assistant.

Kharkiv University, founded in 1804 on the initiative of Vasylyi Nazarovych Karazin, became the center for the development of pharmaceutical education in Ukraine. At that time, Kharkiv had certain advantages for the establishment of a higher educational institution. It was located at the intersection of important trade routes, large fairs were held there. At the beginning of the 19th century at Kharkiv University, pharmaceutical disciplines were taught at the unified department of pharmacy of the department of medical and medical sciences.

In 1816, Odessa University was established. In 1820, a gymnasium of higher sciences was opened in Nizhyn, and in 1835, a university in Kyiv began to operate, where pharmaceutical courses were introduced.

In the 1840s, thanks to the accumulation of theoretical knowledge about metabolism, the chemical structure of bodies, the composition and physiological qualities of the active

substances of plants, the toxicological effect of drugs, the process of separation into independent sciences began - pharmaceutical chemistry, pharmacognosy, pharmacology and toxicology, which formed the basis of pharmaceutical discipline. As a result, by the middle of the 19th century, pharmacy was a complex science that combined a set of practical skills and theoretical knowledge.

From the beginning of the XIX century, we can talk about the emergence of public management of the pharmaceutical industry, since the pharmacy network of Ukraine began to develop intensively, pharmacies were opened in all large settlements, their number increased in cities, therefore, in 1873, the government issued "Rules for opening pharmacies" to regulate the implementation of the pharmacy business. According to this document, permission to open a pharmacy had to be issued by the governor, taking into account the population and the number of pharmacies operating in the province. In the 19th century the work of pharmacies was controlled by city, district, regional hospitals and inspectors. The auditors were supervised by the chief health inspector.

After 1917, the complete dismantling of the old system of medical supply began, the entire pharmaceutical staff of pharmacies was mobilized, stocks of medicinal products, patient care items and medical instruments were transferred to military medical institutions. During this period, pharmacies turned from independent state units into appendages of military medical and sanitary institutions. Management has become state-owned.

To some extent, this contributed to the development of the pharmaceutical education system in Ukraine. In 1921, pharmaceutical educational institutes (Kharkiv, Odesa) and pharmaceutical technical schools (Kyiv, Vinnytsia, Kharkiv) were founded; in 1937, academic titles of candidates and doctors of pharmaceutical sciences were introduced; in 1940, pharmaceutical faculties were created at the Lviv Medical Institute and the Kyiv Institute for the Improvement of Pharmacists; in 1954, improvement and specialization courses for pharmacists were introduced at the Odesa Pharmaceutical Institute. Since 1961, Ukrainian pharmacologists have been united in the Scientific Pharmaceutical Society.

During the years of Ukraine's independence, the pharmaceutical industry went through a rather difficult path from almost complete disruption to reaching the appropriate level of production, drug creation, product quality control, entrepreneurship, science and education.

The concept of developing the education of pharmaceutical industry specialists and ensuring their continuous training is aimed at integrating pharmaceutical education and science, solving personnel problems of the industry taking into account the needs of health care of Ukraine, improving pharmaceutical assistance to the population, implementing a formulary supply system, creating a single information space in pharmacy, applying pharmacoeconomic approaches to the rational use of drugs to improve the quality of life of the population and promote the competitiveness of specialists from higher education institutions on the domestic and international labor markets. In our opinion, it should be about continuous education of specialists in the pharmaceutical industry.

Continuing education is an educational system, a complex of various types of educational institutions that ensure organizational and content unity, the continuity of all levels of education, which together solve the tasks of general or professional education, as well as education, raising the level and expanding the boundaries of professional competence using various means, methods and forms of professional training taking into account the actual needs of the state and society and the interests of a person throughout the active period of his life [14].

The concept of continuous education is revealed according to its value dimension at the public level: the individual, society and the state.

At the individual level, continuous education is the process of forming and satisfying a person's cognitive requests and spiritual needs, acquiring new skills and abilities, expanding his personal communications.

At the state level, continuous education is a priority direction of public administration, public policy regarding training, advanced training, and retraining of personnel for branches of the national economy, which should ensure an increase in its efficiency and competitiveness.

For society, continuous education is a mechanism for accelerating the socio-economic progress of the country due to the growth of the intellectual capital of society.

In European practice, the concept of "continuous education" means: acquisition of educational and qualification degrees in free time; professional courses for the purpose of improving qualifications; education for adults; second higher education. In the EU countries, adult education is given considerable attention due to the desire to increase competitiveness. So, on average, 60% of enterprises in the EU provide training for their employees. The increase in the degree of educational coverage of the adult population is explained by the EU policy aimed at sustainable innovative development. This attitude became the basis of the EU program «Europe 2020: A strategy for Smart, Sustainable and Inclusive growth» [8].

For the effectiveness and consistency of Ukraine's continuing education with European trends, its concept should reflect the key principles of continuing European education defined in the Memorandum of Continuing Education of the European Union [3], namely:

1. New basic skills for all: Guarantee universal and continuing access to learning for gaining and renewing the skills needed for sustained participation in the knowledge society
2. More investment in human resources: Visibly raise levels of investment in human resources in order to place priority on Europe's most important asset – its people
3. Innovation in teaching and learning: Develop effective teaching and learning methods and contexts for the continuum of lifelong and life-wide learning
4. Valuing learning: Significantly improve the ways in which learning participation and outcomes are understood and appreciated, particularly non-formal and informal learning
5. Rethinking guidance and counselling: Ensure that everyone can easily access

high-quality information and advice about learning opportunities throughout Europe and throughout their lives

6. Bringing learning closer to home: Provide lifelong learning opportunities as close to learners as possible, in their own communities and supported through ICT-based facilities wherever appropriate [3].

According to the National Doctrine of Education Development, continuous education in Ukraine is implemented by [9]: forming the need and ability of the individual for self-education; optimization of the system of retraining of employees and improvement of their qualifications, modernization of the system of postgraduate education based on relevant state standards; ensuring the connection between general secondary, professional and technical, higher and postgraduate education.

The principle on which public administration in the field of continuing education should be formed is as follows: "education should be a mechanism for reproducing the public intelligence of the state, the quality of its intellectual resources" [12].

Mechanisms of public management of continuous professional development must necessarily have the following features: "it is a product of organized activity; it has a purpose or function, contains a sequence of actions" [10].

In addition, each specific mechanism should be considered "as a set of mutually agreed management methods" [7], we do not ignore the improvement of the current legislation aimed at regulating social relations in terms of the development of continuous education.

Using the appropriate mechanisms of public management of the system of training and improvement of personnel for the pharmaceutical industry, it is possible to determine the directions of its development based on the experience of developed countries. The International Pharmaceutical Federation (FIP) defines the strategic directions of continuous professional development of pharmacists. Continuous professional development is an approach to continuous training of a specialist in medicine and pharmacy. It was proposed by the special department of FIP - "Educational Initiative".

A special working group Education Development Team was created to coordinate activity within the department. The leading goals of the group include creating a global platform for sharing experience, mentoring and training specialists from academies, universities based on professional and pedagogical competence. The pharmaceutical education standards developed by the group are actively being implemented in the United States of America, where CPD is defined as an ongoing process of active participation in educational activities that assist individuals in developing and maintaining continuing competence, enhancing their professional practice, and supporting them to achieve their career goals.

The principles of continuous professional development of pharmacists can be included in the continuous education programs of our country, so that specialists, along with the acquisition of knowledge and skills by pharmacists, can take responsibility, fully participate and document their knowledge through critical analysis and generalization of their own practice, evaluate and identify their professional needs and learning

opportunities, develop and implement individual learning plans and evaluate learning outcomes.

It would be expedient to formalize the development directions of the system of training and improvement of personnel for the pharmaceutical industry in a regulatory document that would contain the purpose, task, function, sequence of actions regarding the organization of continuous professional development of specialists.

Conclusions. Continuous education of personnel for the pharmaceutical industry requires systematic introduction of scientific research into the educational process and integration with directions of European and national health care reform. Taking into account modern European trends, the training of specialists should be aimed at their continuous self-development as professionals who constantly improve their qualifications. The purpose of public management of the system of training and improvement of personnel for the pharmaceutical industry in Ukraine is to provide the state with such specialists for the realization of the rights and legitimate interests of citizens in providing affordable and high-quality safe medicines. Therefore, the main tasks of Ukraine in terms of EU integration are: ensuring proper conditions for the development of pharmaceutical science and for training and retraining, improving the qualifications of highly professional pharmaceutical personnel; creation of new progressive medicines; provision of broad legal education of pharmaceutical workers.

References:

1. Bosak O.Z. (2010). Public management as a new model of management in the public sector. Public administration: theory and practice: coll. of science. Kharkiv Ukraine.
2. Cabinet of Ministers of Ukraine (2018), Resolution № 1022 from 05.12.2018 "On the approval of the State strategy for the implementation of the state policy of providing the population with medicines for the period until 2025" URL: <https://www.kmu.gov.ua/npas/pro-zatverdzhennarskimi-zasobami-na-period-do-2025-roku>.
3. European Communities: A Memorandum on Lifelong Learning, issued in 2000. URL: <https://uil.unesco.org/document/european-communities-memorandum-lifelong-learning-issued-2000>
4. European Commission, Pharmaceutical Committee (2020). Dependency of the EU pharmaceutical industry on active pharmaceutical ingredients and chemical raw materials imported from third countries. ec.europa.eu. URL: https://ec.europa.eu/health/sites/health/files/files/committee/ev_20200312_795_en.pdf
5. Karamyshev, D.V., Sotnikova, L.V. (2021) Implementation of Ukraine's State policy on the supply of medicines in the context of integration into the European Union. Teoriya ta praktyka derzhavnoho upravlinnya. Theory and practice of public administration,
6. Knysh S.V. (2019). Administrative and legal relations in the field of health care in

Ukraine: dissertation. ... Dr. Jur. Sciences: 12.00.07. Ternopil, Ukraine.

URL: http://dspace.wunu.edu.ua/bitstream/316497/36960/1/knishes_v___dssertacija_sajt.pdf

7. Korotych O.B. (2006). Mechanisms of state administration: problems of theory and practical construction. Bulletin of the National Academy of Public Administration. Kyiv, Ukraine.

8. Legal regulation of innovation activity in the European Union and EU member-states / Editors-in-chief G. Avigdor, Dr. Y. Kapitsa. Kyiv, Ukraine. 2011.

9. Logvinenko B.O. (2017). Public administration in the field of health care in Ukraine: theory and practice: Monograph. Kyiv, Ukraine. URL: http://pap-journal.in.ua/wp-content/uploads/2020/08/5_2017.pdf#page=233

10. Radchenko O.V. (2013). Generic features of the "mechanism" category in social sciences. Public administration: theory and practice. Kyiv, Ukraine.

11. Salikhova, O.B. Honcharenko D.O. (2020). Ukraine's Pharmaceuticals: From Dependence to Endogenous Development. Ekon. Prognozuvannâ. Economy and forecasting, URL: <https://doi.org/10.15407/eip2020.04.007>

12. Stepanov V.Yu. (2014). Mechanisms for ensuring the quality of higher education. Bulletin of the National University of Civil Defense of Ukraine: coll. of science pr. Series: "State Administration". Kharkiv, Ukraine

13. Volk N.V., Svitlichnyi O.P. (2018). Administrative and legal regulation of pharmaceutical activity in Ukraine: ways of improvement: monograph. Kyiv, Ukraine. URL: https://www.businesslaw.org.ua/wp-content/monographia_volk_cvitlychnyi.pdf

14. Zaichenko I.V. (2016). Theory and methodology of professional training: study guide. Kyiv, Ukraine.

PEDAGOGY AND PSYCHOLOGY

PSYCHODIAGNOSTICS OF POST-TRAUMATIC STRESS DISORDER: VIOLATIONS OF THE MENTAL STATE OF MILITARY

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Annotation. *In the article describes post-traumatic stress disorder (PTSD), which is a mental disorder that develops in some people after they have experienced or witnessed traumatic events. PTSD is an anxiety problem that develops after an extremely traumatic event such as war, crime, accident, or natural disaster. People with post-traumatic stress disorder cannot relive the event because of intrusive memories and nightmares; tend to avoid anything that reminds them of the trauma and have feelings of anxiety that were not there before, so intense that their normal life is disrupted.*

Common symptoms of post-traumatic stress disorder include: unwanted recurring memories, avoidance of people or events that remind you of the trauma, negative emotions, and feelings of anxiety and worry. People who experience traumatic events have strong reactions to those events. But most of them do not develop post-traumatic stress. After a trauma, it is normal to have intrusive memories of the event, have trouble concentrating, and experience other reactions. In the most cases, these reactions resolve within a month or so, but if they do not, they become clinical symptoms and may meet the criteria for a PTSD diagnosis. The symptoms fall into four categories. People with PTSD may fill some or all of these and may sense them differently depending on their temperament, past experiences, support system, and other factors.

Keywords: *military personnel, traumatic events, post-traumatic stress disorder, combatants, extreme situations.*

Formulation of the problem. *Traumatic events pose significant physical, emotional, or psychological threats to the victim or those close to them and are overwhelming, shocking, or dangerous. Post-traumatic stress disorder (PTSD) can develop after serious accidents, natural disasters, terrorist attacks and combat or other military situations. PTSD can also result from sexual assault, domestic violence, robbery, and other frightening or*

dangerous events. Some experiences that are not directly life-threatening, such as the sudden death of a loved one can also cause post-traumatic stress disorder [1 – 5].

During a traumatic event, the brain and nervous system go into hypervigilant, reactive mode. In people with post-traumatic stress disorder, the brain has not returned to normal, causing a variety of symptoms and behaviors that interfere with everyday life.

It is important to remember that not everyone who experiences a dangerous event develops PTSD. In fact, most people do not develop this disorder. Some factors that can contribute to recovery from trauma include: seeking support from other people such as friends and family, seeking group support after a traumatic event, having a positive coping strategy or way to overcome a bad event and learn from it, the ability to act and effectively respond, despite fear, etc. Factors of risk for PTSD are currently being studied. With further research, it may someday be possible to predict who is likely to develop PTSD and prevent it.

The purpose of the article is to characterize post-traumatic stress disorder in the situation of chronically disturbed mental state of military personnel.

Post-traumatic stress disorder is a chronic mental disorder that can develop after a traumatic event, writes the Ministry of Health. In the list of those who can develop this disorder includes war veterans. PTSD manifests itself in constant thoughts about a traumatic event, abuse of alcohol, cigarettes and drugs, panic attacks, mistrust of the environment, etc. PTSD, like any other illness, needs to be treated. Common symptoms of PTSD include [1, 4]:

1. Intrusive or recurring memories of the trauma. Because of the way mind and body deal with post-traumatic stress disorder, it can be difficult for you to forget your trauma. You may have nightmares, vivid memories of the event that seem real. Sometimes these reactions can be triggered by environmental cues, such as a report in news that reminds you of the accident in which you got [2, 3].

2. Avoidance of reminders of the trauma. People with PTSD may avoid people or situations that remind them of the traumatic event. Essentially, constantly checking their surroundings so they don't have to face potential triggers. This is understandable, but it can interfere with the ability to work, study, communicate with others and generally live a normal life. They can also try to "immerse themselves" in work and other matters in order not to think about the traumatic event [2, 5].

3. Feeling sadness, anger or numbness. People with post-traumatic stress disorder, often experience more negative emotions than before, including sadness, anger, and a loss of pleasure in things they used to enjoy. If the trauma involved abuse, you can feel guilt or shame about what happened. In you may have problems trusting people. You may become emotionally numb, hide your feelings, or use alcohol or drugs to suppress memories and emotions [1, 4].

4. Feeling "on edge" or other changes in reactivity or arousal. This symptom is directly related to the physiological changes that occur in response to trauma. You may be more nervous than usual and feel impatient or irritable. You may have trouble sleeping or concentrating [2, 3].

It is worth remembering that PTSD symptoms are often interconnected. For example, someone with PTSD may avoid sleep because they are afraid of having nightmares. Fatigue can lead to a bad mood and make it difficult to work during the day, which is especially true for military personnel. In the face of war and the long-term constant threat of terrorism, the Ukrainian military feels extremely intense emotions. Restlessness, anger and sadness, characteristic of most people, are healthy and normal reactions to combat events. But some soldiers can have much deeper reactions on combat.

The duration of stay in the combat zone creates a greater risk of developing post-traumatic stress disorder, on the development of which is influenced by:

- using of weapons by a military personnel with lethal consequences even for the enemy;
- if the military personnel witnessed the death of fellow soldiers and civilians.
- In many military personnel after their first stay in a combat zone may experience the following symptoms of combat injury [1, 5]:
- depression and depressive reactions;
- anxiety or acute reactions to combat stress and injury;
- generalized anxiety disorder.

The risk of their occurrence concerns to younger military personnel, aged 18-24, who have shown symptoms of depression or who have had problems with alcohol. The symptoms listed above require the help of specialists - psychologists, psychiatrists, psychotherapists, as they can cause the development of post-traumatic stress disorder - PTSD.

Some important typical symptoms to development of PTSD [2, 3]:

- excessive control: compulsively checking doors, windows, vehicles to make sure they are safe. This is symptom may be associated with a greater risk of developing PTSD;
- excessive and dominant feelings of military personnel for their loved ones - parents or children, spouses.

The symptoms of PTSD develop approximately in 12-20% of military personnel who have suffered combat trauma, but did not seek psychological help due to fear of being scorned for showing weakness, cowardice, or a threat to their military career. In fact, it is extremely important to recognize the problem and get qualified help and in no way blame yourself for it. Everyone has the right to emotional experiences, so seeking psychological help is the best solution for both the victim and his relatives [1, 3].

For to study the psychological state of servicemen who, after receiving an injury, were undergoing inpatient treatment at the Military Medical Clinical Center of the Central Region (Vinnytsia), the Short scale of anxiety, depression and PTSD was used as a diagnostic psychological test [3]. This diagnostic method is one of the methods recommended by the Scientific-Diagnostic Center for Humanitarian Problems of the Armed Forces of Ukraine for use in the diagnosis of negative mental states of military personnel who were in the area of hostilities. The short scale of anxiety, depression and PTSD is intended for initial screening of the listed symptoms in persons who have experienced various types of mental injury.

The processing of the results obtained after testing the Short scale of anxiety, depression and PTSD consisted in counting the number of positive answers: the more "yes" answers the respondent gives, the more pronounced the negative psychological consequences of traumatization, such as anxiety and depression, which are considered the most specific manifestations of PTSD. The "threshold" value for determining the presence of mental state disorders is more than 4 "yes" answers.

In addition, a psychological conversation (clinical interview) was conducted with each of the wounded. This technique was used for the purpose of studying the psychological state of a military personnel after he was injured. It is based on the verbal socio-psychological interaction between the psychologist and the injured person with whom they are having a conversation. This makes it possible, by asking targeted questions during the conversation, to detect in a combatant such psychological disorders as exaggerated response, aggressiveness, impaired memory and concentration, depression, anxiety, hallucinations, sleep problems (difficulty falling asleep, interrupted sleep).

A psychological examination using the above methods was conducted among 55 wounded who were being treated at the Communal Non-Commercial Enterprise "Vinnytsia Regional Clinical Hospital of War Veterans of the Vinnytsia Regional Council". All patients who were under observation were injury in the area of the anti-terrorist operation. The age of the patients ranged from 20 to 52 years, the average age was years (34.9 ± 2.1). The breakdown of the wounded by age is shown in Table 1.

Table 1

Age characteristics of investigated of the military personnel

Age of the injured, years	Age structure, %
20–30	35,9
31–40	31,6
41–50	26,9
51–60	4,6
In general	100

The division of patients according to the nature of the injury received is shown in Table 2.

Table 2

Division of patients according to the nature of the injury

the nature of the injury	quantity of patients, n (%)
Gunshot wound	31 (56,4)
Mine-explosive injury	22 (40,0)
Thermal injury	2 (3,6)
In general	55 (100)

As can be seen from the data presented in Table 2, most of the injured (31 patients (56.4%)) received a gunshot wound; mine-explosive injury – 22 patients (40.0%); thermal injury – 2 patients (3.6%).

The structure of injuries of the examined patients is shown in Table 3, according to which data in the structure of injuries among the examined category of persons was dominated by wounds of the lower extremities in 19 patients (34.6%); wounds of the upper extremities – in 12 patients (21.0%); chest injury – in 5 patients (9.9%); abdominal injury – in 4 patients (6.1%); head trauma – in 7 patients (11.9%), closed craniocerebral injury – in 3 patients (4.7%); spinal injury – in one patient (1.4%); combined injuries – in 6 patients (10.4%). Based on the analysis of the results of the psychological examination of the injured, the following was established. Among the 55 examined, 21 patients (38.8%) had signs of PTSD, and 34 patients (61.2%) did not found.

Table 3

The structure of patients according to the location of injury

location of the injury	Structure of patients, %
Lower limbs	34,6
Upper limbs	21,0
breast	9,9
Stomach	6,1
Head	11,9
Closed traumatic brain injury	4,7
Spine injury	1,4
Combined injuries	10,4
In general	100

The results obtained by us fully correspond to the data of the scientific literature - 25% of military personnel who participated in combat operations and were not injured arise psychological disorders [3, 5]. Among the wounded and those who received disability as a result of the injury, this syndrome is observed much more often and it reaches 40-50%.

Based on the results of the testing, it was established that among 21 patients diagnosed with PTSD, in 6 (28%) when counting the results, the quantities of positive answers received during the initial screening according to the Short scale of anxiety, depression and PTSD significantly exceeded the "threshold" value. The processing of the obtained results (according to the instructions) consisted in counting the number of positive answers: the more "yes" answers the respondent gives, the more pronounced the negative psychological consequences of traumatization, such as anxiety and depression, which are the most specific manifestations of PTSD. The "threshold" value for determining the presence of mental state disorders is more than 4 "yes" answers.

Out of 21 interviewed patients, 10 (47.9%) answered "yes" to nine questions. 5 people (22.8%) answered "yes" to seven questions, 3 (15.9%) - to six questions, and 2 (13.4%) - to five questions, which also exceeds the "threshold" value at

determining the presence of mental state disorders.

The presence in 21 injured the signs of PTSD also confirms the results of the psychodiagnostic conversation conducted with them (clinical interview). The analysis of got the results allowed to identify the following groups of psychological features of PTSD in the examined injured. Among the signs of psychological disturbance, most of the injured (46%) complained of sleep disturbance. The specific weight of other disorders of the psychological state in the injured with PTSD was distributed as follows: 33% complained of emotional instability; 32% – irritability, increased emotionality; 28% – inability to relax; 25% - poor concentration of attention; 19% – memory impairment; 10% - isolation, indifference; 11% - depressed mood.

Among the 21 injured of who, according to the Short scale of anxiety, depression and PTSD, were not diagnosed with PTSD, the results were distributed as follows. The majority of respondents in this category - 39 patients (58.2%) - answered "yes" to three questions, 21 patients (31.3%) answered "yes" to two questions, 7 (10.4%) - to two questions. This became the basis for the assumption that they did not have signs of PTSD, since none of the 67 injured exceeded the "threshold" value of positive responses.

However, it should be noted what during by a psychologist with them a psychodiagnostic conversation (clinical interview), in all of the wounded still had complaints (groups of psychological symptoms) that indicate about changes in the psychological state, but not sufficient to confirm the presence of PTSD symptoms . Among of them were dominate complaints of sleep violations; the presence of irritability, increased aggressiveness.

The absence of signs of PTSD in 34 persons out of 55 examined injured may be due to the fact that in a certain category of military personnel, the psychological consequences of being in the war and being wounded may not appear immediately after returning to peaceful life, but only after some time. That is, they develop one of the variants of PTSD - remote PTSD. In this form of PTSD, symptoms of stress disorder are absent within 6 months after receiving a psychological or physical injury [2, 4].

American authors who conducted research in different periods of time after the end of the war in Vietnam indicated a significant quantity of veterans who needed specialized medical care and socio-medical rehabilitation [1]. So, 5 years after the end of the war, their quantity was 250 thousand. 7 years after the war, there were reports in the literature about serious problems associated with impaired adaptation to peaceful life in 500 thousand veterans. These problems were defined as delayed reactions to the stress experienced during the war [2, 5].

Conclusions. Participation in an armed conflict, received an injury is a powerful stress factor, which leads to various functional disorders of the body, including psychological ones. During the study of psychological changes in the military personnel who were injured, it was established that 38.8% of the examined patients showed signs of post-traumatic stress reaction. This is category of patients needs both medical and psychological rehabilitation.

References:

1. McNally R. J. (1995). Association of intelligence with severity of posttraumatic stress disorder symptoms in Vietnam Combat veterans / R. J. McNally, L. M. Shin. *Am. J. Psychiatry*, 152, 936–938.
2. Meyers L. L. (2013). Service utilization following participation in cognitive processing therapy or prolonged exposure therapy for post-traumatic stress disorder / L. L. Meyers, T. Q. Strom, J. Leskela [et al.]. *Military Medicine*, 178 (1), 95–99.
3. Vizniuk, I., Teslenko, V., Martyniuk, I., Savinova, N., Biliuk, O., Kyslychenko, V., Stelmakh, N. (2022). Posttraumatic growth in the context of forming a positive experience of volunteers in the information environment. *IJCSNS International Journal of Computer Science and Network Security*, 22, 6, DOI: <https://doi.org/10.22937/IJCSNS.2022.22.6.70>
4. Bryndikov Yu. L. (2018). Rehabilitation of military personnel of the participants of hostilities in the system of social services: theoretical and methodological foundations: monograph. Khmelnytskyi: Publishing House «Polygraphist», 372.
5. Ministry of Health of Ukraine (2016). Order of the Ministry of Health of Ukraine from 23.02.2016 № 121 "On the approval and implementation of medical and technological documents on the standardization of medical care for post-traumatic stress disorder"

VOLUNTEER PRACTICES OF UKRAINIANS AND PUBLIC CHARITABLE ORGANIZATIONS IN THE CONDITIONS OF MILITARY ACTIONS

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Annotation. *Ukrainian volunteering is a topic that is extremely common in the social sphere. Written without exaggeration by thousands of journalistic publications in electronic and printed mass media, the term "volunteer" itself has passed the test of time and results in society, is actively used both among ordinary citizens and at the level of higher and local state authorities. men were more likely to be involved in volunteering, procurement and delivery of military aid, and cybervolunteering. Women more often joined informational volunteering and organization of charitable gatherings. Younger respondents were more likely to participate in physical and informational volunteering, while older respondents were more likely to participate in the organization of humanitarian aid.*

Keywords: *volunteer, volunteer activity, public charitable organizations, social networks and Internet resources.*

One of the most discussed and asked topics in Ukrainian science and the public sector over the past few years is the development of civil society and the state policy of promoting this process. Hundreds of publications are published: from articles in scientific journals and mass media to collections of materials of round tables, various methodological recommendations, individual and collective monographs, candidate and doctoral theses. One of the main ideas promoted in the scientific and social space is the thesis about the development of civil society with the help of the state, and, accordingly, the question of the state policy of promoting the development of civil society.

Among the most problematic issues, the following stand out: the organization of volunteer activities, legal regulation of the formation and activity of civil society institutions and their improvement (according to European standards), political and legal support for the development of civil society in Ukraine, modern trends in civic activity and self-organization, ensuring conditions for public participation in the formation and implementation of policy and the exercise of public control over the activities of government bodies, features of the democratization of relations between the state and society in independent Ukraine, political aspects of the interaction of the state and society, the functional capacity of the state and its institutions and many other problematic issues [1].

Ukrainians have a unique ability to unite in crisis situations. During the Revolution of Dignity, we showed that completely different people can work together extremely effectively to achieve a common goal. In addition, they did it absolutely free of charge

and voluntarily - that is, on a volunteer basis.

During the annexation of Crimea and the Anti-Terrorist Operation in eastern Ukraine, volunteers played a key role in providing our military with equipment, ammunition, and food.

And what happens after the beginning of the full-scale invasion of Russia on February 24, 2022, can generally be called a triumph of Ukrainian volunteerism. Hundreds of thousands of Ukrainians have joined the volunteer movement and are doing the seemingly impossible. They provide the army with everything they need, solve complex logistical issues, risk their own lives and evacuate people from the hottest spots, deliver thousands of tons of humanitarian aid, protect and support millions of displaced people in Ukraine and abroad, take care of animals, take care of the elderly, rebuild destroyed buildings, block thousands of enemy resources and perform other incredible feats on a daily basis. And in six months, they collected a staggering sum of over 30 billion UAH in donations and were the first in the world to purchase a real space satellite and attack drones for our army.

The purpose of the article is to substantiate the peculiarities of volunteer practices of Ukrainians and public charitable organizations in the conditions of military operations.

In the context of the outlined topic of the study, the volunteer practices of Ukrainians, the active public support of the population of the Ukrainian armed forces and the Ukrainian army in general, the introduction of new norms of social responsibility into Ukrainian society - largely thanks to the activists and leaders of the volunteer movement, the high level of efficiency of domestic volunteers, their mobility are of interest, the ability to quickly respond to situational requests and needs. Without exaggeration, one can also raise the question of the involvement of Ukrainians in the world volunteer movement as its important and effective component, especially in view of the skills, abilities and, especially, the impressive results of activities acquired by volunteers (and therefore a socially active part of society), especially if you take into account attention to the current Ukrainian conditions, primarily external military aggression, the state of the Ukrainian security forces, the difficult economic situation and the impoverishment of the population.

According to UN Volunteers, 970 million people volunteer in the world, that is, every eighth inhabitant of the planet. The number of hours they devote to volunteering is equal to the work of 125 million full-time employees. And the cost of work is approximately 1.3 trillion dollars - 2.4% of the world economy. From February 24 to June 30, 2022, 4,365 civil society organizations were registered in Ukraine. The Center for Democracy and the Rule of Law (CEDEM) received this information from the Ministry of Justice of Ukraine. Among the registered ones are 3,364 charitable and 1,001 public organizations [2, 3, 4]. Some of them are new, others previously worked informally, but now have received official status. CEDEM experts explain this by the fact that civil society mobilized to help the Armed Forces of Ukraine and civilians. In addition, organizations seek official status in order to have more opportunities, such as: the right to open bank accounts, attract funding, cooperate with volunteers, conclude contracts on

the implementation of volunteer activities and issue volunteer certificates, etc.

Volunteer activity is a voluntary, socially oriented, non-profit activity carried out by volunteers through the provision of volunteer assistance.

A volunteer is a natural person who voluntarily carries out charitable non-profit and motivated activities of a socially beneficial nature.

This year Euromaidan SOS and the Ukrainian Volunteer Service aim not just to tell the stories of «ordinary people doing extraordinary things». To nominate yourself, a volunteer, or an organization, you must meet these criteria [1]:

- * daily volunteer work or act;
- * lack of affiliation to any of the political forces;
- * non-payability of activity.

Among the current volunteer fronts [1, 4]:

1. *Assistance to the military on the front line.* The army and the Defense Ministry constantly need cars, ammunition, drones, thermal imagers, tactical medicine equipment, walkie-talkies, communication systems and much more (PF "Return Alive", BO "Charitable Fund Serhiy Prytula").
2. *Ensuring the work of humanitarian headquarters:* food, clothing, medicine, accommodation of internally displaced persons (volunteer platform "SpivDiya", "Palyanytsia.Info", IBF "Ukrainian Charity Exchange»).
3. *Information front:* countering disinformation and propaganda, blocking enemy resources, spreading true information in the mass media, the Internet and social networks, information protection and cyber security (Telegram channels "Cyber-Cossacks", "Internet of the Army of Ukraine»).
4. *Helping the elderly, children and those who have difficulty taking care of themselves.* These people need food, medicine, moral support and just your attention (Zhyttelyub BF, UNICEF United Nations Children's Fund, SOS Children's Towns Ukraine BF»).
5. *Helping animals:* evacuation of four-legged animals, provision of shelters with everything necessary, search for new homes (BF "Happy Paw", organization "UAnimals»).
6. *Reconstruction of buildings:* restoration of damaged buildings to habitable condition, demolition of rubble, covering of roofs, replacement of windows, etc. (GO "Dobrobat", VO "Vdoma", "BUR" program»).
7. *Medical assistance:* donating blood, working in medical facilities, lectures on tactical medicine, medical evacuation activities in hot spots ("DonorUA" platform, BF "Mykola Pirogov First Voluntary Mobile Hospital", medical evacuation unit "PULS»).
8. *Psychological help:* free online consultations, help for people who feel anxious, have panic attacks or depressive states ("Tell me" platform, "Psychological support" telegram channel, " TO LIVE " foundation»).
9. *Legal assistance:* free legal consultations for people affected by Russian aggression, recording and documentation of war crimes (platforms «UA.SUPPORT»,

«WE4UA»).

The activity of volunteers in cooperation with an officially registered non-profit organization is the correct format of cooperation and organization of volunteering. At the same time, the official registration of the organization is only one of the steps. Currently, volunteers who help soldiers, medics, migrants and other Ukrainians to overcome difficulties are not protected from the risks of war. If they get hurt while helping others, they will not receive compensation from the state, CEDEM experts note. After all, the current regulation of the Ministry of Health "On volunteering" provides for the possibility of assistance for injured volunteers or families of deceased volunteers who worked in the territory of Donetsk and Luhansk regions. Today's realities are different.

In order to ensure the rights of volunteers, it is necessary to adopt volunteer draft laws No. 7363 and No. 7364, which are currently registered in the Verkhovna Rada. Lawyers of the Center for Democracy and the Rule of Law, together with the project team of the Sectoral Support Initiative for Civil Society, call on people's deputies to vote for such important changes as soon as possible.

Also, the draft laws contain a number of other innovations for volunteers [2, 3, 4]:

1. Assistance in overcoming the consequences of the armed aggression of the Russian Federation against Ukraine will be added to the list of directions for volunteering. After all, the original law "On Volunteering" (2011) did not yet have such a clause.

2. Conditions will appear for the development and implementation of state targeted programs to support volunteers and train them.

3. The draft laws will encourage volunteers and public organizations to conclude cooperation agreements.

4. If the volunteer receives compensation for travel expenses or medical examination, this money will not be considered his income. Accordingly, the volunteer will not pay taxes on them: Personal Income Tax and State Income Tax.

5. The same principle will apply to compensation if the volunteer studied: for example, pre-medical assistance, psychological adaptation, work with PTSD.

6. Non-profit organizations will be able to help victims of hostilities (for example, forced migrants) without violating the conditions of non-profitability. Such a norm already works for those who help the Armed Forces and other military formations. And since it is difficult to make changes to the charter, the amendment remains relevant.

7. The initiators of the draft laws call on the deputies to adopt them as soon as possible. After all, both documents are up-to-date and designed to strengthen the volunteer movement. And therefore, they will help Ukraine to win.

That is why, over the past six months, charity has become an integral part of the lives of most Ukrainians: 86% of Ukrainians have become philanthropists, and 33% have joined volunteering. At the same time, the average monthly donation increased almost tenfold compared to 2021. Zagoriy Foundation together with research agency "Socioinform" conducted a quantitative study "Charity in times of war". Data were collected during June-July 2022 by the method of telephone interviews on randomly selected numbers. The sample size is 1,605 people. A similar study was conducted in

2021, so we are able to consider the dynamics of changes. The main results of the study are presented in this article. In 2022, 86% of Ukrainian residents were benefactors. This is 19% more than in 2021 and 26% more than in 2016 (Chart 1).

The increase in participation in charity did not go unnoticed: 84% of Ukrainians noted that the scale of charity is growing. Respondents see more help from charitable foundations and organizations, and their friends are more likely to get involved in charity.

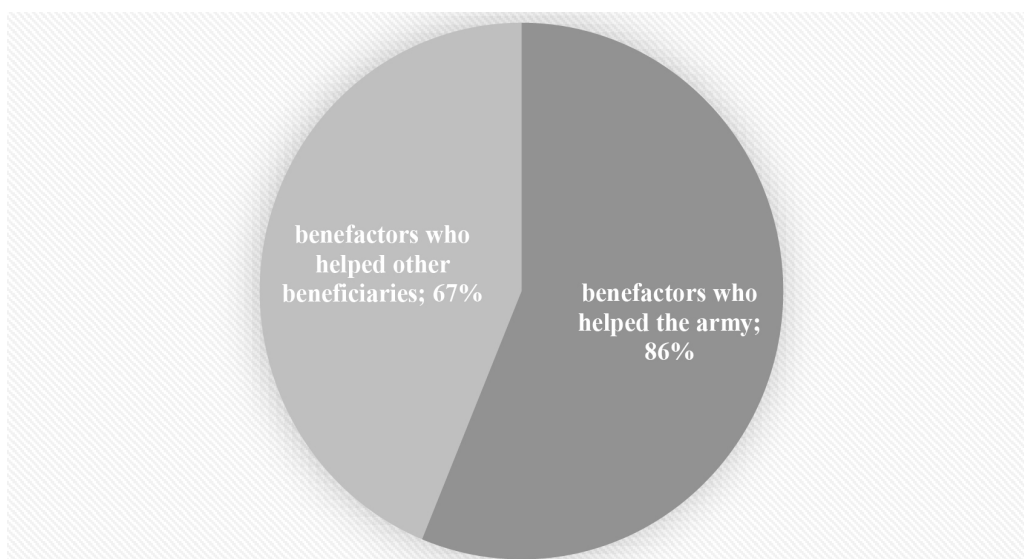


Fig. 1. Volunteer activities of benefactors who helped the army and other beneficiaries

Chart 1 shows that more than half of benefactors direct their contributions both to the army and to other needs - for example, for IDPs: 86% of benefactors helped the army, 67% - to other beneficiaries. 33% of all Ukrainians and 39% of philanthropists have volunteered since February 24. In most cases, it is about physical work: unloading and loading cargo, weaving nets, transportation, etc.

Financial support remains the most popular form of assistance (Table 1) (76% of benefactors). In second place is the free transfer of food, clothing, and hygiene products (69%), and in the third place is the free provision of services or work (45%). Most often, residents of Ukraine sent funds to the state account of the Armed Forces of Ukraine (37%) and bank cards to those who needed financial support (32%). 27% gave aid through volunteers, and 25% through charitable foundations.

At the same time, if in 2021 the average charitable contribution was 1,046 UAH, now it is more than 9 times more - 9,730 UAH. However, the intensity of donations is gradually decreasing. Half of the donations fall on February-March (in fact, the first 40 days of the war), the other half - on the next three months (90 days). A third of Dobrochyns made contributions of UAH 1,000-3,000, a quarter - UAH 3,000-6,000, 13% - up to UAH 1,000. 33% of respondents engaged in volunteering. Among benefactors, this share was higher - 39%. 66% of volunteers engaged in physical labor, such as unloading

cargo or weaving nets, 39% organized humanitarian aid, 25% - aid to the military. 31% joined the fight on the information front, and 10% became cyber volunteers.

As before, the desire to help and the ability to put yourself in another person's place are in the first place among motives (Fig. 2). However, in 2022, the share of those who help for patriotic reasons, a sense of duty to society, or want to join a common cause has grown significantly (Fig. 1). The vast majority of benefactors felt positive emotions when donating - hope (62%), joy (37%), relief (18%). However, there were also negative emotions - sadness (13%), excitement (14%), anger (6%). Note that it is quite normal to feel negative emotions during the war, and to "convert" them into support for the Armed Forces and fellow citizens is a reasonable behavior.

Table 1

Volunteer practices of Ukrainians and public charitable organizations

Types of volunteering in 2022	Indicators
Philanthropists who helped the army	86%
Benefactors who helped other beneficiaries	67%
Volunteers engaged in physical labor	66%
Volunteers organizing humanitarian aid	39%
Volunteers who provided assistance to the military	25%
Volunteers who joined the struggle on the information front	31%
Cyber volunteers	10%
Financial support of benefactors	76%
Free delivery of food, clothing, hygiene products	69%
Free provision of services or performance of works	45%

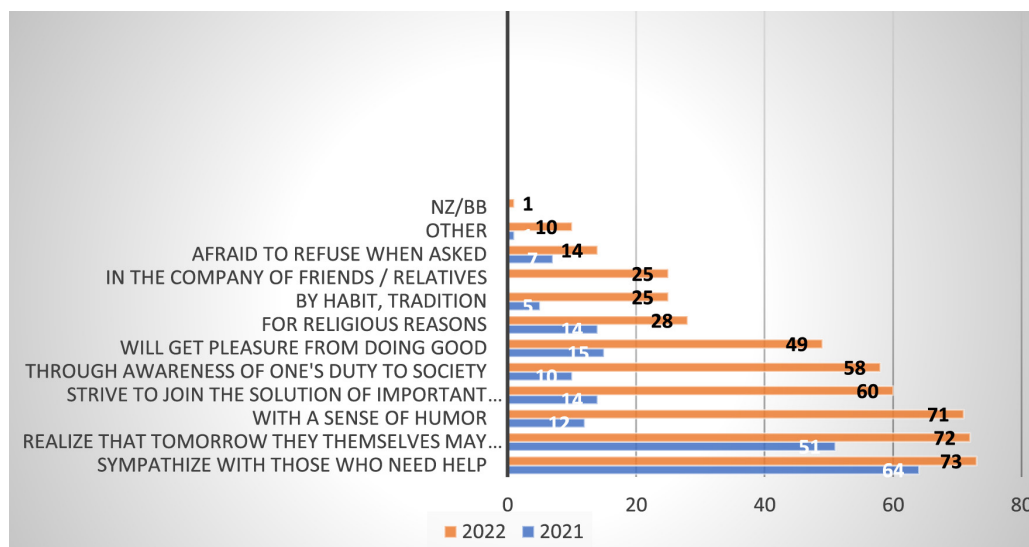


Fig. 2. Motivational field of volunteer activity

Most often, people learn that someone needs help from social networks and from relatives/acquaintances (49% of respondents). Slightly less popular sources of information are websites (35%), mobile apps in fifth place, and television in sixth. 34% of respondents noted that they learned about the problem from their own experience - that is, when faced with a problem, Ukrainians act, and do not wait for someone to solve the problem. Trust in benefactors has grown significantly since the beginning of the war (from 2.66 to 3.77 on a 5-point scale). International charitable foundations have the highest trust (4.11 points), volunteer organizations slightly less (4.02), followed by all-Ukrainian and local foundations.

Conclusions. Ukrainians have a lot of trust in volunteer associations and charitable foundations (trust in the latter has increased compared to last year). Naturally, those who are more able to do so help more (more often and with larger amounts) - people with higher incomes and higher education, employed people, men, younger people. By region, the largest share of people involved in aid was in the west (94%), while in the east it was less, but still a lot, at 76%. Women, rural residents, and people with lower incomes are more likely to help with food and clothing, while men, urban residents, and people with higher incomes are more likely to help with money.

A similar conclusion can be drawn regarding volunteering - people chose activities according to their skills and physical capabilities. Thus, men were more often involved in physical volunteering, procurement and delivery of military aid, as well as cyber volunteering. Women more often joined informational volunteering and organization of charitable gatherings. Younger respondents were more likely to participate in physical and informational volunteering, while older respondents were more likely to participate in the organization of humanitarian aid.

Nevertheless, Ukrainians are much more likely to support volunteer initiatives than charitable foundations. Perhaps they find voluntary associations more effective and useful. Among charitable foundations, despite the higher trust in international organizations, Ukrainians are more likely to help local foundations - obviously, because they are "closer" to the respondents, that is, there is an opportunity to come to their office, presumably friends or acquaintances work there.

References:

1. Analytical report "Volunteer movement: world experience and Ukrainian civic practices" [Electronic resource]. Access mode: <http://www.niss.gov.ua/content/articles/files/volonter697e4.pdf>
2. Volunteer movement: world experience and Ukrainian civic practices: analyst. add. K.: NISD, 2015. 36.
3. Inessa Vizniuk, Valentyn Teslenko, Iryna Martyniuk, Nataliia Savinova, Olena Biliuk, Viktoriia Kyslychenko, Nina Stelmakh. Posttraumatic growth in the context of forming a positive experience of volunteers in the information environment. IJCSNS International Journal of Computer Science and Network Security, 2022. VOL.22. № 6. P. 562-570.
4. Kokun O.M., Agaev N.A., Pishko I.O., Lozinska N.S. Basics of psychological assistance to military personnel in the conditions of hostilities: methodical manual. K.: NDC SE ZSU, 2015. 170.

PROFESSIONAL EDUCATION IN THE FORMATION OF COMPETENT CREATIVE PERSONALITY: THEORY AND PRACTICE

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Annotation. *The article considers the historical origins of the creation of a specialized high school. Methodical problems of creation of profile school are raised. The current state of school education is specified and the necessity of introduction of profile education in the modern educational process is proved. The essence of the concept of «specialized training» is revealed, the significance and priorities of this phenomenon in the system of today's education are determined.*

The formation of specialized education in the theory and practice of education in Ukraine is taking into account the historical domestic and international experience. The idea of specialized training occupies a significant place in different countries.

The introduction of specialized training in the modern school has led to an increase in the requirements for professional training of teachers, his professional competence, the level of readiness to implement this aspect of pedagogical activity.

The problem of inconsistency of theoretical research on the issues of profile education and the reality of the current educational paradigm is considered. The focus is on the positive and negative aspects in the structure of the content of specialized education in a particular historical period.

Keywords: *general secondary education, content of education, profiling, high school, students.*

Modernization of modern education is aimed at providing conditions for Ukraine's inclusion in the international educational space. A personal approach to the formation of a creative personality involves ensuring success in activities for each student.

The general tendency for the senior profile school is its orientation on wide differentiation, variability, multidisciplinary, integration of general and pre-vocational education [1]. Profile education is one of the types of differentiation of education is a form of organization of educational activities of middle and senior school age, which takes into account their abilities, aptitudes and interests.

Linguistic definition of the term «profile» contains a set of basic features that characterize the profession, specialty, economy [2; p.995].

According to this concept, specialized training in an educational institution is considered as educational work aimed at studying educational areas that contain typical

knowledge, skills and abilities that are characteristic of a particular field of activity, profession, specialty.

This approach to the formation of the content of education by profiles is based on the idea of implementing a broader profile than is customary in schools with in-depth study of individual subjects (in special schools). In view of this, we can say that the profile is a transitional form of differentiation of learning - on the one hand, between the traditional universal approach and, on the other hand, deep specialization, which is characteristic of lyceums and special schools (mathematics school, chemistry class, etc.). It should be noted that, as practice shows, such a form of specialization («profile as a special school») can also be implemented within the accepted conceptual framework, when almost all the content is devoted «subject-hard» to deepen two or three profile disciplines.

In the study, we assume that the profiles presented in the Concept of specialized training are not an exhaustive list; in a number of schools - taking into account the needs of students, school opportunities, features of the local educational network of the region, social order and other factors - other profiles are opened, including specializations of leading profiles (medical, agro-technological, literary, pedagogical, etc.).

Accordingly, the profile is defined as the provision of a special institution, direction, educational institution, class, group, educational process, etc. In this context, the profile school is a secondary school in which in high school the educational interests (including professional) and opportunities of students in general have been determined, and the profile of study is a way of differentiated learning that provides in-depth and professionally oriented study of related subjects.

According to the definition of A.P. Samodrina, profile training is a profile-differentiated (by affinity of individual profiles) planned, organized, joint bilateral activities of teachers and students, aimed at conscious, strong and deep mastery of the latest system of profile-oriented knowledge, skills and abilities, during which along with general education (educational core) acquires personality-oriented pre-vocational training (educational periphery) - together is the content of specialized education [3].

In L.V. Golub «profile training» is something that is broader than the profession, at the same time is the core of the profession (several future specializations of higher education). That is, the profile in high school is nothing but pre-vocational-oriented educational activities at the school-university segment.

Profile education is one of the types of differentiation of education - a form of organization of educational activities of middle and senior age, which takes into account their aptitudes, interests, abilities (P.S. Lerner, M.F. Rodichev, S.N.Chistyakova). The pedagogical principle of differentiation does not allow reducing the general (basic) level of general education of students.

Scientists O.I.Bugayov and D.I Deikun In the context of defining specialized education, singled out the levels of differentiation according to: the structure of the education system; the content of education; the nature of the educational process [4, p.148].

Differentiation by the content of training the authors defined as follows: profile mass; profile deepened; individualized; special.

Profile education is a little-studied phenomenon in domestic pedagogy. However, it should be noted that domestic education from time to time turned to him and has some experience in this area.

The first attempt to carry out specialized training was made in 1864. It was provided by the organization of seven-grade gymnasiums of two types: classical (purpose - preparation for university entrance) and real (preparation for practical activities and admission to specialized educational institutions).

In 1915-1916, during the reform of education, the following steps were taken to profile the differentiation of education: 4-7 classes of the gymnasium were divided into three areas: neo-humanitarian, humanitarian-classical and real.

In 1913, the problem of creating a «labor school» arose in the field of view of national education.

The idea of the labor school was borrowed from the founders of utopian socialism T. More and T. Campanella. In the early twentieth century, this idea was partially implemented by G. Kirschensteiner and J. Dewey.

Much attention was paid to the development of certain aspects of the ideas of the labor school as one of the priority areas of reforming national education. K.Ushinsky, V.Bekhterev, G.Rossolimo, O.Nechaev and others.

The construction of a new type of school was based on pedology as a science of child development.

According to the conceptual positions of teachers-founders of the labor school, children, participating in socially useful work and changing the environment in accordance with the knowledge, skills and abilities acquired at school, transform their value-emotional world, master socially significant activities.

Since 1918, on the basis of the Regulations on a single labor school, further profiling of the high school took place. In the senior stage of high school there were three areas: humanities, science and mathematics and technology. Considerable experience in the introduction of labor school was accumulated by well-known teachers S. Shatsky and A. Pinkevich.

In the 1920s in Ukraine, the «labor principle with new content» also became a priority in the education and training of schoolchildren. Preparation for future employment was carried out by vocational schools, where students studied after seven years of employment. Schools such as industrial-technical, agricultural, socio-economic, music, art, handicraft, construction, transport (term of study - three and four years) prevailed [5].

A new attempt by the Soviet school to influence society was the transition in 1931 from the artificial abstract content of education to the formation of students' objective-subject (polytechnic) ideas about production. The education system is being unified, vocational schools are being reorganized into special secondary schools, and there are such types of specialized schools as FA (factory apprenticeship) and rural youth schools.

As a result of the militarization of the country, the academic school at this time acquires signs of approaching the applied school. The requirements for professional training are increasing due to the integration of intellectual and applied connections in

its content. There is a new need for a labor school.

In 1934, the Resolution "On the structure of primary and secondary schools in the USSR, which provided for a single curriculum and uniform curricula. At the same time, the introduction of a single school throughout the USSR caused such a serious problem as the lack of continuity between a single secondary school and specialized higher education institutions. This has forced scientists and educators to turn again to the problem of profile differentiation in higher education.

In 1940, a system of state labor reserves was formed in the USSR, which included specialized schools.

An attempt to combine training with productive work took place in 1950-1960. Pedagogical practice at this time has confirmed that the combination with productive labor does not mean a mechanical addition of labor to learning and requires significant adjustments to the content, forms and methods of learning, as well as improving ways of organizing students' work.

In 1957, on the initiative of the Academy of Pedagogical Sciences, an experiment began, the task of which was to conduct profile differentiation in three areas: physical-mathematical and technical; biological and agronomic; socio-economic and humanitarian. In 1958, specialized schools were created for gifted children: physics and mathematics, sports, music, art, with in-depth study of foreign languages and more.

In order to further improve the work of secondary schools in 1966, a form of profile differentiation according to the interests of students was introduced, such as optional classes in grades 8-10. At that time, pedagogical science naturally raised the question of the need to link elective classes with classroom and extracurricular activities, take into account the age of students and help them make informed choices about elective courses, systematic work for several years based on elective courses in various subjects.

One of the key problems of these reforms was the lack of didactic classification and a system of optional classes that would practically ensure the implementation of their functions [6].

Vocational guidance in secondary schools was based on a broad general and polytechnic education and did not involve early professionalization. It was believed that the broader and more thorough the education, the more opportunities to make a more informed, correct choice of profession. The system of vocational guidance in secondary school compensated for the lack of certain mechanisms of professional self-determination

Principles of compulsory circles, sections, electives, work on collective farm fields, etc. The specifics of socially useful work were used in the preparatory work to determine students' future profession.

In the process of career guidance work, students received the necessary knowledge about mass professions. At this stage of education development, it became expedient to include a pre-professional component in the content of secondary school education (E. Klimov, A. Sazonov, V. Symonenko, B. Fedoryshyn, etc.). Since 1987, the subject «Fundamentals of production. Career choices».

Relatively stable needs of society caused in 1966 the creation of schools (classes)

with in-depth study of subjects. In the following years, for the first time, ethics, ballroom dancing, choreography, music and movement, rhetoric, basics of journalism were introduced into the curriculum; in the early 1990, courses on the history of religion and national culture, folklore and ethnography of Ukraine were introduced.

In the 80's, new types of secondary schools (lyceums, colleges, gymnasiums) appeared, focused on in-depth study by gifted students in vocational training of certain educational fields of choice for further study in higher education. The main task of these specific educational institutions is to train the intellectual national elite. Their academic traditions in teaching begin with the well-known in the history of Ukraine fraternal schools of the XVI-XVII centuries.

Specialized (to some extent - profile) schools developed. With all the variety of forms and methods of new types of schools, despite some vagueness of goals and unclear ways to achieve them, the activities of these schools gradually shifted from experimental orientation to the implementation of agreed and approved by the relevant educational authority's curricula. Priority areas of activity of these educational institutions were: development of new and correction of existing curricula and plans; determination of scientifically substantiated content of teaching subjects, its volume and quality; search for non-standard forms and methods of intensification of educational activities; improving the structure of the educational regime of the school; democratization of the educational process; computerization of learning.

On the basis of pedagogical experimental sites, these educational institutions gradually formed approaches to profile-differentiated learning. Teachers-innovators, heads of schools became scientists (V. M. Alfimov, M. P. Guzyk, S. M. Sichko, A.I.Sologub, V.M.Khayrulina, etc.).

The system of planning and control in new types of schools, in addition to traditional functions, also performed such a function as solving the problem of student workload. The plans of these educational institutions at all levels provided for the main types of tests, writing works, essays, laboratory work carried out during classes and after school hours. Targeted creative programs and textbooks were developed. Students mastered special courses focused on the comprehensive development of future intellectuals. In order to develop new programs and ways to implement them in light of the requirements of the State National Doctrine of Education Development, working creative groups are created.

In the 80's and 90's the lecture-practical system of educational classes was developed (which was proposed in Ukraine in the early 60's by O.O.Khmuryum). Opportunities were provided for activating students' self-education, development of individual abilities and interests. The role of the teacher, who ceased to be a transmitter of information and acquired the features of a supervisor, consultant in the organization of the educational process, changed. Non-standard lessons are being developed: lesson-lecture, lesson-seminar, lesson-consultation, lesson-test, lesson-workshop, etc. Further improvement of the lecture-practical system took place in different levels of differentiation of education, testing of new educational content, introduction of innovative pedagogical technologies.

Signs such as the lack of a new material base at that time, the lack of a well-developed concept of educational activities, teachers with new learning technologies, appropriate legal framework, etc., did not stop parents from choosing these children for their children. institutions.

In the 1990s, the secondary school received the so-called invariant (standard) and a variable differentiated part. In the normative documents, the variable part was called the «School component».

One of the main achievements of domestic education in these years is that it became possible to create different types of rural schools, which also provided specialized training or in-depth study of those subjects needed to continue education in special secondary and higher education institutions or to work in countryside.

For earlier vocational guidance of high school students, creating conditions for improving the quality of education and upbringing based on the continuity of all levels and levels of the education system and improving the quality of higher education students through differentiated training in secondary schools at universities formed scientific and educational complexes. Purposefulness in pre-university training in some way influenced the competitive situation and the quality of students.

K. Varnavskykh, A. Golomshtok, L. Golub, A. Gubenko, V. Demidova, S. Yelkanov, V. Kizenko, E. Klimov, V. Madzigon, Y. Malovany, N. Nychkalo devoted their works to the problems of professional self-determination of students. E. Pavlyutenkov, P. Perepelytsia, N. Pobirchenko, A. Sazonov, V. Symonenko, V. Tishchenko, D. Thorzhevsky, B. Fedoryshyn and others.

Pre-university training was gradually aimed at increasing the involvement of trained rural youth to enter universities. Profile classes were opened in rural schools. Work on the basis of training and production plants was quite effective in opening such classes.

The whole ideology of specialized training determined a significant degree of variability in its implementation. Accordingly, the importance and need for clear design and organization of pre-professional training of students in the final grades of primary school grew.

Under such conditions, in the education system there was a tendency for the academic school to cover the entire educational space of secondary school. The tasks of polytechnic training, the scientist notes, are not limited to the study of the basics of science: learning should not be reduced to the transfer of fragmented and interconnected knowledge and skills, it should be carried out in such a way that everything learned in theory is fixed in practice. Tasks should be solved through labor training, production work, polytechnic workshops and technical creativity.

There is a need, taking into account the experience of the past, including Ukrainian folk pedagogy, to take into account new approaches to the training of students due to Ukraine's transition to the market. Thus, the 90s were marked by the widespread use of the experience of folk pedagogy in labor education, acquaintance of students with the history and development of crafts, folk arts and crafts. Students of new types of schools were also involved in manual labor, studying the labor traditions of the people.

The study was connected with the history of the native land, Ukraine in general. For this purpose, opportunities of local lore museums, excursions on native land were used. As students became acquainted with the technological aspects of making folk art, they became interested in various crafts and related industries.

Since the mid-1990s, the field of education, in particular specific vocational guidance or professional training, has become dominant in all types of educational institutions of a certain profile. They have the basic content of education (state program), but there is room for variability in the education system, broad autonomy for the introduction of new subjects and the distribution of study time. According to this, all types of educational disciplines were equal in general educational institutions: social-humanitarian, natural, technical-applied. In all other institutions, one of them could take a priority position in the number of hours and subjects and the nature of the study.

Lyceums and gymnasiums were also established on the basis of some district secondary schools.

In such villages, preference was given to the creation of new types of educational institutions, such as educational complexes. As a rule, these were mini-complexes with such centers as cultural, educational, sports, and industrial, where students not only studied, but also worked if they wished and received a monetary reward for their work. The work of these complexes was designed according to individual plans and projects, not according to general standards. This took into account local and regional characteristics and needs in the professions.

When creating new types of educational institutions in rural areas, the specifics and needs of the village were taken into account. New curricula, courses and electives focused on agricultural specialties. The peculiarities of the work of these educational institutions in rural areas were taken into account.

A leading role in the organization of specialized training in the early 90's in Ukraine was played by new types of schools. At the same time, only 40% of students were guided by their own tendency to study subjects of a certain profile.

The unresolved problem is the lack of students' right to personal goal-setting in specialized education and the choice of individual educational trajectory. A number of secondary schools in large cities are trying to meet the demand for a particular profile, including through in-depth study of some subjects. Often such training takes place at an additional cost, which the school raises from outside the main budget. This only partially solves the problem of individualization of educational services and compliance with socio-economic development of society, as it does not create equal access to quality education, deepens the segregation of students to those who can pay for in-depth training and those who cannot. do it. In addition, when organizing specialized training, schools, as a rule, limit the choice of students, as they are based only on available pedagogical resources, educational and didactic and methodological materials and material and technical base.

In 2003-2004, Ukraine was laying the foundation for the transition of domestic high school to specialized education. The development of the European and world educational space requires from the Ukrainian school, as stated in the Concept of specialized education in high school, an adequate response to the processes of reforming the general secondary school taking place in the leading countries of the world. This Concept ensures the implementation of the Laws of Ukraine on Education, the resolution of the Cabinet of Ministers of Ukraine «On the transition of secondary schools to a new content, structure and 12-year term of study». It is also based on the main provisions of the Concept of General Secondary Education (12-year school) and is aimed at implementing the National Doctrine of Education Development.

The above-mentioned Concept envisages training of tenth- and twelfth-graders in five main areas: social-humanitarian, natural-mathematical, technological, artistic-aesthetic and sports. In addition, high school students who do not plan to enter a university can continue their education at the standard level - a mandatory minimum content of subjects.

In the explanatory note to the working curricula of secondary schools, the directions are defined approximately in the following profiles: philological; physical and mathematical; social and humanitarian; biological and chemical; medical; legal; technical and production; natural science; artistic and aesthetic; sports; economic; legal, etc.; computer science and computer engineering.

Teaching in new educational institutions of a new type by the authors of the Concept of specialized education (L. Berezivska, N. Bibik, M. Burda, L. Denisenko, G. Egorov, I. Ivanyuk, L. Kalnina, V. Kizenko, O. Korsakova, L. Onyschuk, S.Trubacheva) was defined as profile. The general tendency of development of the senior profile school is its orientation on wide differentiation, variability, multidisciplinary, integration of general and pre-vocational education.

Educational work in specialized classes becomes more purposeful, it loses the features of situationality and episodicity. An atmosphere is formed in the classrooms that promotes the manifestation and realization of the inclinations and interests of students; a sense of unity is created. Adolescents are united by common interests, the possibility of further joint professional growth.

Thus, a retrospective analysis of specialized training as a pedagogical problem shows the following:

- interdependence of education in general educational institutions of academic and applied training on the basis of profile-professional socialization is provided;
- at different levels of the school such skills are formed as scientific organization of work, modeling of future activities, design and technological activities, finding solutions to crisis situations, independent creative thinking, etc.;
- opportunities are created for the implementation of pre-professional function in working with gifted children;
- the motivation of the educational process at school increases;
- the connection between the socio-economic situation in the country (region) and the content of education is established;
- the trend of profiling secondary education for more effective socio-economic growth of the country is increasing;
- the role of the teacher in the educational process changes: the teacher becomes not a translator of knowledge, but an organizer of the collective educational

process, independent work of students, an indicator of the acquisition of knowledge and skills;

- profile education, as the experience of many countries shows, can be aimed at ensuring the interests, abilities and individual capabilities of students in accordance with their future life plans by differentiating and individualizing learning, ensuring equal opportunities.

However:

- the functioning of different types of schools in Ukraine only partially solves the problem of high school profiling, in some way limiting equal access to quality education;
- existing standards of general secondary education do not sufficiently reflect the main approaches to the profiling of high school in Ukraine;
- the system of teacher training and retraining does not take into account the problems of high school profiling.
- thus, along with other problematic aspects of the profiling of high school there is a problem of training teachers of the new formation of pre-professional and specialized (including pre-professional) training.

References:

1. Dychkivska I.M. (2004) Innovative pedagogical technologies: textbook. way. Kyiv: Akademvydav, 2004. 352 p.
2. Borytko N.M. (2001) Preparation of the teacher for educational activity: Abstracts of mountains. scientific-practical conf., Volgograd, April 26. 2001. Volgograd, 2001. S. 17-21. URL: borytko.nm.ru/papers/podvosp.htm
3. Lapinsky V.V. (2012) Preparation of students of pedagogical specialties for interactive learning with the use of modern hardware and software. Higher education in Ukraine. 2012. № 3 (46), vol. 3: Higher school pedagogy: methodology, theory, technology. Pp. 481-492.
4. Bidyuk N.M., Fedukh I.S. (2016) English: Step to proficiency: textbook. way. Khmelnytsky: KhNU, 2016. 254 p.
5. Eremin Yu.V. (2001) Theoretical bases of professional and communicative preparation of the future teacher in the conditions of pedagogical university (Subject area foreign language): diss. ... Dr. Ped. Science: 13.00.08. SPb., 2001. 322 p.
6. Verbitsky A.A. (1991) Active learning in higher education: A contextual approach. Moscow: Higher. school, 1991. 207 p.
7. Kushnir V.M. (2016) Profile training in the history of domestic school development (second half of the XIX-XX centuries). Monograph. Uman: Publisher "Sochinsky", 2016. 418 p.
8. Arapov A.I. (2000) The problem of differentiation of education in the history of domestic pedagogy and school of the late nineteenth - early twentieth century: author. dis. ... cand. ped. Sciences: 13.00.01 «General pedagogy». Novosibirsk, 2000. 21 p.
9. Bibik N.M. (2006) The problem of specialized training in pedagogical theory practice. Profile training: Theory and practice: 36. sciences, works on materials methodologist. seminar of the Academy of Pedagogical Sciences of Ukraine. K. : Ped. press, 2006. P.23–29.

DIFFERENTIAL GEOMETRY IN THE FORMATION OF PROFESSIONAL COMPETENCES OF FUTURE TEACHERS OF MATHEMATICS AND PHYSICS

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Annotation. *The article examines the purpose, content, main tasks and forms of organization of differential geometry training for students of pedagogical higher educational institutions in the conditions of personally oriented training, taking into account the educational capabilities of students. The proposed system of learning differential geometry using modular technology and rating assessment of the quality of assimilation of educational material for the formation of professional competences of future teachers of mathematics and physics.*

Keywords: *differential geometry, competence, interdisciplinary ties, teaching, studying process, physics.*

Problem statement. The development of the education system should take place in accordance with the needs and demands of society. In the conditions of the complication and differentiation of social, economic and cultural processes, education faces the task of purposeful formation of a personality capable not only of reproducing the acquired professional knowledge, but also of acting as a full-fledged subject of social life, while preserving its own socio-cultural individuality in harmony with all its cultural qualities. Education should turn into an integral multicomponent system and transfer the cultural heritage of world civilization in its structural completeness, form all the main types of activity, develop the creative powers of each person to the fullest extent. The professional competence of a specialist involves not only professional skills and abilities, but also many other qualities, in particular, the general culture of the individual, professional skills, worldview, etc.

The main components of pedagogical education are general education, general pedagogical and special pedagogical training. Every teacher, in addition to mastering the mechanisms of special pedagogical activity, must master all other types of it, and his general education is designed to harmonize the development of the teacher's personality. It is appropriate to consider the main components of a teacher's professional competence, which must be formed in a graduate of a higher educational institution: persistent interest in the teaching profession, professional purposefulness; thorough scientific knowledge and professional thinking formed on their basis; broad methodological awareness of the organization of the educational process at school; the ability to use professional knowledge creatively, adequately to the pedagogical situation; psychological readiness to work with children.

The integral formation of the future teacher's personality is impossible without the improvement of traditional forms of organization of the educational process in the higher pedagogical school, without the creation of a new personally-oriented pedagogy - the pedagogy of humanism and humanity. The search for such educational and educational technologies that would form a socially active, creative personality becomes relevant. It is the innovative technologies of developmental learning that should give the future teacher not only professional knowledge, but also the means for innovative pedagogical activity, on the basis of which the teacher will master all its structural elements - from the formation of the goal to obtaining the result, its evaluation and subsequent correction.

Effective ways of forming the professional competence of the future teacher can be: improving the content of specialist training curricula taking into account the pedagogical orientation of all disciplines; development and implementation of integrated educational courses in pedagogy into the educational process - psychology-methodology of teaching professional disciplines, built on the principle of solving problem situations of future pedagogical activity; introduction of learning technologies into the educational process to activate students' cognitive and professional activity (modular rating system, problem-based learning, business and role-playing pedagogical games, logical-heuristic trainings, etc.); improvement of the content of practical training of students using interactive methods and the introduction of continuous pedagogical practice; active implementation of individual programs for the formation of pedagogical and professional culture of the future teacher; wider involvement of students in scientific work in professional disciplines and on complex psychological and pedagogical topics; formation of students' interest in pedagogical activity by means of the educational process.

The strategy of reforming modern education should be based on the formation of the ability to independently generate new knowledge, the ability to find new, creative solutions in non-standard situations. For this, new educational technologies are needed to provide each person with an individual trajectory of developing creative abilities and becoming a person and a specialist. The formation of a specialist's personality involves the activation and improvement of mental cognitive interests (sensation, perception, representation, thinking, language) in accordance with the requirements of the specialty and professional activity as a whole. In this regard, the issues of developing students' activity and forming positive motives that encourage them to engage in cognitive activity become relevant. On this path, research on such issues as the essence and features of problem-based learning in a higher educational institution are promising; creation of effective conditions for posing and solving problematic and heuristic situations; didactic basics of developing and using cognitive tasks from each academic discipline; forms and methods of organizing scientific research of students in the educational process; finding new forms of intensification of students' educational activities, in particular, wide use of new information technologies, business games, etc.

The determining components of the professional competence of the future teacher are cognitive and professional activity in their relationship with fundamental and methodical training. It is known that the main goal of training a specialist is achieved in the process

of educational activities, which most intensively affects the development and formation of mental processes and professional qualities of the individual, as well as the acquisition of the necessary knowledge, skills and abilities. Educational activity is characterized by goals, motives, cognitive processes, starting with the perception of information and ending with the functioning of complex creative processes. The educational activity of students is, first of all, intense mental activity, the intensity of which depends on many factors: the content and complexity of the tasks, the level of knowledge, intellectual abilities and skills, motives and general psychological attitudes of the individual. The formation of positive motives for learning is determined by such conditions as awareness of the theoretical and practical significance of knowledge acquisition; increasing the content and novelty of the educational material; professional orientation of educational activities; selection of adequate tasks that create an information contradiction in the very structure of educational activity and stimulate cognitive activity and creative thinking, etc.

Differential geometry has great opportunities for the development of the cognitive activity of the future teacher of mathematics through the development of such methods of mental activity as analysis, synthesis, abstraction, comparison, generalization, analogy, intuition, etc. Taking into account the specialization and individual development of students in accordance with their abilities and capabilities, the content of the "Differential Geometry and Topology" course, in addition to theoretical material with mandatory and additional parts, task material that will ensure solid assimilation of basic knowledge, should also contain motivational material (system problematic and heuristic problems and questions, creative and research questions, problems of interdisciplinary content, historical materials for studying relevant course topics, etc.).

At the first lectures, it is necessary to explain the general purpose of differential geometry as a separate module of the course, to clarify the structure of this module as a whole system. Attention should be paid to the dialectical nature of the module as a whole. It is necessary to draw students' attention to a wide range of applied and practical problems that are solved by the methods and means of differential geometry.

Geometry is the science of spatial forms and the relationship between them, that is, the science of shapes and their mutual transformations. The separation of differential geometry from other disciplines is not related to the object, but to research methods or research apparatus. If we can characterize analytical geometry as that part of geometry in which the main apparatus is the apparatus of algebra, then differential geometry is that part of geometry where the main apparatus is the apparatus of mathematical analysis.

Differential geometry is a branch of geometry that studies the properties of geometric images, curves, and surfaces in three-dimensional Euclidean or affine space, as well as multidimensional surfaces and manifolds by methods of mathematical analysis.

Differential geometry arose and developed in close connection with mathematical analysis, which itself grew out of the problems of geometry. Many geometric concepts preceded the corresponding concepts of analysis: tangent - derivative, area, volume - integral.

The emergence of differential geometry is attributed to the 18th century. and associated with the names of L. Euler, H. Monge. In their works, issues of differential geometry were studied, for example: the curvature of the normal section of the surface and its dependence on the cutting plane (Euler's formula), the properties of unfolded surfaces (H. Monge "Application of analysis to geometry", 1795). A great contribution to differential geometry was made by Gauss ("General study of curves and surfaces", 1827), who laid the foundations of the theory of surfaces in its modern form, introduced two basic quadratic forms of a surface, the internal equation of a surface, proved the theorem on the invariance of the complete curvature of a surface under bending. Since then, differential geometry has taken an independent place in mathematics.

Construction of the foundations of the theory of surfaces in three-dimensional Euclidean space was completed by E3 in the 19th century. Peterson, who established the necessary and sufficient conditions for two quadratic shapes to define a surface with precision to a position in space. A characteristic feature of all studies is a local point of view: each geometric image is studied in a sufficiently small neighborhood of its usual element. This section was called *classical differential geometry*.

The subject of modern geometry, along with the forms and relations of bodies of ordinary space, are also other forms and relations taken from reality, by maximal (mathematical) abstraction, having a structure similar to the structure, forms and relations of bodies of ordinary space. These or other sets of objects, the relations between which are described by systems of axioms, have been called generalized or abstract spaces, and the study of these spaces and the objects specified in them constitutes the content of geometry in the modern sense of the word. Thus, modern differential geometry is the science of generalized spaces constructed on the basis of classical geometry and studied using the apparatus of differential calculus.

A significant contribution to the further development of differential geometry was made by the German mathematician Riemann, who proposed a generalization of the concept of internal geometric surfaces, and the French mathematician Cantor, who created the method of external forms, which makes it possible to investigate from a geometric point of view systems of equations that describe a large class of geometric objects.

Recently, methods of group theory, algebra, topology, and functional analysis have been used in research.

Analysis of recent research and publications.

In the 20th century, the issues of studying and teaching students of differential geometry were dealt with by A.D. Aleksandrov, M.Ya. Vyhodskiy, P.S. Modenov, A.P. Norden, P.K. Rashevskiy, A.L. Werner, B.E. Kantor, S.P. Finikov, O.V. Pogorelov, M.I. Kovantsov, O.A. Borysenko, S.P. Novikov, A.S. Mishchenko, Yu.P. Solovyov, A.T. Fomenko, O.V. Manturov, M.M. Postnikov, M.V. Vasylieva, V.P. Yakovets, V.P. Borovyk, T.V. Lomaeva et al.

The subject of study of the educational discipline "Differential Geometry and Topology" is geometric images, primarily curves and surfaces, as well as families of

curves and surfaces in Euclidean space by methods of mathematical analysis, metric and topological spaces, mapping of topological spaces, topological manifolds, polyhedra.

The organization of the educational course "Differential Geometry and Topology" involves the active use of interdisciplinary connections with such disciplines as "Mathematical Analysis", "Analytic Geometry", "Linear Algebra", "Elementary Mathematics", "Differential Equations", "Theory of Invariants", "Physics".

Knowledge and skills acquired by students as a result of mastering the discipline "Differential Geometry and Topology", which belongs to the normative part of the cycle of mathematical, natural and scientific training of students of the Faculty of Physics and Mathematics of the NPU named after M.P. Drahomanov of the "Mathematics" direction, are used in the study of such educational disciplines as "Mathematical analysis", "Basics of geometry", "Differential equations", "Methodology of teaching mathematics in higher and secondary schools", "General physics", as well as in the study of individual sections of general and special courses in physics, mathematics, computer science and astronomy, etc.

The academic discipline program consists of three modules and five content modules:

Module 1. Differential geometry. Theory of plane and spatial curves.

Content module 1. Lines in Euclidean space.

Module 2. Differential geometry. Theory of surfaces.

Content module 2. Surfaces in Euclidean space.

Module 3. Topology. Polyhedra.

Content module 3. Topological and metric spaces.

Content module 4. Display of topological spaces.

Content module 5. Topological manifolds.

The purpose of the article. The purpose of teaching the educational discipline "Differential geometry and topology" is to teach students techniques and methods of solving differential geometry and topology problems, to develop the ability to use methods of mathematical analysis, to study the basic facts of differential geometry and topology, and to be able to apply these geometric and topological facts as in solving geometric and topological problems, as well as problems of an applied nature, researching their connection with problems and methods of differential and integral calculus, with a school geometry course.

The main tasks of studying the discipline "Differential geometry and topology" are:

1) formation of the ability to study the properties of curves and surfaces in Euclidean space by methods of mathematical analysis, namely, methods of differential and integral calculus;

2) systematization and understanding in the minds of students of acquired theoretical knowledge and their concretization in the process of solving theoretical, practical and applied problems;

3) development of students' spatial imagination in the process of solving practical problems;

- 4) mastering the basic facts and understanding the basic principles of topology and forming the ability to apply them to solving problems, including school geometry;
- 5) assimilation of key topological techniques for the study of geometric objects;
- 6) finding invariant properties of geometric and topological images and forming skills to apply them;
- 7) creation of the necessary theoretical and practical basis for further professional activity [20].

According to the requirements of the educational and professional program, students should *know*:

Basic concepts. Vector function of a scalar argument, hodograph, regular parameterization, smooth curve, normal and singular points of a curve, natural parameterization, curvature of a curve, radius and center of curvature, natural equation of a curve, circumscribing families of curves, involute and involutes of a plane curve, asymptotes of plane curves, torsion of a curve, accompanying Frenet trihedron, tangent line, principal normal, binormal, normal plane, contact plane, reference plane, natural equations of a spatial curve. Vector function of two variables, smooth surface, tangent plane and normal to the surface, normal section of a surface, coordinate lines on a surface, first quadratic form of a surface, second quadratic form of a surface, normal curvature of a curve on a surface, principal curvatures of a surface, mean and Gaussian curvatures of a surface, tangent paraboloid, geodesic curve, geodesic lines, geodesic triangle.

Metric, metric space; open and closed sets in metric space; interiority, closure and limit of a subset; convergent sequences in metric space; topology; topological space; topological environment; comparison of topologies; discrete topology; antidiscrete topology; metric-induced topology; subspaces of the topological space; closed sets in topological space; convergent sequences in topological space; axioms of separability; Hausdorff topological spaces; axioms of countability; topology base; separable topological spaces; metric outer topological spaces; normal topological spaces. Display of topological spaces; continuity of mapping of topological spaces at a point and "as a whole"; homeomorphism; topological properties; connectivity; compactness; components of topological space, linear connectivity; topological dimensionality, Hausdorffness; inherited topological properties. Locally Euclidean topological space; dimensionality of the topological space; n-dimensional topological manifold; edge of multispecies; Möbius sheet; torus; Klein's bottle; model surfaces; pens, tubes, films; multispecies orientation; spheres with handles; spheres with holes; spheres with films; triangulation; cellular divisions of surfaces; Euler characteristic of the manifold; regular polyhedra; surface sweeps.

Basic formulas and theorems. Formulas for differentiation of scalar, vector and mixed products of vector functions of a scalar argument. The formula for calculating the arc length of a smooth line. Formulas for calculating the twist and curvature of spatial and flat lines in natural and arbitrary regular parameterization. Formulas of the elements of the accompanying Frenet trihedron. Frenet's formulas. Formulas of involute and involute of plane curves. Equations of the tangent line, principal normal and

binormal. Equations of tangent, normal and directional planes. Natural parametrization of a smooth curve. Natural equations of a spatial curve and natural equation of a plane curve. Formulas for differentiating a vector function of two variables. The formula for calculating the arc length of a curve on a smooth surface. Formula of the first quadratic surface form. Formulas for calculating the coefficients of the first quadratic shape of the surface for different ways of specifying it. Formulas for finding the lengths of coordinate lines on the surface. The formula for finding the angle between curves on a surface. The condition of orthogonality of lines on the surface. The formula for finding the angle between coordinate lines on the surface. The condition of orthogonality of coordinate lines on the surface. The formula for calculating the surface area. Formulas for finding the normal curvature of a curve lying on a surface. The formula of the second quadratic form of the surface. Formulas for calculating the coefficients of the second quadratic shape of the surface for different ways of specifying it. The formula of the characteristic equation of the surface. Formulas of average and Gaussian surface curvatures. Peterson-Mainardi-Kodazzi formulas. Properties of open and closed sets in metric space. Properties of interiority, closure and limit of a set. Theorem on the structure of a topological subspace. Theorems on the structure of the boundary and interior of a set of topological space. Properties of Hausdorff spaces. Criterion of metrization of topological space. Criterion of continuity of mappings of topological spaces "as a whole". Properties and signs of continuous mappings. Properties of homeomorphisms. Connectivity criterion. Connectivity component properties. Properties of compact topological spaces. Criterion of compactness in Euclidean spaces. Criterion of homeomorphism. Theorem on topological classification of one-dimensional manifolds. Theorem on topological classification of two-dimensional manifolds. Euler's formula. Theorem on the classification of topologically regular polyhedra.

Students should be **able to**: calculate the arc length of a line. Go to the natural parametrization of the smooth curve. Find the equations of the elements of the accompanying Frenet trihedron. Investigate and classify special points of a plane curve. Find the equation of a contour one-parameter family of plane curves. Find the equation of the asymptotes of plane curves. Perform general research and construction of flat curves. Calculate curvature and torsion of spatial and plane curves. Find the natural equations of the spatial curve. Differentiate a vector function of two variables. Calculate the length of the arc of a curve on a smooth surface. Find the first quadratic form of a surface or a linear element of a surface or a Riemannian metric. Calculate the coefficients of the first quadratic form of the surface for different ways of specifying it. Find the lengths of coordinate lines, the angle between curves, the angle between coordinate lines on the surface. Calculate the surface area. Find the normal curvature of the curve lying on the surface. Find the second quadratic form of the surface. Calculate the coefficients of the second quadratic form of the surface for different ways of specifying it. Use the characteristic equation of the surface for its study. Calculate the average and Gaussian curvature of the surface. Determine the types of points on the surface. Check the fulfillment of the axioms of topological and metric spaces. Metrize the basic

set in different ways, check the equivalence of metrics. Topologize sets in different ways, compare topologies. Investigate the convergence of sequences in topological and metric spaces. Classify points by their position relative to a fixed set. Check the continuity of the display at the point. Check the continuity of the display "as a whole". To prove homeomorphism (non-homeomorphism) of topological spaces. Calculate the topological dimension of subsets of the topological space. Investigate topological spaces and their subspaces for compactness, connectivity, linear connectivity, Hausdorffness. Determine the topological dimension of a manifold. Calculate the Euler characteristic of a manifold. Establish topological equivalence (non-equivalence) of one-dimensional and two-dimensional manifolds.

These knowledge and skills ensure the formation of the following competencies:

- basic ideas about the variety of geometric objects, understanding the meaning of the unity of geometry as a science, its place in the modern world and the system of sciences;
- mastery of methods of description, identification, classification and definition of geometric objects;
- the ability to apply basic analytical, geometric methods and methods of mathematical analysis, in particular differential and integral calculus, to the creation, analysis and research of mathematical models of real objects, processes and phenomena;
- the ability to apply modern information technologies to solve theoretical, practical and applied problems;
- basic ideas about the history of the development of differential geometry;
- ability to analyze educational and methodical literature on the discipline;
- ability to apply acquired theoretical knowledge in solving practical problems;
- the ability to use previously acquired knowledge when studying new theoretical material and solving practical problems;
- the ability to conduct deductive justifications of the correctness of solving problems and to look for logical errors in incorrect deductive reasoning;
- the ability to find invariant quantities, invariant elements and invariant properties and apply them in further research;
- the ability to use mathematical and logical symbols in practice.

The experience of teaching differential geometry to future teachers of mathematics, physics, and computer science shows that in order to increase the effectiveness of the initial process in this discipline, it is advisable to consider not only geometric characteristics and their properties, but also to explain and illustrate their geometric and physical meaning, demonstrate their use in solving applied problems in physics. Such a combination and interaction of these two manifestations turns out to be quite productive and makes it possible to create general methods of solving problems of different content.

So, for example, when studying special points of plane curves, students should pay attention to the fact that each curved line is a mathematical representation of the evolution of a mathematical object or describes some physical process. Stationary

moments of development correspond to the usual points of the curve, but every physical phenomenon has moments of sharp qualitative change (shocks) - a transition to a new state. Special points correspond to these moments on the curve [7].

When finding the tangent to the curve γ at any point, students should pay attention to the fact that the direction vector of the tangent to the curve γ is determined by the first derivative and is the velocity vector at that point [3].

When studying the natural parameterization of a curve, taking into account the fact that the length of a smooth curve does not depend on the parameter t , we can choose the parameter t so that the norm of the velocity vector will be equal to unity at any of its points, and we will call this parameter t the natural parameter for smooth curve γ . If the curve γ is given by a natural parameter, then at each of its values the velocity and acceleration vectors are orthogonal.

When finding the geometric invariants of a spatial curve, namely the length of the arc, curvature and twist, which completely determine the curve and are themselves determined by the curve, it should be noted that each of these invariants does not depend either on the position of the curve in space, or on which parameter is assigned curve, and consider their kinematic interpretation. Namely, the *kinematic interpretation of curvature*: the curvature of a curve is the instantaneous angular speed of rotation of the tangent at a given point. The curvature vector is always directed in the direction of the concavity of the curve. *Kinematic interpretation of twist*: absolute twist is the instantaneous angular velocity of rotation of the binormal at a given point. *Kinematic interpretation of the sign of torsion*: if we imagine an observer at the considered point looking at the normal plane of the curve from the end of the tangent vector at this point, then he will observe the instantaneous rotation of this plane around the tangent line against the clockwise movement (i.e., positive movement), when the torsion is positive at this point, and clockwise (negative motion) when the twist at this point is negative. Thus, it can be concluded that the curvature and twist of the curve are kinematic characteristics of this movement [20].

When considering the natural equations of a spatial curve, the attention of students should be focused on the fact that the natural equations define the curve unambiguously, if the initial position of the Frenet frame is fixed, that is, the natural equations define the curve with the accuracy of movement in space, as well as on the fundamental feature of the natural equations of a spatial curve, which consists in the fact that they do not include coordinates, that is, they have an invariant character with respect to the choice of coordinates. In this regard, curvature and twist are called the main invariants of a curve [7].

When studying an ordinary helical line that lies on a straight circular cylinder, it is necessary to demonstrate a right-handed and a left-handed thread and analyze what it depends on [22].

Special attention of students should be drawn to the applied applications of differential geometry, which is used in the compilation of geographical maps, in calculations related to the laying of paths on the earth's surface, or the flights of spaceships, in mathematics, quantum physics, and medicine.

In order to diagnose the success of students, the following are used:

- 1) thematic written independent works;
- 2) oral surveys of students in practical classes;
- 3) written test papers;
- 4) written calculation and graphic works;
- 5) colloquium;
- 6) written test tasks;
- 7) thematic essays;
- 8) electronic presentations;
- 9) written individual tasks.
- 10) written examination tasks.

Conclusions. A system of purposefully designed problems, questions and tasks is an important condition for the development of cognitive motivation in the educational process and an effective means of developing productive heuristic thinking. By solving geometric problems, students not only actively master the content of the module, but also acquire the ability to use analogy, generalization, and think independently and creatively. Along with tasks of a reproductive nature, associated with cognitive difficulties, to overcome which new knowledge or intellectual efforts are required. Such tasks form the basis of problem-based learning, the pedagogical conditions for success of which are: creation of cognitive difficulties corresponding to the intellectual abilities of students; provision of a set of knowledge on the subject content of the problem situation; formation of operational skills for solving problematic problems. The development of non-standard thinking will be facilitated by tasks that require creative mastery of educational material.

Diversification of methodical possibilities is provided thanks to the use of multimedia learning tools, namely, showing presentations, dynamic drawings with visual prompts, using a step-by-step script for working with multi-level tasks. At the same time, the student can (or even should) perform some actions on the picture. Drawings of this type serve as a substitute for textbook fragments and are especially useful for self-training [21].

The introduction of modern information and communication technologies makes it possible to significantly increase the efficiency of obtaining and assimilating educational material, its cognitive accessibility, to take into account the individual characteristics of students, to effectively combine individual and collective activities, to give educational activities a creative, research character.

Studying the course "Differential Geometry and Topology" plays an important role in the formation of a future teacher of mathematics in a broader view of geometry, a deeper understanding of the connections between different geometric systems, the nature of geometric properties, and the possibilities of various methods of their study. Enrichment of the student's geometric culture takes place in the closest connection with the use of the apparatus of mathematical analysis, provides specific knowledge sufficient for teaching geometry and qualified group classes.

The study of the properties of geometric figures in differential geometry provides wide opportunities for their practical application, increases the competence of future teachers of

mathematics and physics and stimulates their own search for new mathematical, geometric and physical ideas and theories.

References:

1. Aleksandrov A.D., Necvetaev N.Yu. Geometriya : ucheb. posobie. M.: Nauka, 1990. 672 s.
2. Atanasyan L.S., Bazylev V.T. Geometriya. Ch. 2. M.: Prosveshenie, 1987. 352 s.
3. Borysenko O.A. Dyferentsialna heometriia i topolohiia. Kh.: Osnova, 1995. 304 s.
4. Verner A.L. Geometriya: uchebnoe posobie dlya studentov fiziko-matematicheskikh fakultetov pedagogicheskikh institutov. Ch. 2. SPb.: Specialnaya literatura, 1997. 320 s.
5. Verner A.L., Kantor B.E., Frangulov S.A. Elementy topologii i differencialnoj geometrii. M.: Prosveshenie, 1985. 112 s.
6. Differencialnaya geometriya: ucheb. posobie dlya mat. spec vuzov. I.V. Belko, A.A. Burdun, V.I. Vedernikov, A.S. Fedenko.; pod red. A.S. Fedenko. Mn.: Izd-vo BGU, 1982. 256 s.
7. Kovantsov M.I. Dyferentsialna heometriia. K.: Vyshcha shk., 1973. 276 s.
8. Kovancov N.I. Differencialnaya geometriya, topologiya, tenzornyj analiz : sbornik zadach. K.: Vysha shkola, 1989. 398 s.
9. Mishenko A.S., Fomenko A.T. Kurs differencialnoj geometrii i topologii. M.: Izd-vo Faktorial Press, 2000. 448 s.
10. Mishenko A.S., Fomenko A.T. Kratkij kurs differencialnoj geometrii i topologii. M.: FIZMATLIT, 2004. 304 s.
11. Modenov P.S. Sbornik zadach po differencialnoj geometrii. M.: Gos. uchebno-pedagogicheskoe izd-vo ministerstva prosvesheniya RSFSR, 1949. 240 s.
12. Novikov P.S., Fomenko A.T. Elementy differencialnoj geometrii i topologii. M.: Nauka, 1987. 432 s.
13. Norden A.P. Kratkij kurs differencialnoj geometrii : uchebnoe posobie. M.: FIZMATGIZ, 1958. 244 s.
14. Norden A.P. Teoriya poverhnostej. M.: GITTL, 1956. 260 s.
15. Norden A.P. Differencialnaya geometriya: uchebnoe posobie dlya ped. institutov. M.: Gosudarstvennoe uchebno-pedagogicheskoe izdatelstvo ministerstva prosvesheniya RSFSR, 1948. 215 s.
16. Postnikov M.M. Lekcii po geometrii. Semestr IV. Differencialnaya geometriya: ucheb. posobie dlya vuzov. M.: Nauka., 1988. 496 s.
17. Rashevskij P.K. Kurs differencialnoj geometrii. M.: GITL, 1956. 418 s.
18. Finikov S.P. Differencialnaya geometriya. M.: Uchpedizd., 1955. 216 s.
19. Finikov S.P. Differencialnaya geometriya. Kurs lekcij. M.: Izd-vo Mosk. un-ta, 1961. 160 s.
20. Shapovalova N. V., Panchenko L. L. Diferencialna geometriya yak skladova profesijnoyi pidgotovki majbutnogo vchitelya matematiki. Zbirnik tez konferenciyi «Metodika vkladannya matematiki v serednij ta vishij shkoli», prisvyachenoyi 75-richchyu

laureata Derzhavnoyi premii Ukrayini v galuzi nauki i tehniki, akademika Akademiyi nauk vishoyi osviti, profesora Kolesnik Tamari Vsevolodivni, 4-5 grudnya 2013 r., m. Kiyiv, Nacionalnij pedagogichnij universitet imeni M. P. Dragomanova. K., 2013. S. 23-25.

21. Shapovalova N. V., Panchenko L. L. Diferencialna geometriya u formuvanni profesijnih kompetentnostej majbutnih vchiteliv matematiki i fiziki. Naukovij chasopis Nacionalnogo pedagogichnogo universitetu imeni M. P. Dragomanova. Seriya 5. Pedagogichni nauki: realiyi ta perspektivi. Vipusk 47: zbirnik naukovih prac. Kiyiv: Vidvo NPU imeni M. P. Dragomanova, 2014. S. 300-309. URL: http://enpuir.npu.edu.ua/bitstream/123456789/8113/1/Shapovalova_Panchenko.pdf

22. Sherbakov R.N., Luchinin A.A. Kratkij kurs differencialnoj geometrii. Tomsk: izd-vo TGU, 1974. 250 s.

23. Yakovets V.P., Borovyk V.N. Kurs dyferentsialnoi heometrii: navchalnyi posibnyk. Nizhyn: NDPU, 2004. 237 s.

MEDICINE AND DENTISTRY

IMPORTANCE OF ATTITUDES AND COMPLIANCE OF CHILDREN WITH MALOCCLUSION DURING TREATMENT WITH REMOVABLE ORTHODONTIC APPLIANCES (LITERATURE REVIEW)

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Annotation. *Treatment compliance plays fundamental roles in achieving the best results in orthodontic treatment, especially in children. This review aims to analyze the multiple factors affecting children' level of compliance (how much they want to treat malocclusion, to wear removable appliances during orthodontic treatment). A literature search was conducted on electronic databases (Pubmed, Scopus, and Google Scholar). The results of the present study show that compliance during orthodontic treatment is affected by factors that are related from children (age, personality traits, attitude of parents for the treatment, the importance of personal appearance, self-perception of malocclusion), appliance-related factors (visibility, pain/discomfort), and clinician-related factors (trust, clear and complete communication, motivation). Compliance is a key factor for treatment with removable appliances that is very important to achieve a good result. It's important to influence on the children with the lack of cooperation and to increase compliance in order to maximize the treatment's results. There is a growing trend towards the use of telemedicine in modern orthodontic practice, that increases efficiency and allow orthodontist to monitor each case and focus on the most important goals for each patient.*

Keywords: *children, malocclusion, compliance, removable orthodontic appliances, cooperation.*

The WHO considers malocclusion one of the most important oral health problem, after caries and periodontal disease. Its prevalence is highly variable and is estimated to be between 39 % and 93 % in children and adolescents. This prevalence range is very wide and heterogeneous. This inhomogeneity may be due to ethnic and age differences of patients considered in studies, assessing the prevalence of malocclusion [7].

Creation of a beautiful smile is an important goal in orthodontic treatment because optimal esthetics is the main reason for most adult patients seeking orthodontic treatment, as well for children [20].

Removable orthodontic appliances are commonly used for correction of jaw position and relations, correction of jaw-size discrepancies and simple orthodontic tooth movements due to their low cost and optimal efficacy for early preventive or therapeutic

orthodontic procedures in children [2]. Removable appliances mainly include functional, functional-acting and mechanical-acting appliances, removable temporary prosthetics with artificial teeth in the case of premature loss of the primary teeth for holding space. Removable orthodontic appliances are also used in orthodontic maintenance phase after completion of fixed orthodontic treatment [16].

However, one major drawback of removable appliances is the necessity of their use for a sufficiently long period of time on a daily basis, which leads to complications such as unfavorable feeling of presence of a foreign object in the mouth, feeling tightness in the mouth, soft tissue traction, pressure on the mucosa, tongue displacement, and dental pain, which can all compromise patient cooperation and compliance of the appliance, and consequently treatment compliance [10, 14].

These problems can also impair the correct speech, especially in the first days of wearing the appliance, increase salivation, and cause embarrassment for the patients [3]. Moreover, impaired speech and visibility of the appliance can negatively affect the self-confidence of patients in social encounters [12, 22], sometimes may cause the bullying among children.

In order to achieve successful treatment outcomes, clinicians have to obtain patients' compliance. Patient cooperation, compliance and motivation play fundamental roles in the outcome of orthodontic treatment. Absence of any of these parameters can compromise the treatment success, prolong the treatment course, and lead to dissatisfaction of orthodontist and patient [11]. Psychologic development during the preadolescent and adolescent stages may influence the child's motive for, understanding of, and adherence to treatment regimens. In a study [21] questionnaires were completed by 75 children (mean age 10.85 years) and their parents for estimation of some personality characteristics, motives, and aesthetic values of young phase I patients. Children's perceived reasons for treatment were consistent with their parents' reports; most were referred for crowded teeth (56%) and overbite (17.3%). Although body image and self-concept scores were within the normal range, both children and their parents expected the most improvement in self-image and oral function, with greater expectations by parents on self-image, oral function, and social life than children themselves. Although white and minority children were similar in their self-ratings and expectations from orthodontics, the former were more critical in their aesthetic judgments. They rated faces with crowded teeth, overbite, and diastema more negatively than did ethnic minorities. These results suggest that younger children are good candidates for Phase I orthodontics, have high self-esteem and body-image, and expect orthodontics to improve their lives.

In orthodontics, patients' cooperation is required throughout every phase of the therapy. Children that are going orthodontic treatment depending on different age can face the treatment in different ways: it seems that there is a compliance reduction with the increase in age—from middle childhood to early adulthood. It has been observed that patients in middle childhood (6–8 years) are more compliant than adolescents (12–15 years) and early adults. A total of 30 patients were fitted with either a class 2 (Frankel or bionator) or a class 3 (face mask) removable appliance, each bearing a compliance

indicator chip, and they were instructed to wear them for 13 hours per day. Compliance was monitored by means of the sensor for an average of 8 months. Of the all patients, 14 were informed that their appliance was fitted with a monitoring sensor, and 16 were not. The psychological maturity of all patients was assessed on the Nowicki-Strickland Locus of Control Scale, and the effect on compliance of this score as well as the patient- and treatment-related variables considered were determined via statistical analysis Results: The mean compliance recorded by the chips was 8.6 hours, far lower than the 13 hours prescribed, and younger patients showed significantly greater compliance than adolescents.. However, no significant differences in compliance were found between intra- and extraoral appliances, and neither gender, psychological scores, treatment duration, nor awareness of being monitored had any significant effect. So, the authors established that compliance is generally very poor in young patients, regardless of their gender and psychological maturity. Although awareness of monitoring does not appear to boost compliance, such systems may be a valuable means of providing a dentist with objective information regarding their patients' compliance [4]. Compliance is influenced by different factors in each of these life periods: during middle childhood, the “parent–child” bond is central and has a strong impact on treatment motivation. Since a child is not aware enough of his/her appearance, parents and caregivers pay attention to the patients' needs, including orthodontic treatment.

Evidence shows that compliance of orthodontic appliance, compliance with its use and tolerating the associated hardship and complications by the patient depend on the severity of malocclusion for the correction of which, the patient has sought orthodontic treatment [5].

Time-dependent patient compliance is especially important in treatment with removable appliances. Compliance has an unpredictable pattern over time but may be increased by clinical intervention. Designing a simple system for prediction of the compliance of removable orthodontic appliance by patients prior to the treatment onset can be helpful because patients do not usually comply with the recommended daily usage of the appliance and often exaggerate when reporting the duration of use [1, 17].

All types of orthodontic treatment require some degree of compliance, but functional removable appliances (FRAs) that are used by orthodontists during the growth spurt to correct mandibular retrognathia and help to stimulate mandibular growth can only succeed with optimal compliance. Better profile esthetics, along with improved function, is the main goal of functional treatment, but success and long-term stability A prospective clinical study was conducted with 30 patients between 10 and 15 years old who were equally divided into two study groups. Group 1 was treated with monoblock, and group 2 was treated with twin-block appliances. The patients were instructed to wear their appliance for 15 hours per day. Wear times were monitored by a microsensor. (TheraMon; MCTechnology, Hargelsberg, Austria) for an average of six appointments. Patients were also instructed to record their wear times on a chart, and this record was admitted as subjective wear time. The mean wear time by the patients was 10.67 hours, which was less than the 15 hours prescribed by the orthodontist, with no difference between the two

appliances. The regular use rate, which included the days with a wear time of 8 hours or more per day, was 75 %. Compliance levels decreased by 35% throughout the six control appointments. Patients declared that their wear time was more than their objective wear time by an average of 3.76 hours [6].

The most effective thing that an orthodontist can use while treating a child with occlusal changes is the dominant role of the parents. The family is the closest socium, which determines what will be the impact on the child of all other social factors, so the cooperation of the doctor with the parents is an obligatory part of orthodontic treatment. Therefore, the success of orthodontic treatment depends on the readiness and ability of parents to follow doctor's prescription and on their active participation in treatment [9]. Exploring the psychological and personal characteristics of patients is a practical method for prediction of their willingness and level of motivation to undergo orthodontic treatment and comply with it, because a number of personal qualities affect daily decision making. By assessment of personality characteristics, orthodontists can predict the patients' reaction and compliance with different treatment plans [11].

Studies on the correlation of personality traits with the level of compliance of orthodontic treatment are limited. The available previous studies on this topic showed that personal attitude towards oral health was an important motivation to seek orthodontic treatment and could affect patients' tolerance and compliance [15].

Children are used to cheating, declaring that they wear orthodontic appliances for more hours than the real time of wearing. There are monitoring devices that lead patients to be more realistic about their wear-time. When confronted with the objective and real measurement of the wear-time of the removable appliances, patients start to provide more accurate subjective estimations, with better transparency about their behavior, which may help in understanding possible failures of the treatment. If patients are informed that their wear-time is recorded, they tend to be more compliant but still wear the appliances for a shorter period than that prescribed by the given instructions.

To determine the attitude of young patients to removable appliance wear times, wear-time instructions and electronic wear-time measurement 140 patients (mean age 11.97 years) undergoing orthodontic treatment with removable appliances were asked about their wishes concerning wear times and wear-time instructions in a questionnaire. Analysis of the questionnaire investigation according to gender revealed that the majority of the respondents preferred wearing their appliances overnight only, and that they did not want their practitioners determining the length of the appliance wear. It was revealed the gender-specific differences in the acceptance of wear times as determined by the dental practitioner, which were accepted by 58 % of the girls but only 28 % of the boys. Willingness to wear a removable appliance increased markedly when the orthodontic objectives included offering patients the prospect of an improvement in their appearance from wearing a removable appliance. A recently-developed removable appliance with an integrated microsensor on the market that provides an objective measure of appliance wear times would only be worn without reservations by about 21 % of boys and 32 % of girls, 41-45 % of the respondents only agreed to treatment using this kind of microsensor

provided the treatment period would be thereby shortened [18].

A broad spectrum of colors for removable appliances, intended to optimize acceptance of treatment and patient cooperation, have been available on the dental market for years. The study included 117 children (55 girls and 62 boys) who were treated with active removable plate or functional appliances. All patients were offered to choose from 11 different colors, which were pooled into six groups (black, blue, green, yellow, pink, red) for analysis, or to combine any two to four colors ("multicolored" group) for their appliances. All appliances featured a built-in microsensor (TheraMon; MC Technology, Hargelsberg, Austria) for objective wear-time tracking. It was revealed that the longest median wear times were recorded in the blue and green groups (approximately 11 h/d) and the shortest ones in the red and pink groups (approximately 9 h/d), but they were not significantly influenced by the patient-selected colors. The median wear times involved an age-related decrease by 0.56 h/y that was statistically significant. No gender-specific patterns of wear behavior were observed. So the investigators found out from their research that patient-selected colors for removable appliances can presumably improve acceptance of treatment, but they are not associated with statistically significant improvements in wear time or wear behavior [19].

High levels of compliance (such as better attendance, accurate appliance wear-times, and good oral hygiene) are associated with the increased efficacy and effectiveness of orthodontic treatment. Li et al. reported that messaging apps such as WhatsApp (WhatsApp Inc., Mountain View, CA, USA) and WeChat (Tencent Holdings Limited, Shenzhen, China) have an impact on improving patients' compliance, especially among adolescents, and on reducing the duration of orthodontic treatment (DOT) [14].

There is such the term "Teledentistry"—the use of digital tools (diagnostic imaging, software, and devices) for diagnosis, follow-ups, and telecommunications in dentistry. Sharing digital information, data, graphics, and photos for clinical care using technology (computers, smartphones, apps) represents an alternative and very innovative method to deliver dental care. In the research [18] eighty dentists (25–60 years old) and eighty patients (12–50 years old) of both genders, undergoing an orthodontic treatment were enrolled in this multicenter university and private practice-based cross-sectional study. Half of the dentists were orthodontists; the other half were general dentists with a special interest in orthodontics. Two different questionnaires were used to evaluate doctors' perceptions and patients' perceptions, investigating their attitudes towards telemonitoring and their opinion regarding its usefulness. The patients in this study showed a more positive attitude towards telemonitoring compared to the doctors. Both patients and doctors judged telemonitoring positively, considering it a technologically advanced tool able to increase the perception of quality and accuracy of the treatment. Patients and doctors seem to be interested in reducing the number of in-office visits, but not all of them revealed to be ready to invest more money and time in it.

Telecommunication in dentistry is a valid tool for the clinician, who can better educate and guide the patient through the therapy with advice, warnings, and reminders for hygiene or time wearing. Additionally, it constantly controls the integrity of appliances,

making earlier diagnoses of vestibular cavities (the evidence suggested the effectiveness of this approach in decreasing the incidence of white spot lesions during the first year of treatment with multibracket appliances) [1]. It can also detect irregularities and mistakes in the treatment process. It is also a valid tool for patients, who can solve some doubts by simply sending a WhatsApp message to consult the dentist.

Conclusions. So, treatment compliance plays fundamental roles in achieving the best results in orthodontic treatment, especially in children. The results of the present study show that compliance during orthodontic treatment is affected by factors that are related from children, appliance-related factors and clinician-related factors. Compliance is a key factor for treatment with removable appliances that is very important to achieve a good result. It's important to influence on the children with the lack of cooperation and to increase compliance in order to maximize the treatment's results. There is a growing trend towards the use of telemedicine in modern orthodontic practice, that increases efficiency and allow orthodontist to monitor each case and focus on the most important goals for each patient, while saving chairside time and patient resources and preventing deterioration of their dental status, from which they also benefit financially, psychologically, and esthetically.

References:

1. Al-Moghrabi, D., Salazar, F.C., Pandis, N., Fleming, P.S. (2017). Compliance with removable orthodontic appliances and adjuncts: A systematic review and meta-analysis. *Am J Orthod Dentofacial Orthop*, 152(1), 17–32.
2. Al Nimri, K., Richardson, A. (2000). Interceptive orthodontics in the real world of community dentistry. *Int J Paediatr Dent*, 10(2), 99–108.
3. Al Quraini, N., Shah, R., Cunningham, S.J. (2019). Perceptions of outcomes of orthodontic treatment in adolescent patients: a qualitative study. *Eur J Orthod*, 24(3), 294–300.
4. Arreghini, A., Trigila, S., Lombardo, L., Siciliani, G. (2016). Objective assessment of compliance with intra- and extraoral removable appliances. *Angle Orthod*, 87, 88–95.
5. Cardoso, C.F., Drummond, A.F., Lages, E.M., Pretti, H., Efigênia, F. Ferreira, E.F., Abreu, M.H. (2011). The Dental Aesthetic Index and Dental Health Component of the Index of Orthodontic Treatment Need as tools in epidemiological studies. *Int J Environ Res Public Health*, 8, 3277–86.
6. Cansın, K., Hülya, K., Gülşilay, S. (2021). Comparison of objective wear time between monoblock and twin-block appliances measured by microsensor. *Angle Orthod*, 91(6), 749–755.
7. Cenzato, N., Nobili, A., Maspero, C. (2021). Prevalence of Dental Malocclusions in Different Geographical Areas: Scoping Review. *Dent. J.*, 9, 117 7. <https://doi.org/10.3390/dj9100117>.
8. Dalessandri, D., Sangalli, L., Tonni, I., Laffranchi, L., Bonetti, S., Visconti, L., Signoroni, A., Paganelli, C. (2021). Attitude towards Telemonitoring in Orthodontists and Orthodontic Patients. *Dent. J.*, 9, 47.

9. Durka-Zajac, M., Mitus-Kenig, M., Wozniak, K. et al. (2014). Perception of discomfort and pain as a result of orthodontic treatment. Abstracts 90th Congress European Orthodontic Society. Warsaw, SP18.
10. Johnson, P., Cohen, D., Wheeler, T., Aiosa, L., Mcgorray, S. (1998). Attitudes and compliance of preadolescent children during early treatment of Class II malocclusion. *Clin Orthod Res*, 1(1), 20–8.
11. Hansen, V., Liu, SS-Y., Schrader, S.M., Dean, J.A., Stewart, K.T. (2013). Personality traits as a potential predictor of willingness to undergo various orthodontic treatments. *Angle Orthod*, 83(5), 899–905.
12. Kazanci, F., Aydoğan, C., Alkan, Ö. (2016). Patients' and parents' concerns and decisions about orthodontic treatment. *Korean J Orthod*, 46(1), 20–6.
13. Lena, Y., Bozkurt, A.P., Yetkiner, E. (2017). Patients' and Parents' Perception of Functional Appliances: A Survey Study. *Turk J Orthod*, 30(2), 33–41.
14. Li, X., Xu, Z.-R., Tang, N., Ye, C., Zhu, X.-L. (2015). Effect of intervention using a messaging app on compliance and duration of treatment in orthodontic patients. *Clin. Oral Investig*, 20, 1849–1859.
15. Marques, L.S., Pordeus, I.A., Ramos-Jorge, M.I., Filogônio, C.A., Filogônio, C.B., Pereira, L.J., Paiva, S.M. (2009). Factors associated with the desire for orthodontic treatment among Brazilian adolescents and their parents. *BMC Oral Health*, 9, 34.
16. Littlewood, S., Tait, A., Mandall, N., Lewis, D. (2001). Orthodontics: the role of removable appliances in contemporary orthodontics. *Br Dent J*, 191(6), 304–10.
17. Sarul, M., Lewandowska, B., Kawala, B., Kozanecka, A., Antoszevska-Smith, J. (2017). Objectively measured patient cooperation during early orthodontic treatment: Does psychology have an impact? *Adv Clin Exp Med*, 26(8), 1245–51.
18. Schott, T.C., Göz, G. (2010). Young patients' attitudes toward removable appliance wear times, wear-time instructions and electronic wear-time measurements--results of a questionnaire study. *J Orofac Orthop*, 71(2), 108-16. doi: 10.1007/s00056-010-9925.
19. Schott, T.C., Menne, D. (2018). How patient-selected colors for removable appliances are reflected in electronically tracked compliance (wear times and wear behavior). *Angle Orthod*, 88(4), 458–464. doi: 10.2319/101617-700.1.
20. Siddiqui, T.A., Shaikh, A., Fida, M. (2014). Agreement between orthodontist and patient perception using Index of Orthodontic Treatment Need. *Saudi Dent J*, 26, 156–65.
21. Tung, A.W., Kiyak, H.A. (1998). Psychological influences on the timing of orthodontic treatment. *American Journal of Orthodontics and Dentofacial Orthopedics*, 113, 1, 29-39.
22. Zentner, A., Stelte, V., Serogl, H. (1996). Patients' attitudes and non-compliance in orthodontic treatment. *Eur J Orthod*, 18, 429.

STUDY OF THE TOXIC INFLUENCE ON THE NERVOUS SYSTEM OF LOCAL ANESTHETICS WHEN USED IN DENTAL PRACTICE

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Annotation. *During his professional activity, the dentist usually uses local anesthesia. Therefore, all dentists should have experience in the field of local anesthesia and local anesthetics. Local anesthetics have a neurotoxic effect in clinically significant concentrations. Many studies have studied the mechanism of neurotoxicity of local anesthetics, but the exact mechanism of neurotoxicity caused by local anesthetics is still not clear. In addition, it is difficult to demonstrate a direct neurotoxic effect of local anesthetics, as perioperative nerve injury depends on various factors, such as anesthetic agent, patient and surgical risk factors. This review summarizes knowledge of local anesthetic pharmacology, nerve anatomy, incidence, risk factors, and possible cellular mechanisms of local anesthetic-induced neurotoxicity.*

Keywords: *dentistry, local anesthetics, neurotoxicity.*

In a dental clinic, local anesthesia is an inevitable procedure during various dental procedures. With local infiltration and blockade of peripheral nerves, local anesthetics reversibly block the action potentials of neuronal potential-dependent sodium channels, causing local anesthesia [1]. However, local anesthetics can cause nerve damage and have a toxic effect on various types of cells [2]. In addition, cytotoxicity caused by local anesthetics is manifested in many cell types at clinically relevant concentrations [3]. However, determining the direct neurotoxic effect of local anesthetics is difficult and complex, since perioperative nerve damage can be caused by many clinical factors. The frequency of local anesthetic-induced neurotoxicity varies depending on the type of surgery, anesthetic technique, and patient-specific factors [4]. In this article, we sought to summarize knowledge about the pharmacology of local anesthetics, the prevalence and mechanisms of neurotoxicity caused by local anesthetics.

Let's start by considering the pharmacology of local anesthetics. Structurally, local anesthetics consist of a lipophilic aromatic group, a hydrophilic group and a chain of amide or ester bonds; local anesthetics are divided into aminoamide and aminoester [5]. The amide class of local anesthetics includes lidocaine, articaine, bupivacaine, mepivacaine, and prilocaine. The class of esters includes benzocaine, novocaine, dicaine and others.

The increased solubility of the drug in lipids not only increases the effectiveness, but

also ensures faster diffusion through cell membranes. For local anesthetics, it accelerates the onset of anesthesia in isolated fibers during studies *in vitro*, but it should be taken into account that other factors also come into effect clinically. For example, the inherent vasodilator properties may promote systemic absorption before the anesthetic reaches the nerve membrane. High solubility in lipids may hinder dispersion in tissue fluids and also promote sequestration in adjacent adipose tissue or myelin sheaths. In any case, fewer molecules reach the neuron membrane and the onset is delayed. Therefore, in contrast to studies of isolated fibers *in vitro*, high solubility in lipids usually slows the onset of anesthesia in clinical conditions. Administration of higher concentrations, which allow more molecules to reach the membrane and accelerate the onset of action, can compensate for this effect. Although bupivacaine and articaine is highly lipid soluble, the 4% concentration of articaine provides a much faster onset of action.

Although there are many factors that affect the amount of local anesthetic that reaches nerve fibers, the most important factor that determines the onset of anesthesia is the proportion of these molecules that are in a fat-soluble, rather than water-soluble, state. The terminal amine can exist in a tertiary form (3 bonds), soluble in lipids, or in a quaternary form (4 bonds), positively charged and making the molecule water-soluble. In order for the local anesthetic base to be stable in solution, it is prepared as a hydrochloride salt. Thus, the molecules are in a quaternary water-soluble state at the time of injection and cannot penetrate the neuron. Therefore, the time of onset of local anesthesia is directly related to the proportion of molecules that are transformed into a tertiary fat-soluble structure under the influence of physiological pH (7.4). This proportion is determined by the ionization constant (pKa) of the anesthetic and is calculated by the Henderson-Hasselbach equation.

Simply put, if a local anesthetic had a pK of 7.4 and was injected into tissue at a physiological pH of 7.4, 50% of the molecules would exist in the quaternary (cationic) form and 50% would exist in the tertiary form. Only half of the molecules will be soluble in lipids and able to penetrate the neuron. Unfortunately, the pKa for all local anesthetics is greater than 7.4 (physiological pH), and therefore most molecules exist in a quaternary, water-soluble form when injected into normal tissue. A clinical caveat is that the higher the pKa of the local anesthetic, the fewer molecules are available in their lipid-soluble form. This will delay the start. In addition, the acidic environment associated with inflamed tissues lowers their pH well below 7.4 and favors the quaternary, water-soluble configuration even more. This has been suggested as one explanation for the difficulty in trying to anesthetize inflamed or infected tissue. In such situations, for example, bupivacaine (pKa 8.1) is less desirable than mepivacaine (pKa 7.6).

Various factors affect the onset and duration of local anesthetic action. Local anesthetics are deposited extracellularly in a state of equilibrium between non-ionized and ionized forms after administration, which is influenced by the pH of the surrounding tissue and the pKa of the drug. The non-ionized form crosses the lipid bilayer of the neuron membrane and blocks potential-dependent sodium channels. There are no significant differences in pKa among local anesthetics amide class, with the exception

of bupivacaine, which has a slightly higher pKa, which leads to a slow onset of action. High solubility in lipids to some extent contributes to the onset of local anesthesia [6]. Local anesthetics with a higher degree of binding to proteins have a longer duration of action. Bupivacaine provides long-term anesthesia of soft tissues in the area of the arches and pulp of the teeth of the lower jaw [7].

In order to discuss the neurotoxicity of local anesthetics, it is necessary to become familiar with the anatomy of the nerve. Nerve fibers are surrounded by endoneurium, which is a layer of loose connective tissue and Schwann cells. The endoneurium contains glial cells, fibroblasts and capillaries of blood vessels. Several nerve fibers are collected in bundles. The bundle is surrounded by perineurium, which is a dense layer of collagen connective tissue. The peripheral nerve consists of many bundles and is surrounded by the epineurium, which is the outer layer of the peripheral nerve and contains arteries, arterioles, and veins. The epineurium acts as a blood-brain barrier and protects the nerve from local anesthetics and other chemical injuries [8].

It is difficult to estimate the actual incidence of local anesthetic neurotoxicity because many confounding risk factors lead to nerve damage over a period of time. In large prospective studies of peripheral nerve block, the rate of neurological complications with peripheral nerve block is <3%. Most of these complications are transient disturbances of sensitivity, and permanent nerve damage is rare [9]. Other studies of neurological complications with peripheral nerve blocks have shown that the risk of nerve damage is 0.02 to 0.5%. The incidence of local anesthetic neurotoxicity varies between studies, as the estimation of the frequency of local anesthetic neurotoxicity is influenced by the methods used to measure anesthesia-related neurological complications [9]. Studies have estimated that the frequency of neurological deficit is 3-5% after examining the neurological deficit 2 weeks after the brachial plexus block. However, the frequency of neurological deficit after 4 weeks is only 0.4% [10]. The risk of long-term paresthesia after the introduction of 4% articaine is higher than after the introduction of other anesthetics [11]. In addition, there were reports that 4% articaine causes neurosensory disturbances in two branches of the trigeminal nerve. Neurosensory disorders associated with 4% articaine solution are mainly associated with mandibular blocks.

Risk factors associated with local anesthetic neurotoxicity can be divided into anesthetic and patient factors.

1. Anesthesia factors. Blockade of peripheral nerves is an independent risk factor for neurotoxicity of local anesthetics [12]. On the other hand, the injection site affects the frequency of peripheral nerve damage caused by the local anesthetic. A recent study has shown that peripheral nerve damage associated with local anesthetics is most severe with intrafascicular injection and less with extrafascicular deposition. This suggests that early direct action of a high concentration of local anesthetic on the nerve may increase neurotoxicity [13].

Direct stimulation of a peripheral nerve with a needle during local anesthetic injection can cause direct perforation of the nerve and damage to the bundle and perineurium. In addition, nerve damage is affected by the size and type of needle. A needle with a long

beveled end is more likely to cause a nerve puncture, but more serious nerve damage is caused by needles with a short bevelled end. High injection pressure of local anesthetics can increase damage to peripheral nerves. Intraneural placement of the needle is indicated by high pressure at the beginning of the injection, which leads to severe damage to the bundle and persistent neurological deficit in an experiment on dogs [14].

2. Patient factors. Patients with preexisting neuropathies, such as diabetic peripheral neuropathy, Guillain-Barre syndrome, post-polio syndrome, and multiple sclerosis, are prone to nerve damage caused by local anesthetics [15]. In addition, all medical conditions affecting the microcirculation, such as peripheral vascular disease, vasculitis, smoking, and hypertension, increase the vulnerability of nerves to ischemia and lead to an increase in local anesthetic-induced neurotoxicity in the perioperative period [13].

Let's consider some cellular mechanisms of neurotoxicity of local anesthetics. Chemical damage to the nerve is caused by the toxicity of the solution or its components. Research in vitro showed that all local anesthetics have neurotoxic effects, and the degree of neurotoxicity increases depending on the concentration [16]. The concentration of local anesthetics has decreased over time, and the highest concentrations of lidocaine and bupivacaine currently used are 2% and 0.5%, respectively. Studies in which the toxicity of various local anesthetics was studied showed that lidocaine more toxic than equipotent concentrations of bupivacaine [17]. However, other studies reported no significant difference in the toxicity of local anesthetics.

The vasoconstrictor effect of local anesthetics can exacerbate nerve damage due to ischemia, and this can be further exacerbated by adjuvant administration of epinephrine. Vasoconstriction due to local anesthetics with adrenaline prolongs the effect of local anesthetics on nerves and reduces blood flow, which leads to a high risk of ischemic nerve damage [3]. After periods of ischemia, oxidative damage accompanied by reperfusion leads to neuronal damage through the initiation of apoptosis. The cellular mechanisms of neurotoxicity caused by local anesthetics are insufficiently studied. Local anesthetics have been reported in some studies to cause mitochondrial DNA fragmentation dysfunction and depletion of calcium in the endoplasmic reticulum. These processes lead to the release of cytochrome and activation of the caspase pathway, which leads to apoptosis of neurons [18]. Cellular mechanisms involved in local anesthetic-induced neurotoxicity include the intrinsic caspase, phosphoinositide 3-kinase (PI3K), and mitogen-activated protein kinase pathways. protein kinases (MAPK). The potential-dependent sodium channel, the primary target of local anesthetics, and G-protein-coupled receptors, the target for the systemic anti-inflammatory effect of local anesthetics, are unlikely to be involved in the pathophysiology of local anesthetic-induced neurotoxicity [18].

The extrinsic and intrinsic pathways of caspases play a central role in apoptosis. Scientific studies have demonstrated that lidocaine induces apoptosis through the release of cytochrome C, and lidocaine-induced apoptosis is strongly reduced in the B-cell lymphoma 2 (bcl-2) overexpressing and caspase-9 deficient Jurkat cell line. This study suggests that lidocaine induces apoptosis by activating the intrinsic caspase pathway. The internal caspase pathway is activated by the release of cytochrome and leads to

cell apoptosis. The release of cytochrome is compensated by the activation of the bcl family [19].

The PI3K family is involved in an intracellular signaling pathway that promotes cell survival, growth, proliferation, metabolism, and angiogenesis. Activation of PI3K phosphorylates and activates serine threonine protein kinase B (Akt), an enzyme for protection against apoptosis [20]. Some studies have investigated the role of the PI3K pathway in the neurotoxicity of local anesthetics. Studies have shown that pretreatment with dexamethasone significantly attenuates bupivacaine- and lidocaine -induced cell damage, prevents bupivacaine- induced reduction of mitochondrial membrane potential, and increases phosphorylation Akt. These protective effects of dexamethasone against bupivacaine- induced cell injury are inhibited by pharmacological inhibition Akt, suggesting that dexamethasone exerts a protective effect against bupivacaine- induced neuronal injury through the Akt signaling pathway [21]. In another study, lithium was shown to attenuate bupivacaine- induced seizures neurotoxicity by activating the PI3K/ Akt pathway in mouse neuroblastoma cells [22].

Experimental studies have demonstrated that lithium provides a protective effect against neurotoxicity bupivacaine by activating the extracellular signal-regulated kinase (ERK) signaling pathway. ERK is a member of the MAPK family. However, other studies have reported that inhibition of p38 MAPK or ERK has a potential therapeutic effect against a model of chronic constrictor nerve injury, metabolic injury, and excitotoxicity [23]. Haller et al. [24] showed that lidocaine -induced neurotoxicity is mediated by specific activation of p38 MAPK, but not by activation of ERK or N-terminal kinase c-Jun. In addition, the neuroprotective effect of p38 MAPK inhibitors is reduced more than 1 h after lidocaine administration, suggesting that lidocaine-induced neurotoxicity is associated with specific and time-dependent activation of p38 MAPK.

Conclusions. It is difficult to single out a specific neurotoxic effect of local anesthetics, since many factors can damage nerves in the perioperative period. In clinical settings, most nerve injuries caused by local anesthesia are transient sensory disturbances, and irreversible nerve injuries are rare. However, irreversible nerve damage can lead to death in a minority of patients with irreversible nerve damage caused by local anesthetics. Therefore, it is very important to prevent nerve damage caused by the local anesthetic. To prevent neurotoxicity of local anesthetics, intratracheal and high-pressure injections should be avoided. In addition, the lowest effective concentration, lowest effective volume, short-acting local anesthetics, and small needles are recommended.

References:

1. Nau C, Wang GK. Interactions of local anesthetics with voltage-gated Na⁺ channels. *J Membr Biol* . 2004;201:1–8.
2. Nouette-Gaulain K, Capdevila X, Rossignol R. Local anesthetic 'in-situ' toxicity during peripheral nerve blocks: Update on mechanisms and prevention. *Curr Opin Anaesthesiol* . 2012;25:589–595.

3. Cai XY, Xiong LM, Yang SH, Shao ZW, Xie M, Gao F. Comparison of toxicity effects of ropivacaine, bupivacaine, and lidocaine on rabbit intervertebral disc cells in vitro. *Spine J.* 2014;14:483–490.
4. Kessler J, Marhofer P, Hopkins PM, Hollmann MW. Peripheral regional anesthesia and outcome: lessons learned from the last 10 years. *Br J Anaesth.* 2015;114:728–745.
5. Lirk P, Picardi S, Hollmann MW. Local anesthetics: 10 essentials. *Eur J Anaesthesiol.* 2014;31:575–585.
6. Haas DA. Compendium of pharmaceuticals and specialties (CPS) 37th ed. Canadian Pharmaceutical Association; 2002. Drugs in dentistry; pp. L26–L29.
7. Haas DA. An update on local anesthetics in dentistry. *J Can Dent Assoc.* 2002; 68:546–551.
8. Moen V, Dahlgren N, Irestedt L. Severe neurological complications after central neuraxial blockades in Sweden 1990–1999. *Anesthesiology.* 2004;101:950–959.
9. Barrington MJ, Watts SA, Gledhill SR, Thomas RD, Said SA, Snyder GL, et al. Preliminary results of the Australasian regional anesthesia collaboration: a prospective audit of more than 7000 peripheral nerve and plexus blocks for neurological and other complications. *Reg Anesth Pain Med.* 2009;34:534–541.
10. Urban MK, Urquhart B. Evaluation of brachial plexus anesthesia for upper extremity surgery. *Reg Anesth.* 1994;19:175–182.
11. Hillerup S, Jensen RH, Ersbøll BK. Trigeminal nerve injury associated with injection of local anesthetics: needle lesion or neurotoxicity? *J Am Dent Assoc.* 2011;142:531–539.
12. Welch MB, et al. Perioperative peripheral nerve injuries: a retrospective study of 380,680 cases during a 10-year period at a single institution. *Anesthesiology.* 2009;111:490–497.
13. Brull R, Hadzic A, Reina MA, Barrington MJ. Pathophysiology and etiology of nerve injury following peripheral nerve blockade. *Reg Anesth Pain Med.* 2015; 40:479–490.
14. Hadzic A, Dilberovic F, Shah S, Kulenovic A, Kapur E, Zacicragic A, et al. Combination of intraneural injection and high injection pressure leads to fascicular injury and neurological deficits in dogs. *Reg Anesth Pain Med.* 2004;29:417–423.
15. Lirk P, Birmingham B, Hogan Q. Regional anesthesia in patients with preexisting neuropathy. *Int Anesthesiol Clin.* 2011;49:144–165.
16. Werdehausen R, Fazeli S, Braun S, Hermanns H, Essmann F, Hollmann MW, et al. Apoptosis induction by different local anesthetics in a neuroblastoma cell line. *Br J Anaesth.* 2009;103:711–718.
17. Sakura S, Kirihara Y, Muguruma T, Kishimoto T, Saito Y. The comparative neurotoxicity of intrathecal lidocaine and bupivacaine in rats. *Anesth Anal.* 2005;101:541–547.
18. Zhao W, Liu Z, Yu X, Lai L, Li H, Liu Z, et al. iTRAQ proteomics analysis reveals that PI3K is highly associated with bupivacaine-induced neurotoxicity pathways. *Proteomics.* 2016;16:564–575.
19. Cory S, Adams JM. The Bcl2 family: regulators of the cellular life-or-death

switch. *Nat Rev Cancer* . 2002;2:647–656.

20. King D, Yeomanson D, Bryant HE. PI3K/ Akt / mTOR pathway as a novel therapeutic strategy in neuroblastoma. *J Pediatr Hematol Oncol*. 2015;37:245–251.

21. Ma R, Wang X, Lu C, Li C, Cheng Y, Ding G, et al. Dexamethasone attenuated bupivacaine-induced neuron injury in vitro through a threonine-serine protein kinase B-dependent mechanism. *Neuroscience*. 2010;167:329–342.

22. Wang Z, Shen J, Wang J, Lu T, Li C, Zhang X, et al. Lithium attenuates bupivacaine-induced neurotoxicity in vitro through phosphatidylinositol-3-kinase/threonineserine protein kinase B- and extracellular signal-regulated kinase-dependent mechanisms. *Neuroscience* . 2012;206:190–200.

23. Park JY, Kim EJ, Kwon KJ, Jung YS, Moon CH, Lee SH, et al. Neuroprotection by fructose-1,6-bisphosphate involves ROS alterations via p38 MAPK/ERK. *Brain Res* . 2004;1026:295–301.

24. Haller I, Hausott B, Tomaselli B, Keller C, Klimaschewski L, Gerner P, et al. Neurotoxicity of lidocaine involves specific activation of the p38 mitogen- activated protein kinase, but not extracellular signal-regulated or c- jun n-terminal kinases, and is mediated by arachidonic acid metabolites. *Anesthesiology*. 2006;105:1024–1033.

GEOGRAPHY

CULTURAL LANDSCAPES OF THE INTERZONAL GEOECOTON «LISOSTEP-STEP» OF THE RIGHT BANK OF UKRAINE

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Annotation. *The scale and depth of the crisis of modern man-made civilization stimulate an active search for scientific foundations for a way out of this situation. As a result, the importance of scientific areas that provide an opportunity to deeply understand the connection between existing cultures and nature is growing significantly. Among such scientific directions, in particular in landscape science, which is formed at an interdisciplinary level, is the study of cultural landscapes. Its potential made it possible to offer specific ways of harmonizing the relationship between man and nature, culture in its spiritual dimensions, and man-made civilization, taking into account the experience of our ancestors. The study of cultural landscapes is of particular importance for such peculiar regions as interzonal geoecotones, which play a significant role in the functioning of any society.*

The interzonal «forest-steppe-steppe» geoecotone of Ukraine, including the southern part of the forest-steppe and the northern steppe, at one time became a place of collision of two civilizations: European agricultural and Asian nomadic, and its conditions influenced anthropogenesis. This resonates with F. Turner's «frontier» theory. Since ancient times, the inhabitants of the interzonal geoecotone «forest-steppe» of Ukraine have been on the edge of the frontier, on the edge of the confrontation of civilizations, making a choice of one or another way of life. The advance of the frontier deep into the continent led to a constant distance from European influences and, repeatedly dooming itself to destruction, the formation of specific anthropogenic landscapes, among which cultural ones occupy a prominent place. 7 stages of the development of the «forest-steppe» geoecotone are distinguished: pre-Scythian (up to the VII century BC), Scythian (VI century BC-VII century AD), Kievan Rus (VIII-XIII century), popular colonization (XIV-XVIII centuries), initial agricultural and industrial development (XIX-early XX centuries), Soviet (20-80s of XX century) and modern stage (90s) 20th-early 21st century). Today, separate territories of the interzonal geoecotone «forest-steppe-steppe» of the Right-Bank Ukraine turned out to be an arena of brutal struggle between European and Russian civilizations,

and the tendency of confrontation between two worlds and two worldviews will continue in the future.

Keywords: *Ukraine, interzonal geocotone, «forest-steppe – steppe», frontier, stages, civilization, anthropogenization, cultural landscapes.*

Relevance of the research topic. The study of globalization processes led to the need to formulate basic methodological principles, transcription of new epistemological provisions of various philosophical theories on specific geographical structures. Among their many unique geographical formations are geocotones, specific forms of organization of the interaction of all types of movement of matter, manifested through the interaction of geographical, biological and social objects of different levels of the systemic organization of the world structure (Sytnyk, Kravtsova, Andreev, Denysyk, Bezlatnia, 2022)

Geocotones play a special role in the processes of formation of nations and nationalization of territories, their ethnic homogenization and elimination of intermediate zones have become important tasks of ethnic nation-states. The population on one side was demonstrably separated from the population on the other side, which had a different citizenship, and often belonged to other ethnic or religious groups.

The interzonal «forest-steppe-steppe» geocotone of Ukraine, including the southern part of the forest-steppe and the northern steppe, at one time became a place of collision of two civilizations: European agricultural and Asian nomadic, and its conditions influenced anthropogenesis. This echoes the theory of the "frontier" (frontier) of the American historian F. Turner (the concept of a dynamic moving border), which passed along the border of free lands between "barbarism" and "civilization" and justified the development of society on the border in the confrontation of civilization with barbarians. Since ancient times, the inhabitants of the interzonal geocotone "forest-steppe" of Ukraine, especially its right-bank part, have been on the edge of the frontier, on the edge of the confrontation of civilizations, making a choice of one or another way of life. The advance of the frontier deep into the continent led to the constant distancing of the population from European influences and repeatedly doomed it to destruction, the formation of specific anthropogenic landscapes, among which cultural ones occupy a prominent place.

Analysis of previous studies. An analytical review of domestic and foreign scientific publications devoted to the process of learning about the cultural landscape made it possible to conclude that the concept of the cultural landscape is one of the important factors in the comprehensive solution to the problem of protecting the natural and cultural heritage. The content of the concept of "cultural landscape" has evolved from any landscape that has been influenced by man to a landscape complex created as a result of the community of man and nature, within which nature and culture interact not only on the material, but also on the spiritual and mental levels (Denysyk, Bezlatnia, 2018).

In various foreign schools, the understanding of the cultural landscape is ambiguous. In the American school of cultural geography, it is an "artificial" landscape in which

culture, especially economy, plays a leading role (Sauer, 1925, 1974, Schein, 1997). Similar views are held by the Western European school of cultural geography. However, the cultural landscape is considered here as the result of society's adaptation to the landscape, and the elements of livelihood production are the cultural core (Schluter, 1920, Jaeger, 1934). Geographers and landscape scientists of Ukraine consider the cultural landscape as a type of anthropogenic landscape (M. D. Grodzynskyi (Hrodzynskyi, 2005), V. M. Pashchenko (2008), Yu. G. Tyutyunnyk (Tiutiunnyk, 2014).

Regardless of the controversies regarding the structure, limits, and criteria for assessing the cultural landscape, in general, scientists recognize it as a model of the future interaction of man and nature, an alternative to the antagonism of these two components of the modern world. The landscape science vision of the economic component in the cultural landscape provides for an appropriate set of mandatory ecological criteria: adaptation, application of resource-saving technologies, adoption of a new objective economic assessment of natural resources, etc. The presence in the process of development of the cultural landscape of two closely interrelated components of nature and culture makes it possible to use both classical and specific approaches, principles and methods in its knowledge (Bezlatnia, 2014).

Results of the research. The historical destinies of mankind are most closely connected with geocotones. Many of them played the role of the geographical environment in which new nations, new cultures, and new states were born. For such centers of civilization P.M. Savitsky at the beginning of the 20th century. the term "place of development" was proposed, which meant "the unity of the socio-historical environment and the territory occupied by it" (Savitskiy, 1927). This term was successfully and widely used by L.M. Gumilyov, developing the theory of ethnogenesis, while discovering an interesting pattern: "...the emergence of new peoples is connected with border regions"; "... a monotonous landscape area stabilizes the ethnic groups living in it, a heterogeneous one - stimulates changes that lead to the emergence of new ethnic formations (Gumilev, 2002). The analysis of the still few literary sources regarding the settlement and economic development of regional geocotones and separate field studies show that the landscape diversity of geocotones and, accordingly, cultural landscapes, significantly increases in the process of their anthropogenization. Interzonal geocotone "forest-steppe" refers to territories that are favorable for ethnogenetic processes. There are no special studies, apart from individual publications, that would directly highlight the process of inhabiting the geocotone (Denysyk, Sytnyk, Chyzh, Bezlatnia, Denysyk, Voina, 2020).

The interzonal "forest-steppe-steppe" geocotone of Right Bank Ukraine is a transitional strip between forest-steppe and steppe, which is bordered from the west and east by two significant water arteries, which are the Dniester and Dnipro rivers along with their tributaries. Its central part is occupied by the middle part of the Southern Bug River, which has been attractive to man since ancient times. The boundaries that outlined the geocotone in its natural state are now impossible to distinguish due to their

complete anthropogenicization. Presumably, even in their natural state, they repeatedly changed their spatial location, which is partially confirmed by paleolandscape studies. It is worth noting that the interzonal geocotone "forest-steppe-steppe" is distinguished by the high recreational and aesthetic potential of landscape complexes. It is no coincidence that within the boundaries of the geocotone or its surroundings are located some of the best examples of garden and park art of Ukraine: "Sophiiivka", "Veseli Bokovenki", nature reserves and national natural parks "Granite-steppe Pobuzhzhya" and others. This once again proves that interzonal geocotones have not only increased material-energy and environmental potential, but also spiritual, aesthetic and psychotherapeutic potential (Sytnyk, Bezlatnia, Valchuk-Orkusha O, Denysyk, 2022).

After analyzing numerous historical and archaeological sources, as well as cartographic materials and materials of own field historical and geographical studies, 7 stages of development of the interzonal "forest-steppe-steppe" geocotone of Right Bank Ukraine were identified: pre-Scythian (up to the VII century BC), Scythian (VI centuries BC–VII centuries AD), Kyivan Rus (VIII–XIII centuries), national colonization (XIV–XVIII centuries), initial agricultural and industrial development (XIX–early XX centuries), the Soviet (20s–80s of the 20th century) and the modern stage (90s of the 20th–beginning of the 21st century) (Sytnyk, Bezlatnia, 2016).

The number of nationalities present at one time within the boundaries of the geocotone is very significant. You can find an antipode-representative for each nationality or archaeological culture. The Scythians-Skolots disappeared from the historical arena. They were destroyed by the Sarmatians due to their excessive attachment to the ancient civilization and detachment from the life of Iranian-speaking nomads. The Antis (whose union was formed within the interzonal geocotone) clashed with the Huns, the Ulychis and Tiberians fought against the Khazars. The same Khazars opposed Kyivan Rus. It was during the reign of the first princes from the Rurik dynasty that the line of confrontation was drawn along the southern borders of Rus, again within the geocotone, where the Pechenegs and Polovtsians later appeared on the historical arena as opponents in the civilizational confrontation with the Rus. The cities of Bozhov suffered a tragic fate, destroyed by King Danylo for the choice of power and lifestyle of the Golden Horde

The long-term, active and comprehensive development of natural resources, which led to the complete replacement of natural landscapes by anthropogenic ones, led to a change in the state of the interzonal geocotone of the Right Bank of Ukraine from natural to anthropogenic status: now the geocotone is developing not on the border of two natural zones of forest-steppe and steppe, but at the junction of a forest field and fields of Ukraine. That is, it is an anthropogenic geocotone "forest-field" (Denysyk, Bezlatnia, 2018).

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beginning of the 21st century. background in the structure of anthropogenic landscapes are agricultural (field and meadow-pasture), residential and industrial, urban, road and local recreational (Denysyk, Sytnyk, Chyzh, Bezlatnia, Denysyk, Voina, 2020)

Cultural landscapes are present in the structure of all classes of anthropogenic landscapes of the interzonal geocotone "forest-field" of Right Bank Ukraine, but in small numbers and small areas. A cultural landscape that would fully meet the requirements of this status was not found in the process of field landscape studies. Separate protected landscapes (Veseli Bokovenki), cult objects and landscape complexes (separate monasteries, religious buildings with adjacent territories, manor house - Khutir Nadiya), restored fortresses, etc., only partially approach the real cultural landscape (Fig. 1).

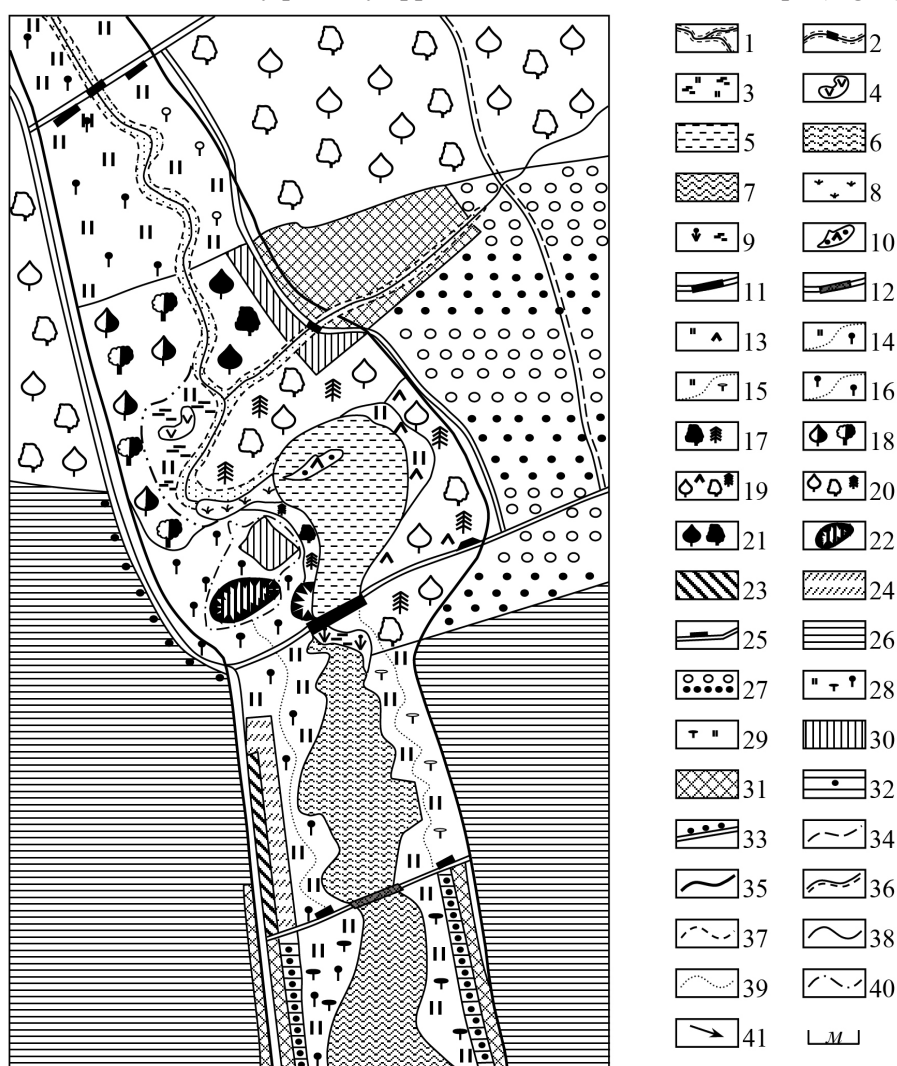


Fig. 1. Cultural landscape development project based on the Veseli Bokovenki Arboretum

The legend to fig. 1

Recreational landscapes. Recreational and educational. Floodplains Tracts: 1 – shallow (0.2-0.4 in floods up to 0.6 m), 1.2-2.5 m wide, muddy, with overwettered low (up to 0.7 m) banks, partially overgrown with swamp vegetation, Veselaya Bokovenka creek; 2 - reinforced concrete bridges, up to 4 m wide, 10-12 m long, with openwork railings, transitions and passageways; 3 – leveled, alluvial moistened floodplain with marsh depressions, meadow grasses, for individual and group walks, partially haying; 4 – shallow (1.5-2 m), 12-16 m wide, up to 80 m long, partially overgrown with reeds near the banks, old man, for individual fishing (Lake Kit). Pond and floodplains. Tracts: 5 – a deep (1.5-3.5 m) large pond for recreational fishing, swimming and water recreation on boats, catamarans and rafts; 6 – shallow (0.5-1.5 m) headwaters of the Ivanivsky pond for individual fishing, observation of wetland bird species and heliotherapy for recreationists; 7 – the lower, deep-water (2-4.5 m.) part of Ivanovsky Pond, for fish breeding (providing fish to recreationists) and partial, especially in summer, recreational use; 8 – the upper reaches of the Great Pond overgrown with reeds and sedges; 9 – the marshy and reed-covered headwaters of Ivanivsky pond, a nesting place for waterfowl; 10 – embankment, 1-2 m high above the water, with shores partially fixed with concrete slabs, island, for temporary rest of recreationists; 11 – an embankment, clay-stone dam with a reinforced concrete bridge, between Velikiy and Ivanovsky ponds, with equipped places for individual fishing; 12 – an openwork metal or wooden bridge for walks and mooring of boats and catamarans for vacationers. Slopes Tracts: 13 – sloping loess slopes with meadow soils, mostly sod, for active individual and group recreation; 14 – steep (up to 28-32°) loess slopes with granite outcrops, washed by low-humus chernozems under steppe forbs, hawthorn bushes, steppe cherry, terrain for health walks and collection of medicinal plants; 15 – steep (up to 35°) loess, with shallow ravines, partially washed chernozems under steppe forbs and forbs, shrubs for health walks, collection of medicinal plants; 16 – sloping (7-9°) loess, with granite outcrops, slopes with weakly washed chernozems with little humus under steppe forbs for individual walks, collection of medicinal plants and partial haying; 17 – steep (40-42°) loess slopes, with partially washed chernozems under oak and pine plantations for temporary rest (phytotherapy); 18 – steep (up to 40°) loess slopes, with outcrops of granite rocks, strongly washed chernozems under oak and ash plantations for walks and phytotherapy; 19 – steep (30-35°) forest, with outcrops of granite, slopes partially washed by chernozems, under derived oak-ash trees, with some exotics, forests for walks and temporary rest on equipped areas; 20 – sloping (7-12°) loess slopes with slightly eroded low-humus chernozems, under the trees of the Veseli Bokovenki Arboretum; 21 – steep (up to 20-28°) loess slopes, with partially washed chernozems, under old oak-ash elite plantations, for educational excursions; 22 – reclaimed, up to 2-3 m deep, granite quarries, with areas for rest and visual observation of nature; 23 – rural residential landscapes on sloping (3-5°) loess slopes, the functioning of which is focused on the development of green tourism; 24 – sloping (4-6°) loess slopes with weakly washed cultivated low-humus chernozems under garden crops for recreationists;

25 – road (asphalt) cultivated landscapes with recreation areas for recreationists. Agricultural landscapes. Field Watersheds. Tracts: 26 - leveled, partly undulating, loess watersheds with plowed low-humus chernozems under agricultural, mainly grain, crop rotations. Garden Watersheds. Tracts: 27 – sloping (2-3°), partially flat loess surfaces with low-humus chernozems under plantations of various types of nuts. Meadow and pasture. Slopes Tracts: 28 – steep (20-30°) loess slopes with partially eroded chernozems for grazing and partial haying; 29 – steep (up to 32°) loess slopes with eroded chernozems for grazing (28 and 29 reserve areas for expansion of recreational landscapes). Water anthropogenic landscapes. Pond and floodplains. Tracts: 30 – deep (3-5 m) lower part of the Ivanivsky pond, for breeding fish and partly for swimming (reserve of recreational landscapes). Residential landscapes. Rural Plakorno-slope. Tracts: 31 – one-, rarely two-story rural buildings mainly made of brick and adobe; 32 – sloping (3-5°) loess slopes with cultivated chernozems under garden crops. Road landscapes. Automotive. Plakorno-watersheds. Tracts: 33 – asphalted, up to 8-10 m wide, partially filled with roadside forest strips. Borders. Among the types of localities: 34 – floodplain and slope; 35 – sloped and sloped; 36 - plakorny and watershed. Tracts: 37 – natural; 38 – anthropogenic. Arboretum "Veseli Bokovenki": 39 - modern border; 40 – designed recreational and educational park "Veseli Bokovenki". Other marks: 41 – the direction of the Bokovenka River.

In the structure of residential landscapes, individual estates, ranches, parts of streets, centers of towns and cities "approach" cultural landscapes. Within the interzonal geocotone, their areas are growing slowly and over the past 25 years, the percentage of the total area of residential landscapes is only 7-12.

The percentage of cultural landscapes in the structure of sacred and religious landscapes is actively growing, especially in quantitative terms. Sometimes these are real samples, a unique combination of the wonderful architecture of the cult building with the original natural features of the interzonal geocotone. However, the study of modern sacred and sacred landscapes of any region of Ukraine focuses on their general features, classification and meaning. Regional withdrawals are almost not considered. There is even less research on their features in such complex and unique landscape structures as interzonal geocotones, where not only different landscapes, but also ethnicities and religions have been in contact for centuries (Denysyk, Bezlatnia, 2018).

By area, cultural landscapes are most widely represented in the structure of agricultural, namely field landscapes. In some areas, especially the central part of the interzonal geocotone "forest-field" of Right Bank Ukraine, field landscapes together with field-protective forest strips form a cultural agricultural landscape that meets modern requirements and can be a model for other forest-steppe and, especially, steppe regions of Ukraine. It is necessary to form cultural meadow-pasture and garden landscapes in the interzonal geocotone. The development of cultural forest and water anthropogenic, industrial and road landscapes, as well as recreational ones, is still spontaneous and does not always lead to the formation of cultural landscapes. In general, only 5–7% of the modern landscape of the interzonal geocotone "forest-field" of Right Bank Ukraine is represented by the cultural variant; the rest need radical reconstruction.

The cultural landscape must be considered not only as a peculiar, at a higher stage of development, anthropogenic landscape, but also as a rationally organized geoeological system. This system consists of natural, social and production subsystems. In the cultural landscape, the lost self-regulation is replaced by anthropogenic management, which can be "soft" and "hard". "Soft" management is the mobilization of natural opportunities of the cultural landscape, "hard" management is carried out with the help of technology. First, it is necessary to fully use the natural possibilities of the cultural landscape and only after that to rebuild its structure using technology. In this process, it is advisable to use the principle of natural and economic adaptability, the law of the necessary diversity of landscape and technical systems, the formation of the optimal ecological framework of the cultural landscape, its zoning and design (Denysyk, Bezlatnia, 2018).

From the second half of the 19th century. economic development of the territory of the interzonal geoeotone "forest-steppe-steppe" of Right Bank Ukraine was uneven: the western and central regions were mainly agricultural, the eastern - industrial-agricultural. This led to the fact that the modern landscape, not on the entire territory of the geoeotone, especially in the first case, lost the ability to self-regulate. Anthropogenic management of future cultural landscapes of the geoeotone can be "soft" (western and central regions) and "hard" - eastern regions. This is possible with the universal use of the principle of natural-economic adaptability, preservation of diversity and formation of the optimal ecological framework of the cultural landscape of the geoeotone, its clear zoning and design.

Conclusions. In the process of forming the cultural landscape of the interzonal geoeotone "forest-field" of the Right-Bank Ukraine, state aid must be focused on the development of cultural frame - residential and road, and background field, as well as forest anthropogenic landscapes; in the eastern regions, in addition to the above, cultivation of industrial landscapes deserves special attention. It is expedient to direct the economic activity of local communities to the development of residential, agricultural, water and recreational cultural landscapes, as well as the maintenance of existing and new cult objects and the territories around them in good condition (Denysyk, Bezlatnia, 2018).

In the first quarter of the 21st century, unfortunately, certain territories of the interzonal geoeotone "forest-steppe" of Ukraine turned out to be the scene of a brutal struggle between European and Russian civilizations, and the tendency of confrontation between two worlds and two worldviews will continue in the future, which will lead to the destructuring of agricultural, residential, road, sacred landscapes, significant development of belligerent and tafalny.

References:

1. Bezlatnia L. O. (2014) Poniattia «kulturnyi landshaft»: sut, sfery zastosuvannia. Naukovi zapysky Vinnytskoho derzhavnoho pedahohichnoho universytetu imeni Mykhaila Kotsiubynskoho. Serii: Heohrafiia. Vinnytsia. Vyp. 26. S. 127-132.

2. Bezlatnia L. O. (2015) Kulturnil andshafty mizhzonalnoho heoekotonu «lisopole-pole» Pravoberezhnoi Ukrainy u rozbudovi rehionalnoi ekomerezhi. Naukovi zapysky Vinnytskoho derzhavnogo pedahohichnoho universytetu imeni Mykhaila Kotsiubynskoho. Seria: Heohrafiia. Vinnytsia. Vyp. 27, № 3-4. S. 82-87.
3. Boplan H. L. (1990) Opys Ukrainy, kilkokh provintsii Korolivstva Polskoho, shcho tiahnutsia vid kordoniv Moskovii do hranyts Transilvanii, razom z yikhnyimi zvychaiamy, sposobom zhyttia i vedennia voien. Kyiv: Nauk. Dumka. 256 s.
4. Demianchuk P. M. (2005) Zakhidno-Podilske horbohiria yak heohrafichni ekoton. Rukopys: avtoref. dys... kand. heohr. nauk. Lviv: Lv. nats. un-t imeni Ivana Franka. 19 s.
5. Denysyk H. I. (1998) Antropohenni landshafty Pravoberezhnoi Ukrainy: monohrafiia. Vinnytsia: Arbat. 292 s.
6. Denysyk H. I. (2001) Lisopole Ukrainy. Vinnytsia: PP «Vydavnytstvo «Tezys». 284 s.
7. Denysyk H. I., Bezlatnia L. O. (2018) Kulturni landshafty mizhzonalnoho heoekotonu «lisostep-step» Pravoberezhnoi Ukrainy : monohrafiia. - Vinnytsia : Tvory. 235 s.
8. Denysyk H.I., Sytnyk O.I., Chyzh O.P., Bezlatnia L.O., Denysyk B.H., Voina I.M. (2020) Mizhzonalni heoekotony Ukrainy: monohrafiia / za red.: H.I. Denyska, O.I. Sytnyka. Vinnytsia. TOV «Tvory». 368 s.
9. Sytnyk O.I., Bezlatnia L. O. (2016) Zaselennia ta rozvytok form hospodariuvannia na terytorii mizhzonalnoho heoekotonu «lisostep-step» Pravoberezhnoi Ukrainy. Naukovyi visnyk Chernivetskoho universytetu : zbirnyk naukovykh prats. Vyp. 775-776 : Heohrafiia. Chernivtsi: Chernivetskyi nats. un-t. S. 101-113.
10. Sytnyk O., Bezlatnia L., Valchuk-Orkusha O., Denysyk B. (2022) Anthropogenic landscapes of the interzonal geoecones of «forest-steppe-steppe» of Ukraine as factors of its steppification. Modern Science, Prague. 2022. №3. P. 56-68.

SOCIOCULTURAL SCIENCES

STRUCTURAL-FUNCTIONAL PARADIGM IN RESEARCHING THE ACTIVITIES OF STUDENT CLUBS OF HIGHER EDUCATION INSTITUTIONS

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Annotation. *The article substantiates the application of the structural-functional approach in the cultural and leisure activities of the student club. The factors of influence of club activities on personality formation and promotion of individual accumulation of own socio-cultural experience are characterized. Emphasis is placed on the expediency of applying cultural and recreational principles that contribute to the involvement of student youth in the values of culture, ensuring equal opportunities for the implementation of creative initiatives. The principles, regularities and functions of modern cultural and leisure activities are determined. The structure, directions and forms of activity of student clubs that carry out their activities in the system of higher education institutions of Ukraine are characterized.*

Keywords: *structural-functional approach, club association; principles, regularities, functions, systematic approach, cultural and recreational activities, student club. institution of higher education.*

Formulation of the problem. The study of the peculiarities of the activity of student clubs as a subject of the organization is due to powerful transformational processes in culture and the strengthening of their role in the educational and cultural and leisure spheres of higher education institutions of Ukraine. The specifics of the formation of a student of a higher educational institution by means of cultural and leisure activities have been considered by authors in various scientific areas: the organization of student clubs (V. Tyuska, 2014; 2017; O. Tadlya, 2013, 2019 a, 2019 b, 2021; S. Hrynyova, Yu Poddubna, 2020); institutional modernization of the cultural and leisure sphere (I. Petrova, 2000; N. Tsymbalyuk, 2000); value orientations in the leisure sphere of modern youth (I. Biletska, 2009); development of forms and methods of organizing youth leisure activities (A. Denysenko, 2014; S. Savchuk, 2015); peculiarities of the socio-cultural transformation of modern Ukrainian society (E. Borinshtein, 2010); formation of leisure culture of student youth (O. Boyko, 2011; I. Oliynyk, 2013); education of leisure culture among students of higher educational institutions (Yu. Baranetska, 2017; Zhang Xiaoxing, 2017). Noting the importance of the scientific research of these scientists, it should be emphasized that there are still many unsolved questions in this problem. In particular, little attention has been paid to the current state of the use of club technologies in the general development strategies of higher educational institutions and the leisure

system of student youth. The relevance and significance of research and the solution of these issues determined the purpose of this research.

The purpose of the article is to determine the principles, regularities, functions of modern cultural and leisure activities and characterize the structure, directions and forms of activity of student clubs in the system of higher educational institutions of Ukraine.

The methodological basis of the research is empirical and systemic approaches, according to which, through the means of structural and functional analysis of the activity of the student club, the processes of the cultural and leisure sphere, which are carried out in the system of higher education institutions, are considered.

Presenting main material. The combination of structural and functional approaches in the study of cultural and leisure activities of student clubs forms a new approach, more complex in terms of its task and capabilities, which is called structural-functional. First of all, the analysis of structural elements is added to its study not only as parts of a self-sufficient structure, but also as necessary components, supplementing certain structural loads, which in science are called functions. If the structural analysis gives us the opportunity to make sure that the subject under study has an internal structure, then the functional analysis shows that all specific details of the structure also have specific functions, determining the internal and external relationships in the construction of the subject of research and its impact on the external environment. This paradigm focuses, first of all, on the study of organizational-functional, systemic aspects of the socio-cultural life of student youth. Accordingly, the sphere of cultural and leisure activities of student clubs is characterized, when considering which attention is focused on the structural elements of the construction of this subsystem of the higher education institution, and on the peculiarities of its functioning.

Thus, in accordance with the rules of applying the structural-functional approach, it is necessary to identify the appropriate structural components of the cultural and leisure activity of the student club, to establish its functions in the system as a whole, to identify the determining factors of leisure processes as an independent cultural sphere of life activities of student youth of higher education institutions.

I. Petrov (2000) considers the concept of «club activity» as «a special kind of leisure cultural activity. Its essential characteristics are the presence of interpersonal cultural communication, the satisfaction of the multifaceted needs of the individual, great opportunities for the manifestation and development of cultural self-activity, the promotion of socialization and individualization of the individual, the dynamism of development, the voluntary participation of the individual in club activities» [9, p. 16]. According to V. Tyuska (2017), «club activity in modern scientific research is considered: from the standpoint of the theory of culture – as an integral part of the spiritual culture of society, which serves to ensure and democratize it, as well as to form and establish a certain system of development and dissemination of creative values; from the standpoint of modern pedagogical science - as a socio-pedagogical system that functions in free time and is aimed at educating student youth by involving them in active creative pedagogical practice» [16, p. 260].

Thus, club activity is a sphere of organized amateur creativity, which manifests itself in collective and individual forms of leisure and directly performs certain cultural functions, outlining the systematic step-by-step development of the personality and contributing to the individual accumulation of one's own socio-cultural experience [13, p.89] (O. Tadia, 2019).

The analysis of the cultural and leisure practice of institutions of higher education confirms that club forms are components of a complete system and determine a number of relatively common patterns of their development, namely: the unity of technologies of implementation, principles, means and forms of activity and methods of its mastery. To study the specifics of the activity of student clubs, it is necessary to determine its main principles - methodological categories that characterize the essence and dialectic of the development of cultural and leisure processes, determine the functions of the activity, its mission, content and goals, reveal the regularities and laws of formation and development [18] (N .Tymbalyuk, 2005).

Analyzing the research of the Soviet period of the 20s–80s of the 20th century, it can be stated that the leading principles of the cultural and leisure activity of student clubs were: ideological, pedagogical and specific [6] (A. Denisenko, 2014). The essence of the ideological principles came down to justifying the forms and methods of cultural and leisure activities [10] (I. Petrova, 2011) for the promotion of the Soviet way of life, the popularization of the political ideas of the Communist Party and the Leninist Communist Youth Union of Ukraine (LKSMU) among student youth, anti-religious propaganda; to intensify efforts to fulfill the tasks of socialist construction and formation of public opinion. Accordingly, the following were defined as the main tasks of pedagogical principles: implementation of communist education and education of student youth; ensuring compliance of educational and educational activities with party policy; promoting the formation of a communist way of life; education in the spirit of respect and love for work; cultivation among young people of motivation to be useful to their country.

The main goal of the specific principles, which are based on self-activity, voluntariness and initiative of participants in cultural and leisure activities [12] (O. Tadia, 2013), is to satisfy the needs for recreation and entertainment, taking into account political and educational goals and objectives.

That is why in the 90s of the XX century. - a time of socio-economic, politically unstable, spiritual transformations of society - the principles developed by Soviet scientists turned out to be ineffective [4] (E. Borinstein, 2010). After a certain period of stagnation, which lasted almost ten years until the end of the 90s of the 20th century, scientists began to actively research the theoretical and methodological foundations of cultural and leisure activities [3] (O. Boyko, 2011) in the new realities of the time: cultural diversity, organization of cultural creation; priority of projects and programs; cultural-historical, socio-pedagogical and national-patriotic experience, traditions, innovations in the socio-cultural sphere.

In order to ensure the optimality of the cultural and leisure activity of student clubs and the implementation of an effective cultural policy, modern culturologists propose

to adhere to the principles that determine the directions and content of the activities of cultural and leisure institutes. We emphasize that the correlation of the principles of cultural and recreational activities depends on the change of social and political orientations in the life of the state, which leads on the one hand to the modernization and innovation of processes, and on the other hand, to the disappearance of existing norms, rules and principles of social development. Therefore, modern scientists faced the task of developing new principles that would take into account qualitative changes in modern society.

I. Biletska (2009) emphasizes not only the principles aimed at education, enlightenment, improvement of creative, professional or household skills, but also those principles that contribute to meeting the needs of the individual, in our case student youth, in meaningful leisure time, organization of various entertainment and recreational activities [2, p. 68].

Researchers of cultural and leisure activities, considering the principles as the main requirements that specialists in the cultural and leisure sphere must adhere to, single out the principles of interest, cultural communication, differentiated approach, self-activity, systematicity and consistency.

The most important among the mentioned is the principle of inseparable connection of the cultural and leisure sphere with the life activities of student youth [1] (Yu. Baranetska, 2017). It is due to the need to respond to events taking place in society and, according to the dynamics of socio-cultural development, to take into account current changes in the needs and requests of students regarding cultural and leisure services. In order to implement the principle of an inextricable link between cultural and leisure activities and society, it is necessary to observe purposefulness, continuity, efficiency and concreteness in the work of student clubs. The principle of a differentiated approach requires taking into account the personal interests and requests of student youth; the principle of self-activity involves the active participation of students in club events not only as passive observers, but as subjects of the organization; the principle of consistency is implemented by specifying the cultural and leisure activities of student clubs aimed at achieving the set goals and objectives; the systematic approach involves rational use of free time, improvement of club management of the organization in institutions of higher education. Thus, we emphasize the expediency of applying cultural and recreational principles that contribute to the involvement of student youth in the values of culture, ensuring equal opportunities for the implementation of creative initiatives, and using the cultural potential of socio-cultural activities. Having analyzed various scientific approaches, it is possible to summarize the principles of modern cultural and leisure activities: the principles of voluntariness, consolidation, goal orientation, initiative, self-activity, systematicity, partnership, openness, consistency and a differentiated approach (see Fig. 1).

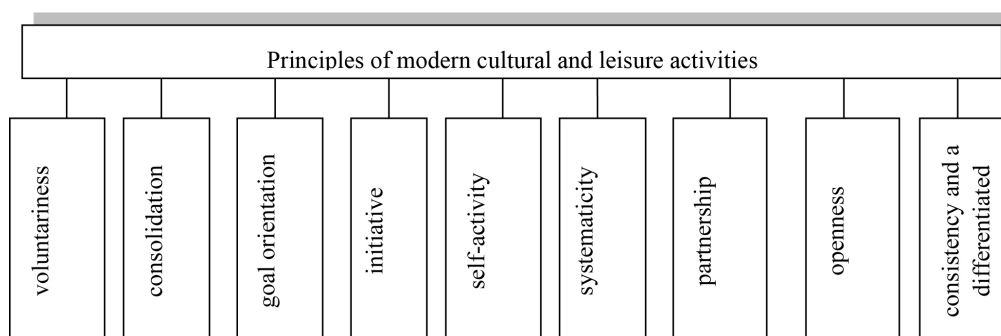


Fig. 1. Principles of modern cultural and leisure activities

Based on this, we can conclude that we consider the principles as fundamental provisions that reflect the essential features of the cultural and leisure activities of higher education institutions and form the basis of regularities, as objective, continuous, necessary connections between subjects, phenomena, and processes.

Studying the patterns of cultural and leisure activities of student clubs, we emphasize the importance of studying the dialectical connections between various cultural phenomena. This will allow us to reveal the most essential processes in the cultural and leisure sphere, to substantiate specific features in terms of leisure, higher education, artistic creativity and other spheres. At the end of the 80s of the XX century, according to O. Boyko (2011) [3], I. Oliynyk (2013) [8], S. Savchuk (2015) [11], the following five regularities should be called the main ones in the cultural and leisure sphere: 1) refusal of traditional areas of work that were carried out formally; 2) focusing on the sphere of students' free time; 3) taking into account the interests and initiatives of student youth; 4) strengthening of socio-cultural activities in institutions of higher education; 5) advantages of self-directed forms of work in student interest clubs, leisure associations, creative cultural and artistic groups. Adherence to the specified laws helps to effectively reorganize traditional and create innovative student clubs as cultural and leisure associations of higher education institutions.

Thus, the cultural and recreational activities of student youth meet the criteria of essence (direction, accessibility), quality (content, personal activity), effectiveness (mission, goal, positive emotions). This will make it possible to ensure the effectiveness of leisure culture in the activities of student clubs.

The most characteristic of the form of club activity is its humanism, democracy and voluntariness. These principles have their origins in the very organizational foundations of the student club, providing the opportunity to directly participate in cultural, artistic and leisure activities. The humanism and democracy of student clubs presupposes the recognition of each member as an absolute value. The idea of a free, integrally functioning individual in the activities of the student club also implies freedom, responsibility, harmony and the realization of creative possibilities.

Thus, the activity of the student club unfolds both as a creative process taking into

account leisure properties, abilities and qualities, and as a collective culturally and socially determined process, the leading factors of which are democracy and accessibility.

The democratic activity of the student club involves taking into account individual needs and interests, which tend to renew and enrich, and hence, to the need to satisfy them; with the actualization of acquired knowledge, practical skills, skills and experience, as well as the promotion of objective assessment of the obtained results both at the individual and collective levels.

The principle of voluntary participation in the student club S. Hrynyov, Yu. Piddubna (2020) [7] reflects the actions of an individual, carried out by him at his own will, taking into account the motivated choice of types and forms of cultural leisure, since this sphere of activity is open and receptive to those , who is oriented towards interaction, communication, satisfying personal interests and spiritual requests in the field of cultural and leisure activities.

Voluntariness is the most important specific feature of the organizational structure of the student club Zhang Xiaoxing (2017) [5]. Classes in the student club are not the main type of educational or work activity of students, but appear as leisure, since student youth participate in it at their own will, giving their free time to club activities V. Tyuska (2014) [17]. In these specific conditions, the creative satisfaction of the participants of student clubs, their achievement of positive results of the accumulation of amateur experience in various spheres of activity, are always determined by the professionalism of the leader, manager, curator, coach of the club community, his expertise and ability to ensure the productivity of the cultural and leisure process.

Thus, as we noted, the form of club activity is characterized by its humanism, democracy and voluntariness. It is at the individual level that every member of the club has the opportunity to realistically level their own limitations, reaching the frontier of individual creativity and self-realization in both cultural and leisure activities, as well as in everyday life. According to its organizational structure, the cultural and recreational activities of student clubs are considered by us as a certain structure of relationships: these are cultural and creative, club classes, trainings, concert performances, festival projects, organization of cultural and recreational events, conferences, seminars, round tables, debates, workshops, etc. The first objective organizational prerequisite for the conscious actions of the participants and the activity of the student club as a whole is the urgent need for knowledge and the need for meaningful leisure time. This need excites a person to specific actions and directly coincides with the goal of the club and its organizational subjects.

The second objective organizational prerequisite for the functioning of student clubs is a unifying, collective cultural and leisure activity, which constitutes the specific essence of self-activity. The collective character stems from the conditions of the student club's activity, which exerts an organizational influence on its members, programming the nature of their activities, as well as orienting them to the performance of certain functions. Therefore, democracy and accessibility, voluntary acceptance and performance of certain duties by participants are an important organizational prerequisite

for collective interaction, which is one of the specific features of a student club.

The third objective organizational prerequisite for the activity of the student club is the time factor, which is manifested in determining the time of classes and participation in cultural and leisure activities. As already emphasized, the specific features of the activity of the student club are the personal desire of each member to attend various types of club classes. It should be emphasized that in this situation, club members are not limited by professional duties or job instructions, but on the contrary, they always have freedom and a range of choices, as they do this in their free time.

Student associations as subjects of a creative cultural and leisure organization, along with the creation of a positive atmosphere, become a significant influence on the formation and development of self-activity in the system of higher education institutions. There are four levels of student associations: academic, faculty, general university, inter-university (see Table 1).

Table 1

Levels of student associations

№	Name of student associations	Contents
1.	Academic	ones are characterized by the fact that the student community at this level is formed on the basis of a separate academic group
2.	Faculty	are formed from among students of the faculty of various courses, based on academic level groups
3.	Generally university	provides such a form of organization of student communities, in which students of different faculties of the same higher education institution participate in their activities
4.	Between university	associations to which student youth from various institutions of higher education are involved

It is important to note the inextricable connection of all levels of the organization of student associations. As a rule, there is a succession of generations of participants at all levels of student associations and their collective participation in various extracurricular cultural and leisure activities. The direction of activity of student associations can be conditionally divided into four main groups: social, artistic and creative, sports and recreation, scientific and research.

Thus, joining various student associations allows you to realize yourself most productively in extracurricular activities, while forming a sense of belonging to a single university community (corporation), and also contributes to the acquisition of the necessary knowledge and skills in matters of personal development.

According to the methods of organizational design of the club, the degree of complexity of its organizational structure, the student club can be created and function as:

- student circle or educational and creative association with a club leader;
- a student club based on interests, or an amateur association that carries out its activities according to its own program, cognitive, creative tasks and management;

– an initiative club, a club association with the most extensive structure of self-governing bodies and with a wider range of club tasks.

According to the status of the student club, its place in the structure of the social environment of the institution of higher education, the level of its relations with the external environment, the following can be created: 1) autonomous student clubs, functioning independently of any other structures, try to act independently with strict individual membership and other mechanisms for regulating club life; 2) student clubs in a club organization, i.e. club associations in the system of club institutions, or any other social and communicative structure; 3) student clubs – substances that provide grounds for the existence of higher-order socio-communicative structures: organizations, parties, unions, etc.; 4) student clubs – a superstructure of social organizations that voluntarily supplement their campaigning, educational and communicative functions.

Thus, there are various methodological approaches to the type of student clubs, its content, principles and regularities, which in turn allows us to analyze the functional load of cultural and leisure activities in modern institutions of higher education.

All functions performed by student clubs are, in their essence, sociocultural, because they provide a collective way of life and determine or correct almost all forms of individual activity of student youth and their connections with the social environment. The most universal function (first level) is considered to be the provision of social integration of student youth, that is, the formation of the foundations for their sustainable collective existence and activities that satisfy common interests and needs.

At the second level - functions that provide the main forms of integrated communication of student youth. These include: organization of students in their joint life activities, regulation of interaction processes, consolidation and self-identification in the team. The functions of the third level provide the basic means of joint life activities of student youth: adaptation, development, cognition, accumulation of socially significant knowledge, ideas and experience, physical and psychological rehabilitation and relaxation.

The fourth and subsequent levels are associated with the differentiation of culture into specialized functional segments and systems of quality criteria for the implementation of certain social functions. Among the diversity of functions, the following directions can be distinguished: social, integrative, organizational, regulatory, normative, cognitive, communicative, recreational and evaluative.

A specific feature of the student club as an original creative association in the field of cultural and leisure activities is also that the educational and educational process of its members takes place in the time free from educational activities. One of the fundamental specific features of the student club is its mission, goals and objectives determined by the group-forming principle. The analysis of scientific sources made it possible to identify and scientifically substantiate the goals and objectives of the student club, which are classified on the basis of the following principles: meaningful content, socio-cultural orientation, productive implementation of multifaceted creative activities and cultural leisure.

In the research, we followed the proposition that the systemic nature of the activity of social institutes of a cultural profile, as well as the socially oriented, multifunctional activity of the student club contribute to the formation of a creative personality, including socialization, self-determination and self-realization of their participants.

The presence of these properties helps to creatively approach the analysis of the creative process of the student club as a whole, as well as to evaluate and determine one's place and role in the socio-cultural space of the club team. The study of the functional structure of club activity made it possible to distinguish the functions of club activity: cognitive, price educational, educational, regulatory, cultural, communicative, psychological, organizational, creative and innovative, recreational functions.

Table 2

Functions of club activities

№	Functions of club activities	Characteristics of club activities
1.	Cognitive	stimulates epistemological and sensory perception by participants and activates and becomes an impulse to creativity
2.	Value orientation	changes the system of views, and their life choices give preference to those phenomena, objects and processes that correspond to socio-cultural standards and that cause deep aesthetic satisfaction
3.	Developing	cultural, educational and creative areas of activity are determined, for the acquisition of new skills, knowledge and skills
4.	Informational and educational	contributes to the accumulation, preservation and dissemination of information, the formation of intellectual abilities, the stimulation of self-education, the acquisition and updating of knowledge
5.	Normative	formation of general humanistic moral qualities and socialization, adaptation to the environment
6.	Culture worker	assimilation of cultural values in various forms of artistic, technical, social creativity
7.	Communicative	the nature of student youth communication is an important aspect that requires understanding of the creative nature of interaction between leisure time and personality.
8.	Psychological	student youth get the opportunity to pay as much attention as possible to the development of their qualities, in particular feelings, thinking, activities.
9.	Organizational	students are involved in the performance of various tasks, where their abilities, skills, skills of active implementation of ideas, plans, implementation of cultural and leisure projects are developed.
10.	Creative and innovative	a student club for the organization of youth leisure is objectively necessary for the creative self-realization of students
11.	Recreational	a specific feature of a student club, among which interpersonal communication, games and artistic and creative activities are of the greatest importance.

Conclusions. The results of the study of the determination of the principles, regularities, functions of modern cultural and leisure activities and the characteristics of the structure, directions and forms of activity of student clubs in the system of higher educational institutions of Ukraine allow the following conclusions to be drawn:

1. The structural-functional approach made it possible to reveal the specific characteristics of the student club, which in practice differs in its organizational structure, functions and artistic nature from other creative collectives of cultural and leisure activities.

2. According to the dialectical unity of the general and individual (specific) principles of the functioning of a student club in the system of a higher education institution, the basis of its organizational structure as a specific whole is: a) humanism, democracy, leisure and voluntary club activity; b) club associations based on the principle of creative interaction and on the basis of moral and spiritual relations and responsible dependence; c) cultural and recreational activities of the student club in terms of content, goals and tasks; d) the activity of the student club is implemented by means of: cognitive, value-orientational, developmental, informational and educational, regulatory, cultural, communicative, psychological, organizational, creative, innovative, recreational functions.

3. A detailed analysis made it possible to formulate the author's definition of the student club as a single cultural and leisure association of student youth, which has a special structural and organizational structure, is based on the following principles: self-realization and self-improvement; purposefulness of creative personalities, activation of creative interaction in the club community and the principle of reliance on collegiality in solving life problems; performs specific functions in the field of cultural and leisure activities and promotes socialization through the assimilation of certain cultural values by the participants with further objectification of acquired knowledge, abilities and skills in collective creativity as a form of self-realization and social self-affirmation.

Therefore, the main goal of creating student clubs is to ensure the influence of club classes on the formation of the inner world of its participants, on the development of their worldview positions, which are oriented to humanistic, national and patriotic values, as well as on the meaningful filling of youth leisure with various directions and forms of artistic creativity.

The conducted research requires further scientific investigations, detailed study of the real practice and specifics of the organization of youth leisure in the conditions of the activity of the student club, which take place in the modern socio-cultural reality.

References:

1. Baranetska, Yu. M.. (2017). Vychovannia u studentiv vyshchychk pedahohichnykh navchalnykh zakladiv kultury dozvillia zasobamy muzychnoho mystetstva [Education of students of higher pedagogical educational institutions of leisure culture by means of musical art]. [Tekst] : avtoref. dys. ... kand. ped. nauk : 13.00.07 / Baranetska Yuliia Mykolaivna ; Vinnyts. derzh. ped. un-t im. Mykhaila

Kotsiubynskoho. Vinnytsia, 2017. 20 s. [in Ukrainian].

2. Bieletska I.V. (2009). Tsinnisni oriientatsii u sferi dozvillia suchasnoi molodi. [Value orientations in the leisure sphere of modern youth]. Visnyk LNU im.T.Shevchenka. 2009. № 17 (180), Ch. II. 58-68. [in Ukrainian].

3. Boiko, O. P. (2011). Kultura dozvillia u suspilstvi ryzyku [Leisure culture in the risk society]. [Tekst] : monohrafiia / O. P. Boiko. Sumy: DVNZ “UABS NBU”, 2011. 285 s. [in Ukrainian].

4. Borinshtein, Ye. R. (2010). Osoblyvosti sotsiokulturnoi transformatsii suchasnoho ukrainskoho suspilstva [Peculiarities of sociocultural transformation of modern Ukrainian society]. [Tekst] : dys. ... d-ra filos. nauk : 09.00.03 / Yevhen Ruslavovych Borinshtein; nauk. konsultant A. I. Kavalero; Pivdenoukr. nats. ped. un-t im. K. D. Ushynskoho. Odesa, 2010. 460 s. [in Ukrainian].

5. Chzhan Siasin. (2017). Vykhovannia etnichnoi tolerantnosti studentiv zasobamy klubnoi diialnosti [Education of students' ethnic tolerance by means of club activities]. / Chzhan Siasin // Naukovyi chasopys Natsionalnoho pedahohichnoho universytetu imeni M. P. Drahomanova. Seriiia 11: Sotsialna robota. Sotsialna pedahohika. 2017. Vyp. 23. S. 119-125. Rezhym dostupu: http://nbuv.gov.ua/UJRN/Nchnpu_011_2017_23_22. [in Ukrainian].

6. Denysenko A. O. (2014). Rozvytok form i metodiv orhanizatsii dozvillievoi aktyvnosti molodi: vitchyzniani dosvid 60–90-kh rr. [Development of forms and methods of organizing youth leisure activities: domestic experience of the 60s–90s of the 20th century]. KhKh st. Pedahohichni nauky: teoriia, istoriia, innovatsiini tekhnolohii, 2014, 6: 51-60. [in Ukrainian].

7. Hrynov S., Piddubna Yu. (2020). Yevropeiskyi dosvid diialnosti studentskykh klubiv za interesamy v umovakh karantynu. [European experience of activity of student clubs by interests in quarantine conditions]. Vytoky pedahohichnoi maisternosti: zhurnal. Poltav. nats. ped. un-t imeni V. H. Korolenka. Poltava, 2020. Vypusk 26.(Seriiia «Pedahohichni nauky»). S. 41-47. [in Ukrainian].

8. Oliinyk I. (2013). Formuvannia kultury dozvillia studentskoi molodi [Formation of the leisure culture of student youth]. / I. Oliinyk, K. Yerusalymets // Fyzichne vykhovannia, sport i kultura zdorovia u suchasnomu suspilstvi : zbirnyk naukovykh prats. № 1 (21), 2013. S. 207 – 212. [in Ukrainian].

9. Petrova I.V. (2000). Orhanizatsiia kulturno-dozvillievoi diialnosti klubiv u krainakh Zakhidnoi Yevropy ta SShA [Organization of cultural and leisure activities of clubs in the countries of Western Europe and the USA].: Avtoref. dys... kand. ped. nauk: 13.00.06 / I.V. Petrova ; Kyiv. nats. un-t kultury i mystets. K., 2000. S.16. [in Ukrainian].

10. Petrova I.V. (2011). Osoblyvosti funktsionuvannia sfery dozvillia yak sotsialno-kulturnoho yavyscha u druhii polovyni KhKh ST [Peculiarities of the functioning of the sphere of leisure as a socio-cultural phenomenon in the second half of the 20th century]. Visnyk Natsionalnoi akademii kerivnykh kadrov kultury i mystetstv, 2011, 2: 51-55. [in Ukrainian].

11. Savchuk S.A. (2015). Orhanizatsiia vilnoho chasu u studentiv

[Organization of students' free time]. / A. Savchuk, V. Kovalchuk // *Molodyi vchenyi*. № 3 (18) 2015. S. 114-117. [in Ukrainian].

12. Tadia O. M. (2013). Studentskyi klub yak kolektyvna forma orhanizatsii kulturno-dozvillievoi diialnosti. [Student club as a collective form of organization of cultural and leisure activities]. *Ukrainska kultura: mynule, suchasne, shliakhy rozvytku*, 2013, 19 (2): 234-239. [in Ukrainian].

13. Tadia O.M. (2019). Diialnist studentskoho zirkovoho klubu lideriv Kyivskoho universytetu kultury [Activities of the student star club of leaders of the Kyiv University of Culture]. / O.Tadia // *Kulturolohichni ta mystetstvoznavchi paraleli: naukovyi i praktychnyi vymir: materialy mizhnarodnoho sympoziumu, 6 chervnia. 2019 r. M-vo kult. Ukrainy*; Kyiv: NAKKKiM, 2019. S. 88–90. [in Ukrainian].

14. Tadia O. (2021). Student club organization as a project in the activity of the socio-cultural sphere manager [Methodological principles of culturology as a science: problems of formation and development]. / Markina I., Aranchiy V., Safonov Y., Zhylynska O. another. *Security management of the XXI century: national and geopolitical aspects. Issue 3: collective monograph / in edition I. Markina. Prague. Nemoros s.r.o. 2021. Czech Republic. P. 373–385. ISBN 978-611-01-2365-5*

15. Tadia O. (2019). Orzation of the student club's activity: structural and functural approach [Methodological principles of culturology as a science: problems of formation and development]. // «Modern Science – Moderní věda». Praha. Česká republika, Nemoros. 2019. № 3. P. 115–124. ISSN 2336-498X

16. Tiuska V.B. (2017). Samorealizatsiia maibutnoho pedahoha – orhanizatora dozvillia u klubnii diialnosti [Self-realization of the future teacher - organizer of leisure time in club activities]. [Elektronnyi resurs] / V. B. Tiuska // *Onovlennia zmistu, form ta metodiv navchannia i vykhovannia v zakladakh osvity. 2017. Vyp. 17. S.260 - Rezhym dostupu: http://nbuv.gov.ua/UJRN/Ozfm_2017_17_70*[in Ukrainian].

17. Tiuska, V. B. (2014). Tvorchia samorealizatsiia studentiv u protsesi klubnoi diialnosti [Creative self-realization of students in the process of club activity]. *Onovlennia zmistu, form ta metodiv navchannia i vykhovannia v zakladakh osvity*, 2014, 9: 152-156. [in Ukrainian].

18. Tsymbaliuk N.M. (2005). Instytutstionalna modernizatsiia kulturno-dozvillievoi sferyv Ukraini [Institutional modernization of cultural and leisure spheres in Ukraine].: dys. na zdobuttia nvuk. stupenia d-ra sots. nauk: 22.00.04 / Nataliia Mykolaivna Tsymbaliuk; Kyivskyi natsionalnyi un-t im. Tarasa Shevchenka. K., 2005. 375 s. [in Ukrainian].

ANALYTICAL REVIEW OF FEATURES OF VOLYN SOCIO-CULTURAL DEVELOPMENT AT THE BEGINNING OF XX CENTURIES

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Annotation. *The article highlights the features of historical and cultural processes of social development of Volyn in the early twentieth century. In this context, for the first time a series of materials published in the newspaper «Volyn», published in Zhytomyr in the early twentieth century, and archival documents covering the specifics of organizing and conducting literary and musical evenings and theater performances in secondary schools in the county towns of the region of the outlined period. It is shown that the main center of cultural life in Volyn in the study period was the provincial center - Zhytomyr. It is noted that the then government, having the appropriate resources and a number of governing bodies, regulated all spheres of public life and had a direct impact on various sectors of culture, laying the groundwork for various activities in socio-cultural life.*

Keywords: *culture, cultural policy, power, art, cultural and educational events, theatrical performances, literary and musical evenings.*

The state-building processes of modern Ukraine are impossible without the formation of a national cultural space. Culture is an important strategic resource for the modernization of the Ukrainian society and the socio-economic development of the state. At the same time, there is a need for organizing cultural and educational events in the region. In this regard, the relevance of the article lies in the need of objective analysis of Volyn cultural life in the early twentieth century, the need to situate theatrical corps and secondary schools in this processes, as well as the rigorous study of the peculiarities of the main lines of the development of theatrical art and the identification of the scope of supervisory powers of imperial authorities in this area.

Questions related to the peculiarities of conducting theatrical performances, literary and musical meetings in the region have been partially researched by O. Pryshepa (Pryshchepa, 2011) and T. V. Kuznets (Kuznets, 2016), who focused on the role of educational institutions in the cultural life of the region, the conduct of literary and musical gatherings and the organization of student choirs at parochial schools. At the same time, different aspects of cultural policy were studied by O. Hrytsenko and V. Solodovnik (cultural industry and state policy in Ukraine), V. Kirsanov (leisure culture as part of a wider politics of culture), V. Lisnichy (specificity of formation and regulation

of socio-cultural needs in the conditions of pluralist segmentation of Ukrainian society).

The presentation of the primary material. At the beginning of the 20th century, educational institutions played an important part in the cultural life of Volyn. After all, in Russian Empire, theaters and libraries were the centers of the cultural life of settlements. Given their shortage or underdevelopment in small cities and towns, educational institutions, with their intellectual and spiritual potential have, in a sense, become the foundation for the cultural life of cities, playing a decisive role in bringing culture to urban areas and throughout the region (Pryshchepa, 2011).

The educational process, as an inseparable from the overarching tasks of the educational institutions in Russian Empire, was directed, guided and adjusted in accordance with the tasks set by the state: not only to teach, but also to bring up children ideologically (The State Archive of the Rivne Region (hereinafter DARO), p.41).

During the studied period, the control over the activity of educational institutions of the Volyn Province was carried out by the trustee of the Kyiv Educational District (KNO), which had a staff of officials and was one of the structural subdivisions of the MNO. Our studies of the primary sources on the problem support the statement that, in the early twentieth century, the educational component was an integral part of the learning itself, and formed the basis for extracurricular work with students in educational institutions.

Participation of students in cultural activities, which became more and more widespread in the early twentieth century, served primarily educational goals. After all, in addition to the cognitive goal, «the educational process was supposed to contribute primarily to the formation of patriotism in the student youth ... and in this sense, the Russification policy acted as an instrument for realizing the tasks set» (Pryshchepa, 2011).

Literary and musical gatherings, theatrical performances, performances of student orchestras and choirs took place in secondary schools, being an integral part of the educational process. Since the 1880's, spectators were added to the group of these pupils and teachers, as honorary guests were often invited to such events, namely: representatives of the administrative authorities, clerics, members of military, students' parents etc. Typically, such events were commemorating the end of the school year, or celebrating historical dates (Pryshchepa, 2013, p. 62).

The programs of all such events, without exception, had to be approved by a KNO Trustee. Before they could be held, the program of the event was sent to the office of the trustee, where its time and place, as well as the audience could be determined. Only after its approval, and in some cases, after making adjustments, could preparations begin.

In parochial schools, much attention was paid to ecclesiastical chant. Its mastery was often not at the proper level, often due to the lack of well-trained teachers, despite the fact that this was a compulsory subject. Choral groups at parochial schools were found in almost all dioceses. Some of them were so co-ordinated that they could sing the liturgy during the bishop's service. In some parishes, the students and adults joined in together in the choir chant. The schools that created choruses and trained students to sing

in the church were respected and even had increased funding (Pryshchepa, 2013, p. 47-48).

The number of choirs at parochial schools has been steadily growing. For instance, there were 2,864 in all dioceses of the empire in 1892-1893. The largest number of choirs had schools of Volyn diocese – 448, 419 were in Podolsk diocese, 239 in Kyiv one, 85 in Poltava, 85 in Kherson. Each choir consisted of an average of 10 to 50 people. The choirs knew the chant and could sing in the church (Pryshchepa, 2013, p. 48).

As of 1896 -1897, there were 4,358 student church choirs in 55 dioceses of the empire. The largest number – 472 – was in the dioceses in the Ukrainian-controlled lands in Podolsky region, in Volyn – 442, in Kharkiv – 386, in Kyiv – 226, in Kherson – 153, in Poltava – 148 (Pryshchepa, 2013, p. 48).

Thus, the late nineteenth and early twentieth century was the time when, so far as education was concerned, the attention was paid to the organization of theatrical performances and student concerts. Parochial schools organized church choirs in which the students not only were taught singing, but often also participated in the liturgies. In this case, separate choirs were formed by both students and adults.

Educational initiatives were the most diverse. In 1909, all secondary schools of the Volyn Province had school holidays and celebrations dedicated to the 100th anniversary since the birth of M. V. Gogol. In the Lutsk male gymnasium, the teacher M. I. Karsky gave the lecture titled "Sources and main elements of M. V. Gogol poetry". Later that day the gymnasium choir closed off the celebration. In addition, students recounted excerpts from the "Sorochynskyi Fair", "Dead Souls", "Nights before Christmas", "Taras Bulba" and other works of the writer, read poetry devoted to M. V. Gogol (State Archive of Volyn Region). A similar initiative, but organized differently, took place in Rivne specialized school (State Archives of Rivne region, p. 7).

As for the holding of literary and musical gatherings or theatrical performances before the holidays, one of the guidance notes of the KNO's trustee stipulated that the petition for permission to hold such events was to be sent to him several days prior. It was noted that «This procedure is not acceptable for me: in cases like these, I, on the one hand, is not given the opportunity to discuss each such petition, and on the other, the unauthorized vacation time is continued to the detriment of education». In this document, holding school performances was seen as desirable, yet they could not violate school regulations. Therefore, performances in educational institutions were to be held not later than 2 weeks before the holidays. Paid school entertainment services were strictly prohibited, but «members of the Board of Directors of poor students Relief Society or members of the Board of Trustees of Parents' Committees are not prohibited from fundraising through invited guests, but the students themselves were not entitled to directly receive benefits». It was strictly forbidden to organize joint performances of pupils from different educational institutions, as well as for students from non-employees families to participate in performances and rehearsals. Only in exceptional cases was it allowed to have joint male and female choirs. Any cultural activities for high school students could be organized and conducted only within an educational institution. When it was not possible to do it, another similar room could be used, «only on condition that

the persons with no invitations were prohibited from attending». The document noted that to begin preparation, the permission to organize any such activity should be obtained in advance. Responsibility for the preparation, carrying out cultural-educational activities and keeping order was entrusted to the educational institution. At the same time, special attention was drawn to «prohibiting people without invitations from attending» (State Archives of Rivne region, p. 66).

As a result, the preparation of all cultural and educational activities in secondary schools of the region was controlled by the authorities. Their organization and conduct were possible only with the consent from the KNO trustee. The management of the educational institution was directly responsible for maintaining order. Only employed at the educational institution or the parents of students could be allowed to attend, others had to have personal invitations. As a rule, those were employees of the administrative authorities, members of the military, priests and wealthy townspeople.

Therefore, it would not be an exaggeration to say that Zhytomyr, the provincial capital, was the center of cultural life in Volyn at the given time. It regularly hosted dance soirees, children's parties and theater troupes which gave theatrical performances. The analysis of the articles in the press, particularly in the Volyn newspaper bears evidence for the number of such events. In one of its issues it was announced that on Friday February 2, 1901, a «Dance Soiree» will take place on the premises of the Zhytomyr assembly hall (Dance evening, 1901). At the same time, in another issue it was stated that "Today, January 26, 1901, the opera «Hamlet», performed by the city theater troupe (City Theater "Hamlet", 1901).

One of the numbers of this issue, in May 1901, announced that on May 25 Italian Opera, led by F. Castellano, will be touring the city theater. The troupe had 100 artists, including 40 male and female choir singers, and the music orchestra consisting of 30 musicians. This theater planned to give 5 opera performances in Zhytomyr. Among the well-known then-time singers in the theater were E. Adaberto (dramatic soprano), L. Movti-Brunner (counterpart), F. de Branli (dramatic tenor), O. Benedetti (baritone) and L. Ferraoli (bass). Among the operas scheduled was «Aida», tickets for which could be purchased at the cash department of the city theater before the start of the play (City Theater. Italian Opera, 1901) will be shown to the poor students of Zhytomyr woman school.

Except theatrical corps, the circus troupes also performed in the provincial city. In one of the advertisement it was announced that two performances with a debut of two invited artists would be presented on June 13th, 14th in the Ferroni Italian Circus. More detailed information about them and about the performances was posted on distributed placards in the city. In other information on the staging of this circus troupes announced that, a double circus benefit of a graceful dancer and equilibrist Fanny and a favorite of the public clown, hunter and gymnast Tant of a graceful dancer would take place on Saturday July 14. This performance differed in the fact that «all actors of the troupe would take part in it with absolutely new show» (In the Italian circus, 1901). And on July 15, 1901, «the last farewell performance of the circus artists' troupes with the participation

of Indian magicians» was to have been held. Mentioned Indian magician completed their performances in the troupe. The performances were to begin at 9 o'clock in the evening (In the Italian circus of F. K. Ferroni, 1901).

So, as we see in the early twentieth century, cultural life in the provincial city was concentrated in the city theater, in which there was not only a local corpse, but also other troupes. Except theater performance residents were able to attend the opera. In addition, there was a circus in the city. It is extremely difficult to answer the question about the quality of theater stagings. After all, neither in the investigated edition nor in other periodical press publications, which at that time appeared in the city there were no reviews on the performances of theater actors, the level of productions, musical accompaniment of plays and operas.

Various troupes came to Zhytomyr with tours, not only with the show of theater performances and operas, but also circuses. Thus, on July 28, 1901, the opening ceremony of the famous circus of Vladimir Leonidovich Durov should take place in the newly built premises in the courtyard of Usatyi, at the crossroad of Petersburg and Ilarionivska streets, with the participation of «first-class famous capital artists and artists». The play consisted of three large departments of the circus repertoire, with the participation of the ballet under the direction of the Warsaw theaters choreographer, V. Domoradzky. During the play and intermission, the ballroom band would to play. The play was to begin at nine o'clock in the evening (The famous circus of Vladimir Leonidovich Durov, 1901).

Except visiting troupes performances, the local theater staging were also take place in the city. So, that year on July 29th, the local theater on the summer stage in the open air «Arcadia» was scheduled the performance «Beautiful Elena» despite the fact that there would be a «Red Sun» performance. The peculiarity of this performance was the fact that it was supposed to be «the first public performance at significantly lower prices» for tickets. At the same time it was announced that «In the park is a great feast» with the participation of two music orchestras, and in the open theater would take place with the participation of actors of the local theater (Garden "Arkadia", 1901).

In early September 1901 the «Parrot and Cockatoo Theater» came to the provincial capital. In the city it gave performances only for 8 days. In the newspaper main attention was drawn to the fact that the performances was «interest for adults and admiration for children» and trained «m-de Cleopatra» parrots were able to count, solve mathematical problems and «did a lot of different pieces». In addition, participation in the performances was taken by «snake-man Robert». The cost of tickets for the first and second ranks was 30 kopecks, other 20 kopecks, the entrance was 10 kopecks. In addition, it was possible to purchase young parrots (Atras of parrots and cockatoos, 1901). As the analysis of this publication shows, «Theater of Parrots and Cockatoo» used traditional PR courses for the study period to attract viewers to their performances. Unlike other performances, which at that time were held in the city this performances were also designed for children. Although the ticket prices were high and quite logical it could be visited only by representatives of the wealthy population.

The repertoire of performances presented at the Zhytomyr City Theater in the early

twentieth century theater did not differ in diversity. In fact, these were performances that were successfully held at the capital's scenes. At the end of October, in early November 1904, the theater performed the plays «Fairy Katsris», «The Bridegroom from the Debt Division», «Career of the Nablatsky» and «The Cottage Bride» (City Theater, 1904).

Conducting of performances in the county towns of Volyn province was an extraordinary rarity due to the remoteness of the region from the cultural life centers of the empire, a small number of population of the county centers, the lack of theatrical premises, which made it impossible the arrival of known actors to them.

Thus, in the provincial center there were constantly tours of various theaters. It was the leading cell of the cultural life of the region. In most county cities, the arrival of theatrical troupes was a huge rarity. This was due to the remoteness of the region from the cultural life centers and the small number of potential spectators in the county centers.

Consequently, the analysis of the materials of the periodical, which in its pages drew attention to the cultural and theatrical life of the region, suggests that they all reduced to informing readers only about the names of the performances, the actors involved in them. Particular attention was paid to the theatrical troupes who came on tour. In fact, all cultural life of the Volyn province in the early twentieth century was concentrated in the provincial center, and the county remained aloof from the cultural processes (Masquerade ball, 1912). The question about the level of actor's skill of the arrived actors remains unanswered, because there is no critical article about their performances unfortunately found. This is due to the fact that most of the periodicals published in the province at that time had a clearly defined direction, and a detailed coverage of cultural life was not intended for them. In addition, it should be noted that at that time there were no highly qualified permanent theatrical corps and theatrical critics in Volyn. The only thing that can be argued with certainty is that all the performances that were held in the region were censored. Another important aspect of the cultural life of Volyn, as well as of the entire Russian Empire, was that theatrical performances were designed to wealthy people and they were conducted in Russian (City Theater, 1912).

Sometimes, concerts of local church choirs took place in the countryside. However, such events could be held only with the governor permission and with agreed in advance program of performances. Thus, the permission to conduct such concerts was given to V. Kornitsky, the priest of village Pelchy of the Dubensky region. According to this, on February 2nd, such a concert had to take place in the village of Vovkovyi, and on February 3rd in the village Verbi of Dubensky Region. The income received from the performances of the church choir should have been used for the charity, namely to help the parishioners who suffered from the fire (Permission to arrange concerts for a priest, 1912, p. 4).

Analyzing the latest information it is difficult to determine the level of creative skill of rural choristers. However, we can state that such concerts were a rare phenomenon, since permits for such performances were given directly by the governor. Given the level of censorship in the Russian Empire, it should be noted that all programs of such events were approved in the provincial center.

Thus, according to the analysis of materials of the provincial press, it adequately covered the cultural life of the region. Information about individual measures was provided informally, others were covered in a fairly large volume. However, the analysis of the articles shows a rather not high qualification of their authors. They stated certain facts, and according to the description of the actors of the local theater, it was clear about the sympathy of the author to this or that actor.

In general, the then provincial press regularly informed its readers about the cultural events that were to take place in the city. First of all, it's about the performances of the local theater and the tourists' tour. Thus, in one of the issues of the study publication, the focus was on the fact that in late March in early April 1912, in the city theater would take place the "last six performances" with the participation of invited actors. The performances were to take place twice a day in the morning and evening (The last 6 performances. City Theater).

Conclusions. Thus, the peculiarities of the cultural life of the cities of Volhyn in the early twentieth century are analyzed in this article. On the basis of primary sources and scientific works it was determined that gymnasia were the leading centers of cultural life in most provincial centers of the province. The exception was only the provincial center - Zhytomyr. In the article particular attention is paid to the study of the role of authorities in monitoring the organization of cultural and educational activities in the region.

On the eve of the First World War, there was an increase in the number of performances in the provincial city. Some theatrical troupes performed performances and concerts in the county cents of the province. However, the processes of development of the cultural life of the region were sharply suppressed by the beginning of the First World War, because the Volyn Province became front-line, and in 1915 - 1916 its western counties were occupied by Austro-Hungarian troops. Some of the cultural and educational institutions were evacuated, which negatively affected to the cultural life of Volyn region.

References:

1. Pryshchepa O. P. (2011). Cultural and educational activities of educational institutions and their role in the formation of the cultural environment of the urban settlements of the Right Bank of Ukraine (second half of the 19th – beginning of the 20th century). *Current problems of national and world history: Scientific notes of RDSU* Issue 22. P. 44-46.
2. Kuznets T. V. (2016). Church singing in the educational system of the Kyiv diocese of the 19th–early 20th centuries. *Scientific notes of Mykhailo Kotsyubynskyi Vinnytsia State Pedagogical University: Collection. of science works Series: History.* Issue 24. P. 47-51.
3. Pryshchepa O.P. (2013). The influence of educational institutions on the formation of the cultural environment of the cities of Volhynia (XIX–beginning of the 20th century). *Slavyansky visnyk: Collection. of science works.* Issue 16. P.p. 58-63.

4. The State Archive of the Rivne Region (hereinafter DARO). f. 568, d. 1, c. 2, p. 141.
5. State Archive of Volyn Region, f. 6, d. 1, c.1, p. 1-26.
6. State Archives of Rivne region f. 215, d. 2, c. 46, p. 7.
7. State Archives of Rivne region f. 568, d. 1, c. 6, p. 66.
8. Dance evening. (1901). Volyn. January 24. No. 19. P. 1.
9. City Theater "Hamlet" (1901). Volyn. January 26. No. 21. P. 1.
10. City Theater. Italian Opera (1901). Volyn. May 23. No. 111. P. 1.
11. In the Italian circus. (1901). Volyn. June 1. No. 128. P. 1.
12. In the Italian circus of F. K. Ferroni. (1901). Volyn. July 14. No. 154. P. 1.
13. The famous circus of Vladimir Leonidovich Durov. (1901). Volyn. July 27. No. 165. P. 1.
14. Garden "Arkadia". (1901). Volyn. July 29. No. 167. P. 1.
15. Atras of parrots and cockatoos. (1901). Volyn. September 2. No. 193. P. 1.
16. City Theater. (1904). Volyn. 1904. October 31. No. 169. P. 1.
17. Masquerade ball. (1912). of the Jewish charitable society Volyn. January 10. No. 8. P. 3.
18. City Theater. (1912). Volyn. January 13. No. 11. P. 4.
19. Permission to arrange concerts for a priest. (1912). Volyn. January 28. No. 20. P. 4.
20. The last 6 performances. City Theater. (1912). Volyn. March 30. No. 85. P. 4

TECHNICAL SCIENCES

INFORMATION APPROACH FOR A FACULTY PREPARATION STRATEGY IN A MODERN TECHNICAL EDUCATIONAL INSTITUTE OF EDUCATION

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Annotation. *Competency approach should be the basis for selecting the content of training specialists in different areas of training. The content of professional training involves targeting not only knowledge, skills and skills as before, but also the formation of professionally and socially significant qualities, values, abilities and behaviors. Actually, in order to educate a future specialist as a leader, it is necessary to ensure not only the transfer of professional knowledge, skills and abilities to students, but also create a set of necessary for the successful execution of professional tasks. Implementing the formation of leadership qualities, based on the competence approach, one should take into account the experience of education of various foreign countries, which is based on the following main provisions: the development of competences is the result of the interaction of many diverse factors. There are certain developments in the practice of modern higher education in Ukraine, in particular, the use of a competent approach in the training of specialists.*

Keywords: *training specialists, professional knowledge, competent approach.*

Introduction. Competence translated from the Latin *competentia* it is a range of issues in which a person has good understanding. Competency approach is a concept that has become widespread in science and education in the 70's. of the XX century. Its emergence is associated with the studies of the famous American linguist N. Khomsky, who formulated the notion of competence in relation to the theory of language. As you know, the further introduction into the higher education system of new educational constructs - competences, skill sets and key qualifications - has been carried out by such foreign researchers as R. Bader, D. Mertens, B. Oskarson, J. Raven, A. Shelten and others.

The analysis of works (N. Khomsky, R. White, J. Raven, N. Kuzmina, A. Markov, V. Kunitsina, G. Bilitskaya, L. Berestova, V. Baidenko, A. Khutorsky, N. Grishanova) allowed to distinguish conventionallt three stages in the formation of a competent approach in education.

The first stage - 1960-1970 gg. - is characterized by the introduction into the scientific apparatus of the category "competence", creation of the preconditions for differentiation of concepts competence and competency. From this time onwards, study of various types of linguistic competence , the introduction of the notion of "communicative competence"startswithin the framework of the transformational grammar and theory of teachinglanguages (D. Heights).

The second stage - 1970-1990 gg. - is characterized by the use of the category competence / competency in the theory and practice of language teaching (especially foreign), professionalism in management, management, management, teaching and communication. At this time, the content of the concept of "social competence / competent " is being developed. In the work of J. Raven "Competence in a Modern Society", which appeared in London in 1984, a comprehensive interpretation of competence is given. This is a phenomenon that "consists of a large number of components, many of which are relatively independent of each other ... some components are more likely to be cognitive, and others - to emotional, ... these components can substitute each other as components effective behavior" [1, 11].

The third stage - from 90-iesof the XX century - to the present - when educational reforms in Europe and in Ukraine, in particular, are carried out within the framework of the Bologna process, where competence and competent are considered as the main criterion for the readiness of a modern graduate of a higher education institution to change conditions of work and social life. Also, the idea of competence and competent correlates with the credit-module training system, which allows establishing the relationship with such aspects of constructing the learning process as multi-level and non-linear deployment of training, the preparation of educational programs, taking into account the individual educational trajectory, fixing the results of learning with the help of accumulation units.

According to O. Shcherbak, the notion of competent education came to us in Ukraine from foreign countries, but, unlike other Western innovations, it does not contradict traditional Ukrainian values. Today in Ukraine the problem of a competent approach in education is explored by O. Savchenko, N. Bibik, L. Vashchenko, O. Lokshina, O. Ovcharuk, L. Parashchenko, O. Pometun, S. Trubachova and others. [8,12].

The importance of implementing a competent approach is due, firstly, to the integration of the domestic higher education system into European within the Bologna process; and secondly, the modern requirements of the labor market in competitive, harmoniously developed, creative specialists; and thirdly, the public need for educated, professional, and moral citizens of the State.

Competency approach should be the basis for selecting the content of training specialists in different areas of training, and to identify as the main point in developing

standards for higher education. This is encouraged by regulatory documents. Thus, in a letter of the Deputy Minister of Education of Ukraine V. Shinkaruk of 31.07.2008 N 1/9484 to the chairmen of the working groups of the Ministry of Education and Science of Ukraine on the development of sectoral standards for higher education and Chairmen of the methodological committees of the Ministry of Education and Science of Ukraine stated that "the transition to a new generation of industry standards of higher Education on the basis of a competent approach is a necessary step on the way of reforming the education system in Ukraine".

We consider it expedient to disclose the essence of the competent approach. So, the domestic researcher O. Pometun considers the "competence approach" as the focus of the educational process on the formation and development of the key (basic, main) and substantive competencies of the individual. The result of this process is the formation of a general competence of a person, which, in turn, is a set of key competencies, an integrated personality feature [9].

Method. One of the criteria of the professional training of an engineer in higher education is professional competence. Thus, Professor V. Polishchuk emphasizes that competence is not only the availability of knowledge and experience, but also the ability to correctly dispose of them in the process of performing professional functions that are conditioned by the content of his professional activities. Competence involves individual style of professional activity, innovative creative approach, developed socio-pedagogical reflection, implementation of author's searches [10, 13].

Analysis of literary sources suggests that this approach to the selection of the content of professional training involves targeting not only knowledge, skills, habit patterns as before, but also the formation of professionally and socially significant qualities, values, abilities and behaviors. Actually, in order to educate a future specialist as a leader, it is necessary to ensure not only the transfer of professional knowledge, skills and abilities to students, but also to form in them a set of necessary for the successful performance of professional tasks, the construction of interpersonal relationships in the team, organized work in the team and for interaction within the system "Man-man" and "man-nature", qualities [14, 15].

However, today there is no unambiguous approach to the formation of professional competence of specialists in technical specialties, including a well-grounded list of competencies that should be formed in the process of studying at higher education institutions. Moreover, the views of different scholars on this issue differ significantly. Such state of things in the higher education can be explained by constantly changing conditions, as it occurs in the society, the latest reforms in education, scientific and methodological provisions of educational institutions, the process of approaching the system of education in Ukraine to world standards, etc.

Competent approach is not an innovation for domestic higher education. Thus, Professor O. Elbrekht notes that the elements of this approach "... were used in Ukraine as a component of the quality management system for training and training of specialists. Different ways of organizing educational activities with an orientation

towards these elements are described in the works of L.M.Dibkova, M.B. Evtukha and other researchers in the sphere of education" [11].

From the point of view of the problem under investigation, the feasibility of forming leadership qualities on the basis of a competent approach is confirmed, if we take into account the definition given by different scholars. So I. Zimnaya considers the competence approach as the focus of education on the development of the personality of the learner, as a result of forming such qualities as competence, which realized through the solution of professional and social problems in the educational process [12].

In implementing the formation of leadership qualities, based on the competence approach, one should take into account the experience of education of various foreign countries, based on the following main provisions: the formation of competences is the result of the interaction of many different factors; modern life requires a person to acquire a certain set of competencies, called the key; the choice of key competencies should take place at the fundamental level, taking into account actual ideological ideas about society and the individual and their interaction; should also take into account the influence of cultural and other contexts of a society, a country [9].

Note that higher education institutions in the UK see their tasks not only in providing knowledge, but also in raising the level of competence of students [11]. Key competencies, from the point of view of British colleagues, perform three functions: 1) help students to learn; 2) enable employees to meet the requirements of employers; 3) contribute to success in life.

The latter, in fact, allows the future specialist to better understand what qualities, properties and abilities he needs to develop, including through self-education, to achieve success both in the career plan and in the system of social relations.

American Professor J. Stretch [13], according to existing practice, defines three main components in US competence education:

- knowledge: knowledge-description, knowledge-explanation, synthesized or system knowledge, knowledge-forecast, knowledge-intervention, knowledge of control;
- ability: ability to think critically; cooperative, i.e. ability to work in a team; ability to make a conscious and correct choice, to appreciate diversity, to take into consideration the views of other people, to reveal the potential of others, to seek from the team members the maximum contribution to the general business; the ability to think systematically, work creatively, see a new one, transfer the usual to a new plane; facilitative and leadership skills;
- values: personal; group (family, friends, professional group); public (law, morality); self-esteem values (proud of oneself); the value of continuing education (to be always open to knowledge).

In Switzerland, the basic skills that are needed by each competent person are: skills in the social, ethical and political spheres (integration into society, communicativeness); skills in the intellectual, scientific and theoretical fields (structuring and applying knowledge, collecting information and self-study, using own experience and knowledge);

skills in the cultural, communicative and aesthetic field (ability to participate in cultural life; to have knowledge of other cultures); abilities necessary for personal learning and using technologies (ability to provide information, use of information and communication technologies, understanding the advantages and risks of new technologies, learning skills, knowledge of information technologies) [13].

The quality of professional competence is important for the leader. According to C. Woodruff, professional competence as a system integrating all components that affect the behavior of the employee, includes: 1) professional knowledge, skills, skills; 2) values, motives, installations; 3) general and cognitive abilities; 4) psychophysiological qualities; 5) professionally significant personal qualities [13].

There are certain developments in the practice of modern higher education in Ukraine, in particular, the use of a competent approach in the training of specialists. Domestic researchers, developing recommendations for the organization of training in higher education on the basis of the standard of competence, emphasize that the modular training method involves the registration and evaluation of the general and specific qualities of the learner [15].

The general qualities of the learner include: attitude to learning; concentration of attention; relation to the order and discipline, safety rules; attitude to equipment and materials, other values; responsibility, attitude towards other members of the collective; behavior and manners, ability to cooperate with team members; ability to plan, perform work; the ability to work in a stressful situation; the ability to adapt to new conditions; perseverance and assiduousness in professional activity. The specific qualities are: good use of the tool, measurements, diagnostics, while working on equipment, assembling, assembling circuits, conducting tests, as well as understanding of technical drawings, electrical circuits, instructions, graphs and diagrams, and the formation of computing skills.

Also, the necessary conditions for the training of a competent specialist are determined, namely: compilation of a model that is adequate to the requirements of production; methods of forming the content of teaching and organization of the educational process should fully implement the model of the employee; the integration of vocational education and production [15].

In general, all competencies of specialists are grouped into four categories: instrumental, interpersonal, systemic and special competencies. Proceeding from the analysis of scientific and methodological practice and own pedagogical experience, we consider it expedient to allocate the following competences in the structure of professional competence of a specialist in the field of technical training:

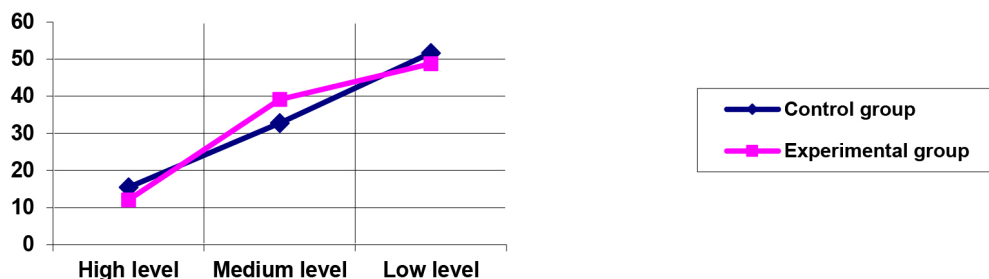
- special competence, which provides the acquisition of the fundamental knowledge as a basis for the realization of the professional activity on a higher level;
- labor protection competence, which involves the development of skills for safe professional performance, the ability to organize and carry out safe individual and group professional activities, anticipate the consequences of the decisions taken to ensure safety during the production process;
- personal competence, which involves personal self-expression and self-development during the whole period of the professional activity realization, the ability for the adequate self-examination and self-criticism;
- information competence, as the ability to find the necessary information, use the

information technologies for the solution of the professional problems, apply special software products in the process of professional activity, etc.

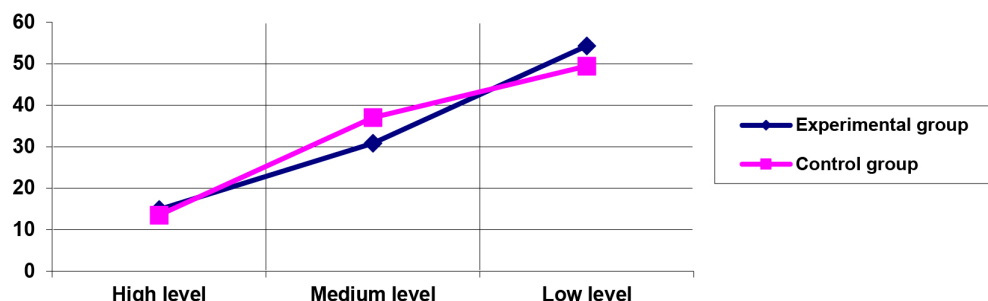
Results of the diagnostics, analysis and discussion. Processing the results of the diagnostics of the students of Vinnytsia National Technical University, we distinguished three levels of revealing signs of professional formation of students of technical higher education establishment: high, medium and low. Based on the results of this comprehensive diagnosis, we singled out control and experimental groups of students in such a way that the studied characteristics of students of these groups were approximately equal. Control groups included 280 students, experimental groups - 135 students. For each student, the level of the formation of indicators for each of the criteria is determined, depending on the total number of points for each indicator of this criterion. The maximum score for each indicator was 30 points. If the number of points was in the range of 25 to 30 points, then we considered the level of formation of the corresponding indicator of this criterion to be high, but if the total score was expressed by the number from 15 to 25, then it is average and less than 15 it is low.

The diagnosis of indicators of professional development was conducted: a questionnaire «Valuable orientations» (M. Rokicha) [1], a test «Motivation of professional activity» (K. Zamfir in the modification of A. Rean) [2], a methodology for analyzing the motivation of studying at higher educational establishments (T. Ilyina) [3], professional motivation (T. Dubovitskaya) [4] and achievement motivation (SAT) [5], diagnosis of success motivation (T. Ehlers) [6], diagnostics of the need for achievement (Yu Orlov) [7], diagnostics of labor protection competence (author's development).

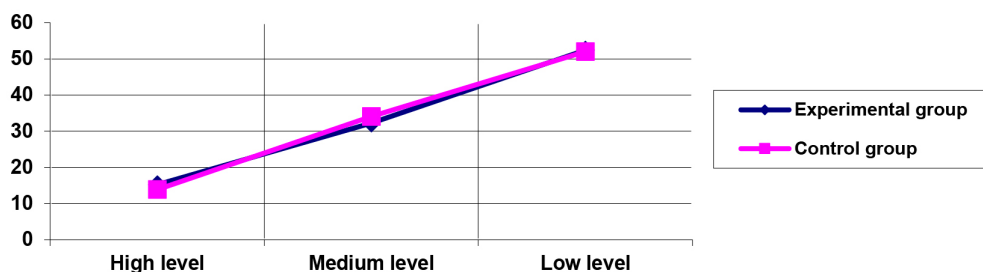
Results of the questionnaire "value-based orientations" of vntu students



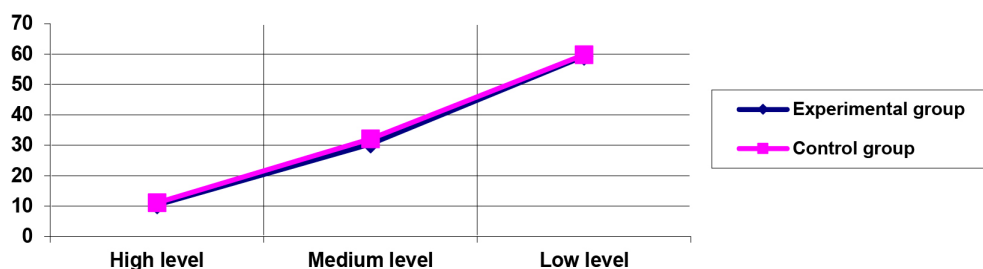
Answers to the test "Motivation of professional activity" of VNTU students



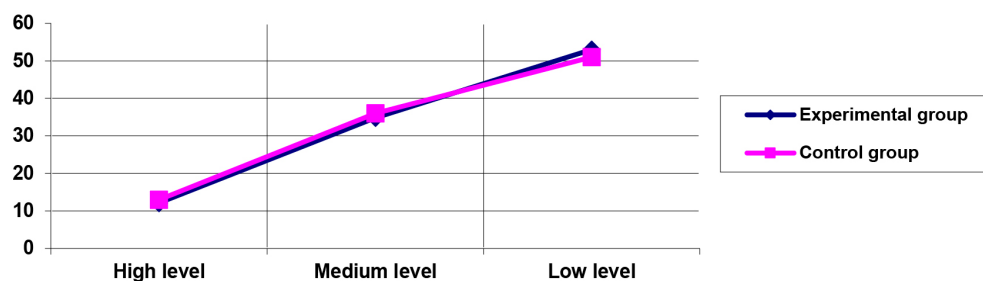
Analysis of study motivation at the university of VNTU students



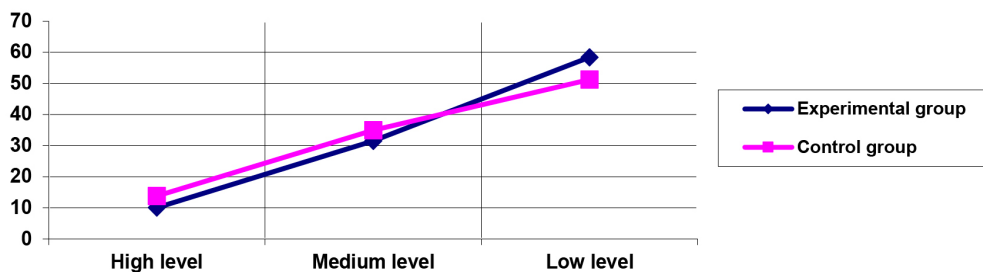
Diagnostics of the levels of professional orientation of the students of VNTU



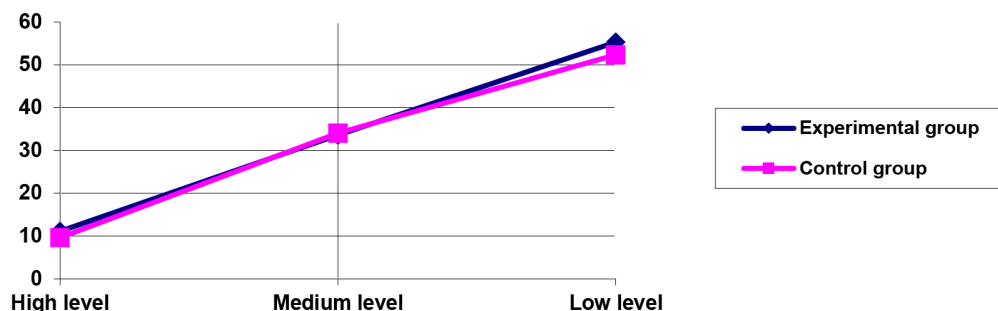
Analysis of study motivation at the university of VNTU students



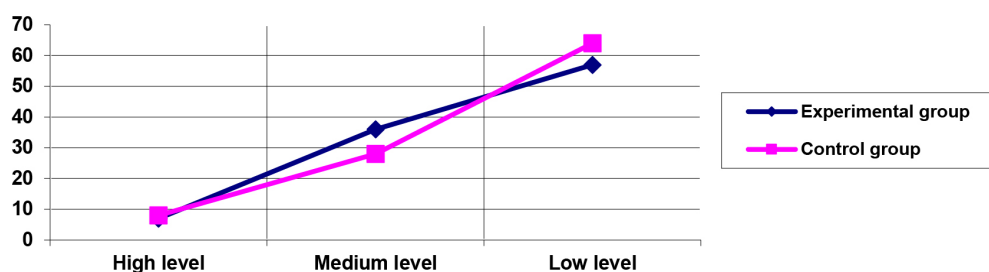
Results of the diagnostics of the motivation of the students' success in VNTU



Results of diagnostics of the need in success for the students of VNTU



Diagnostics of the levels of labor protection competence of the students of VNTU



To determine the average professional development of the students of VNTU for each criterion, we used the formula of the arithmetic mean weighted:

$$\bar{x} = \frac{\sum x_1 n_1}{n}$$

Analysis of the results of the diagnosis showed that during the experiment, the number of students of control groups with a high level of professional development was 14.29%, with an average level of 34.64% and a low level of 51.05%. At that time, the number of students of experimental groups with a high level of the corresponding indicator was 14.07%, with an average level of 34.07% and a low level of 51.85%.

Conclusion. Consequently, the competent approach involves the attitude towards the student as a subject of the educational process, which manifests activity in activity and develops through self-education and self-improvement. It is also necessary to solve the tasks of forming leadership skills of students, which can not be successfully implemented without their desire, which should manifest itself in active self-realization.

Conclusions. From our point of view, the specific features which have already been distinguished by various foreign scientists are fully justified, namely: the competence approach is directed not only to the process, but also, first of all, to the result; the formation of competences involves the creation of certain educational and training situations that can be implemented in special environments that allow teachers to simulate and effectively

monitor the activities of those who develop in a simulated environment and realize their potential from a leader position, while gaining experience Leadership behavior, shapes and improves relevant qualities; the development of students' competences is that they are formed as professional skills, practical skills and personal qualities, which are also required for the role of leader; the formation of each competence, skill, skill, ability, quality or set of qualities is provided by certain disciplines and production practices, forms and methods of work.

In addition, there is a need to identify and substantiate the list of key competencies for technical specialists as the base for the professional growth in order to ensure the quality of higher education. Besides, there is a need to find such pedagogical conditions for the organization of educational process in institutions of higher education, due to which the targeted development of professional competence of students of technical specialties will be carried out.

References:

1. Methodic "Valuable Orientation" by Rokicha / [Electronic resource]. Available at: http://psychologis.com.ua/metodika_cennostnye_orientacii_rokicha.htm Date of reference: September 18, 2017.(Ukr)
2. Motivation of professional activity (the method of K. Zamfir in the modification of A. A. Rean) / [Electronic resource]. Available at: <http://www.vashpsixolog.ru/psychodiagnostic-school-psychologist/122-tests-guidance/716-motivation-professional-activity-c-zamfir-technique-to-modify-aa-reana> Date of treatment: September, 18, 2017.(Rus)
3. A methodology for analyzing the motivation of studying at a higher educational institution (T. Ilyin) / [Electronic resource]. Available at: <http://medbib.in.ua/motivatsiya-obucheniya-vuze-39992.html> Date of appeal: September 18, 2017. (Ukr)
4. Dubovitskaya T.D. Diagnostics of the level of professional orientation of students / T.D. Dubovitskaya // Psychological science and education. - 2004. - No. 2. - P. 82-86. (Rus)
5. Self-actualization test - SAT. Quantitative and qualitative parameters of self-actualization level - testing / [Electronic resource]. Available at: http://psychologis.com.ua/samoaktualizacionnyy_test_-_sat-1.htm Date of reference: September 19, 2017. (Ukr)
6. Methodology of personality diagnosis on the motivation for the success of T. Ehlers / [Electronic resource]. Available at: https://stud.com.ua/17007/menedzhment/metodika_dagnostiki_osobistosti_motivatsiyu_uspihu_elsa Date of appeal: September 19, 2017. (Ukr)
7. Methodology Orlova Yu.M. Test - questionnaire Need to achieve the goal. Scale of need for success. / [Electronic resource]. Available: <https://psycabi.net/testy/475-metodika-orlova-yu-m-test-oprosnik-potrebnost-v-dostizhenii-tseli-shkala-otsenki-potrebnosti-v-dostizhenii-uspekha> Date of appeal: September, 24, 2017.(Rus)
8. Shcherbak O. I. Professional and pedagogical education: theory and practice:

monograph / O. I. Shcherbak; ed. N.G. Nichkalo. - K.: Science. world, 2010. - 279 p. (Ukr)

9. Competency Approach in Modern Education: World Experience and Ukrainian Prospects: The Library from educational policy / under the congregation edit O. V. Ovcharuk. - K.: "K.I.S.", 2004. - 112 p. (Ukr)

10. Polishchuk, VA Theory and methodology of vocational training of teachers in conditions of continuous education [Text]: diss. ... doctor of science: 13.00.04 - theory and methodology of vocational education / Polishchuk Vera Arkadevna; Ternopil National Pedagogical University named after Volodymyr Hnatyuk. - Ternopil, 2006. - 454 pp. (Ukr)

11. Elbrekht O. Competency approach as a methodological basis for the formation of the content of professional training managers / O. Elbrekht // Humanization of the educational process. - Slavyansk: SDPU, 2011. - Ch. III, Vip. LVIII. - P. 54-64. (Ukr)

12. Zimnaya I. A. Competence approach. What is his place in the system of modern approaches to education? / I. A. Zimnaya // Higher education today. - 2006. - No. 8. - P. 22-29.(Rus)

13. Greyson D.K. American Management at the Turn of the 21st Century / D. K. Grayson, K. O'Dell; [per. with English.] - M.: Economics, 1991. - 319 p. (Rus)

14. The vital competence of the individual: from theory to practice: science-method. manual / ed. L. V. Sokhan. - K.: Bogdan, 2003. - 250 s.(Ukr)

15. State standards for vocational education: theory and methodology: [monograph] / ed. N.G. Nichkalo. - Khmelnytsky: TUP, 2002. - 334 p. (Ukr)

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