

**ҚОРАҚАЛПОҒИСТОНДА
ФАН ВА ТАЪЛИМ**

**ҚАРАҚАЛПАҚСТАНДА
ИЛИМ ҲӘМ ТӘЛИМ**

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**MAGNETIZED PARTICLES MOTION AROUND MAGNETICALLY CHARGED
BLACK HOLE**

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Summary: *our purpose here is to analyse the effects of the free parameters occurring in the Einstein-Æther theory for the particle motion in a curved spacetime. Specifically, we have studied the stability of circular and radially varying orbits of different kinds of particles by varying the free parameters c_{13} and c_{14} and also varying particle's specific energy, specific angular momentum and electric charge of the black hole.*

Keywords: *Lagrange function, Reisner-Nordstorm, scalar invariants, Kratschman scalar, Killing vector, Hamilton-Jacobi equation.*

Introduction. One of the aims of black hole physics is to test and analyze the no-hair conjecture of black holes which roughly states that black holes are characterized by their mass, spin and electric charge only. Although mass of the black hole is determined or constrained through tidal interactions with neighboring stars while spin is constrained through the analysis of X-ray emission spectrum from the black hole-accretion disk system, the direct detection of electric charge carried by the black hole's horizon is a difficult task. However, some studies dealing with the supermassive black hole at the center of Milky Way galaxy have found upper limits on the electric charge of the black hole, which are of order. Though a black hole's electric charge cannot be measured directly, it can certainly impact the motion of particles and geometrically effect the shadow of horizon. Thus indirect methods involving particle motion, quasiperiodic oscillations and shadows can be used to constrain the electric charge. For instance, the position of the innermost stable circular orbit (ISCO) for the motion of massive particles about a black hole is modified by the variation of the free parameters such as electric charge of the black hole.

Scalar invariants

To explore of the properties of the spacetime may be started with the study of the scalar invariants of a geometry around a compact gravitating object. Here we analyze the Ricci scalar, Square of Ricci tensor and Kretschmann scalar of the spacetime metric (1) given with the lapse function given by Eq. (2) and (3). Ricci scalar: Ricci scalar or so-called the scalar curvature is one of the simplest curvature invariants of curved spacetime and defined as $R = g^{\mu\nu}R_{\mu\nu}$, where $R_{\mu\nu}$ is the Ricci tensor. The positive and the negative values of the Ricci scalar correspond to sunken and convex form of the spacetime, respectively. After some simple mathematics, one may easily get the following form for the Ricci scalar for the solution $c_{123} = 0$ $R = 0$, and for the solution $c_{14} = 0$. we will investigate the motion of test neutral particles around a charged BH in the Æther gravity paying attention to circular stable and unstable orbits, as well as the energy efficiency from the black hole. The standard Lagrangian density for the neutral particle with rest mass m moving around a black hole can be written as

$$\mathcal{L}_p = \frac{1}{2}g_{\mu\nu}\dot{x}^\mu\dot{x}^\nu \quad (1)$$

Due to the existence of the timelike and spacelike Killing vectors one may introduce the conserved specific energy $\mathcal{E}$ and specific angular momentum $\mathcal{L}$ of the particle in the following form

$$g_{tt}\dot{t} = -\mathcal{E}, \quad g_{\phi\phi}\dot{\phi} = \mathcal{L} \quad (2)$$

The equations of motion for a test particle are governed by the normalization condition

$$g_{\mu\nu}u^\mu u^\nu = \epsilon \quad (3)$$

where ϵ is 0 and -1 for massless and massive particles, respectively. For a neutral test particle, the motion is governed by time like geodesics of the spacetime and the equations of motion can be found by using Eq. (2). Taking into consideration Eq. (3) one may easily obtain the following equations of motion.

$$\begin{aligned} \dot{t} &= -\frac{\mathcal{E}}{g_{tt}}, \\ \dot{r}^2 &= \mathcal{E}^2 + g_{tt} \left(1 + \frac{K}{r^2} \right), \\ \dot{\theta} &= \frac{1}{g_{\theta\theta}^2} \left(K - \frac{\mathcal{L}^2}{\sin^2 \theta} \right), \\ \dot{\phi} &= \frac{\mathcal{L}}{g_{\phi\phi}}, \end{aligned} \quad (4)$$

where K is the Carter constant associated with the total angular momentum. Restricting the motion of the particle to the constant plane $\theta = \text{const}$ and $d\theta = 0$, the Carter constant takes the form $K = \mathcal{L}^2$ and the equation of the radial motion can be expressed in the following standard form

$$\dot{r}^2 = \mathcal{E}^2 - V_{\text{eff}} \quad (5)$$

where the effective potential of the motion of neutral particles is defined as

$$V_{\text{eff}} = f(r) \left(1 + \frac{\mathcal{L}^2}{r^2 \sin^2 \theta} \right) \quad (6)$$

Radial dependence of effective potential for radial motion of neutral particles around charged Λ ether BHs is presented in Fig.1. Here we have provided the effective potential for the solution $c_{14} = 0$ and $c_{123} = 0$, and fixed the angular momentum of the particles at $\mathcal{L} = 4.3M$. One can easily see that with the increase of the parameter c_{14} and the BH charge causes to increase of the maximum of the effective potential, while the point where the effective potential is maximum, which borders of stable and unstable circular motion comes close to the central BH. However the effect of the parameter is vise-versa and too weak, it can very slightly decrease the effective potential.

Now we study the circular motion of a neutral particle and consequently, one may consider using the standard conditions for the circular motion that implies there are no radial motion ($\dot{r} = 0$) and no forces in the radial direction ($\partial(\partial r) = 0$). Using these condition we may easily obtain the radial profiles of the specific angular momentum and specific energy for circular orbits in the equatorial plane ($\theta = \pi/2$)

where the effective potential given in Eq.(30) is maximal (actually, it can be found by solving the equation $\partial_\theta V_{\text{eff}} = 0$ with respect to θ) test particle around BH in $\mathcal{A}$ ether gravity in the following form

$$\mathcal{L}^2(r; M, c_{13}, c_{14}, Q) = \frac{r^2 [(2c_{13} - c_{14}) M^2 + 2(1 - c_{13}) Mr - 2Q^2]}{2[(c_{14} - 2c_{13}) M^2 + (1 - c_{13}) r(r - 3M) + 2Q^2]},$$

$$\mathcal{E}^2(r; M, c_{13}, c_{14}, Q) = \frac{[(c_{14} - 2c_{13}) M^2 + 2r(r - 2M)(1 - c_{13}) + 2Q^2]^2}{4r^2 (1 - c_{13}) [(c_{14} - 2c_{13}) M^2 + (1 - c_{13}) r(r - 3M) + 2Q^2]},$$

when $c_{123} = 0$, and

$$\mathcal{L}^2(r; M, c_{13}, Q) = \frac{16r^4 (1 - c_{13}) (Q^2 - Mr) - 54c_{13} M^4 r^2}{81c_{13} M^4 - 16r^2 (1 - c_{13}) (2Q^2 + r^2 - 3Mr)},$$

$$\mathcal{E}^2(r; M, c_{13}, Q) = \frac{[27c_{13} M^4 - 16r^2 (1 - c_{13}) (Q^2 + r^2 - 2Mr)]^2}{16r^4 (1 - c_{13}) [16r^2 (1 - c_{13}) (2Q^2 + r^2 - 3Mr) - 81c_{13} M^4]}, \quad (7)$$

The results we got

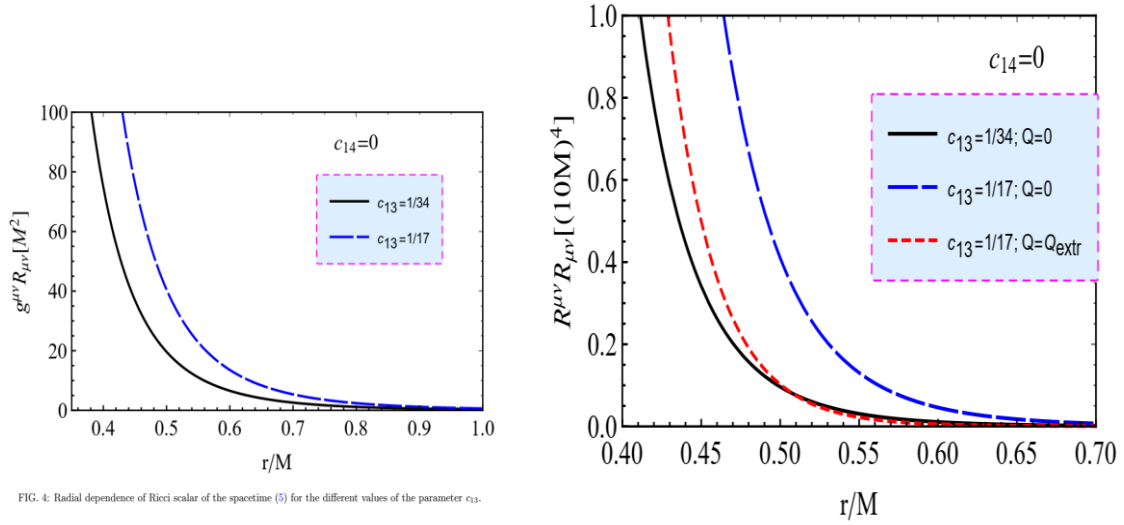


FIG. 4: Radial dependence of Ricci scalar of the spacetime (5) for the different values of the parameter c_{13} .

Conclusion:

In this article we analyzed the particle motion and scalar invariants by applying Lagrangian density equation and particle motion equation. The results give us much information about how stable circular orbit

affects the Ricci tensor Kretschman scalar. When the particle is magnetized and moving in a uniform magnetic field around the magnetized BH (i.e. BH electric charge is replaced by the magnetic charge), the particle behaves as if it were moving about a Kerr black hole. The mimicking values of $\mathcal{A}$ ether BH parameters are compared with the spin of Kerr BH as well for concreteness.

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Rezyume: Bu erda bizning maqsadimiz erkin parametrlarning ta'sirini tahlil qilishdir. Eynshteyn-Ater nazariyasida zarrachalarning egri fazoda harakati uchun sodir bo'lgan. Xususan biz har xil turdagi zarrachalarning dumaloq va radial o'zgaruvchan orbitalarining barqarorligini o'rgandik. c_{13} va c_{14} erkin parametrlarini o'zgartirish, shuningdek, zarrachaning o'ziga xos energiyasi, o'ziga xos burchak. Qora tuynukning impulsi va elektr zaryadini xususiyatlarini o'rgandik.

Резюме: Наша цель здесь — проанализировать влияние свободных параметров. Происходящее в теории Эйнштейна-Этера для движения частиц в искривленном пространстве-времени. Конкретно, мы изучили устойчивость круговых и радиально изменяющихся орбит различных видов частиц с помощью варьируя свободные параметры c_{13} и c_{14} , а также варьируя удельную энергию частицы, удельный угловой, Импульс и электрический заряд черной дыры.

Kalit so'zlar: Lagranj funksiyasi, Reisner-Nordstorm, skalar invariantlar, Kratsman skalari, Killing vektor, Gamilton Yakobi tenglamasi.

Ключевые слова: Лагранж функцияси, Райснер-Нордсторм, скалярный инвариант, Крацман скалари, Вектор убийства, Уравнение Гамильтона Якоби

INVESTIGATION OF EXCITED STATES OF ODD-ODD NUCLEI WITH MASS NUMBER
 $A = 134, 136, 138$

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Summary: This work studied the radioactive decay of nuclides $^{136,138}\text{Nd}$ and ^{134}Ce and obtained new data on the properties of daughter odd-odd nuclei. Some lower states can be interpreted as members of two-quasi-partial p - n multiplets and deviations from Brennan-Bernstein rules are observed when describing the characteristics of the ground state ^{136}Pr as well as individual low-lying levels can be used as suitable candidates for states of a vibrational nature. Our proposed systematics of Q_β values makes it possible to predict with good accuracy the energy of beta-decay of nuclei and identifies among the set of states $1 +$ levels of type $1 + [\pi(d_{5/2}), \nu(d_{3/2})]$.

Key words: odd-odd nuclei, even-even nuclei, gamma radiation, nuclides, state, experiment, nuclear deformations, gamma transition, one partial model, radioactive decay, electronic conversion of transitions.

Introduction. Progress in studies of the properties of odd-odd nuclei in recent years is associated with the possibility of interpreting their lowest states as members of proton-neutron multiplets. This representation is especially acceptable for cores near filled shells (for example, in the vicinity of ^{208}Pb). However, experimental studies of odd-odd nuclei with $A=130$ -140 performed in recent years have shown that even the lowest levels in this area cannot always be described by proton-neutron multiplets. Thus, in the decay of even-even nuclei, a large number of states with $1^\pi=1^+$ are excited in the daughter nuclei. Only some of them seemed possible to interpret within the framework of the shell model as two-quasiparticle. Therefore, attempts have been made to consider such levels within the framework of the model of the coupling of the vibrational backbone with single-particle states of unpaired nucleons. In other works, to explain the properties of odd-odd nuclei in this region of mass numbers, a proposal was made about their noticeable deformation. In this work, the radioactive decay of nuclides $^{136,138}\text{Nd}$ and ^{134}Ce was studied and new data on the properties of daughter odd-odd nuclei were obtained. The decay of ^{138}Nd ($T_{1/2}=5,2\pm0,1$ h) was studied earlier in [1,2]. Several γ -transitions were detected. In [1] the electrons of internal conversion are also studied. The ^{136}Nd - ^{138}Pr decay scheme proposed in [1] and [2] are close, but they need to be confirmed by the results of measurements of α - α or e - α coincidences. The radiation of ^{136}Nd ($T_{1/2}=50.65\pm0,33$ min) was radiated in detail in the works [3,4]. A large number of γ -rays are attributed to the decay of this isotope. Internal conversion electrons were measured at the most intense transitions [3] the variant of the decay scheme ^{136}Nd differs from the scheme b [4]. The scheme of excited states ^{138}Pr was justified by measurements of α - α coincidences and, in addition, the 40,1 keV transition masked by K α rays was found, which greatly influenced the design of the scheme. Lifetimes were measured for two ^{136}Pr states: $T_{1/2}=9,4\pm0,2$ ns [4,5] - for the 40,1 keV level and $T_{1/2}<0,8$ ns [4] and $<0,2$ ns [5] - for the 149 keV level.

The radiation of ^{134}Ce ($T_{1/2}=75,9\pm0,9$ h) was radiated in detail in the work of Greenwood et al. [6]. About 30 α -transitions were detected, the intensities of which (in % for decay) were established along the α -lines of the daughter ^{134}La . Based on the measurements of the spectra of α -rays and α - α - coincidences, a decay scheme is proposed.

Experimental conditions. Neutron-deficient Neodymium and Cerium nuclides were obtained in the deep cleavage reaction of gadolinium by protons with an energy of 660 MeV. A target made of metal Gd weighing 2 g was irradiated on an internal beam -to obtain a long-lived ^{134}Ce , the target was irradiated for 12 hours. The amount of rare-earth radionuclides was isolated from the target by anion exchange chromatography. Then lanthanides were separated into separate fractions by cation exchange chromatography. Sources for spectrometers were prepared from Nd and Ce fractions by separating them into isobars using an electromagnetic mass separator. The ions were driven into aluminum substrates 15-20 microns thick or into mylar substrates 5-10 microns thick.

To study the electron spectrum of the internal conversion of ^{134}Ce on a beta spectrograph, the source was prepared by electrolysis from the cerium fraction. The substrate was a platinum wire with a diameter of 0,1 mm. The gamma radiation of the obtained preparations was studied using spectrometers with Ce(Li) detectors with a volume of 0,8 and 38 cm^3 with an energy resolution of 0,6 keV (^{57}Co) and 2,2 keV (^{60}Co), respectively. The details of the methodology for measuring and processing γ -spectra are set out in [7]. The electron spectra of the internal conversion of Nd isotopes were studied using a beta spectrometer with a toroidal magnetic field [8] and a spectrometer with a Si(Li) detector placed in a homogeneous magnetic field [7]. The “Orange” type spectrometer was set to a resolution of 0,8% with a light intensity of 15%. The spectrometer with the Si(Li) detector had a resolution of 2,2 keV at -500 keV. The spectrum of ^{134}Ce conversion electrons was studied using a beta spectrograph with a constant magnetic field [9] at a resolution of 0,05%. Successive exposures of photographic plates made during 5 days allowed to identify the observed conversion lines. The e- γ -coincidence spectra were studied at the installation [10], created on the basis of a beta spectrometer with a toroidal magnetic field and a γ -spectrometer with a Ce(Li) detector with a volume of 35 cm^3 . In our experiments, the resolving installation time was $\tau = 50\text{ns}$.

Table 1. Information about γ -rays and electrons of internal conversion ^{138}Nd ((e- γ ,a) keV) rel.ed Line Ie in) rel.ed Ie exp. Multiplicity I is complete.b)

E γ ,a) keV	I γ b)	lines	Ie v)	Ie exp.	Multipolarity	I b)
1	2	3	4	5	6	7
K _{1,2} (Pr)	2350±250	-	-	-	-	-
K _{B1} (Pr)	380±40	-	-	-	-	-
K _{B2} (Pr)	80±15	-	-	-	-	-
	1,2±0,4	K	1620±210	4,0±1,8	MI+<6%E2	7,26±2,42
		L	260±30	0,64±0,29	-	-
		M+N	68±8	-	-	-
116,3±0,2	3,6±0,4	K	990±100	0,82±0,17	MI+<23%E2	7,09±0,79
		L	102±15	(8,4±2,2)	-	-
		M+N	30±5	-	-	-
126,14±0,05	4,6±0,6	K	1000±100	0,65±0,15	MI+<10%E2	7,73±1,01

		L	121±14	(7,8±2,0)	-	-
		M+N	25±5	-	-	-
132,73±0,05	7,3±0,9	K	1230±125	0,50±0,11	MI+<25%E2	11,66±0,96
		L	207±27	(8,4±2,1)	-	-
		M+N	33±7	-	-	-
168±1 ^{r)}	0,6±0,2	-	-	-	-	(0,78±0,2
178,5±1,0	1,2±0,4	K	25±5	(6±3)	EI	1,2±0,4
194,21±0,05	10,6±0,6	K	550±55	0,154±0,22	MI	12,67±0,72
		L	75±10	(2,1±0,4)		
199,50±0,05	22,9±1,2	K	964±96	0,125±0,02	MI+<22%E2	27,28±1,43
		L	165±20	(2,1±0,5)	-	-
		M+N	41±6	-	-	-
214,13±0,06	3,0±0,8	K	210±30 ^{D)}	0,21±0,09	MI+(E2)	3,46±0,92
215,31±0,06	12,0±1,3	K	390±50 ^{D)}	(9,6±2,2)	E2+(MI)	13,8±1,5
234±1 ^{r)}	0,9±0,3	-	-	-	-	0,9±0,3
284,3±0,7	1,6±0,5	K	30±6	(5,6±2,8)	MI+E2	1,7±0,5
325,76±0,05	122±3	K	1600±110	(3,9±0,4)	MI+E2	128,2±3,2
		L	220±30	(5,4±0,9)	-	-
		M+N	50±8	-	-	-
326,9±0,6 ^{g)}	1,0±0,3	-	-	-	-	1,0±0,3
341,65±0,05	17,2±1,7	K	195±25	(3,4±0,8)	MI+E2	18,0±1,8
		L	42±7	(7,2±2,0)	-	-
541,0±0,3	1,7±0,5	K	13±3	(2,4±1,2)	MI	1,7±0,5
553,6±0,5 ^{e)}	<0,6	K	33±6	>0,16	EO	-
581,0±0,5 ^{j)}	2,2±0,5	K	<5,3	<0,007	EI, E2	2,2±0,5
788,7±0,1 ⁺)	100	K	100 ⁺)	2,97±0.03	E2	100,3

a) Most of the values of E_{γ} are borrowed from [1].

b) I from.units=(0,0233+0,0033)% for decay / $I_{\gamma 787}=(2b33+0b33)$ % for decay[1].

c) I from.ed.=(6,92+1,04) 10.5% to decay

d) Transitions are observed in e- γ -coincidences.

e) The I_{cs} are taken from [1].

f) The transition is observed only in the electron spectrum of internal conversion and confirmation of its belonging to the decay of ^{138}Pr is required.

g) It may belong to ^{138}Pr [1].

h) It is taken as a MI-transition according to the decay scheme.

+) Normalization values.

EXPERIMENTAL RESULTS.

Disintegration ^{138}Nd - ^{138}Pr

The results of our studies of the spectra of X-rays and electrons of internal conversion are presented in Table.1. Determination of the energy differences of the conversion lines E_K-E_L or the differences $E_\gamma-E_K$ allowed us to establish the isotopic affiliation of the γ -transitions. Conclusions about the isotopic affiliation of γ -transitions were also made from the results of the study of e- γ -coincidences.

Previously unknown γ -transitions with Eu are attributed to the decay of ^{138}Nd =62,6: 168: 178,5: 234:284,3 and 326.9 keV. For most of the γ -transitions, the types of multipoles are set. Conclusions about the multipoles of γ -transitions are made by comparing the experimental values of the conversion coefficients α_K and α_L with the corresponding theoretical values according to Hager and Selzer.11 Measurements of e- γ -coincidences allowed us to establish a number of cascades of matching γ -transitions /Table 2/.

Decay of ^{138}Nd - ^{138}Pr

Table 3 shows the data obtained in our experiments on γ -rays and electrons of internal conversion of ^{138}Nd . Measurements of differences $E_\gamma-E_K$, E_K-E_L , as well as e- γ -coincidences.

Table 2. Information about e- γ -coincident ^{138}Nd .

keV	Energy and intensity of coincident γ -transitions
K 62,2	116,3; 132,7; 168; 194,2; 234; 284,3; 326,9;
K116,3	132,7; 168; 194,2;
K126,1	199,5
K132,7	116,3; 194,2; 214,1
K194,2	/116,3;/132,7; /214,1/
K199,5	126,1; 341,6
K214,1 K215,3	/132,7;/ 194,2; 325,5

The energies of transitions that were not very convincingly demonstrated in coincidences are indicated in parentheses.

Table 3. Information on γ -rays and electrons of internal conversion of ^{136}Nd .

E_γ keV	$I_\gamma^{(6)}$	Lines	I_e	J_e exp.	$I^{(6)}$	Multicompleteness
1	2	3	4	5	6	7
40,2 $\pm$ 0,1	60 $\pm$ 5	L	140 $\pm$ 14	2,33 $\pm$ 0,47	237 $\pm$ 15	MI $\pm$ (0,17 $\pm$ 0,04)%E2
		M	29,6 $\pm$ 3,0			
		N	7,7 $\pm$ 0,8			

63,0±0,2 ^{a)}		L	0,43±0,08			
		M	0,15±0,03			
100,54±0,11	4,4±0,4	K	3,92±0,39	0,89±0,18	9,0±0,6	MI
		L	0,50±0,10	0,11±0,04		
		M	0,14±0,05			
108,90±0,10	100	K	88,3±4,4	0,883	206±6	MI+(2,84±0,25)%E2
		L	13,4±1,3	0,134±0,013		
		M	3,30±0,35			
		N	0,70±0,14			
130,54±0,13	1,70±0,17	K	0,70±0,10	4,1±1,0	2,9±0,2	E2+/MI/
		L	0,35±0,07	2,1±0,6		
		N	0,19±0,06			
139,3±0,5 ^{a)}	0,65±0,15				-1,0	
144,28±0,15	4,0±0,6	K	complex		5,6±0,7	
		L	0,23±0,04	5,8±2,0		
149,1±0,1	22,0±2,0	K	6,3±0,9	2,86±0,72	30,0±2,3	
		L	1,0±0,1	4,5±0,9		
		N	0,20±0,03			
184,5±0,2	1,5±0,3		complex			
			2,7±1,3			
204,3±0,5	0,45±0,09		6,0±1,5			
219,5±1,0	0,50±0,15					
240,4±0,5	0,18±0,08					
252,7±0,3 ^{a)}	0,50±0,15		5,0±1,3			
292,4±0,5	0,90±0,15		8,0±0,9			
292,4±0,5	0,65±0,15					
294,6±0,2	2,10±0,25					

336,0±0,3	1,50±0,30					
390,3±0,2	2,40±0,40					
425,9±0,3	0,60±0,10					
436,5±0,4	0,60±0,15					
476,7±0,2	4,0±0,4					
488,6±0,5	0,55±0,15					
498,7±0,5	0,80±0,25					
523,6±0,4	0,55±0,15					
525,9 ^{a)}	<0,15					
528,5±0,5	0,25±0,08					
534,9±0,4	2,3±0,4					
574,8±0,1	33,0±3,0					
605,7±0,6	32,4±0,5	+N K K K K	/4.4±0.4/-2	/1,3±0,3/-3		
643,9±0,4			/1.40±0.14/-			
652,9±0,5	1,6±0,2		/1,40±0,14/-	/8,5±2,0/-3	1,6±0,2	M1+/E2/
672,4±0,5	0,8±0,2		/3,8±1,0/-3	/4,8±2,4/-3	0,8±0,2	E2+/M1/
755,2±0,3	1,5±0,3		/7,8±1,0/-3	/5,2±1,7/-3	1,5±0,3	E2+/M1/
841,3±0,5	1,0±0,2		/8,5±1,3/-3	/8,5±3,0/-3	1,0±0,2	M1+/E2/
855,5±0,5	0,9±0,2		/4,0±1,2/-3	/4,4±2,2/-3	0,9±0,2	E2+/M1/
900,3±0,5	1,45±0,20		/5,9±1,2/-3	/4,1±1,4/-3	1,45±0,20	E2+/M1/
921,9±0,5	0,30±0,08				0,30±0,08	
940,3±0,5	0,5±0,2		/1,8±0,9/-3	~3,6-3	0,5±0,2	/E2,M1/
972,3±0,5	1,1±0,2		/3,0±1,2/-3	/2,8±1,4/-3	1,1±0,2	E2, /M1/
1013,1±0,5	0,8±0,2		/1,8±0,6/-3	/2,3±1,2/-3	0,8±0,2	E2, /M1/
1021,5±0,5	1,7±0,2		/3,7±1,2/-3	/2,2±0,9/-3	1,7±0,2	E2, /M1/
1031,5±0,5	2,9±0,4		8,0±1,6/-3	/2,8±1,0/-3	2,9±0,4	M1,/E2/
1041,4±0,6	0,8±0,2		/~7/-4		0,8±0,2	

1062,5±0,6	0,85±0,20		/1,0±0,5/-3		0,85±0,20	
1184,0±0,8	0,8±0,2		/1,7±0,7/-3	/2,1±1,2/-3	0,8±0,2	
1489,0±0,7	1,0±0,2		/2,7±0,9/-33/8±4/-4	/2,7±1,3/-3	1,0±0,2	
	0,65±0,15				0,65±0,15	
	0,9±0,30				0,9±0,3	
	0,70±0,25				0,70±0,25	

a) Transition is not placed in the decay scheme. b/1 of.units = / 0.317 ± 0.016/% for decay. The entry of the type/5,8±2,0/-2 indicates/5,8±2,0/10⁻²/Table [4] allowed us to unambiguously establish belonging to the decay of the ¹³⁶Nd series of γ -transitions, attributed [3] to the decay of the “epocha” of the ¹³⁶Nd → ¹³⁶Pr → ¹³⁶Ce.

Table 3 shows the types of multipoles we have established for most of the gamma transitions. Conclusions about multipoles were made as a result of measurements of the values of α_K or α_L , or by studying the structure of L-lines. For example, for the 40,2 keV transition, the intensity ratios L_I/L_{III} =23,0±3,0; L_I/L_{II} =9,2±0,9/ see Figure [1] were measured on an Orange-type beta spectrometer. It follows that the transition has a multipole M1 with a small admixture of E₂ /0,17 ± 0,04%/. Table 4 shows the results of our measurements of e- γ -coincidences.

3.3. Decay of ¹³⁴Ce → ¹³⁴La

The information we have obtained about the gamma radiation of ¹³⁴Ce is given in Table.5. For comparison, the results of Greenwood et al. are also given there [6]. In Table 6 we present our data on the electrons of the internal conversion of ¹³⁴Ce. The K-, L- and M-lines of 130,15 and 162,30 keV transitions were detected. In addition, L_I-, L_{II}- and L_{III}- conversion lines of a previously unknown transition of 32,07 keV were detected. The transition of 130,15 keV, based on the ratio of the intensities of K-, L_I - L_{II}- and M-lines, should be attributed to the multipole M1. The value of α_K (M1) of this transition is used to normalize the intensities of gamma rays and electrons of internal conversion.

The ratio of the intensities of the L –transition lines of 32,07 keV $L_I:L_{II}:L_{III}$ = 1:≈ 0,56: ≈ 0,78 is closest to the theoretical one for pure E1-type /1:0,40: 0,59/, therefore, in the preliminary message [12] the multipole E1 was attributed to this transition. However, the estimate of α_{II} 1,9 excludes type E1 / α_{II} =0,36/ and type

Table 4. Information about e - γ – matches ¹³⁶ Nd

EVK	Energy and intensity of coinciding γ - transitions						
L 40,2	100,9	108,9	144,5	294,7	336,0	390,4	436,3
	/5,0/	/=100/	/3,9/	/2,5/	/2,0/	/2,0/	/1,6/
	499,3	535,1	605,7	632,7	645,3	/653,4/	/724,8/
	/0,8/	/2,2/	/1,5/	/1,0/	/1,2/	/~0,6/	/~0,6/
	754,8	855,9	900,1				
	/~1,0/	/~0,8/	/~1,0/				
K 100,9	336,0	653,5	921,9				
	/1,6/	/0,9/	/0,8/				
K108,9	523,9	645,3	855,9				
	/~1,0/	/1,2/	/~0,8/				

The energies of γ -transitions, which did not appear very convincingly in coincidences, are indicated in parentheses.

$E2/\alpha_{II}=0,96/$ and does not contradict the multipole $M1/\alpha_{II}=3,24/$ or $M1+E2$. From the structure of the L –lines and the estimate of α_{II} , we conclude that the transition is 32,07keV – type $M1+3,0\%$ E2.

The transition of 162,2 keV on the basis of the values of α_K and K/L_I is attributed to the multipole $M1$.

DISCUSSION OF THE RESULTS

Decay scheme ^{138}Nd

Based on the data obtained on gamma rays, internal conversion electrons and e – gamma coincidences, we propose a scheme for the decay of ^{138}Nd [Fig.2]. All transitions attributed to the decay of ^{138}Nd are placed in the scheme. New ^{138}Pr levels have been introduced: 389,5; 505,8; 624; 673,8 and 719 keV. The occupancy levels of ^{138}Pr by electronic capture are determined from the balance of the intensities of gamma transitions.

The β^+ decay energy of ^{138}Nd has not been established. Various mass formulas give values for $Q_{\beta^+}(^{138}\text{Nd})$ from 1000 [13] to 2500 keV [14]. From the estimate of the upper limit of the annihilation radiation intensity of ^{138}Nd , [15] was obtained for the value $Q_{\beta^+}\leq 1750$ keV. In the future, for the magnitude of the mass difference $^{138}\text{Nd}\rightarrow^{138}\text{gPr}$, we take, according to the taxonomy [Fig.5]: $Q_{\epsilon}=1020$ keV accuracy is not worse than 30 keV. With this value, the values of $\lg ft$ β -transitions ^{138}Nd are calculated.

Table 5. Information about gamma rays ^{134}C

Grinvud at all. [6]				Our data			
E_{γ} /keV/	ΔE_{γ}	I_{γ} ,	ΔI_{γ}	E_{γ} /keV/	ΔE_{γ}	I_{γ} ,	ΔI_{γ}
22,7		<22					
Kx/La/		72300	3600				
31,89		<50					
39,08		<150					
54,65	0,06	16,9	2,4	54,8	0,3	14,0	2,8
59,04	0,20	0,21	0,10				
61,88	0,14	3,6	0,8				
/66,26/	0,20	0,12	0,60				
68,55	0,16	0,76	0,25				
70,85	0,12	1,21	0,20				
90,18	0,06	5,5	0,5	90,3	0,5	4,5	1,5
93,47	0,16	0,93	0,25				
102,998	0,010	25,3	2,5	103,0	0,1	21,3	3,2
104,53	0,08	2,14	0,28	104,7	0,5	2,0	0,6
107,34	0,04	6,1	0,4	107,4	0,2	6,8	1,4
116,19	0,04	2,68	0,27	116,2	0,5	2,6	0,8
130,414	0,015	209	15	130,4	0,1	200	15
131,93	0,05	17,1	1,7	132,0	0,2	20,3	3,0
150,20	0,04	3,76	0,40	150,3	0,5	4,0	1,6
157,785	0,010	39,1	2,7	158,8	0,1	42,1	4,2
162,306	0,010	230	16	162,3	0,1	230	
168,453	0,025	12,2	0,9	168,4	0,5	13,0	3,0

187,013	0,012	21,8	1,5	187,0	0,2	23,9	3,5
193,157	0,012	40,4	2,8	193,2	0,2	43,1	4,3
197,891	0,025	13,6	1,0	197,8	0,3	11,9	2,3
200,60	0,08	1,61	0,24	200,5	0,6	2,0	0,7
205,27	0,06	4,2	0,5	205,5	0,5	5,0	1,2
220,56	0,05	4,6	0,6	220,5	0,5	4,6	1,2
239,650	0,020	13,1	1,0	239,6	0,3	16,7	3,3
252,54	0,07	3,7	0,5	252,5	0,5	4,1	1,2
262,26	0,10	3,4	0,5	262,5	0,7	3,0	1,0
265,54	0,07	3,9	0,5	х/		х/	
294,264	0,015	54	4	294,3	0,2	47	5
300,884	0,015	88	7	300,9	0,2	88	9
323,59	0,05	15,6	1,6	323,5	0,5	12,1	3,1
355,54	0,05	8,8	0,9	355,5	0,5	7,0	1,8

x-line ^{135}Ce is superimposed.

Table 6. Information about the electrons of the internal conversion of some transitions ^{134}Ce

E_γ /keV/	Relative intensity ^{a)}					α_K exp.	Multicompleteness
	K	L _I	L _{II}	L _{III}	M		
32,07±0,05	—	9	~5	~7	—	>1,9 ^{6/}	M1
130,15±0,05	9	1,3	<0,2	<0,1	0,3	0,45	M1
162,20±0,05	7	1	<0,2	0,23	0,25	0,32±0,10	M1

a) Accuracy in determining the relationship $L_X: L_X: L_X$ is not worse than 15%

The error in determining the intensity of strong lines is about 20%, and weak lines – 50%. b) The value of α_{II} is specified.

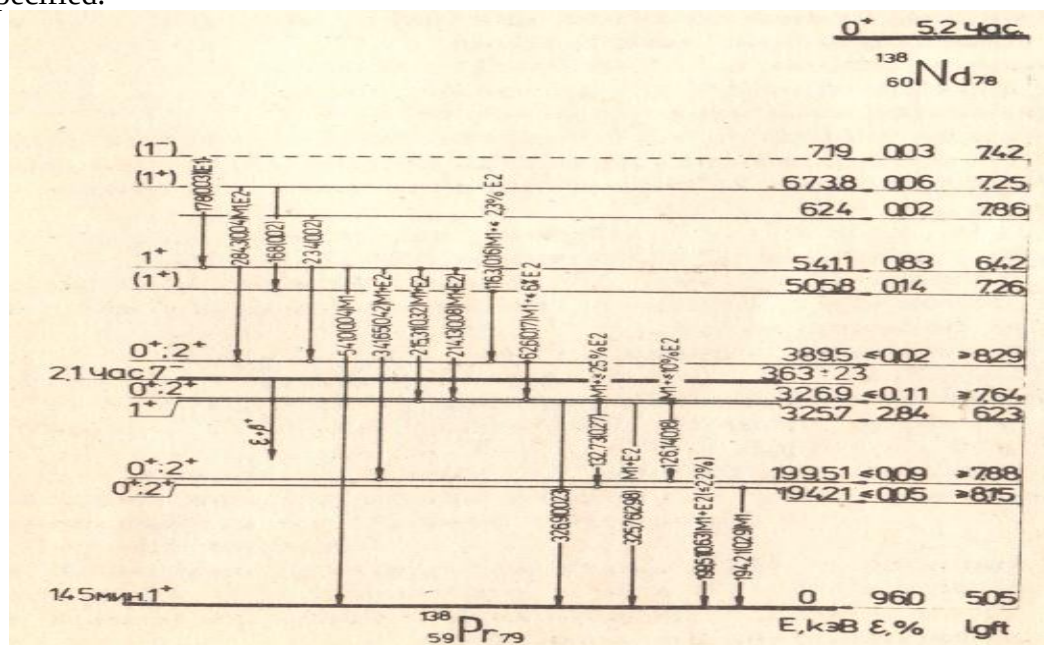


Fig.2. ^{138}Nd decay scheme.

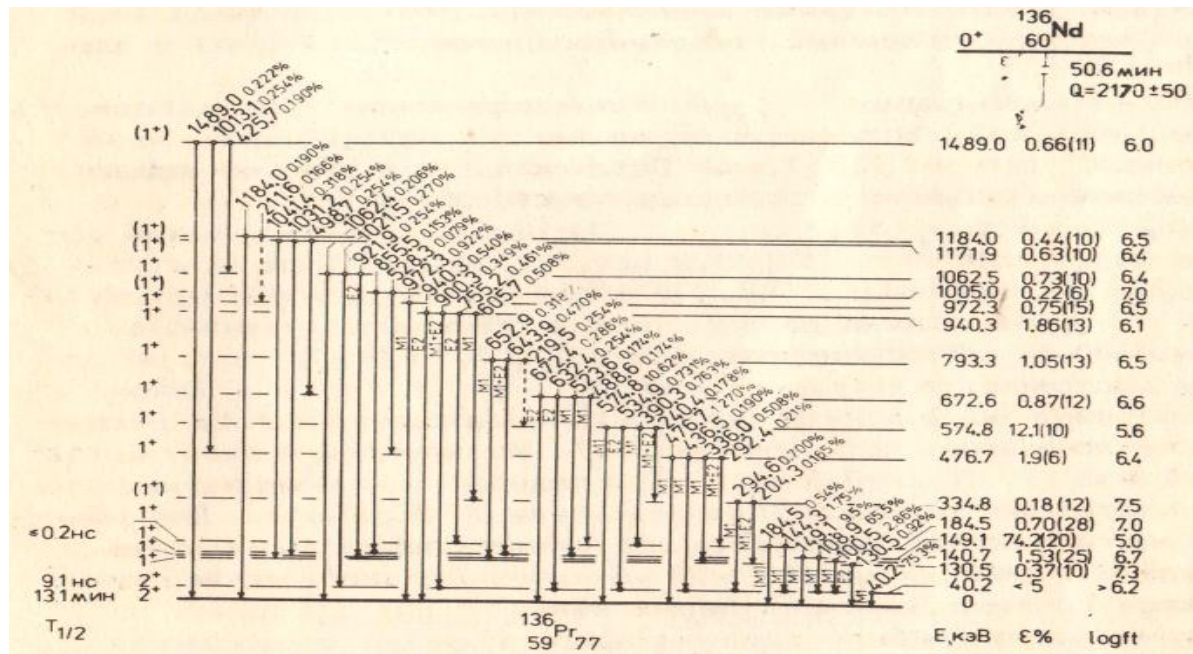
The spins and the parity of the excited states of ^{138}Pr are established on the basis of the multipoles of the γ -transitions and the values of $\lg ft$ of the corresponding β -transitions. At the same time, the results of [16] measurements by the method of atomic beams of spins ^{138}Nd ($I=0$) and ^{138}Pr ($I=1$) were accepted.

The value $\lg ft = 5,05$ of the beta transition between the ground states $^{138}\text{Nd} \rightarrow ^{138}\text{Pr}$ is characteristic in this region of mass numbers for the beta process $\pi(d_{5/2}) \rightarrow \nu(d_{3/2})$. Therefore, we attribute the two-quasiparticle configuration $[\pi(d_{5/2}) \rightarrow \nu(d_{3/2})]1^+$ to the state ^{138}Pr , as before [1]. In the scheme of excited states of ^{138}Pr , there are several more levels to which we attributed $I^\pi=1^+$: 325,7; 505,8; 541,1 and 673,8 keV. However, these levels are much weaker than the ground state, populated by electronic capture / $\lg ft = 6,2 \div 7,3$ /. States 194,2; 199,5; 326,9 and 389,5 keV are practically not populated by electronic capture. Positive parity should be attributed to these four states from the multipoles of the γ -transitions by which they are highlighted. We exclude the characteristics $I^\pi = 1^+$ for them, since the values of $\lg ft$ of the corresponding β -transitions are quite large / $> 7,6$ /. Therefore, $I^\pi = 0^+$ and 2^+ should be left in consideration, bearing in mind that Fermi β -transitions $0^+ \rightarrow 0^+$ are significantly inhibited due to the ban on isotopic spin. Within the framework of the shell model, there are no possibilities for constructing two-quasiparticle configurations with $I^\pi = 0^+$, and for states 2^+ , the following configurations can be assumed: $[\pi(g_{7/2}), \nu(d_{3/2})]2^+$, $[\pi(d_{5/2}), \nu(d_{3/2})]2^+$ and $[\pi(d_{5/2}), \nu(s_{1/2})]2^+$. The first two configurations, apparently, can be compared with the levels of 194,2 and 199,5 keV, and the third – with the level of 326,9 or 389,5 keV. At the same time, γ –transitions to the ground state are observed, which by their nature are close to single-particle transitions $\pi(g_{7/2}) \rightarrow \nu(d_{3/2})$, $\nu(s_{1/2}) \rightarrow \nu(d_{3/2})$, or inside a multipole transition $[\pi(d_{5/2}), \nu(d_{3/2})]2^+ \rightarrow [\pi(d_{5/2}), \nu(d_{3/2})]1^+$. The states 389,5 and 326,9 keV are connected by the M1 transition of 62,6 keV, so the characteristics $I^\pi = 0^+$ cannot be at both levels. It is likely that $I^\pi = 2^+$ has a level of 326,9 keV, and 389,5 keV - $I^\pi = 0^+$. Among the low-lying states of ^{138}Pr , there are levels with negative parity. This is an isomeric state at an energy of 363 ± 23 keV with $I^\pi = 7^-$, which we previously attributed [1] to the two-quasiparticle multiplet $[\pi(d_{5/2}), \nu(h_{11/2})]$. We attributed $I^\pi = 1^-$ to the level at an energy of 719 keV, based on the multipole E1 of the 178 keV transition highlighting it and the value $\lg ft = 7,4$ of the corresponding β –transition. Two-quasiparticle states $I^\pi = 1$ are not expected according to the shell model.

A certain progress in understanding the structure of low-lying states /with $I^\pi = 1^+$ and 0^+ / is associated with the assumption [1] that the appearance of some of them is due to the connection of vibrations of an even-even skeleton with the one-particle motion of unpaired nucleons. Such a framework for $(^{59}_{138}\text{Pr}_{79})$ will be $(^{58}_{136}\text{Ce}_{78})$, whose first vibrational state 2^+ has an energy of 552 keV. Therefore, even at small excitation energies in ^{138}Pr , states of the type $[\pi(d_{5/2} \otimes 2^+), \nu(d_{3/2})]0^+, 1^+ \dots$ or $[\pi(d_{5/2}) \nu(d_{3/2} \otimes 2^+)]0^+, 1^+ \dots$. It is impossible to exclude the appearance in the region of energies below 1 MeV and states of the type $[\pi(d_{5/2} \otimes 3^-), \nu(d_{3/2})]1^-, \dots$

New information about gamma rays, internal conversion electrons and e–gamma coincidences made it possible to significantly refine the decay scheme of ^{136}Nd /Fig.3/. New levels of ^{136}Pr have been introduced into the scheme: 130,5; 1005,0; 1062,5; 1171,9; 1184,0 and 1489,0 keV. Most of them were introduced on the basis of the observed e- γ coincidences. Only the levels of 130,5, 1184,0 and 1489,0 keV were introduced according to the balance of the energies of the γ -transitions. A few weak gamma transitions (63,0; 139,3; 252,7; 525,9 keV) remained unplaced in the scheme of 136 levels. The population levels of ^{136}Pr by electronic capture are determined from the balance of the intensities of gamma transitions, taking into account the data on Kx rays. The value of $Q_\beta(^{136}\text{Nd})$ was previously determined in work [3] by observing positrons ^{136}Nd with $U_{sr} \approx 900$ keV and in work [4] as a result of measuring the branching of K/β^+ . We performed a more thorough processing of the previous measurements of the positron spectrum of ^{136}Nd and clarified the boundary energy: $E_{gr}=1000 \pm 50$ keV. Taking into account the

fact that positrons populate the level of 149.1 keV in ^{136}Pr , we find $Q\beta(^{136}\text{Nd})=2170 \pm 50$ keV. With this value, the values of $\lg ft$ β -transitions ^{136}Nd are calculated. Fig. 3. ^{136}Nd decay scheme.



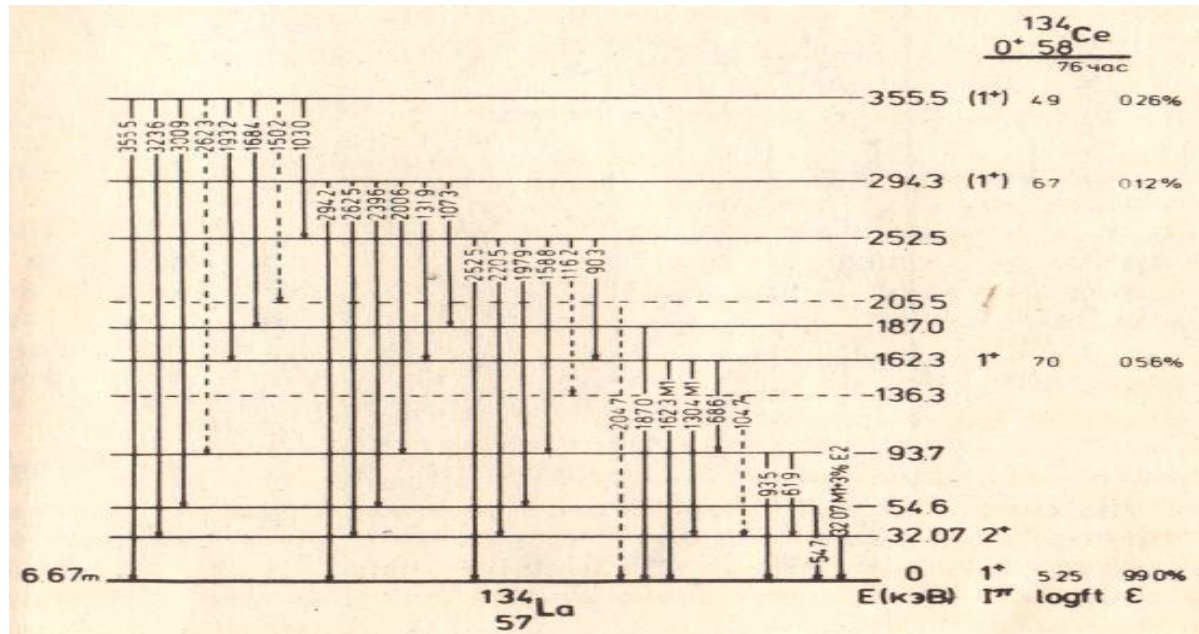
^{136}Nd Decay Scheme

Knowledge of the types of multipoles in a number of γ -transitions, as well as the $\lg ft$ values of the corresponding β -transitions, allows us to propose the characteristics $I^\pi = 1^+$ of almost all levels of ^{136}Pr [Fig. 8]. Although there is no information about the multipoles of γ -transitions discharging levels 1005,0;1171,9;1184,0;1489,0 keV, however, we also attribute the characteristics $I^\pi = 1^+$, since β -transitions to them are quite fast ($\lg ft = 6,0 \div 7,4$). The balance of the intensities of the γ -transitions allows the level of 40,2 keV to be populated by electronic capture ($I_e < 5\%$, $\lg ft > 6,2$), and it is difficult to make a conclusion about the type of the corresponding β -transition. The characteristics of $I^\pi = 2^+$ for this state we adopted according to the work of Borzi et al.[4]. The ground state, according to our work [3], also has $I^\pi = 2^+$. This result is confirmed by direct measurement of spin $^{136}\text{Pr}/I = 2/$ in the work [6].

The most intense $I_e + \beta^+ = 74\%$ in the decay of ^{136}Nd , the level of 149,1 keV is populated. The beta transition to it is allowed, not inhibited / $\lg ft = 5,0$. Such a beta process in the framework of the shell model can be explained by the transformation of $\pi [(d_{5/2})20^+ \rightarrow [\pi (d_{5/2}), \nu (d_{3/2})]1^+$. From the estimation of the lifetime of the state of 149,1 keV ($T_{1/2} \leq 0,2$ ns) [5], it follows that the braking factors of M1 transitions 108,9 and 149,1 keV will be respectively ≤ 25 and ≤ 310 . Such factors can be explained by attributing the configuration $[\pi (d_{5/2}), \nu (s_{1/2})]2^+$ to the 40,2 keV state, and $[\pi (g_{7/2}), \nu (d_{3/2})]2^+$ to the ground state. In this case, the transition 40,2 should be strongly inhibited / both unpaired nucleons change their orbits/. From the lifetime of the 40,2 keV state ($T_{1/2} = 9,1$ ns [4.5]), it follows that the transition to the ground state is slowed down slightly ($F_3 \approx 100$). To explain such a factor, the configuration $[\pi (d_{5/2}), \nu (d_{3/2})]2^+$ should be attributed to the ground state. However, in this case, the Brennan-Bernstein rules are violated.

Therefore, Earlier [3] an assumption was made about a small deformation of the core of ^{136}Pr ($e \approx 0,1$ [17]). Using Nilsson single-particle levels, calculations of the probabilities of electromagnetic transitions were performed [Table 7]. As can be seen from this table, for the M1 components of the considered γ -transitions, the factors F_3^N differ slightly from $1/F_3^N \approx 0,1 \div 0,2$, and the E2 components are

strongly accelerated / by 10^4 - 10^5 times./. From the decay of ^{136}Nd in the nucleus of ^{136}Pr , a significant number of states with $I^\pi = 1^+$ are excited in the energy range of 0,5-1,5 MeV. It can be assumed that some of them arise due to the superposition of vibrations of an even-even skeleton / in this case $^{58}_{134}\text{Ce}_{76}$, the lowest 2+-vibrational states of which have energies of 409 and 965 keV/per single-particle states of unpaired nucleons.



^{134}Ce decay scheme

As a basis for the scheme of excited states ^{134}La [Fig. 4] we have adopted a version of the work of Greenwood et al. [6]. We direct the detected transition of 32,07 keV (M1+M2) to the ground state and thereby prove the existence of the 32,07 keV level introduced in [6] on the basis of indirect arguments. It follows from the balance of the intensities of gamma transitions that this state is not populated by electronic capture. Then, based on the multipole of the transition and the known spin of the ground state $^{134}\text{La}(I^\pi=1^+)$, we attribute $I^\pi=2^+$ to the level.

Table 7. Analysis of the probabilities of γ – transitions in ^{136}Pr

E_{γ}, keV $T_{1/2}, \text{exp. ns}$	E_{γ} $\kappa\pi$	Initial composition. $(2\Omega N n_z \lambda)_{p,n}$ IK^π	Final state $(2\Omega N n_z \lambda)_{p,n}$ IK^π	Multicompleteness	$B(\text{GL})$ exp.	F	N $s = g_s^{\text{free}}$	F_N $g_s=0.65$ g_s^{free} $g_R=0.3$
40,29,1/2	0,2	5413/1400 22 ⁺	3411/1400 22 ⁺	M1	1.7/-2/	1.1/+2/	2.0/-1/	1.6/-3/
149,2 $\leq 0,2$	49,2	3411/1400 11 ⁺	3411/1400 22 ⁺	M1	>6.1/-3/	<3.1/+2/	.9/-2/	
	08,9	3411/1400 11 ⁺	5413/1400 22 ⁺	M1	>5.8/-2/	<2.5/+1/		8.0/-4/

Type entry $1,1/+2/$ means $1,1 \cdot 10^2$. The values in $/M1/$ are given in units of $/eh/2MX2/2$. F_w is the Weisskopf -Moshkovsky braking factor. F_N is the Nilsson braking factor. The state of 162,2 keV, as it follows from the balance of the intensities of gamma transitions, is quite noticeably populated by electronic capture. Taking into account this fact and the multipole transitions 130,15 (M1) and 162,20 keV, (M1) we attribute the characteristics $I^\pi=1^+$ to the level. In addition to the state of 162,2 keV, the levels of 294,3 and 355,5 keV are also noticeably populated by electronic capture. To attribute quantum characteristics to them, in the absence of information about the multipoles of discharging γ -transitions, it is necessary to use only the values of $lg ft$ of the corresponding β -transitions. To calculate the values of $lg ft$, it is necessary to know the decay energy $^{134}\text{Ce} \rightarrow ^{134}\text{La}$. Biryukov et al. [18] from the estimation of the ratio of the probabilities of L- and K-capture, we obtained $Q_e=120\pm60$ keV. In the work [19], the ratio of the numbers of X-ray quanta of the K-series $I_K(\text{La})/I_K(\text{Ba})=2,43\pm0,10$ was measured for an equilibrium mixture of $^{134}\text{Ce} + ^{134}\text{La}$. Taking into account the data [18] on the magnitude of K/β^+ in the daughter ^{134}La , it was obtained for the decay of ^{134}Ce $K/e=0,72\pm0,08$, from which it follows: $Q_e=110\pm30$ keV. Close to the result [19] ratio $I_K(\text{La})/I_K(\text{Ba})=2.49\pm0.12$ was obtained by Greenwood et al.[6]. However, the values obtained in [18,19] contradict the fact of observation in the decay of $^{134}\text{Ce} \rightarrow ^{134}\text{La}$ of gamma rays with an $E_\gamma > 300$ keV. The reason for the discrepancy is the use, in our opinion, of an underestimated ratio to β^+ (^{134}La)[18,20]. Therefore, to estimate the energy $Q_e(^{134}\text{Ce})$, we will use the systematics of the energies Q_β [Fig.5]. From [Fig.5], for the energy Q_e , we obtain the value 390 ± 10 keV. This value is used to calculate the values of $lg ft$ β - transitions ^{134}Ce . Beta transitions to the levels of 294,3 and 355,5 keV are characterized by values of $lg ft = 6,7$ and $4,9$, respectively. We attribute $I^\pi=1^+$ to both levels. Thus, among the low-lying levels of ^{134}La , as in neighboring odd-odd nuclei, several states of type 1^+ have been identified. The rate of beta transition to the ground state $lg ft=5,25$ agrees with its interpretation as a two-quasiparticle level $\pi[(d_{5/2})20, \nu(d_{3/2})]1^+$. At the same time, beta transitions to c $I^\pi = 1^+$ levels at energies of 162,3 and 294,3 keV are strongly inhibited. nuclei – isotons $N=77,79, 81$. (ΔE coincides with Q_β if beta transitions of type $0^+ \rightleftharpoons 1^+$ actually occur; in other cases, the energy of the excited state of type 1^+ is added [$\pi(d_{5/2}), \nu(d_{3/2})$] in the parent nucleus). In the case of $^{130}\text{I}/a/$ and $^{132}\text{Cs}/a/$, it is assumed that the state 1^+ lies near the main one.

Remarks on the decay scheme $^{136}\text{Pr} \rightarrow ^{136}\text{Ce}$

The spectra of internal conversion electrons $/EVC/^{136}\text{Pr}$ were measured using a beta spectrometer based on a $\text{Si}(\text{Li})$ detector placed in a uniform magnetic field. The obtained data on the EVC, together with the updated data [3] on γ -rays, are given in Table 8. The conclusions arising from these data on the multipoles of some γ -transitions in ^{136}Ce are also indicated there. The totality of the information obtained confirms the characteristics of I^π assigned to [3] levels ^{136}Ce . Let us specifically focus on identifying the state $I^\pi=0_2^+$ in the ^{136}Ce nucleus. In work [3] such a level is assumed at an energy of 1076,1 keV and is highlighted by a transition of 523,6 keV. However, according to the results of e- γ - coincidences /Table 4/, this transition belongs to ^{136}Nd . Among the γ -transitions of ^{136}Pr there is an E_0 transition with an energy of 1665 keV. It seems very likely to introduce a level with $I^\pi=0_2^+$ into ^{136}Ce at an energy of 1665 keV. The level is highlighted by the E_0 – transition, as well as the 1113.8 keV transition. An entry like $/2,7\pm0,7/-3/$ means $/2,7\pm0,7/ 10^{-3}$ to the 2_2^+ / state / possible γ -transition to the 2_2^+ state with $E_\gamma = 573$ keV is masked by an intense γ - transition of ^{136}Nd with an energy of 574.8 keV/. The state with $I^\pi=0^+$ at an energy of 1665 keV in $^{134}_{58}\text{Ce}$ is similar to the state 1760 keV, 0^+ in $^{134}_{56}\text{Ba}$ and they are, according to ^{121} , members of the Three-phonon multiplet, lowered due to the large softness of nuclei $/\gamma = 28^\circ/$ is noticeably lower than the two-phonon 0^+ state.

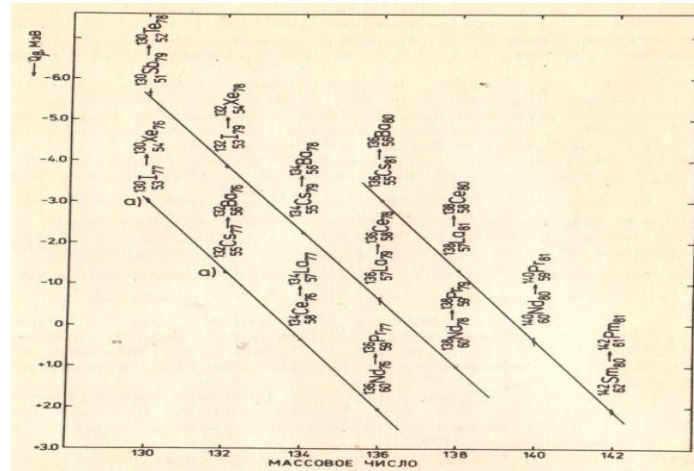


Fig.5. Systematics of energy differences ΔE between states $[\pi(d_{5/2})^2]$ at

Table 8. Information about the internal conversion electrons of some ^{136}Pr γ -junctions

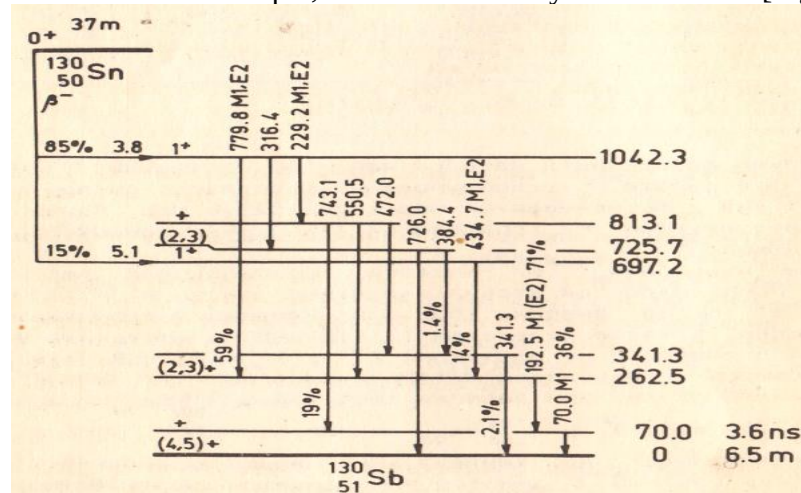
E_x keV	I_γ	I_K	α_K /exp/	λ
552,2±0,2	≅100	≅1000	≅0,0071	E2
761,0±0,4	1,93±0,34	7,4±0,7	/2,7±0,7/-3/	E2
974,2±0,5	0,45±0,06	2,5±0,5	/3,9±1,3/-3/	M1
1000,8±0,3	6,6±0,3	17,5±1,7	/1,8±0,3/-3/	E2
1192,0±0,5	24,4±1,2	45±5	/1,3±0,2/-3/	E2
1113,8±0,6	0,062±0,021	0,4±0,2	/4,6±3,6/-3/	/E2/
1203,8±0,8	0,27±0,03	0,90±0,24	/2,4±0,8/-3/	M1
1359,9±0,4	1,3±0,1	1,6±0,5	/8,7±3,5/-4/	/E2/
1425,0±0,3	1,24±0,14	1,4±0,5	/8,0±3,2/-4/	/E2/
1514,8±0,4	2,52±0,27	4,0±0,8	/1,1±0,3/-3/	M1
1602,8±0,3	5,17±0,41	6,5±1,3	/8,9±2,7/-4/	/M1/
1665±1	<0,17	0,60±0,25	>0,20	/E0/
1735,7±0,4	0,57±0,06	0,75±0,25	/9,3±3,7/-4/	M1,E2,
1899,0±0,5	1,24±0,28	0,90±0,22	/5,2±2,1/-4/	/E2, M1/
2042,7±0,5	0,97±0,07	0,60±0,25	/4,4±2,0/-4/	/E2, M1/
2066,8±0,3	3,93±0,21	2,3±0,6	/4,2±1,4/-4/	/E2, M1/
2270,2±0,4	0,47±0,05	0,4±0,2	/6,0±3,6/-4/	/E2, M1/

Systematics of quantities Q_β beta – transitions of type $0^+ \rightleftharpoons 1^+$, due to the transformation $\pi(d_{5/2}) \rightleftharpoons \nu(d_{3/2})$

Among the beta transitions of the nuclei of the region $A \approx 130 \div 140$ there is a characteristic beta transition between members of the spin-orbital doublet $\pi(d_{5/2}) \rightleftharpoons \nu(d_{3/2})$. The group of such beta transitions between nuclei with odd A is characterized by values of $\log ft = 4.9 \div 5.2$. Approximately the same values / taking into account the correction for pair correlations / are observed in beta transitions of the indicated type between even-even and odd-odd nuclei.

Previously [22] we established that in odd nuclei the values of Q_β transitions $d_{5/2} \rightleftharpoons d_{3/2}$ as a function of the mass number of isotone nuclei fit well on straight lines. As can be seen from Fig. 5, a similar pattern is observed for beta transitions of the noted type between even-even and odd-odd nuclei. Taxonomy of Q_β values [Fig. 5], as shown in the case of ^{138}Nd and ^{134}Ce , allows one to estimate the

energies of beta decay of nuclei with good accuracy. It also turns out to be useful for identifying the nature of some 1^+ levels in odd-odd nuclei. For example, consider the decay $^{130}\text{Sn} \rightarrow ^{130}\text{Sb}$ [Fig. 6][33].



Rice. 6. Scheme of the decay of ^{130}Sn according to [23].

In the $^{130}\text{Sb}_{79}$ nucleus, two states are excited with $I^\pi = 1^+$, β^- transitions to which have $\log ft \leq 5.1$. From [Fig. 5] we can conclude that the 1^+ state $[\pi(d_{5/2}), \nu(d_{3/2})]$ is the level of 697,2 keV (if we use the level of 1042,3 keV, then the value of Q_β significantly deviates from the straight line for isotones $N=79$).

Consideration of the decay of $^{130}\text{Sn} \rightarrow ^{130}\text{Sb}$ and $^{134}\text{Ce} \rightarrow ^{134}\text{La}$ reveals a very remarkable fact: in addition to beta transitions $[\nu(d_{3/2})] \frac{2}{0}^+ \rightarrow [\pi(d_{5/2}), \nu(d_{3/2})] 1^+$ and $[\nu(d_{5/2})] \frac{2}{0}^+ \rightarrow [\pi(d_{5/2}), \nu(d_{3/2})] 1^+$, low values $\log ft \leq 5.0$ / have beta – transitions to the levels of 1042 keV in ^{130}Sb and 355,5 keV in ^{134}La , lying just 350 keV above the state $[\pi(d_{5/2}), \nu(d_{3/2})] 1^+$. This situation also occurs for other nuclei in this region of mass numbers / decay ^{128}Ba , ^{128}Sn , ^{134}Te .

CONCLUSIONS

The totality of the experimental data obtained on the properties of odd-odd nuclei $^{136,138}\text{Pr}$ and ^{134}La leads us to the conclusion:

a) Only some of the lowest states can be interpreted as members of two-quasiparticle p-n-multiplets. Deviations from the Brennan-Bernstein rules are observed when describing the characteristics of the ground state of ^{136}Pr .

b) Individual low-lying levels can be suitable candidates for states of a vibrational nature / superposition of core vibrations on single-particle movements of unpaired nucleons /.

c) The proposed systematics of the values of Q_β makes it possible to predict with good accuracy the energies of beta decay of nuclei and reveals levels of type 1^+ among the set of 1^+ states $[\pi(d_{5/2}), \nu(d_{3/2})]$.

d) The point of view about the deformability of nuclei with $A \approx 130-140$ deserves attention. In particular, an anomalously large number of 1^+ states in ^{136}Pr and ^{134}La can be generated by isovector spin forces of the type $k\sigma \rightarrow 1\sigma \rightarrow 2\tau \rightarrow 1\tau \rightarrow 2$ with the inclusion of nuclei [24], and beta transitions with low $\log ft$ values can be explained.

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Rezyume: Ushbu ish $^{136,138}\text{Nd}$ va ^{134}Ce nuklidlarining radioaktiv parchalanishini o'rgandi va qiz toq-toq yadrolarning xususiyatlari haqida yangi ma'lumotlar oldi. Ba'zi bir quyi shtatlarni ikki qismli p-n multipletlarining a'zolari sifatida talqin qilish mumkin va asosiy holatning xususiyatlarini tavsiflashda Brennan-Bernshteyn qoidalaridan og'ishlar kuzatiladi ^{136}Pr , shuningdek, individual past darajalar davlatlar uchun mos nomzod sifatida ishlatilishi mumkin. tebranish xususiyatiga ega. Biz taklif qilayotgan $Q\beta$ qiymatlari sistemikasi yadrolarning beta-emirilish energiyasini yaxshi aniqlik bilan bashorat qilish imkonini beradi va holatlar to'plami orasida $1 + 1 + [p(d5/2), \nu(d3/2)]$ tipidagi darajalarni aniqlaydi.]

Резюме: В работе изучен радиоактивный распад нуклидов $^{136,138}\text{Nd}$ и ^{134}Ce и получены новые данные о свойствах дочерних нечетно-нечетных ядер. Некоторые низшие состояния можно интерпретировать как члены двухквaziчастичных p-n-мультиплетов, и при описании характеристик основного состояния ^{136}Pr наблюдаются отклонения от правил Бреннана-Бернштейна, а также отдельные низколежащие уровни могут быть использованы в качестве подходящих кандидатов в состояния. вибрационного характера. Предложенная нами систематика значений $Q\beta$ позволяет с хорошей точностью предсказывать энергию бета-распада ядер и выделяет среди множества состояний $1 +$ уровни типа $1 + [\pi(d5/2), \nu(d3/2)]$.

Kalit so'zlar: toq-toq yadrolar, juft-juft yadrolar, gamma-nurlanish, nuklidlar, holat, tajriba, yadro deformatsiyalari, gamma-o'tish, bitta qisman model, radioaktiv parchalanish, o'tishlarning elektron konversiyasi.

Ключевые слова: нечетно-нечетные ядра, четно-четные ядра, гамма-излучение, нуклиды, состояние, эксперимент, ядерные деформации, гамма-переход, одна частичная модель, радиоактивный распад, электронная конверсия переходов.

LOCAL INNER DERIVATIONS OF FILIFORM LIE ALGEBRAS

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Summary: The present paper is devoted to study local inner derivations of some filiform Lie algebras. We prove that every local inner derivation on filiform algebras L_n and Q_n is an inner derivation, and shown the existence of a local inner derivation that is not an inner derivation on algebra R_n .

Key words: Lie algebra, derivation, inner derivation, local derivation, local inner derivation.

1. Introduction. Currently, various types of derivations over algebras are being studied, for example, derivations, local derivations, 2-local derivations, almost inner derivations, etc. Local derivations were first considered in the work of R.Kaidison in 1990 [1] and, independently in the work of D.Larson and A. Sourour [2]. In these papers, some conditions are indicated under which local derivations is derivations. R.Kaidison considered local derivations on von Neumann algebras and in some polynomial algebras. The definition of local inner derivations on standard operator algebras was introduced by L.Molnár [4].

Let us present a list of finite dimensional algebras for which all local derivations are derivations: C^* -algebras, in particular, the algebra $M_n(C)$ of all square matrices of order n over the field of complex numbers [1], [3]; the complex polynomial algebra $C[x]$ [1]; finite dimensional simple Lie algebras over an algebraically closed field of characteristic zero [5]; Borel subalgebras of finite-dimensional simple Lie algebras [6]; solvable Lie algebras of maximal rank [7]; Cayley algebras [8]; finite dimensional semi-simple Leibniz algebras over an algebraically closed field of characteristic zero [9]; locally finite split simple Lie algebras over a field of characteristic zero [10].

On the other hand, some algebras (in most cases close to nilpotent algebras) admit pure local derivations, that is, local derivations which are not derivations. Below a short list of some classes of algebras which admit pure local derivations: the algebra $C(x)$ of rational functions [1]; finite dimensional filiform Lie algebras [5]; p -filiform Leibniz algebras [11]; the ternary Malcev algebra M_8 [12].

The aim of studying a local inner derivation on an algebra is to prove that every local inner derivation is an inner derivation or to show the existence of a local inner derivation that is not an inner derivation on this algebra. In this paper, local inner derivations of filiform Lie algebras are considered.

2. Preliminaries. To begin with, recall the definition of Lie algebras.

Definition 2.1. An algebra L over field F is called a *Lie algebra* if its multiplication satisfies the identities:

$$1) [x, x] = 0,$$

$$2) [x, [y, z]] + [y, [z, x]] + [z, [x, y]] = 0,$$

for all $x, y, z \in L$.

The product $[x, y]$ is called the bracket of x and y . Identity 1) is called the anticommutativity identity and 2) is called the Jacobi identity.

Let L be a finite-dimensional Lie algebra. For Lie algebra L we consider the following central series:

$$L^1 = L, L^i = [L^{i-1}, L], i \geq 1,$$

A Lie algebra L is *nilpotent* if there exists $m \geq 1$ such that $L^m = 0$.

A Lie algebra L is called *filiform* if $\dim L^i = \dim L - i, 2 \leq i \leq \dim L$.

Definition 2.2. A *derivation* on a Lie algebra L is a linear map $D: L \rightarrow L$ which satisfies the Leibniz rule:

$$D([x, y]) = [D(x), y] + [x, D(y)]$$

for any $x, y \in L$. The space all derivation on L denoted by $\text{Der}(L)$.

Let a be an element of a Lie algebra L . Consider the operator of $\text{ad}_a: L \rightarrow L$ defined by $\text{ad}_a(x) = [a, x]$. This operator is a derivation and called *inner derivation*.

Definition 2.3. A linear operator Δ is called a *local inner derivation* if for any $x \in L$, there exists a inner derivation $\text{ad}_{a_x}: L \rightarrow L$ (depending on x) such that $\Delta(x) = \text{ad}_{a_x}(x)$.

The following algebras are examples of filiform Lie algebras.

1. Let L_n be the $(n+1)$ -dimensional Lie algebra defined by $[e_0, e_i] = -[e_i, e_0] = e_{i+1}$ for $i = 1, \dots, n-1$ where $(e_0, \dots, e_n)$ is basis of L , the missing brackets being zero.

2. Let Q_n be the $(n+1)$ -dimensional nilpotent Lie algebra defined in the basis $(e_0, \dots, e_n)$ by

$$\begin{cases} [e_0, e_i] = -[e_i, e_0] = e_{i+1}, i = 1, \dots, n-1, \\ [e_i, e_{n-i}] = -[e_{n-i}, e_i] = (-1)^i e_n, i = 1, \dots, n-1. \end{cases}$$

3. Let R_n be the Lie algebra whose brackets, in the basis $(e_0, \dots, e_n)$ are:

$$\begin{cases} [e_0, e_i] = -[e_i, e_0] = e_{i+1}, i = 1, \dots, n-1, \\ [e_1, e_i] = -[e_i, e_1] = e_{i+2}, i = 2, \dots, n-1. \end{cases}$$

3. Main results. In this section we will consider local inner derivations of filiform Lie algebras. The following theorems are the main result the present paper.

Theorem 3.1. Every local inner derivation on L_n ($n \geq 5$) is an inner derivation.

Now we consider the following lemma, which will be needed in the proof of the theorem.

Lemma 3.1. Let Δ_1 be a local inner derivation on L_n ($n \geq 5$), such that $\Delta_1(e_0) = 0$. Then Δ_1 is an inner derivation.

Proof. Let $x = \sum_{i=0}^n x_i e_i \in L_n$. For an element $a = \sum_{i=0}^n a_i e_i \in L_n$ the inner derivation on L_n has the following form:

$$\text{ad}_a(x) = [a, x] = \left[\sum_{i=0}^n a_i e_i, \sum_{i=0}^n x_i e_i \right] = \sum_{i=0}^{n-2} (a_{e_0} x_{i+1} - a_{e_{i+1}} x_0) e_{i+2}.$$

We write the values of the operator Δ_1 for the basis elements. By definition local inner derivation for any $x \in L_n$ we have

$$\Delta_1(x) = \text{ad}_{c_x}(x), \quad (3.1)$$

where $c_x = \sum_{i=0}^n c_{e_i, x} e_i$.

In formula (3.1) we substitute x by e_i , ($1 \leq i \leq n$). Then,

$$\Delta_1(e_i) = \text{ad}_{e_i}(e_i) = \left[\sum_{k=0}^n c_{e_k, e_i} e_k, e_i \right] = c_{e_0, e_i} e_{i+1}, \quad 1 \leq i \leq n-1 \quad (3.2)$$

and

$$\Delta_1(e_n) = \text{ad}_{e_n}(e_n) = \left[\sum_{k=0}^n c_{e_k, e_n} e_k, e_n \right] = 0 \quad (3.3)$$

For $x = e_1 + e_k$, ($2 \leq k \leq n-1$) we obtain the following equality

$$\Delta_1(e_1 + e_k) = \Delta_1(e_1) + \Delta_1(e_k) \stackrel{(3.2)}{=} c_{e_0, e_1} e_2 + c_{e_0, e_k} e_{k+1}.$$

On the other hand

$$\text{ad}_{a_{e_1+e_k}}(e_1 + e_k) = a_{e_0, e_1+e_k} e_2 + a_{e_0, e_1+e_k} e_{k+1}.$$

Equating the coefficients of the bases, we obtain that $c_{e_0, e_k} = c_{e_0, e_1}$. Hence,

$$\Delta_1(e_i) = c_{e_0, e_1} e_{i+1}, \quad (1 \leq i \leq n-1).$$

Now we calculate the value of Δ_1 for any $x = \sum_{i=0}^n x_i e_i \in L_n$. Further

$$\Delta_1(x) = \Delta_1\left(\sum_{i=0}^n x_i e_i\right) = x_0 \Delta_1(e_0) + \sum_{i=1}^{n-1} x_i \Delta_1(e_i) + x_n \Delta_1(e_n) = c_{e_0, e_1} \sum_{i=0}^{n-1} x_i e_{i+1}.$$

On the other hand

$$\left[c_{e_0, e_1} e_0, x \right] = \left[c_{e_0, e_1} e_0, \sum_{i=0}^n x_i e_i \right] = c_{e_0, e_1} \sum_{i=1}^{n-1} x_i e_{i+1}.$$

Hence, $\Delta_1(x) = \left[c_{e_0, e_1} e_0, x \right]$. Lemma is proved.

Proof of Theorem 3.1. Let Δ be a local inner derivation on L_n . Then there exists an element $a \in L_n$ such that $\Delta_1(x) = \Delta(x) - \text{ad}_a(x)$ is a local inner derivation for $\Delta_1(e_0) = 0$. Hence, then Δ_1 satisfies the conditions of Lemma 3.1, i.e. $\Delta_1(x) = \text{ad}_b(x)$, $b \in L_n$. Further,

$$\Delta(x) = \text{ad}_a(x) + \text{ad}_b(x) = \text{ad}_{a+b}(x).$$

The theorem is proved.

Theorem 3.2. Every local inner derivation on Q_n ($n \geq 5$) is an inner derivation.

Now we consider the following lemma, which will be needed in the proof of the theorem.

Lemma 3.2. Let Δ_1 be a local inner derivation on Q_n ($n \geq 5$), such that $\Delta_1(e_0) = 0$. Then Δ_1 is an inner derivation.

Proof. Let $x = \sum_{i=0}^n x_i e_i \in Q_n$. For an element $a = \sum_{i=0}^n a_i e_i \in Q_n$ the inner derivation on Q_n has the following form:

$$\begin{aligned} \text{ad}_a(x) &= [a, x] = \left[\sum_{i=0}^n a_{e_i} e_i, \sum_{i=0}^n x_i e_i \right] = \\ &= \sum_{i=1}^{n-1} a_{e_0} x_i e_{i+1} - \sum_{i=1}^{n-1} a_{e_i} x_0 e_{i+1} + \sum_{i=1}^{n-1} (-1)^i a_{e_i} x_{n-i} e_n, \quad i = 1, \dots, n-1. \end{aligned}$$

We write the values of the operator Δ_1 for the basis elements. By definition local inner derivation holds for any $x \in Q_n$ the equality

$$\Delta_1(x) = \text{ad}_{a_x}(x), \quad (3.4)$$

where $a_x = \sum_{i=0}^n a_{e_i, x} e_i$.

In formula (3.1) we substitute x by e_i , ($1 \leq i \leq n$). Then,

$$\Delta_1(e_i) = \text{ad}_{b_{e_i}}(e_i) = \left[\sum_{k=0}^n b_{e_k, e_i} e_k, e_i \right] = b_{e_0, e_i} e_{i+1} + (-1)^{n-i} b_{e_{n-i}, e_i} e_n, \quad 1 \leq i \leq n-1. \quad (3.5)$$

For $x = e_0 + e_1$, we obtain the following equality

$$\Delta_1(e_0 + e_1) = \Delta_1(e_1) = \Delta_1(e_1) = b_{e_0, e_1} e_2 + (-1)^{n-1} b_{e_{n-1}, e_1} e_n.$$

On the other hand

$$\text{ad}_{e_0+e_1}(e_0 + e_1) = a_{e_0, e_0+e_1} e_2 - \sum_{i=1}^{n-1} a_{e_i, e_0+e_1} e_{i+1} + (-1)^{n-1} a_{e_{n-1}, e_0+e_1} e_n.$$

Equating the coefficients of the basis e_n , we obtain that $b_{e_{n-1}, e_1} = 0$. Hence,

$$\Delta_1(e_1) = b_{e_0, e_1} e_2. \quad (3.6)$$

Similarly, as above mentioned we obtain the next:

– for $x = e_0 + e_1 + e_k$, where $2 \leq k \leq n-2$, we have

$$\Delta_1(e_k) = b_{e_0, e_k} e_{k+1}, \quad 2 \leq k \leq n-2. \quad (3.7)$$

– for $x = e_0 + e_1 + e_{n-1}$, we have

$$\Delta_1(e_{n-1}) = b_{e_0, e_1} e_n. \quad (3.8)$$

– for $x = e_1 + e_j$, where $2 \leq j \leq n-2$, we get

$$\Delta_1(e_j) = b_{e_0, e_1} e_{j+1}, \quad 2 \leq j \leq n-2. \quad (3.9)$$

Combining formulas (3.6), (3.8) and (3.9) we get that

$$\Delta_1(e_k) = b_{e_0, e_1} e_{k+1}, \quad 1 \leq k \leq n-1. \quad (3.10)$$

In formula (3.4) we substitute x by e_n , then

$$\Delta_1(e_n) = \text{ad}_{a_{e_n}}(e_n) = \left[\sum_{i=0}^n a_{e_i} e_i, e_n \right] = 0 \quad (3.11)$$

Now we calculate the value of Δ_1 for any $x = \sum_{i=0}^n x_i e_i \in Q_n$. Hence,

$$\Delta_1(x) = \Delta_1\left(\sum_{i=0}^n x_i e_i\right) = x_0 \Delta_1(e_0) + \sum_{i=1}^{n-1} x_i \Delta_1(e_i) + x_n \Delta_1(e_n) = \sum_{i=1}^{n-1} x_i \Delta_1(e_i) = \sum_{i=1}^{n-1} x_i b_{e_0, e_1} e_{i+1}.$$

On the other hand

$$\left[b_{e_0, e_1} e_0, x\right] = \left[b_{e_0, e_1} e_0, \sum_{i=0}^n x_i e_i\right] = b_{e_0, e_1} \sum_{i=1}^{n-1} x_i e_{i+1}.$$

Then, $\Delta_1(x) = [b_{e_0, e_1} e_0, x]$. Lemma is proved.

Proof of Theorem 3.2. Let Δ be a local inner derivation on Q_n . Then there exists an element $a \in Q_n$ such that $\Delta_1(x) = \Delta(x) - \text{ad}_a(x)$ is a local inner derivation for $\Delta_1(e_0) = 0$. Hence, then Δ_1 satisfies the conditions of Lemma 3.2, i.e. $\Delta_1(x) = \text{ad}_b(x), b \in Q_n$. Further,

$$\Delta(x) = \text{ad}_a(x) + \text{ad}_b(x) = \text{ad}_{a+b}(x).$$

The theorem is proved.

Example 3.1. $\Delta(x) = x_1 e_4$ is a local inner derivation, but is not an inner derivation on R_n .

Proof. Let $x = \sum_{i=0}^n x_i e_i \in R_n$. For an element $a = \sum_{i=0}^n a_i e_i \in R_n$ the inner derivation on R_n has the following form:

$$\text{ad}_a(x) = [a, x] = \left[\sum_{i=0}^n a_i e_i, \sum_{i=0}^n x_i e_i\right] = \sum_{i=1}^{n-1} (a_{e_0} x_i - a_{e_i} x_0) e_{i+1} + \sum_{i=2}^{n-2} (a_{e_1} x_i - a_{e_i} x_1) e_{i+2}.$$

Let us show that $\Delta(x) = x_1 e_4$ is a local inner derivation. Let $x = \sum_{i=0}^n x_i e_i$.

Case 1. If $x_0 \neq 0$, then we have

$$\Delta(x) = x_1 e_4 = \left[\sum_{k=3}^{n-1} \left(-\frac{x_1}{x_0}\right)^k e_k, x\right].$$

Case 2. If $x_0 = 0$,

Case 2.1. Let $x_1 \neq 0$, then we have $\Delta(x) = x_1 e_4 = [-e_2, x]$.

Case 2.2. If $x_1 = 0$, then we have $\Delta(x) = 0 = [0, x]$. Thus, the operator $\Delta(x) = [x_1 e_4, x]$ is a local inner derivation.

It remains for us to show that the operator $\Delta(x) = x_1 e_4$ is not an inner derivation. Then, let $\Delta(x) = e_4$, $\Delta(y) = e_4$. Checking the operator Δ for Leibniz equalities for $x = e_0 + e_1$ and $y = -e_0 + e_1$, we have: $\Delta([x, y]) = \Delta(e_2) = 0$. On the other hand $[\Delta(x), y] + [x, \Delta(y)] = 2e_5$. Hence it follows that

$$\Delta([x, y]) \neq [\Delta(x), y] + [x, \Delta(y)].$$

Since, Δ is not a derivation, it is also not an inner derivation.

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Rezyume: Mazkur maqolada ba'zi bir filiformli Li algebralarining local ichki differensiallashlari o'rganilgan.

Резюме: В данной работе изучено локально внутренние дифференцирования некоторых филиформных алгебр Ли.

Kalit so'zlar: Li algebrasi, differensiallash, ichki differensiallash, local ichki differensiallash.

Ключевые слова: Алгебра Ли, дифференцирование, внутренние дифференцирование, локальные внутренние дифференцирование.

UDC:881.4

MORPHOLOGICAL FEATURES OF OKRA CULTIVATION IN THE NUKUS CITY

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Summary: *In the article, the collected analysis of flowering and fruiting biology of biomorphological characteristics of okra plant varieties in Nukus conditions was carried out.*

Key words: *Nukus conditions, okra plant, flowering, fruiting.*

Introduction. Human's indispensable food consists of 3/4 of organic matter. The world of organics provides 83 billion tons of organic substances every year. Humans recognize the nature and collect various substances such as wool, blood, skin, fat, mucus, starch, ether, resin, and other materials from plants. Among them, the most valuable are often processed in the form of various types of oils. Therefore, plant materials are widely used in the world of organics.

The introduction of plants played a significant role in improving the nutritional content of animal feed. In recent years, the importance of plant introductions has not diminished but, on the contrary, the demand for resources for plant introductions in new areas is growing. The intensity of plant introductions in each region is closely related to the conditions of the new areas, and the dynamics of adaptation are gradually being established. According to the experts, it is optimal to create the conditions necessary for the successful introduction of plant introductions, depending on the ecological volume of the plant. Only in this way can positive results be achieved.

The adaptation of plant introductions to new soil and climate conditions is directly related to the reproductive volume of the plant. Today, new plant introductions are being studied in our Republic, and significant work has been done in recent years, such as the study of the bioecological features of okra varieties in the soil and climate conditions of N. K. Safarova Khorezm Academy [4], the cultivation of cotton varieties by Annamuratova D, Safarov K.S. in 2004 [1], and the study of medicinal and food plants in Uzbekistan by B. E. Tukhtaev in 2015 [5]. Okra-Hibiscus esculentus L. is a herbaceous plant belonging to the Malvaceae family, a one-year plant. It is believed to originate from tropical Africa, and okra varieties such as "Cuba" and "India" have been studied. The people's food and nutrition resources, crafts, and livestock breeding, as well as various other high-value products, are fully supplied with raw materials, and one of the ways to expand and improve the quality of these products is through the introduction of new plants. Research activities began at the research site of Nukus in the territory of the Karakalpak State University of the Republic of Karakalpakstan on April 24, 2022. The seeds of the okra plant were prepared in advance, and a row spacing of about 60 cm and a plant-to-plant spacing of 25 cm were used for sowing on April 24, 2022. The Cuba variety of okra had a germination rate of 65% after 5-6 days and increased to 85-87% after 3-4 days. The India variety showed a germination rate of 60% after 5-6 days and increased to 82-84% after 3-4 days. The length of the larger okra pods that matured in 2 months was about 10 sm, with 2-3 leaves per pod, a length of 3 sm, and a width of 1-2.5 sm. The fruit length reached 4-8 sm, and the pod's peduncle started to appear in 12-14 days. The first true leaves of these plants appeared on May 28. In the Cuba variety, the height of the okra plants was 11-13scm on June 13, with 7-8 leaves, while in the India variety, it reached 15-17 sm with 6-7 leaves. In late June, when the air temperature was around 25°C on average, with a maximum of 38°C, the height of the okra plants in the Cuba variety was 30 sm, and in the India variety, it was 42 sm, resulting in slightly accelerated growth. This is illustrated in the table below.

Table 1

The Length of Okra Pods (in sm) for Cuba and India Varieties, sm

Varieties	Months				
	V	VI	VII	VIII	IX
Cuba	7	30	90	160	180
India	10	42	98	180	200

The India variety of okra can be considered a promising crop for cultivation in our soil and climate conditions because its fruit length reaches 200 sm, whereas in the Cuba variety, it is typically less than 180 sm. This indicates the adaptability of the Cuba and India varieties of okra to our region. When it comes to the development of the okra fruits in terms of size, the quick growth of pod development was observed. It was found that the Cuba and India varieties of okra reached 12 pods per plant, with 5-6 pods in one cluster. The pods were evenly spaced. The distance between the ground and the first pod was 20 sm, and the pods base had a length of 10 sm, a width of 6 sm, and 2 pods were located 5 sm above it, each measuring 12 sm by 12 sm. The base of the pod was 9.5 sm, with a length of 12 sm and a width of 14 sm, while 5 pods were found 12 sm above it, with a length of 14 sm and a width of 16 sm. However, the India variety had 14 pods. Their average pod length was 10.5 sm, the pod length was 9.5 sm, and the width was 11.5 sm. In the results of the harvest, it was observed that the India variety of okra had longer pods than the Cuba variety, with all measurements being higher in comparison. Their average pod length is indicated in the second column of the table.

Table 2

The Characteristics of Okra Leaves for Cuba and India Varieties

Varieties	Number of Leaves	pieces sm	Leaf Length	Leaf Width, cm	Stem Width, sm
Cuba	30		19	17	22
India	34		17	18	24

In the Cuba variety of okra, the average number of leaves per plant in each row was 30, with a leaf length of 19 sm and a width of 22 sm. The leaves had an elliptical shape with lobes. In the India variety, the number of leaves per plant was 34, with a leaf length of 17 sm and a width of 24 sm. The leaves were notched, and they were less lobed. When studying the flowering dynamics of the okra varieties in our climate conditions in Nukus, it was observed that the first signs of flowering in the form of bud formation appeared in the pod of the leaves in the first ten days of July. In Nukus conditions, flowering started on July 10. The flowers continued to bloom until October. In these varieties of okra, the flowering and fruiting periods were observed in July, August, September, and October. During the first ten days of July, buds of okra flowers began to form, and flowering started. This happened in the Cuba variety. The flowers remained open until October. In these varieties of okra, in July, August, September, and October, the formation of buds, flowering, and fruiting occurred within one cluster. The flowers opened during the day and closed in the evening. The flowers were hermaphroditic, small, and yellow in color. In terms of the harvest results, it was observed that in the Cuba variety of okra, flowering and fruiting started when buds appeared on the pod. In Nukus, on July 15, this process and repetition were observed. In the India variety of okra, the same phase was hardly noticeable.

In the berry observations of July 21, okra flowers started to form in the Cuba variety, while in the India variety, this phase was hardly noticeable. On July 21, in the berry observations, this process was repeated. In the India variety of okra, only the formation of buds and flower organs occurred. In the third decade of July, in the India variety of okra, buds started to form, and flowering began. These findings

revealed that, in our Nukus climate conditions, the Cuba variety of okra exhibited a more rapid flowering process compared to the India variety, which was characterized by a delayed process. According to the analysis of flowering dynamics in 2022, it was found that the Cuba variety of okra is better suited to our Nukus conditions. This is indicated in the third column of the table.

Table 3

The Flowering Dynamics of Okra for Cuba and India Varieties (%)

Varieties	Months			
	VII	VIII	IX	X
Cuba	20	70-80	96	-
India	5	30-50	90	92

In the 3rd stage, the flowering and fruiting phase of okra in the Cuba variety began in June, while in the India variety, it was observed in July, with only around 5% flowering. The fruiting phase of okra, particularly early flowering, was determined from the results of fruiting in the harvest. Okra flowers develop from leaf axils, and after pollination, they eventually turn into pods. The pods are harvested when they are young, tender, and have a pyramid shape with 5-11 short lobes. They are picked before they mature, and the seeds are soft, white, and have a mucilaginous texture. The flowering and fruiting phase for the India variety of okra started late, which is why the fruiting began later as well. Therefore, it can be concluded that the India variety of okra had a later start in fruiting. As a result, in the Cuba variety of okra, the development of fruit elements started on July 16th, with the lobes measuring 12 sm.

When looking at the results from July 21st, if there were fruits, in the Cuba variety, the development of fruit elements had already started in 11 tubers, with a length of 12 sm. For the India variety, the results showed that on August 5th, in the 5th cluster, the okra's fruit length was only 1.5 sm. On August 27th, in the Cuba variety, on average, 8 fruit elements were observed to have developed in one tuber, with a length of 12 sm. In the India variety, in the same period, 4 fruit elements were observed, with a length of 6-7 sm. In the observations from September 10th, the India variety showed okra with a fruit length of 19 sm and a diameter of 10-12 sm. These results were presented in the 4th stage.

Table 4

The development dynamics of okra pods (fruit) in the Cuba and India varieties, cm

Varieties	Months					
	VII		VIII		IX	
	Length	Diametr	Length	Diametr	Length	Diametr
Cuba	9	4	12-15	7	13-16	8-9
India	2	3	7	9	9-10	10-12

The arrangement and shape of the pods in both the Cuba and India varieties differ. The pods in both varieties have ridges on the skin, which makes them somewhat challenging to cut through. In the Cuba variety, the pods have a larger, cylindrical shape, are pale green in color, and have a length and width of 4-5 mm. In a 1000-pod sample, the average weight of the pods' stems is 55 g. The pods have an elongated shape, with a single pod containing 91 seeds. In the India variety, the pods are more rounded and have a light green color, with the stem being shorter in length and around 3-4 mm in width. The average weight of the stems in a 1000-pod sample is 53 g. The pods have a pyramid-like shape, and a

single pod contains 74 seeds. The leaf shapes in the Cuba and India varieties of okra have distinct differences. For example, in the Cuba variety, there are 30 leaves with a length of 19 sm, a width of 17 sm, and they are somewhat wrinkled. In the India variety, there are 34 leaves with a length of 17 sm, a width of 18 sm, and they are somewhat less wrinkled. The flowering period of okra plants in our local Nukus climate begins in June for the Cuba variety, which accounts for 20% of the total flowering. It continues with a mass flowering in July and August and may extend until September. In the India variety, flowering starts in the last days of July, accounting for only 5%, but the mass flowering occurs in the middle of September and continues until the first ten days of October.

In our Nukus climate, the fruiting period of okra plants correlates with flowering. In the India variety, the fruiting starts a little earlier, whereas in the Cuba variety, fruiting begins later. The pods of the Cuba variety of okra have a length of 13-16 sm and a diameter of 8-9 sm. They have ridges on the surface, and they have an elongated shape. In contrast, the India variety has pod-shaped fruit, resembling a pyramid or trapezoid, with a length of 9-10 cm and a diameter of 10-12 sm. The pods are somewhat less wrinkled. In summary, our findings show that both the Cuba and India varieties of okra have adapted well to our local soil and climate conditions and exhibit excellent growth characteristics in our Nukus climate. The cultivation of okra plays a significant role in providing fresh food, raw materials for various industries, and improving the agricultural sector and soil fertility.

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Rezyume: Maqolada Nukus sharoitida Bamiya o'simligi navlarining biomorfologik xususiyatlaridan gullash va mevalash biologiyasi bo'yicha yig'ilgan tahlil amalga oshirilgan.

Резюме: В статье проведен обобщенный анализ биологии цветения и плодоношения, биоморфологических особенностей сортов растений бамии в условиях Нукуса.

Kalit so'zlar: Nukus sharoiti, bamiya o'simligi, gullashi, mevalashi.

Ключевые слова: Нукусские условия, растение бамии, цветение, плодоношение.

UDC 517.95

BOUNDARY VALUE PROBLEM FOR A FRACTIONAL WAVE EQUATION

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Summary: In this work, a boundary value problem for a hyperbolic equation with a fractional derivative is studied in a rectangular domain. The solution is sought by the method of separation of variables.

Key words: boundary value problem, fractional derivative, wave equation, method of separation of variables

Currently, there is a noticeable increase in the attention of researchers to fractional calculus. This is primarily due to numerous effective applications of fractional integro-differentiation in describing a wide class of physical and chemical processes occurring in fractal media. Fractional order models are more efficient than integer order models for some real world problems. Fractional derivatives provide an adequate means for describing the memory and hereditary properties of various materials and processes. Fractional differential equations arise in many engineering and scientific disciplines, such as mathematical modeling of systems and processes in the fields of physics, chemistry, aerodynamics, electrodynamics, etc.

When mathematically modeling continuous media with memory, equations arise that describe a new type of wave motion, occupying an intermediate position between ordinary diffusion and classical waves (see [5,6]). This refers to fractional order differential equations, which are the basis of most mathematical models that describe a wide class of physical and chemical processes in media with fractal geometry. The monograph [7] provides a detailed bibliography on partial differential equations of fractional order, in particular, the diffusion-wave equation is considered. The diffusion-wave equation was studied by the method of separation of variables in [3]. A priori estimates for the solution of boundary value problems for the diffusion-wave equation with the Caputo fractional derivative were obtained in [1]. Questions of solvability of local, non-local, initial,

In area $D = \{(x, t) : 0 < x < p, 0 < t < T\}$ consider the problem for the equation

$$D_{0t}^{\alpha+1} u - u_{xx} = 0, \quad (1)$$

where $0 < \alpha < 1$.

Prolem I. In domain D , find function $u(x, t)$ satisfying equation (1) is continuous everywhere in $\overline{D}$ except $0 \leq x \leq l$, and straight $t = 0$ satisfying equation (1) and conditions,

$$\left. \begin{aligned} \lim_{t \rightarrow 0} t^{1-\alpha} u &= \varphi(x), & 0 < x < p, \\ \lim_{t \rightarrow 0} \frac{d}{dt} (t^{1-\alpha} u) &= \psi(x), & 0 < x < p, \end{aligned} \right\} \quad (2)$$

$$u_x(0, t) = u(l, t) = 0, \quad 0 < t \leq T. \quad (3)$$

We look for a class of nontrivial solutions to equation (1) satisfying conditions (3) in the form

$$u(x, t) = X(x) \cdot T(t), \quad (4)$$

Substituting (4) into equation (1) we get:

$$\frac{D_{0t}^{\alpha+1}T}{T} = \frac{X''}{X} = -\lambda, \quad \lambda = \text{const}, \quad (5)$$

here

$$D_{0t}^{\alpha+1}X(x)T(t) = \frac{1}{\Gamma(1-\alpha)} \frac{d^2}{dt^2} \int \frac{X(x)T(t)}{(t-\tau)^\alpha} d\tau = X(x)D_{0t}^{\alpha+1}T(t),$$

from (5) we obtain the equations:

$$X''(x) + \lambda X(x) = 0, \quad X'(0) = X(l) = 0, \quad (6)$$

$$D_{0t}^{\alpha+1}T(t) + \lambda T(t) = 0. \quad (7)$$

Nontrivial solutions to problem (6) are possible only for the values

$$X_k(x) = \cos \lambda_k x, \quad \lambda_k = \frac{2k+1}{2l} \pi \quad k = 1, 2, \dots$$

We act on both sides of (7) with the fractional integration operator of the order $\alpha + 1$.

$$I_{0t}^{\alpha+1}D_{0t}^{\alpha+1}T^{(k)} + \lambda_k I_{0t}^{\alpha+1}T^{(k)} = 0, \quad I_{0t}^{\alpha+1} = D_{0t}^{-\alpha-1}.$$

As a result, we obtain the Volterra integral equation of the 2nd kind [8]. Here

$$\begin{aligned} I_{\alpha t}^\alpha D_{\alpha t}^\alpha f(x) &= f(x) - \sum_{k=0}^{n-1} \frac{(x-\alpha)^{\alpha-k-1}}{\Gamma(\alpha-k)} f_{n-\alpha}^{(n-k-1)}(\alpha) \\ n &= [\alpha] + 1 \quad \text{And } f_{n-\alpha}(x) = I_{\alpha t}^{n-\alpha} f \text{ we get:} \\ T^{(k)}(t) - \frac{T_{1-\alpha}(0)}{\Gamma(\alpha+1)} t^\alpha - \frac{T_{1-\alpha}(0)}{\Gamma(\alpha)} t^{\alpha-1} + \lambda_k I_{\alpha t}^{\alpha+1} T^{(k)}(t) &= 0 \\ T^{(k)}(t) + \lambda_k I_{\alpha t}^{\alpha+1} T^{(k)}(t) &= \frac{T_{1-\alpha}(0)}{\Gamma(\alpha+1)} t^\alpha + \frac{T_{1-\alpha}(0)}{\Gamma(\alpha)} t^{\alpha-1} \\ T^{(k)}(t) + \frac{\lambda_k}{\Gamma(\alpha+1)} \int_0^t \frac{T^{(k)}(\tau)}{(t-\tau)^\alpha} d\tau &= f^{(k)}(t) \end{aligned}$$

further, according to [3], we obtain

$$\begin{aligned} T^{(k)}(t) &= -\frac{\lambda_k}{\Gamma\left(\frac{1}{\beta}\right)} \int_0^t (t-\tau)^{\frac{1}{\beta}-1} T^{(k)}(\tau) d\tau + f^{(k)}(t) \\ T^{(k)}(t) &= \frac{T_2^{(k)}(0)}{\Gamma\left(\frac{1}{\beta}\right)} t^{\frac{1}{\beta}-1} + \frac{T_2^{(k)}(0)}{\Gamma\left(\frac{1}{\beta}-1\right)} t^{\frac{1}{\beta}-2} - \\ &- \lambda_k \int_0^t (t-\tau)^{\frac{1}{\beta}-1} E_\beta\left(-\lambda_k (t-\tau)^{\frac{1}{\beta}}; \frac{1}{\beta}\right) \left\{ \frac{T_2^{(k)}(0)}{\Gamma\left(\frac{1}{\beta}\right)} \tau^{\frac{1}{\beta}-1} + \frac{T_2^{(k)}(0)}{\Gamma\left(\frac{1}{\beta}-1\right)} \tau^{\frac{1}{\beta}-2} \right\} d\tau \end{aligned}$$

$$\begin{aligned}
 T^{(k)}(t) &= \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} t^\alpha + \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} t^{\alpha-1} - \\
 &- \lambda_k \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \left\{ \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} \tau^\alpha + \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} t^{\alpha-1} \right\} d\tau \\
 T^{(k)}(t) &= f^{(k)}(t) - \frac{\lambda_k T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \tau^\alpha d\tau - \\
 &- \frac{\lambda_k T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \tau^{\alpha-1} d\tau.
 \end{aligned}$$

Let's calculate the integral

$$I = \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \tau^{\alpha-1} d\tau,$$

where

$$\begin{aligned}
 E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) &= \sum_{s=0}^{\infty} \frac{\left(-\lambda_k (t-\tau)^{\alpha+1} \right)^s}{\Gamma((s+1)(\alpha+1))} = \sum_{s=0}^{\infty} \frac{\left((-1)^s \lambda_k^s (t-\tau)^{s(\alpha+1)} \right)}{\Gamma((s+1)(\alpha+1))} \\
 I &= \sum_{s=0}^{\infty} \frac{\left((-1)^s \lambda_k^s \right)}{\Gamma((s+1)(\alpha+1))} \int_0^t (t-\tau)^\alpha (t-\tau)^{s(\alpha+1)} \tau^{\alpha-1} d\tau; \\
 T^{(k)}(t) &= f^{(k)}(t) - \frac{\lambda_k T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \tau^\alpha d\tau - \\
 &- \frac{\lambda_k T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} \int_0^t (t-\tau)^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) \tau^{\alpha-1} d\tau.
 \end{aligned}$$

If we enter a notation as follows, $\frac{\tau}{t} = \eta, \tau = t\eta, d\tau = t d\eta$, we get:

$$\begin{aligned}
 T^{(k)}(t) &= \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} t^\alpha - \lambda_k T^{(k)}(0) t^{2\alpha+1} E_{\frac{1}{\alpha+1}} \left(-\lambda_k (t-\tau)^{\alpha+1}; \alpha+1 \right) + \\
 &\frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} t^{\alpha-1} - \lambda_k T_{1-\alpha}^{(k)}(0) t^{2\alpha} E_{\frac{1}{\alpha+1}} \left(-\lambda_k t^{\alpha+1}; 2\alpha+1 \right) \\
 T^{(k)}(t) &= T_{1-\alpha}^{(k)}(0) t^\alpha \left[\frac{1}{\Gamma(\alpha+1)} - \lambda_k t^{\alpha+1} E_{\frac{1}{\alpha+1}} \left(-\lambda_k t^{\alpha+1}; 2(\alpha+1) \right) \right] + \\
 &+ T_{1-\alpha}^{(k)}(0) t^{\alpha-1} \left[\frac{1}{\Gamma(\alpha)} - \lambda_k t^{\alpha+1} E_{\frac{1}{\alpha+1}} \left(-\lambda_k t^{\alpha+1}; 2(\alpha+1) \right) \right]
 \end{aligned}$$

or

$$T^{(k)}(t) = T_{1-\alpha}^{(k)}(0) t^\alpha E_{\frac{1}{\alpha+1}} \left(-\lambda_k t^{\alpha+1}; (\alpha+1) \right) + T_{1-\alpha}^{(k)}(0) t^{\alpha-1} E_{\frac{1}{\alpha+1}} \left(-\lambda_k t^{\alpha+1}; (\alpha) \right). \quad (8)$$

The integral has solution (8). Substituting now into (4) we obtain partial solutions in the form

$$u_k(x, t) = X_k(x) T^{(k)}(t) = \left[T_{1-\alpha}^{(k)}(0) t^{\frac{\alpha}{\alpha+1}} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; (\alpha+1)) + \right. \\ \left. + T_{1-\alpha}^{(k)}(0) t^{\frac{\alpha-1}{\alpha+1}} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; (\alpha)) \right] \times \cos \frac{(2k+1)\pi}{2l} x;$$

Then the general solution will be written as:

$$u(x, t) = \sum_{k=1}^{\infty} \left[T_{1-\alpha}^{(k)}(0) t^{\frac{\alpha}{\alpha+1}} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; (\alpha+1)) + \right. \\ \left. + T_{1-\alpha}^{(k)}(0) t^{\frac{\alpha-1}{\alpha+1}} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; (\alpha)) \right] \times \cos \frac{(2k+1)\pi}{2l} x;$$

Using the initial conditions we have:

$$\lim_{t \rightarrow 0} \frac{d}{dt} (t^{1-\alpha} u_k) = \lim_{t \rightarrow 0} \frac{d}{dt} \left[T_{1-\alpha}^{(k)} t E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha+1) + \right. \\ \left. + T_{1-\alpha}^{(k)}(0) E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha) \right] \cdot \cos \frac{(2k+1)\pi}{2l} x = \\ = \lim_{t \rightarrow 0} \left\{ T_{1-\alpha}^{(k)}(0) \left[E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha+1) + t \frac{d}{dt} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha+1) \right] + \right. \\ \left. + \frac{d}{dt} \left(T_{1-\alpha}^{(k)}(0) E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha) \right) \cdot \cos \frac{(2k+1)\pi}{2l} x \right\};$$

so,

$$\psi(x) = \lim_{t \rightarrow 0} \frac{d}{dt} (t^{1-\alpha} u) = \sum_{k=1}^{\infty} \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} \cos \frac{(2k+1)\pi}{2l} x,$$

here we enter the notation $\frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha+1)} = A_k$, also using the second initial condition

$$\varphi(x) = \lim_{t \rightarrow 0} (t^{1-\alpha} u) = \sum_{k=1}^{\infty} \frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} \cos \frac{(2k+1)\pi}{2l} x,$$

here $\frac{T_{1-\alpha}^{(k)}(0)}{\Gamma(\alpha)} = B_k$ let's denote

$$A_k = \xi(x), B_k = \eta(x),$$

$$\begin{aligned}\xi(x) &= \sum_{k=1}^{\infty} \xi_k(x) \cos \frac{(2k+1)\pi}{2l} x, \\ \xi_k &= \frac{2}{l} \int_0^l \xi(\theta) \cos \frac{(2k+1)\pi}{2l} \theta d\theta \\ \eta(x) &= \sum_{k=1}^{\infty} \eta_k(x) \cos \frac{(2k+1)\pi}{2l} x, \\ \eta_k &= \frac{4}{(2k+1)\pi} \int_0^l \eta(\theta) \cos \frac{(2k+1)\pi}{2l} \theta d\theta.\end{aligned}$$

The general solution will be written as:

$$u(x, t) = \sum_{k=1}^{\infty} \left[A_k \Gamma(\alpha + 1) t^{\alpha} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha + 1) + B_k \Gamma(\alpha) t^{\alpha-1} E_{\frac{1}{\alpha+1}}(-\lambda_k t^{\alpha+1}; \alpha) \right] \cos \frac{(2k+1)\pi}{2l} x.$$

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Rezyume: Ushbu maqolada kasr hosilali giperbolik tenglama uchun chegaraviy masala to'g'ri burchakli sohada o'rganiladi. Yechim o'zgaruvchilarni ajratish usuli bilan izlanadi.

Резюме: В работе в прямоугольной области изучается краевая задача для уравнения гиперболического типа с дробной производной. Решение ищется методом разделения переменных.

Kalit so'zlar: chegaraviy masala, kasr hosilasi, to'lqin tenglamasi, o'zgaruvchilarni ajratish usuli.

Ключевые слова: краевая задача, производная дробного порядка, волновое уравнение, метод разделения переменных.

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COMPACT FINITE DIFFERENCE SCHEMES FOR THE ONE DIMENSIONAL DIFFUSION EQUATION

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Summary: This work is devoted to the construction and study of compact difference equations for the diffusion equation. The constructed difference scheme is a conditional approximation scheme. The conditional stability of the compact difference scheme is proved. The numerical experiment presented in the work are consistent with the theoretical conclusions.

Keywords: compact finite difference schemes, conditional approximation, stability, numerical experiment.

Introduction. Partial differential equations (PDE) are mathematical equations that play an important role in modeling physical phenomena that occur in nature. Due to the complex nature of many practical problems, most PDE solutions are numerical. The parabolic equation is used to study diffusion and heat conduction problems. The main characteristic of the parabolic equation is that it models a transition state or evolutionary diffusion process and requires the specification of appropriate boundary conditions at all boundaries and initial conditions at the starting point of the evolutionary process. Due to its wider application in many natural and technical sciences, the numerical scheme for solving parabolic equations often attracts the attention of many researchers [1, 2]. The numerical method for solving parabolic problems can fall under the following categories: finite difference method, finite element method and finite volume method [3]. Due to their ease of implementation and computational efficiency, finite difference methods are popular for solving parabolic equations.

This work is devoted to the construction and study of compact difference equations for the heat equation. Compact are usually called difference schemes that have a higher order of approximation, but are written on a stencil that is not significantly different from the traditional one for a given equation. The constructed difference scheme is a conditional approximation scheme [2, 4]. The conditional stability of the compact difference scheme is proved. The test numerical calculations presented in the work are consistent with the theoretical conclusions.

Statement of the problem and difference scheme. In the domain $\bar{Q}_T = \{(x, t) : 0 \leq x \leq l, 0 \leq t \leq T\}$ consider the initial boundary value problem for inhomogeneous diffusion equation

$$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2} + f(x, t), \quad 0 < x < l, \quad 0 < t \leq T, \quad (1)$$

$$u(x, 0) = u_0(x), \quad 0 \leq x \leq l, \quad (2)$$

$$u(0, t) = \mu_1(t), \quad u(l, t) = \mu_2(t), \quad 0 < t \leq T. \quad (3)$$

Here and below we assume that the solution to the differential problems under consideration is formulated correctly according to Hadamard and has in $\bar{Q}_T$ all the continuous derivatives necessary in the course of the work. All input data are also assumed to be sufficiently smooth.

On a uniform grid of nodes $\bar{\omega} = \bar{\omega}_h \times \bar{\omega}_\tau = \{(x_i, t_n) \in \bar{Q}_T\}$, where

$$\bar{\omega}_h = \{x_i = ih, 0 \leq i \leq N, h = l / N\}, \bar{\omega}_\tau = \{t_n = n\tau, 0 \leq n \leq K, \tau = T / K\}$$

we replace differential problem (1)–(3) with a difference scheme with weight [5]

$$y_t = \Lambda \sigma \hat{y} + \Lambda (1 - \sigma) y + \varphi, \quad (4)$$

$$y(x, 0) = u_0(x), \quad x \in \bar{\omega}_h, \quad \hat{y}_0 = \mu_1(\hat{t}), \quad \hat{y}_N = \mu_2(\hat{t}), \quad (5)$$

where

$$\sigma = \frac{1}{2} - \frac{\omega}{12}, \quad \omega = \frac{h^2}{\tau} = 2\sqrt{5}, \quad \varphi = \hat{f} + \hat{f}_1, \quad (6)$$

$$\begin{aligned} f_1 = & \left(\frac{h^2}{12} - (1 - \sigma)\tau \right) \frac{\partial f}{\partial t} + \left(\frac{h^4}{360} + (1 - \sigma) \frac{\tau^2}{2} - (1 - \sigma) \frac{\tau h^2}{12} \right) \frac{\partial^2 f}{\partial t^2} + \\ & + \frac{h^2}{12} \frac{\partial^2 f}{\partial x^2} + \frac{h^4}{360} \frac{\partial^4 f}{\partial x^4} + \left(\frac{h^4}{360} - (1 - \sigma) \frac{\tau h^2}{12} \right) \frac{\partial^3 f}{\partial t \partial x^2}. \end{aligned} \quad (7)$$

If $\sigma = \frac{1}{2} - \frac{h^2}{12\tau}$, then the difference scheme (4) approximates equation (1) with order $O(h^4 + \tau^2)$

[5], and for $\sigma = 1 - \frac{h^2}{12\tau}$ with $O(h^4 + \tau)$ [6].

It should be noted that for the homogeneous diffusion equation, for the first time, a compact difference scheme of the sixth order of accuracy in the spatial direction was constructed by V.K. Saul'ev [2]. For a two-dimensional equation was constructed by B. Larkin [7].

Here and below we use the standard notation of the theory of difference schemes [5]:

$$y = y_i^n = y(x_i, t_n); \quad \hat{y} = y^{n+1} = y(x_i, t_{n+1}),$$

$$y_t = \frac{\hat{y} - y}{\tau}; \quad y_x = \frac{y_{i+1} - y_i}{h}; \quad y_{\bar{x}} = \frac{y_i - y_{i-1}}{h}; \quad y_{\bar{x}x} = \frac{y_{i+1} - 2y_i + y_{i-1}}{h^2}.$$

Let us introduce scalar products and norms

$$(y, v) = \sum_{i=1}^{N-1} y_i v_i h, \quad \|y\| = \sqrt{(y, y)},$$

$$(y, v] = \sum_{i=1}^N y_i v_i h, \quad \|y\| = \sqrt{(y, y]},$$

$$\|y\|_C = \max_{x \in \omega_h} |y^n(x)|, \quad \|y\|_{\bar{C}} = \max_{x \in \bar{\omega}_h} |y^n(x)|.$$

Writing the expression for the approximation error for scheme (4) $z = y - u$ we obtain

$$z_t = \Lambda (\sigma \hat{z} + (1 - \sigma) z) + \psi.$$

Let us show that the difference scheme (4), (5) approximates the original differential problem (1)–(3) by the sixth order in space and the third in time, i.e. for her truncation error

$$\psi = -u_t + \Lambda \sigma \hat{u} + \Lambda (1 - \sigma) u + \varphi,$$

an a priori estimate holds:

$$\|\psi\| \leq M (h^6 + \tau^3), \quad M = \text{const} > 0. \quad (8)$$

Let us expand $u = u(x, t)$ using the Taylor formula in a (x_i, t^{n+1}) point, i.e.

$$\begin{aligned} \frac{u_{i-1}^{n+1} - 2u_i^{n+1} + u_{i+1}^{n+1}}{h^2} &= \frac{\partial^2 u}{\partial x^2} + \frac{h^2}{12} \frac{\partial^4 u}{\partial x^4} + \frac{h^4}{360} \frac{\partial^6 u}{\partial x^6} + O(h^6), \\ \frac{u_{i-1}^n - 2u_i^n + u_{i+1}^n}{h^2} &= \\ &= \left(h^2 \frac{\partial^2 u}{\partial x^2} - \tau h^2 \frac{\partial^3 u}{\partial x^2 \partial t} + \frac{h^4}{12} \frac{\partial^4 u}{\partial x^4} + \frac{\tau^2 h^2}{2} \frac{\partial^4 u}{\partial x^2 \partial t^2} - \frac{\tau h^4}{12} \frac{\partial^5 u}{\partial x^4 \partial t} + \frac{h^6}{360} \frac{\partial^6 u}{\partial x^6} \right) / h^2 + O(h^6), \\ \frac{u_i^{n+1} - u_i^n}{\tau} &= \frac{\partial u}{\partial t} - \frac{\tau}{2} \frac{\partial^2 u}{\partial t^2} + \frac{\tau^2}{6} \frac{\partial^3 u}{\partial t^3} + O(\tau^3). \end{aligned}$$

Then

$$\begin{aligned} \psi &= \Lambda (\sigma \hat{u} + (1 - \sigma) u) - u_t + \varphi = \sigma \frac{u_{i-1}^{n+1} - 2u_i^{n+1} + u_{i+1}^{n+1}}{h^2} + \\ &+ (1 - \sigma) \frac{u_{i-1}^n - 2u_i^n + u_{i+1}^n}{h^2} - \frac{u_i^{n+1} - u_i^n}{\tau} + \varphi = \\ &= \sigma \left(\frac{\partial^2 u}{\partial x^2} + \frac{h^2}{12} \frac{\partial^4 u}{\partial x^4} + \frac{h^4}{360} \frac{\partial^6 u}{\partial x^6} \right) + (1 - \sigma) \left(\frac{\partial^2 u}{\partial x^2} - \tau \frac{\partial^3 u}{\partial x^2 \partial t} + \frac{h^2}{12} \frac{\partial^4 u}{\partial x^4} + \right. \\ &+ \frac{\tau^2}{2} \frac{\partial^4 u}{\partial x^2 \partial t^2} - \frac{\tau h^2}{12} \frac{\partial^5 u}{\partial x^4 \partial t} + \frac{h^4}{360} \frac{\partial^6 u}{\partial x^6} \left. \right) - \left(\frac{\partial u}{\partial t} - \frac{\tau}{2} \frac{\partial^2 u}{\partial t^2} + \frac{\tau^2}{6} \frac{\partial^3 u}{\partial t^3} \right) + \varphi = \\ &= \frac{\partial^2 u}{\partial x^2} - \frac{\partial u}{\partial t} + \varphi + \frac{\tau}{2} \frac{\partial^2 u}{\partial t^2} - \frac{\tau^2}{6} \frac{\partial^3 u}{\partial t^3} - \tau (1 - \sigma) \frac{\partial^3 u}{\partial x^2 \partial t} + \frac{h^2}{12} \frac{\partial^4 u}{\partial x^4} + \\ &+ \frac{\tau^2}{2} (1 - \sigma) \frac{\partial^4 u}{\partial x^2 \partial t^2} - \frac{\tau h^2}{12} (1 - \sigma) \frac{\partial^5 u}{\partial x^4 \partial t} + \frac{h^4}{360} \frac{\partial^6 u}{\partial x^6} + O(h^6 + \tau^3). \end{aligned}$$

Considering that

$$\begin{aligned} \frac{\partial^3 u}{\partial x^2 \partial t} &= \frac{\partial}{\partial t} \left(\frac{\partial^2 u}{\partial x^2} \right) = \frac{\partial}{\partial t} \left(\frac{\partial u}{\partial t} - f \right) = \frac{\partial^2 u}{\partial t^2} - \frac{\partial f}{\partial t}, \\ \frac{\partial^4 u}{\partial x^2 \partial t^2} &= \frac{\partial^2}{\partial t^2} \left(\frac{\partial^2 u}{\partial x^2} \right) = \frac{\partial^2}{\partial t^2} \left(\frac{\partial u}{\partial t} - f \right) = \frac{\partial^3 u}{\partial t^3} - \frac{\partial^2 f}{\partial t^2}, \\ \frac{\partial^5 u}{\partial x^4 \partial t} &= \frac{\partial^3}{\partial t \partial x^2} \left(\frac{\partial^2 u}{\partial x^2} \right) = \frac{\partial^2}{\partial t^2} \left(\frac{\partial u}{\partial t} - f \right) - \frac{\partial^3 f}{\partial t \partial x^2} = \frac{\partial^3 u}{\partial t^3} - \frac{\partial^2 f}{\partial t^2} - \frac{\partial^3 f}{\partial t \partial x^2}, \end{aligned}$$

$$\frac{\partial^4 u}{\partial x^4} = \frac{\partial^2}{\partial x^2} \left(\frac{\partial u}{\partial t} - f \right) = \frac{\partial^2 u}{\partial t^2} - \frac{\partial f}{\partial t} - \frac{\partial^2 f}{\partial x^2},$$

$$\frac{\partial^6 u}{\partial x^6} = \frac{\partial^4}{\partial x^4} \left(\frac{\partial u}{\partial t} - f \right) = \frac{\partial^3 u}{\partial t^3} - \frac{\partial^4 f}{\partial x^4} - \frac{\partial^3 f}{\partial t \partial x^2} - \frac{\partial^2 f}{\partial t^2},$$

we obtain

$$\begin{aligned} \psi &= (Lu + f - \dot{u}) + \varphi - f + \left(\frac{h^2}{12} + \frac{\tau}{2} - (1-\sigma)\tau \right) \ddot{u} + \\ &+ \left(\frac{h^4}{360} - \frac{\tau^2}{6} + \frac{\tau^2}{2}(1-\sigma) - \frac{\tau h^2}{12}(1-\sigma) \right) \ddot{u} - f_1 + O(h^6 + \tau^3) = \\ &= [\varphi - f - f_1] + \left[\frac{h^2}{12} + \frac{\tau}{2} - (1-\sigma)\tau \right] \ddot{u} + \\ &+ \left[\frac{h^4}{360} - \frac{\tau^2}{6} + \frac{\tau^2}{2}(1-\sigma) - \frac{\tau h^2}{12}(1-\sigma) \right] \ddot{u} + O(h^6 + \tau^3), \end{aligned}$$

where

$$Lu = \frac{\partial^2 u}{\partial x^2}, \quad \dot{u} = \frac{\partial u}{\partial t}.$$

When conditions (6), (7) are met, the expressions in square brackets are equal to zero. This implies the fulfillment of estimate (8).

Stability. To obtain the corresponding a priori estimate, we apply the standard maximum principle technique [5]. Let us write scheme (4), (5) in canonical form:

$$A_i y_{i-1}^{n+1} - C_i y_i^{n+1} + B_i y_{i+1}^{n+1} = -F_i^n, \quad i = \overline{1, N-1},$$

$$y_0^{n+1} = \mu_1(t_{n+1}), \quad y_N^{n+1} = \mu_2(t_{n+1}).$$

Here

$$A_i = B_i = \frac{\sigma\tau}{h^2}, \quad C_i = 1 + \frac{2\sigma\tau}{h^2},$$

$$D_i = C_i - A_i - B_i = 1, \quad F_i^n = y_i^n + \frac{(1-\sigma)\tau}{h^2} (y_{i-1}^n - 2y_i^n + y_{i+1}^n) + \tau\varphi_i^{n+1}.$$

Since $\sigma > 0$ and $1-\sigma > 0$, the coefficients A, B, C, F are positive.

The maximum modulus of the grid function y^{n+1} can be reached either at the border of the domain

$$\|y^{n+1}\|_{\bar{G}} = \max \{ |\mu_1^{n+1}|, |\mu_2^{n+1}| \},$$

or at an internal point $x \in \omega_n$. However, then from equation (4) we immediately obtain

$$\|y^{n+1}\|_{\bar{C}} = \|y^{n+1}\|_C \leq \|y^n\|_C + \tau \|\varphi^n\|_C.$$

Combining the obtained estimates, we arrive at an a priori estimate [6]

$$\|y^{n+1}\|_{\bar{C}} \leq \max \left\{ \max_{t_n \in \omega_\tau} \{|\mu_1(t_n)|, |\mu_2(t_n)|\}, \|u_0\|_C \right\} + t_n \max_{t_n \in \omega_\tau} \|\varphi(t_n)\|_C,$$

expressing stability with respect to initial data, boundary conditions and right-hand side.

Numerical experiment. This section presents numerical results for equation (1) at

$$f(x, t) = -3e^{t-2x}.$$

The initial and boundary conditions are determined from the exact solution

$$u(x, t) = e^{t-2x}.$$

To determine the order of the rate of convergence in spatial and temporal variables (6+3) in the norms $L_\infty = C, L_2$ we use Runge's rule [8]

$$\|z(h, \tau)\|_{L_\infty} = \|y(h, \tau) - u(h, \tau)\|_{L_\infty},$$

$$p_\infty^h = \log_2 \frac{\|z(h, \tau)\|_{L_\infty}}{\|z(h/2, \tau)\|_{L_\infty}}, \quad p_\infty^\tau = \log_2 \frac{\|z(h, \tau)\|_{L_\infty}}{\|z(h, \tau/2)\|_{L_\infty}}.$$

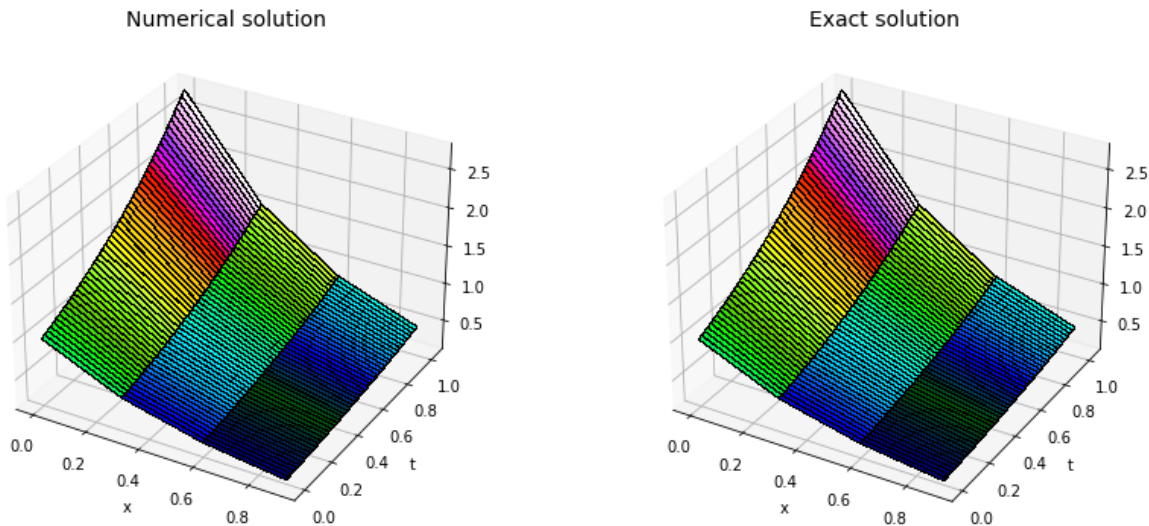


Fig. 1. The numerical and exact solutions at $T = 1$ with steps $h = 1/50$



Fig. 2. The error at $T = 1$

Tables 1, 2 show the orders of convergence speed in spatial and temporal directions in the L_∞ and L_2 norms. The values presented in the tables correspond to the moment of time $T = 1$. These test numerical calculations are consistent with theoretical conclusions.

Table 1. The rate of convergence in the spatial direction

h	τ	$\ z\ _{L_\infty}$	$p_{L_\infty}^h$	$\ z\ _{L_2}$	$p_{L_2}^h$
0.25	$h^2 / (2\sqrt{5})$	3.13e-08	-	2.33e-08	-
0.125	$h^2 / (2\sqrt{5})$	5.07e-10	5.9480	3.69e-10	5.9805
0.0625	$h^2 / (2\sqrt{5})$	7.98e-12	5.9894	5.80e-12	5.9914
0.03125	$h^2 / (2\sqrt{5})$	2.44e-13	5.0313	1.77e-13	5.0342

Table 2. The rate of convergence in the temporal direction

τ	h	$\ z\ _{L_\infty}$	$p_{L_\infty}^\tau$	$\ z\ _{L_2}$	$p_{L_2}^\tau$
0.01	$\sqrt{2\tau\sqrt{5}}$	9.70e-09	-	6.60e-09	-
0.005	$\sqrt{2\tau\sqrt{5}}$	1.29e-09	2.9105	9.14e-10	2.8521
0.0025	$\sqrt{2\tau\sqrt{5}}$	1.76e-10	2.8737	1.25e-10	2.8702
0.00125	$\sqrt{2\tau\sqrt{5}}$	2.26e-11	2.9611	1.62e-11	2.9478
0.000625	$\sqrt{2\tau\sqrt{5}}$	2.80e-12	3.0128	1.99e-12	3.0251

Comment. Compact difference schemes are constructed similarly for the wave equation

$$\frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2} + f(x, t).$$

A separate work will be devoted to this issue.

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Rezyume. Ushbu maqola diffuziya tenglamasi uchun kompakt ayirmali sxemalar qurish va o'rganishga bag'ishlangan. Tuzilgan ayirmali sxema shartli sxema hisoblanadi. Kompakt ayirmali sxemasining shartli barqarorligi isbotlangan. Ishda keltirilgan hisoblash eksperimenti nazariy xulosalar bilan mos keladi.

Резюме. Настоящая работа посвящена построению и исследованию компактных разностных для уравнения диффузии. Построенная разностная схема является схемой условной аппроксимации. Доказывается условная устойчивость компактной разностной схемы. Приведенные в работе тестовые численные расчеты согласуются с теоретическими выводами.

Kalit so'zlar: Kompakt ayirmali sxema, shartli approksimatsiya, barqarorlik, hisoblash eksperimenti.

Ключевые слова: Компактные разностные схемы, условная аппроксимация, устойчивость, вычислительный эксперимент.

THE PROBLEM OF WEYL AND DISCRETE LOGARITHM PAIRS IN THE SELECTION OF ELLIPTIC CURVES

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Summary: Nowadays, the theory of elliptic curves is widely used in the construction of most cryptographic algorithms for information protection as well as in the development of cryptoresistance. During the implementation of elliptic curves into cryptographic algorithms, it makes it possible to perform all calculations in a finite field. The elliptic curve contains sets of points over a finite field. It is possible to generate pseudo-random keys using the elements of this curve point set. It can be seen as open or closed keys. With these keys, the security of a number of cryptographic systems such as Electronic Digital Signature, blockchain technologies and cryptocurrencies is ensured. Of course, a number of mathematical problems are gaining relevance in solving these issues. One such problem is the selection of efficient elliptic curves. In this paper, Weyl pairs and Discrete logarithm problems of efficient elliptic curve selection are considered.

Key words: Elliptic curve, cryptocurrency, Cryptography, blockchain, key generation.

Introduction. Discussing the conditions for the selection of elliptic curves for modern elliptic curve-based cryptographic algorithms, we should note that elliptic curves are widely used in cryptographic algorithms, blockchain technology and cryptocurrencies (bitcoin, ethurum, Litecoin h.k.).

Problem Statement. The problems we will encounter are as follows.

- a) the proper selection of elliptic curves;
- b) selection of efficient and fast computational elliptic curves;
- c) determination of singular elliptic curves and solution of this problem based on mathematical theories;

To solve these problems, it is necessary to study in depth the theory of elliptic curves, analyze scientific papers on elliptic curves and the presented conclusions. In particular, as a result of analyzing the conclusions of many scientific studies, we can see that mapping of the groups of elliptic curve points and using them in the formation of crypto algorithms, protocols and cryptocurrencies leads to effective results. One of the most important steps in using elliptic curves in cryptographic algorithms is the selection of the curve. In the course of research, the problem of supersingularity arose when choosing elliptic curves. Supersingularity imposes a number of several restrictions on the choice of elliptic curves. In order to understand the problem, we must first study some principles of cryptographic algorithm design and stability.

One of the most important tools for increasing the stability of cryptographic algorithms are one-way functions. The general essence of the construction of one-way functions is as follows: using a large finite repeating group $G = \langle G, \circ \rangle$ and a generator $g \in G$, the product $m \cdot g := g \circ g \circ \dots \circ g$ should be computed easily for all $m \in N$, while the computation of m for some arbitrary element $h \in G$ satisfying the condition $m \cdot g = h$ should be difficult. At the same time, the simplicity of calculations is due to the fact that a polynomial with an order of degree $\log |G|$ can be performed in a short time. An example of the implementation of these tasks is the degree ascension i.e. exponentiation in a finite field, proposed by Diffie-Hellman. This principle is particularly used in elliptic curves to create cryptographic algorithms with a public key [7].

In cryptographic applications, elliptic curves are considered in a finite field $GF(q)$, which means that a cubic curve E is defined as the set of all points $(x, y) \in GF(q) \times GF(q)$ satisfying equation (1) with coefficients $A, B, C \in GF(q)$. The points $P \in E(GF(q))$ of an elliptic curve E over a finite field $GF(q)$ are used to perform crypto-substitutions, which form a group with respect to the operation of adding points [4].

In this case, a complex reversible transformation consists in calculating points that are multiples of some generated element of the elliptic curve point group. It looks like we said above: $Q = kP, Q \in \langle P \rangle$. Where P is the fulcrum of the elliptic curve (also called the generator), k is some integer, $1 < k < N$. This fulcrum should have a large order. Then it is relatively easy to calculate the scalar product $kP = P + P + \dots + P$, k -times, but it is difficult to calculate k for certain values of Q and P . The problem of determining the multiplier for certain values of Q and P is called discrete logarithm.

The main essence of the discrete logarithm problem is to find the multiplier k at certain values of Q and P . If we interpret these operations by multiplication, $P + P + \dots + P = kP \rightarrow P \circ P \circ \dots \circ P = P^k$ indicates the correspondence between these explicit additive and multiplicative groups, which indicates the efficiency of applying the notion of logarithmization in the case of the additive group Q . This stability of the cryptographic substitution is determined by the complexity of solving the discrete logarithm problem in a large simple repetition group $\langle P \rangle$ of order N . In our case, this means the order of the group of points of the elliptic curve E formed by the fulcrum of the curve P .

Now we can return to the next restriction on the selection of elliptic curves. Initially, in 1987, Koblitz recommended using curves known as supersingular curves with a finite number of $\#E(GF(q)) = q + 1$ elements (points on the curve) for public key cryptosystems [8]. But it was later shown that such curves are unsuitable for cryptographic applications. Cryptosystems based on curves of this type can be attacked using discrete logarithm algorithms presented by A.Menezes, T.Okamoto and T.Wenston in 1993. It can be attacked using discrete logarithm algorithms presented by Menezes. This algorithm allows the multiplicative group of some GF fields of a given finite field to use Weyl pairs to set the group of points of an elliptic curve over a GK field, which leads to a discrete logarithm problem on the curve to a discrete logarithm problem in a finite field [9]. It was then possible to replace the elliptic curves presented by Koblitz by some other superspecific curves which were assumed to be sufficiently reliable for the application. But these curves could also be reduced to some finite space of large dimension. This algorithm makes it possible to reduce the problem of discrete logarithm on a curve to the problem of discrete logarithm on a finite field, using Weyl pairs to establish a group of points of an elliptic curve on a field $GF(2^m)$ for the multiplicative group of some domains $GF(2^{lm})$ of a given finite field [9]. An attempt was then made to replace the elliptic curves presented by Koblitz by some other superspecial curves which were considered somewhat reliable for application. However, these curves can also be reduced to some finite region of large dimensions.

Now let us recall the essence of the algorithm presented by A.Menezes, T. Okamoto and S.Wenston. The basic idea of this algorithm is that when computing the discrete logarithm in the point group of an elliptic curve $E(K)$ considered in a field K , the point group $E(K)$ reduces to the multiplicative and discrete logarithm problem of a field $G(F)$.

From the theory of elliptic curves, we know that in an arbitrary set of points, the values of arithmetic operations such as addition, multiplication of points and introduced points of an elliptic curve form a group of points at O infinity [3,4].

Hence, an arbitrary point P of an elliptic curve forms a subgroup $E[n]$ of a group of points P of finite order n . Such a subgroup is called the rotation group of an elliptic curve. If n is an odd number, then the order of the rotation group has the form $n^2 \left(P = (x_p, y_p) \in K \times K \right)$. Cryptographic algorithms are built precisely in a simple group of repetitions of the n th order. This repetition group is a subgroup of the rotation group. The remaining points of the rotation group will not belong to the main field (the n -element subfield). Since the rotation group is bounded, there is an extension $GF(2^{m_l})$ of this field that contains all points of the rotation group. The multiplicative group of this extension has order $2^{m_l} - 1$, therefore, according to the Langrange theorem, to introduce a rotation group into the multiplicative group of this extension, it is sufficient and necessary that the condition $n / (2^{m_l} - 1)$ be satisfied [5]. This fact underlies the method of reducing the problem of discrete logarithm in the group of points of an elliptic curve to the problem of discrete logarithm in the multiplicative extension group of a given finite field, where there is an algorithm for solving the problem of discrete logarithm of subexponential complexity.

In fact, this reduction is performed using a Weyl pair, which is map in the $e_N : E[n] \times E[n] \rightarrow \mu_n$ representation, in which μ_n is the group of roots of degree n of unity, which is a subgroup of the multiplicative group of the finite field $GF(2^{lm})$ in the above condition.

Indeed, as a result of mapping in the form $e_N : E[n] \times E[n] \rightarrow \mu_n$, all calculations are performed using Weyl pairs, in which μ_n is the group of the n th order roots of the subgroup $E(N)$ of the multiplicative group of a finite field $K(2)$. This leads to the following question.

2. FORMULATION OF THE DISCRETE LOGARITHM PROBLEM AND APPROACHES TO ITS SOLUTION

If the points $Q = kP$ and T are points of the group $E[n]$ that does not belong to the base point $\langle P \rangle$ of the elliptic curve, then the mapping e_n for $e_n(P, T) = \alpha \in \mu_n$ and $e_n(P, T) = \beta \in \mu_n$ is linear and non-degenerate.

The solution of the problem and its analysis. From this follows the solution of the problem as follows.

$$\begin{aligned} \beta &= \underbrace{\alpha \circ \alpha \circ \alpha \dots \circ \alpha}_k \\ \beta &= \underbrace{\alpha \circ \alpha \circ \alpha \dots \circ \alpha}_k = \alpha^k \\ \beta &= \alpha^k \end{aligned}$$

The solution of the problem shows that the problem of discrete logarithmization of the expression $\beta = \alpha^k$ in the group of repetitions of the base point $\langle P \rangle$ of an elliptic curve reduces to the problem of discrete logarithmization $Q = kP$ in a finite field $GF(2^{lm})$.

If the expansion factor is less than unity, there will be a subexponential algorithm for this discrete logarithm problem. For example, for computationally very interesting supersingular curves $1 \leq 6$ is true, so the use of such curves in cryptographic algorithms with relatively small sizes of the base field does not give high results.

Thus, we have one more condition for the choice of curves, known as the MOV condition (the Menezes-Okamoto-Wenston condition): the order of the support points of elliptic curves allowed for cryptographic application must satisfy the restriction $2^{m_l} \neq 1 \pmod{n}$ for $1 \leq l \leq 32$.

This means that the group of repetitions generated from the base point must have a large order (the above discussions refer to the area expansion coefficient in characteristic 2, that is, in general, we must understand the finite expansion $GF(p^k)$).

It should be noted here that the discrete logarithm in the finite field $GF(2^n)$ can be calculated using the Koperschmidt algorithm with $O\left(\exp\left(cn^{1/3}(\ln n)^{2/3}\right)\right)$ complexity [10].

Later, it was revealed that the MOV condition can be satisfied if non-supersingular elliptic curves are used.

CONCLUSION

So, we can conclude that it is necessary to use the MOV algorithm when choosing elliptic curves based on the conditions of supersingularity and non-supersingularity, which are contradictory to each other. We can also use the MOV algorithm to create a supersingular curve.

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Rezyume: Hozirgi kunda elliptik egri chiziqlar nazariyasi axborotni himoya qilish uchun kriptografik algoritmlarning ko'pchiligini qurishda hamda kriptorezistentlikni rivojlantirishda keng qo'llaniladi. Elliptik egri chiziqlarni kriptografik algoritmlarga tatbiq etish jarayonida chekli maydonda barcha hisob-kitoblarni amalga oshirish imkonini beradi. Elliptik egri chiziq cheklangan maydon ustidagi nuqtalar to'plamini o'z ichiga oladi. Ushbu egri chiziqli nuqtalar to'plamining elementlari yordamida psevdotasodifiy kalitlarni yaratish mumkin. Bu ochiq yoki yopiq kalitlar sifatida ko'rish mumkin. Ushbu kalitlar yordamida Elektron raqamli imzo, blokcheyn texnologiyalari va kriptovalyutalar kabi bir qator kriptografik tizimlarning xavfsizligi ta'minlanadi. Albatta, bu masalalarni yechishda bir qator matematik masalalar dolzarb ahamiyat kasb etmoqda. Bunday muammolardan biri samarali elliptik egri chiziqlarni tanlashdir. Ushbu maqolada Veyl juftlari va samarali elliptik egri tanlashning Diskret logarifm masalalari ko'rib chiqiladi.

Резюме: В настоящее время теория эллиптических кривых широко используется при построении большинства криптографических алгоритмов защиты информации, а также при разработке криптостойкости. При внедрении эллиптических кривых в криптографические алгоритмы это позволяет выполнять все вычисления в конечном поле. Эллиптическая кривая содержит множество точек над конечным полем. Можно генерировать псевдослучайные ключи, используя элементы этого набора точек кривой. Его можно рассматривать как открытые или закрытые ключи. С помощью этих ключей обеспечивается безопасность ряда криптографических систем, таких как электронная цифровая подпись, технологии блокчейна и криптовалют. Конечно, при решении этих вопросов приобретает все большую актуальность ряд математических задач. Одной из таких проблем является выбор эффективных эллиптических кривых. В данной статье рассматриваются пары Вейля и задачи дискретного логарифмирования эффективного выбора эллиптической кривой.

Kalit so'zlar. Elliptik egri chiziq, kriptovalyuta, Kriptografiya, blokcheyn, kalit generatsiyasi.

Ключевые слова. Эллиптическая кривая, криптовалюта, криптография, блокчейн, генерация ключей.

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BIOIMPEDANCE STUDY OF THE PECULARITIES OF BONE MASS OF STUDENTS LIVING IN KARAKALPAKSTAN

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Summary: *In this article, the bone mass of students living in the conditions of Karakalpakstan was studied. As a result of bioimpedance analysis, it gives students the opportunity to objectively quantitatively assess the bone composition in the body. This helps a lot in identifying the underlying diseases. The results of the examination revealed that the male and female students were normal and underweight, and the bone mass of the students was reduced. Low bone mass in students is a sign of endogenous and exogenous influences, lack of movement, poor nutrition, lack of protein, calcium, vitamin D and trace elements in food products, that is, they do not follow a healthy lifestyle.*

Key words: *Student, bioimpedance, bone mass, body length, body weight, body mass index.*

Introduction. Today, the increase in environmental impressions on the face of the world, the impact of various sulfidogenic factors on the surface of the world is one of the pressing issues on the face of the world in the search for the basics of its theory of maintaining the health of the population, improving the healthy lifestyle of young people. In particular, the mass of the human body in vivo is occupied by a desperately needed fan of research.

In the practice of epidemiological research, the most common method of determining the composition of the human body is bioimpedance analysis, in order to obtain before the morbidity and morbidity of the people in the field of epidemiological research, in order to apply methods of assessment of body composition in a single line with the purpose of Bioimpedance analysis of body composition based on the inherent numerical essences of the electrical impurity (impedance) of the human body and the arthrometric, the exchange of protein, oil and water conditions, the assessment of the intensity of metabolic processes, their assessment with intervals marks normal estimates, the possibility of assessing the risk of reserve capabilities of the body and diseases [1. 38].

Bioimpedance analysis of the body provides objective information about the composition of biological tissues of one person and patient, and also shows possible deviations (deviations) and functional disorders in the body [2. 370].

As is known, the formation of the skeleton occurs in the pubertal and post pubertal periods, when bone mass increases due to endosteal ossification and thickening of trabecular structures. During this period, molding takes precedence over bone resorption. The normal course of the ossification process is largely due to the content of food, the sufficient amount of protein, mineral salts and vitamins in it, as well as the fact that clear air is constantly exposed to ultraviolet rays. Therefore, physical exercise has a positive effect on the normal course of bone formation.

Once peak bone mass is reached, there is a relatively short period (25 to 35 years) of equilibrium between the rates of bone resorption and bone formation, followed by a continuous decline in bone mass. The normal state of bone tissue determines not only the same physical development of a person, but also the general state of health. A healthy lifestyle of a student (his physical and social activity, eating habits, bad habits, etc.) plays an important role among the reasons leading to disruption of the structural and functional state of bone tissue and the development of osteoporosis [4. 6].

Therefore, it is important to know and take into account risk factors in the prevention of osteoporosis, and students are a promising age group in developing a healthy lifestyle. There are many works devoted to the problem of decreased bone mass, but in the review literature we did not find any works devoted to bone mass and the characteristics of bone mass among university students in our country.

The purpose of the work is to study bone mass in students in the conditions of Karakalpakstan.

Materials and methods. This study provides an overview of the study of the body mass composition of male and female students using the bioimpedance method, height, body weight, body mass index and bone mass of modern students.

The body weight of male and female students was studied. The experiments were carried out in the Bioecology laboratory of the Faculty of Biology. In this experiment, the results obtained from students living in Karakalpakstan in the 2021-2022 academic year were taken as an indicator, and the total mass included students aged 18 to 22 years. A total of 285 students took part in the experiment, of which 126 were boys and 159 were girls. Body bone mass was measured using a Tanita VC-543 analyzer between 10 and 11 am. All study participants underwent anthropometry and bioimpedance measurements.

Statistical analysis of the data was analyzed by Student using Excel. P and t values were considered statistically significant.

Received reports and their analysis. In our experiment on anthropometry indicators of students in the conditions of Karakalpakstan (table 1), height, body girth, body mass index and bone mass in the body composition were studied.

Anthropometric measurements of student boys. The average height of 18-year-old students is 174.4 ± 1.8 cm, the average body weight is 67.3 ± 2.8 kg, the average height of 19-year-old students is 170.4 ± 2.5 cm, the average body weight is $62.6 \pm 2, 3$, the average height of 20-year-old male students is 173.2 ± 1.5 cm, the average body weight is 65.3 ± 2.4 kg, 21 The average height of 22-year-old students is 176.0 ± 1.8 cm, the average body weight is 68.9 ± 1.7 kg, the average height of 22-year-old students is 174.9 ± 1.3 cm, the average body weight is 66.7 ± 2.0 kg.

The body mass index of male students 18 years old is 19.8 ± 2.5 The body mass index of male students 19 years old is 18.4 ± 2.3 The body mass index of male students 20 years old is 19.1 ± 2.5 Body weight the indicator for 22-year-old students was 22.1 ± 2.0 .

Anthropometric data of student girls. The average height of 18-year-old female students is 161.9 ± 0.7 cm, the average body weight is 51.3 ± 1.1 kg, the average height of 19-year-old female students is 162.4 ± 0.9 cm, the average body weight is $54.8. \pm 1.6$ kg, average height of 20-year-old female students 160.3 ± 1.3 cm, average body weight 65.3 ± 2.4 kg, 21 average height of 22-year-old female students 162.3 ± 1.3 cm, average body size weight 52.9 ± 2.1 kg, average height of female students 22 years old 164.8 ± 2.2 cm, average body weight 56.8 ± 2.3 kg.

Body mass index of female students 18 years old - 19.3 ± 2.3 ; Body mass index of female students 19 years old - 20.5 ± 2.5 ; Body mass index of female students 20 years old - 24.9 ± 2.6 ; Body mass index of female students 21 years old - 19.3 ± 2.8 ; The body mass index of 22-year-old female students was 22.1 ± 3.2 g.

Table 1

Comparison of average arithmetical values of students according to anthropometric measurements

Age	Signs	Boys	Girls
18	Body weight (kg)	$67,3 \pm 2,8$	$161,9 \pm 0,7$
	Body height (cm)	$174,4 \pm 1,8$	$161,9 \pm 0,7$
	Body mass index	$19,8 \pm 2,5$	$19,3 \pm 2,3$

19	Body weight (kg) Body height (cm) Body mass index	62,6±2,3 170,5±2,0 18,4±2,3	54,0±1,6 162,4±0,9 20,5±2,5
20	Body weight (kg) Body height (cm) Body mass index	65,3±2,4 173,2±1,5 19,1±2,5	54,8±1,6 160,7±0,9 24,9±2,6
21	Body weight (kg) Body height (cm) Body mass index	68,9±1,7 176,0±0,9 19,3±1,7	52,9±2,1 162,3±1,3 19,3±2,8
22	Body weight (kg) Body height (cm) Body mass index	66,7±2,0 174,9±1,3 22,1±2,0	56,8±2,3 164,8±2,2 22,1±3,2

living in Karakalpakstan; 18-19; -20; 21; height of 22-year-old students, height of students in the group of boys is 19, 11%, ($P<0, 001$); 4.75% ($P<0.001$); 7.21% ($P<0.001$); 7, 78%, ($P<0, 001$) and 5, 77%, ($P<0, 001$) greater than girls.

So, 18; - It was determined that the body mass index of 20-year-old female students is below the norm. 18 in our experience; -19; -20; 21; It was determined that the body mass index of 22-year-old male and female students is normal.

When assessing the bone mass in the body of students (fig. 1) 18; -19; -20; 21; Bone mass characteristics of 22-year-old male and female students were studied.

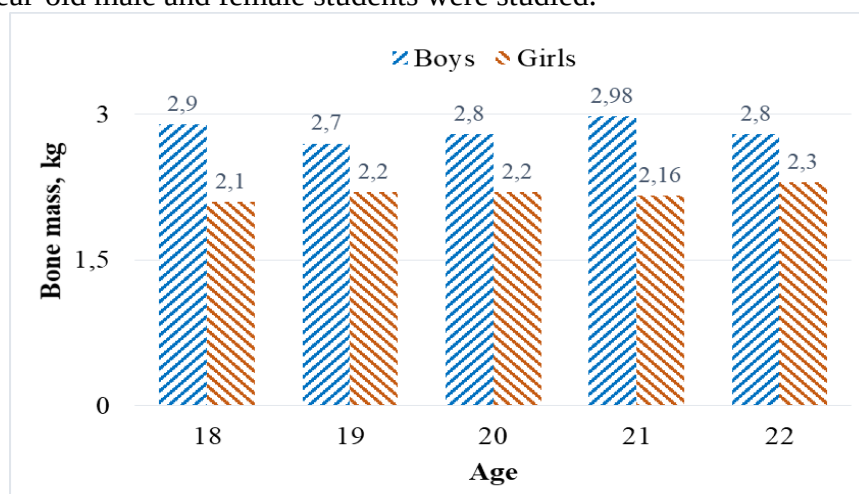


Fig. 1. Bone mass indicators of students' body composition

Body mass of adolescent. 19-year-old students have a normal bone mass of 2.7 kg, 18; -20; - 21 and 22-year-old male students have a bone mass of 2.9 kg; 2.8 kg; 2, 98% weight is 2, 8 kg. From this it can be seen that 18; -20; - In 21-22-year-old students, it was observed that the bone mass in the body is low when compared to body weight.

Bone mass in girls. 18; -19; -20; - 21 and 22-year-old female students have a bone mass of 2.1 kg; 2.2 kg; 2.2 kg; It was equal to 2.16 kg and 2.3 kg. So, it was observed that the bone mass of female students of all ages is low compared to body mass.

Therefore, 18; -19; -20; - 21-year-old male and female students of 21 years of age have less than normal bone mass, while 19-year-old male students have normal bone mass.

Discussion. Extreme environmental conditions, unbalanced nutrition and low social status put the inhabitants of the Archipelago in extremely difficult conditions. Aggravation of climatic discomfort, aggravation of air dryness, stable fluctuations in temperature, lack of micro and macro elements led to a significant decline in the health and lifestyle of the inhabitants of the Aral Bay. In recent years, the main

indicators of the health of the population of the Republic of Karakalpakstan have sharply deteriorated. There are connections between the disease and the harmful factors of the external environment, and therefore, the regional distribution of the disease.

Deficiency of bone mass, which is the most necessary structural element of the body's adaptive reserve, was observed in all groups. This shows that under the influence of various factors of the external environment, partial attention is paid to the nutritional factor of growth potential and its final results. In recent years, the scientific direction is actively developing, which is related to the study and prevention of the disease caused by the deficiency and imbalance of microelements in the body. One of these diseases, skeletal metabolic disease called osteoporosis, is characterized by a decrease in bone mass, failure of the microarchitecture of bone tissue, and thus a small wound, light [5. 392]. This is a polyetiological disease, the development of which is related to hereditary predisposition, lifestyle, level of physical activity, presence of endocrinological diseases, drugs, human composition and individual life. Growth of bone mass occurs during childhood and adolescence and reaches its maximum level at the age of 20-30 years. After 35-40 years, bone mass remains almost unchanged. After that, it starts to decrease little by little. Women have a significantly higher rate of bone mineral density (BMD) decline than men, which is associated with peri- and postmenopausal estrogen deficiency.

The bone tissue is in a state of stable changes, while two opposite processes occur simultaneously: bone formation and bone resorption, which determine their balanced mineral density, bone composition and strength. In conditions of estrogen deficiency, this child will lose bone mass. However, estrogen deficiency is not the only reason for the loss of bone mineral density [6.3].

Bone tissue regeneration is associated with the state of phosphorus-calcium metabolism, parathyroid hormone, vitamin D, growth hormone, calcitonin, thyroid hormones, glucocorticoids and others. In general, the presence of an effect on bone metabolism is realized on the shores of the main regulatory systems of osteoblast genesis and osteoclast genesis. Fractures with age and minimal trauma due to the negative effects of other factors, changes in the expression of molecules regulating osteoclast genesis and osteoclast genesis, lead to a decrease in bone mass. This may be accompanied by a decrease in bone mass, bone mineral density, or a violation of internal micro architectonics [7. 25; 8. 42].

Conclusion. Thus, according to the results of bioimpedance, it was noted that the bone mass of the students' body composition is statistically less than the norm according to the results of bioimpedance. Low bone mass in students is a source of endogenous and exogenous influences, lack of movement, poor nutrition, i.e. lack of protein, calcium, vitamin D and trace elements in food, i.e. non-compliance with a healthy lifestyle. Consequently, insufficient supply of bone mass with orthotropic minerals can be considered as a risk factor for the development of osteogenic syndrome, which can lead to negative consequences at later stages of ontogenesis.

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Rezyume: *Ushbu maqolada Qoraqalpog‘iston sharoitida yashovchi talabalarining tana tarkibidagi suyak massasi o‘rganildi. Talabalarni bioimpedans analizi natijasida tanadagi suyak tarkibini obyektiv miqdoriy baholash imkoniyatini beradi. Bu esa kelib chiqqan kasalliklarni aniqlashda katta yordam beradi. Tekshirilgan natijalarda talaba yigit va qizlarning normal va kam vaznli ekanligi hamda talabalardagi suyak massasi kamayganligi aniqlandi. Talabalarda suyak massasining kam bo‘lishi endogen va ekzogen ta’sirlarga, kam harakatlanish, nato‘g‘ri ovqatlanishi, ovqat mahsulotlarida oqsil, kaltsiy, D vitamini va mikroelementlar yetishmasligi ya’ni sog‘lom turmush tarziga rioya qilmasligidan darak beradi.*

Резюме: *в данной статье изучалась костная масса в составе тела студентов, проживающих в условиях Каракалпакии. Биоимпедансный анализ учащихся дает возможность объективно количественно оценить состав костей в организме. Это очень помогает в диагностике заболеваний, которые могут возникнуть. Результаты обследования показали, что мальчики и девочки-студенты имели нормальный и низкий вес при рождении, а также снижение костной массы у студентов. Низкая костная масса у учащихся свидетельствует об эндогенных и экзогенных воздействиях, недостаточной физической активности, неправильном питании, недостатке белка, кальция, витамина D и микроэлементов в продуктах питания, то есть о несоблюдении здорового образа жизни.*

Kalit so‘zlar. *Talaba, bioimpedans, suyak massasi, tana uzunligi, tana vazni, tana massasi indeksi.*

Ключевые слова: *студент, биоимпеданс, костная масса, длина тела, масса тела, индекс массы тела.*

UDC 517.3

HEAT PROPAGATION IN HOMOGENEOUS ROD WITH SOURCE INSTANTANEOUS IMPACT

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Summary: The problem of heat propagation in a homogeneous rod with an installed heat source, which is capable at fixed points in time, instantly changes the temperature at the point of the rod, is considered. These systems are mathematically designed to describe the thermal conductivity equation with corresponding initial and boundary conditions, as well as the conditions of pulsed influences at fixed points in time. The modification of the Fourier method for these thermal conductivity systems has resulted in this. The Fourier method is developed to solve the inhomogeneous heat conductivity equation with impulse action at fixed points in time in particular. All possible private cases are taken into account and the article describes the thermal conduction processes that correspond to these special cases.

Key words: Thermal conductivity, rod, heat source, differential equations, pulse action at fixed points in time, initial and boundary conditions, partial derivatives, method of separation of variables, modification of the method

Consider an inhomogeneous partial differential equation

$$u_t = a^2 u_{xx} + f(x, t), \quad 0 < x < l, \quad t \in R_+ \setminus t_p, \quad (1)$$

with an initial condition

$$u(x, 0) = \phi(x), \quad 0 \leq x \leq l, \quad (2)$$

boundary condition

$$u(0, t) = \varphi_1(t), \quad u(l, t) = \varphi_2(x) \quad 0 \leq t < +\infty \quad (3)$$

and the condition of impulse action

$$\Delta u(x, t) \Big|_{t=t_p} = u(x, t_p + 0) - u(x, t_p - 0) = I_p(x) \quad (4)$$

where a , l are some positive valid constants, $I_p(x)$, $p = 1, 2, \dots$, $x \in [0, l]$ are continuous, have a fragment-continuous derivative and turn to zero under $x = 0$, $x = l$ functions: $\psi_1(t)$, $\psi_2(t)$, $t \in [0; +\infty)$ are specified continuous functions.

The $f(x, t)$, $(x, t) \in [0; l] \times [0; +\infty)$ function of the x variable is decomposed into a Fourier series on the $[0; l]$ segment. The $\varphi(0) = \psi_1(0)$, $\varphi(l) = \psi_2(0)$ matching condition is also assumed.

Consider the problem of constructing a solution to equation (1) that satisfies conditions (2)-(4).

The solution of the problem (1)-(4) will be searched in the form of the Fourier series of the unknown $u(x, t)$ function by the x variable.

$$u(x, t) = \sum_{n=1}^{\infty} T_n(t) \sin \frac{n\pi}{l} x \quad (5)$$

where

$$T_n(t) = \frac{2}{l} \int_0^l u(x, t) \sin \frac{n\pi}{l} x dx \quad (6)$$

Performing the integration twice by parts, from (4.6) we get

$$T_n(t) = \frac{2}{n\pi} [u(0,t) - (-1)^n u(l,t)] - \frac{2l}{n^2\pi^2} \int_0^l u_{xx} \sin \frac{n\pi}{l} x dx \quad (7)$$

From equation (1) follows

$$u_{xx} = \frac{1}{a^2} [u_t - f(x,t)] \quad (8)$$

Due to boundary conditions (3) and (8) the expression (7) is converted to form

$$T_n(t) = \frac{2}{n\pi} [\psi_1(t) - (-1)^n \psi_2(t)] - \frac{2l}{n^2\pi^2 a^2} \int_0^l [u_t - f(x,t)] \sin \frac{n\pi}{l} x dx \quad (9)$$

Because of (6)

$$\int_0^l u_t(x,t) \sin \frac{n\pi}{l} x dx = \frac{l}{2} T'_n(t)$$

and

$$\int_0^l f(x,t) \sin \frac{n\pi}{l} x dx = \frac{l}{2} f_n(t)$$

then of (9) have

$$T_n(t) = \frac{2}{n\pi} [\psi_1(t) - (-1)^n \psi_2(t)] - \frac{l^2}{n^2\pi^2 a^2} [T'_n - f_n(t)]$$

whether

$$T'_n(t) + b^2 n^2 T_n(t) = \frac{2nb^2}{\pi} [\psi_1(t) - (-1)^n \psi_2(t)] + f_n(t) \quad (10)$$

$$\text{where } b^2 = \left(\frac{\pi a}{l} \right)^2, t \in R_+ \setminus \{t_p\}, p = 1, 2, \dots$$

Then, from the initial condition (2) and (6),

$$T_n(0) = \frac{2}{l} \int_0^l u(x,0) \sin \frac{n\pi}{l} x dx = \frac{2}{l} \int_0^l \varphi(x) \sin \frac{n\pi}{l} x dx = \varphi_n \quad (11)$$

From the condition of impulse action (4) and from (5), have

$$\Delta u(x,t) \Big|_{t=t_p} = \sum_{n=1}^{\infty} [T_n(t_p + 0) - T_n(t_p - 0)] \sin \frac{n\pi}{l} x = I_p(x)$$

Hence we find the conditions of impulse impact for (10)

$$\Delta T_n(t) \Big|_{t=t_p} = T_n(t_p + 0) - T_n(t_p - 0) = \frac{2}{l} \int_0^l I_p(x) \sin \frac{n\pi}{l} x dx \quad (12)$$

Solving equation (10) by force (1) and (12), we find

$$T_n(t) = \phi_n e^{-b^2 n^2 t} + \frac{2}{l} \sum_{0 < t_p < t} e^{-b^2 n^2 (t-t_p)} \int_0^l I_p(x) \sin \frac{n\pi}{l} x dx + \quad (13)$$

$$+ \frac{2b^2n}{\pi} \int_0^t [\psi_1(\tau) - (-1)^n \psi_2(\tau) e^{-b^2n^2(t-\tau)}] d\tau + \int_0^t f_n(\tau) e^{-b^2n^2(t-\tau)} d\tau$$

Substituting (13) in (5), we get a row

$$u(x,t) = \frac{2}{l} \sum_{n=1}^{\infty} \left(e^{-b^2n^2t} \int_0^l \phi(x) \sin \frac{n\pi}{l} x dx + \right. \quad (14) \\ \left. + \sum_{0 < t_k < t} e^{-b^2n^2(t-t_p)} \int_0^l I_p(x) \sin \frac{n\pi}{l} x dx + \frac{b^2nl}{\pi} \int_0^l (\phi_1(\tau) - (-1)^n \phi_2(\tau)) e^{-b^2n^2(t-\tau)} d\tau + \right. \\ \left. \int_0^t \int_0^l f(\xi, \tau) \sin \frac{n\pi}{l} \xi e^{-b^2n^2(t-\tau)} d\xi d\tau \right) \sin \frac{n\pi}{l} x$$

Consider the particular cases.

1. If we assume that in (1)-(4) $f(x,t) = 0$, $\psi_1(t) = 0$, $\psi_2(t) = 0$ under all $(x,t) \in [0,l] \times [0,+\infty)$, we get from (14)

$$u(x,t) = \frac{2}{l} \sum_{n=1}^{\infty} \left(e^{-b^2n^2t} \int_0^l \phi(\xi) \sin \frac{n\pi}{l} \xi d\xi \right. \quad (15) \\ \left. + \sum_{0 < t_p < t} e^{-b^2n^2(t-t_p)} \int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) \sin \frac{n\pi}{l} x$$

Because $\phi(x)$ and $I_p(x)$, $p = 1, 2, \dots$, functions are continuous, have a fragment-continuous derivative and are zero at the ends of the $[0;l]$ segment then the rows

$$\sum_{n=1}^{\infty} \left(\int_0^l \phi(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) \sin \frac{n\pi}{l} x, \quad \sum_{n=1}^{\infty} \left(\int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) \sin \frac{n\pi}{l} x \quad (16)$$

converge with $x \in [0;l]$ absolutely and uniformly.

Since for $t \in [t_k; t_{k+1})$, $k = 1, 2, \dots$, we have $t - t_k \geq 0$, the inequalities are fulfilled

$$0 < e^{-b^2n^2(t-t_p)} \leq 1, \quad p = 1, 2, \dots, k, \quad 0 < e^{-b^2n^2t} \leq 1$$

and therefore the rows

$$\sum_{n=1}^{\infty} \left(\int_0^l \phi(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) e^{-b^2n^2t} \sin \frac{n\pi}{l} x, \\ \sum_{n=1}^{\infty} \left(\int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) e^{-b^2n^2(t-t_p)} \sin \frac{n\pi}{l} x$$

also converge with each $p \in N$ in the

$$D = \{(x, t) : x \in [0; l], t \in \bigcup_{p=0}^{\infty} (t_p; t_{p+1})\}$$

Therefore, the functions of $u(x; t)$, defined by the expression (15), are continuous in the D area, has first-kind breaks in $t = t_k$, $k = 1, 2, \dots$, satisfies the initial condition (2), trivial boundary conditions, and conditions of pulse action (4).

Show that the $u(x; t)$ function satisfies the homogeneous thermal conductivity equation in the D region. To do this, it is enough to show that the series obtained from (15) differentiation by x twice and by t once, also converge absolutely and uniformly in the area of D . This follows from the fact that under any $t \in (t_p; t_{p+1})$ and sufficiently large $n \in N$ there are inequalities

$$0 < b^2 n^2 e^{-b^2 n^2 t} < 1, \quad 0 < \left(\frac{n\pi}{l}\right)^2 e^{-b^2 n^2 (t-t_p)} < 1$$

where $p = 1, 2, \dots$.

Therefore, formula (15) reflects the process of heat propagation in a rod length l , the ends of which are maintained zero temperature and which is exposed to sources capable at fixed points of time t_p , $p = 1, 2, \dots$, "instantly" change the temperature of the rod at a point with an abscissa x by a value of $I_p(x)$, $p = 1, 2, \dots$

If additionally put $\varphi(x) = 0$ for all $(x, t) \in D$ the temperature of the rod will change by law

$$u(x, t) = \frac{2}{1} \sum_{n=1}^{\infty} \sum_{10 < t_p < t} \left(\int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) e^{-b^2 n^2 (t-t_p)} \sin \frac{n\pi}{l} x.$$

In this case, the core temperature changes over time due only to the heat sources of impulse nature.

2. If you assume that in the problem (1)-(4) $f(x, t) = 0$ where $(x, t) \in D$ then from (14) you get a function

$$u(x, t) = \frac{2}{1} \sum_{n=1}^{\infty} \left(\int_0^l \phi(\xi) \sin \frac{n\pi}{l} \xi d\xi e^{-b^2 n^2 t} + \sum_{0 < t_p < t} \left(\int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) e^{-b^2 n^2 (t-t_p)} + \right. \\ \left. \frac{b^2 n l}{\pi} \int_0^t e^{-b^2 n^2 (t-\tau)} (\phi_1(\tau) - (-1)^n \psi_2(\tau)) d\tau \right) \sin \frac{n\pi}{l} x$$

describing the process of heat propagation in a pulsed action rod, at the ends of which the specified temperature variables $\psi_1(t)$ and $\psi_2(t)$ are supported.

3. If in (1)-(4) have $\varphi(x) = 0, \psi_1(t) = 0, \psi_2(t) = 0$ where $(x, t) \in \bar{D}$ of (14) find function

$$u(x, t) = \sum_{n=1}^{\infty} \left(\frac{2}{l} \sum_{0 < t_p < t} \left(\int_0^l I_p(\xi) \sin \frac{n\pi}{l} \xi d\xi \right) e^{-b^2 n^2 (t-t_p)} + \right. \\ \left. + \int_0^t \int_0^l f(\xi, \tau) \sin \frac{n\pi}{l} \xi d\xi e^{-b^2 n^2 (t-\tau)} d\tau \right) \sin \frac{n\pi}{l} x$$

which describes the process of heat propagation in a pulsed rod under the influence of some external heat source $f(x, t)$ and at the initial moment $t = 0$ zero temperature is maintained in all strand currents.

Consider now equation (1) with the initial condition (2), the boundary condition of the form

$$u_x(0, t) - hu(0, t) = 0, \quad u_x(l, t) + hu(l, t) = 0 \quad (17)$$

where h is the coefficient of heat exchange, and the condition of impulse action (4).

Let

$$\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x, \quad n = 1, 2, \dots, \quad (18)$$

-solving a boundary value problem

$$\phi''(x) + \mu_n^0 \phi(x) = 0,$$

$$\phi'(0) + h\phi(0) = 0, \quad \phi'(l) + h\phi(l) = 0$$

where $\mu_n, n = 1, 2, \dots$, is the positive roots of the transcendent equation

$$2ctg \mu = \frac{\mu}{hl} - \frac{hl}{\mu}$$

which has an infinite set of real (positive) roots.

Systems (18) form an orthogonal system of functions, by means of which an arbitrary function from space $L_2(0, l)$ can be written in the form of its Fourier series.

Then the solution of the problem (1), (2), (4), (17) can be represented as a Fourier series of functions (18) as follows:

$$u(x, t) = \sum_{n=1}^{\infty} T_n(t) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right), \quad (19)$$

where

$$T_n(t) = \frac{2}{l} \int_0^l u(x, t) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) dx \quad (20)$$

$$\lambda_n = \frac{\mu_n}{l}, \quad n = 1, 2, \dots$$

Substituting (19) in equation (1) and comparing coefficients at the same harmonics, we obtain an ordinary differential equation

$$T'_n(t) + \sigma_n^2 T_n(t) = \frac{2}{l} \int_0^l f(x, t) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) dx, \quad t \neq t_p \quad (21)$$

$$\text{where } \sigma_n^2 = \left(\frac{a\mu_n}{l^2} \right)^2, \quad p = 1, 2, \dots$$

From the initial condition (2) and the pulse action condition (4) by force (19) and (20) we find the initial values for $T_n(t)$, $n = 1, 2, \dots$, functions

$$T_n(0) = \frac{2}{l} \int_0^l \phi(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi \quad (22)$$

and conditions of impulse (jump)

$$\Delta T_n(t)|_{t=t_p} = I_{np} = \frac{2}{l} \int_0^l I_p(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi \quad (23)$$

Solving equation (21) with initial condition and condition of impulse action (23), have

$$\begin{aligned} T_n(t) = & \frac{2}{l} \left(\int_0^l \phi(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 t} + \right. \\ & + \sum_{0 < t_p < t} \left(\int_0^l I_p(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi \right) e^{-\sigma_n^2 (t-t_p)} + \\ & \left. + \int_0^t \int_0^l f(\xi, \tau) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 (t-\tau)} d\tau \right) \end{aligned} \quad (24)$$

where $t \in [t_k; t_{k+1})$, $k = 1, 2, \dots$

Substituting (24) in (19), we finally get

$$\begin{aligned} u(x, t) = & \frac{2}{l} \sum_{n=1}^{\infty} \left(\int_0^l \phi(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 t} + \right. \\ & + \sum_{0 < t_p < t} \int_0^l I_p(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 (t-t_p)} + \\ & \left. + \int_0^t \int_0^l f(\xi, \tau) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 (t-\tau)} d\tau \right) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) \end{aligned} \quad (15)$$

Convergence of series

$$\begin{aligned} & \sum_{n=10}^{\infty} \sum_{0 < t_p < t} \int_0^l I_p(x) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) dx e^{-\sigma_n^2 (t-t_p)} \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) \\ & \sum_{n=10}^{\infty} \int_0^l \phi(x) \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) dx e^{-\sigma_n^2 t} \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) \end{aligned}$$

in the field can be proved by reasoning similar to that used to prove the convergence of series (16).

Thus, the series (24) is a solution of equation (1) with an initial condition (2), a condition of a pulse effect (4) and a boundary condition (17).

In particular, if $f(x, t) = 0$ with $(x, t) \in \overline{D}$ then from (25) we get a function

$$u(x, t) = \frac{2}{l} \sum_{n=1}^{\infty} \left(\int_0^l \phi(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 t} + \right. \\ \left. + \sum_{0 < t_p < t} \int_0^l I_p(\xi) \left(\cos \frac{\lambda_n}{l} \xi + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} \xi \right) d\xi e^{-\sigma_n^2 (t-t_p)} + \left(\cos \frac{\lambda_n}{l} x + \frac{hl}{\lambda_n} \sin \frac{\lambda_n}{l} x \right) \right)$$

describing the process of heat propagation in a pulsed rod, at the ends of which there is a free heat exchange with the environment.

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Rezyume: O'rnatilgan issiqlik manbai bo'lgan bir hil novda issiqlik tarqalishi muammosi ko'rib chiqiladi, bu belgilangan vaqtlarda u o'rnatilgan novda nuqtasidagi haroratni bir zumda o'zgartirishi mumkin. Matematik jihatdan bunday tizimlar issiqlik o'tkazuvchanligi tenglamasi bilan mos keladigan boshlang'ich va chegara shartlari, shuningdek, belgilangan vaqtlarda impuls ta'siri shartlari bilan tavsiflanadi. Furye usulining modifikatsiyasi bunday issiqlik o'tkazuvchanlik tizimlariga nisbatan qo'llaniladi. Xususan, belgilangan vaqtlarda impulsli ta'sirga ega bo'lgan bir jinsli bo'lmagan issiqlik tenglamasining yechimi Furye usuli yordamida qurilgan. Har xil maxsus holatlar ko'rib chiqiladi va bunday maxsus holatlarga mos keladigan issiqlik o'tkazuvchanlik jarayonlari tavsiflanadi.

Резюме: Рассмотрена задача распространения тепла в однородном стержне с установленным источником тепла способная в фиксированные моменты времени мгновенно изменить температуру в точке стержня где она установлена. Математически такие системы описываются уравнение теплопроводности с соответствующими начальными и граничными условиями, а также условиями импульсных воздействий в фиксированные моменты времени. Приведена модификация метода Фурье применительно к таким системам теплопроводности. В частности, построен методом Фурье решение неоднородного уравнения теплопроводности с импульсным воздействием в фиксированные моменты времени. Рассмотрены всевозможные частные случаи и описаны процессы теплопроводности соответствующие таким частным случаям.

Kalit so'zlar: Issiqlik o'tkazgichlik, sterjen, issiqlik manbasi, differensial tenglamalar, tayinlangan vaqt momentlaridagi impuls tasiri, boshlang'ich shartlar, xususiy hosilalar, o'zgaruvchilarni ajratish usuli, usulning modifikatsiyasi

Ключевые слова: теплопроводность, стержень, источник тепла, дифференциальные уравнения, импульсные воздействия в фиксированные моменты времени, начальные и краевые условия, частные производные, метод разделения переменных, модификация метода.

**ISSUES OF ECONOMIC-GEOGRAPHICAL REGIONALIZATION OF THE LIVESTOCK
SECTOR OF THE REPUBLIC OF KARAKALPAKSTAN**

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Summary: *In this article, the livestock industry of the Republic of Karakalpakstan is studied and it is regionalized economically and geographically. In the article, Karakalpakstan is divided into five regions in terms of animal husbandry. These are the Central, South-eastern, North-eastern, Northern and Western regions. Central region - Amudarya, Bozatau, Kegeyli, Kanlikul, Nukus, Takhiatas, Khojeyli, Chimbay and Shumanay districts, South-eastern region - Beruni, Tortkul and Ellikkala districts, North-eastern region - Karauzak and Takhtakupir districts, Western region - Kungrad district and Northern region - Muynak district.*

Key words: *livestock industry, territorial system, zoning, specialization, pasture livestock.*

The scientific research of Karakalpakstan's livestock sector began at the beginning of the last century. The republic's cattle breeding network was comprehensively studied in the 1930s, and it was divided into the following five regions from the point of view of livestock: Southern Kyzylkum, specializing in cattle breeding; central Kyzylkum, specializing in wool-meat sheep farming; central Ustyurt, specializing in meat sheep farming; the Amudarya delta specializing in dairy cattle breeding; Karauzak, Chimbay, Kungrad and Kegeyli districts, which specialize in meat-related livestock and horse breeding, and northern Kyzylkum, which specializes in camel and goat breeding [3].

Nowadays, the following principles are used as a basis for zoning the rural districts of Karakalpakstan from the point of view of livestock:

- Geographical location, that is, territorial integrity;
- Level of provision of agricultural or pasture lands of rural districts;
- Environmental situation of the region (level of water supply, land reclamation, etc.);
- Population location and level of urbanization;
- National and ethnic composition of the population, rich experience in livestock, etc.

In general, the above-mentioned principles are the basis for the regionalization of Karakalpakstan from the point of view of livestock. Furthermore, the economic geographical analyzes show the existence of great differences in the geographical location of the republic's rural districts, the size of the cultivated and pasture areas, and the specialization in livestock sector. Accordingly, the rural districts of the republic are divided as follows: **Central** (Amudarya, Bozatau, Kegeyli, Kanlikul, Nukus, Takhiatas, Khojeyli, Chimbay and Shumanay districts) specializing in dairy-meat cattle breeding; specializing in dairy-meat and meat-wool cattle breeding, sheep and goat breeding - **South-eastern** (Beruni, Tortkul and Ellikkala districts); specialized in meat-milk and meat-wool cattle breeding, sheep and goat breeding - **North-eastern** (Karauzak and Takhtakupir districts); specializing in meat-milk and meat-wool cattle breeding, sheep and goat breeding, and camel breeding - **Western** (Kungrad district), and in the future, specialized in sheep and goat breeding in the meat-wool direction - it can be divided into **Northern** (Muynak district) regions.

The **Central** region is an important politically and economically developed region of Karakalpakstan. The reason is that in the region there is the capital of the republic - the city of Nukus, as well as the industrial centres of Khodjeli and Takhiatas, intensively developed agricultural districts of Nukus, Amudarya, Kegeyli, Kanlikul, Takhiatas, Khodjeli, Chimbay and Shumanay. According to its geographical location, the central region forms the central and southern part of the Republic of

Karakalpakstan, borders with the state of Turkmenistan in the south and the Khorezm region of our country in the southeast. The territory of the region is small, and the population is large and densely populated. The occupied land area is 8.6 thousand square km, which occupies 5.2% of the republic's land area (excluding the area of the city of Nukus).

The central region mainly occupies the Amudarya delta, and the population of the region have been engaged in agriculture since ancient times. According to statistics, the population of the district in 2021 was 1091.9 thousand people, that is, 58.6% of the population of the republic (including the population of the city of Nukus). The majority of the population lives in cities and the urbanization rate is 58.6 percent. It is known that the delta has been densely populated since ancient times, and its density is 127 people per 1 square km. This region is one of the industrially developed regions of Karakalpakstan. There are several enterprises of mechanical engineering, metallurgy, energy, chemistry, food and light industry in the district. In this regard, the cities of Nukus, Takhias and Khodjeli are of great importance. For example, Takhias Thermal Power Station, Takhias Metal Structures Plant, Nukus Polymer Plant, Nukus Electrical Apparatus Enterprise, Samsung Household Appliances Manufacturing Enterprise in Nukus, textile factories and grain production enterprises in almost all districts are among them. The district accounts for 54.1% of the total industrial production in the republic, which amounts to 2576.7 billion sums (2020).

The central region has an intensively developed agriculture. Suburban agriculture has been formed in the region, and the farmer is well developed in relation to animal husbandry. Agriculture is mainly specialized in policing and vegetable growing, as well as growing cotton, rice and grain crops. As mentioned above, the region occupies 5.2% of the republic's land area, 53.2% of arable land and 4.3% of its pastures. Since the territory of the Central Region is small, densely populated and extremely dense, it mainly specializes in suburban dairy-meat cattle breeding. In the north of the region, in the districts of Bozatau and Chimbay, cattle breeding in the direction of meat and milk prevails.

In the Central region, the number of cattle increased from 185,400 to 559,500 in 2000-2022, i.e. by 3.0 times. During this period, the share of livestock of this type in the republic decreased from 49.2 percent to 48.0 percent. 29.6 percent of the total large horned cattle are raised in Amudarya district, while this figure is 70.4 percent in the remaining 8 districts. It is known that the number of cows and their breed are important in milk production. In the Central region, 28.3% of the total cattle are cows. During the research period, the number of cows increased from 76.4 thousand to 158.6 thousand, i.e. by 2.1 times. As a result, the share of cows in the republic decreased from 47.4 percent to 47.0 percent. 28.6 percent of all cows in the region are raised in Amudarya district.

During the research period, the number of sheep and goats in the Central region increased from 120.9 thousand to 407.4 thousand, i.e. by 3.4 times. Due to the high increase in the number of livestock of this type, its share in the republic increased from 27.9 percent to 34.8 percent. 25.8% of sheep and goats belong to Amudarya district, 18.2% to Shumanay district and 15.1% to Chimbay district.

Cattle breeding is not well developed in the district, only slightly developed in Kegayli and Shumanay districts. In addition, in Amudarya, Bozatau and Kanlikul districts, cattle are reared in very small quantities. In 2000-2022, the number of Karakol sheep decreased from 4.4 thousand to 1.6 thousand, i.e. by 3 times. As a result, the share of this type of sheep in the republic decreased from 1.9 percent to 0.6 percent. In the Central region, horse breeding is well developed and it is raised in all districts. During the research period, the number of horse breeding increased from 7.0 thousand to 12.1 thousand or 172.8 percent. This process was higher than the national average. For this reason, the share of horse breeding in the republic increased from 42.1 percent to 45.3 percent. Despite the lack of pasture land in the district, camel breeding is well developed in all districts. The share of camels in the republic is 32.4 percent

(2022). This figure was equal to 18.5% in 2000. Their number increased from 0.8 thousand to 1.5 thousand, i.e. by 188.2 percent. The South-Eastern region is located in the southern, southeastern part of the Republic of Karakalpakstan, and it includes Beruni, Tortkul and Ellikkala districts. The total area is 16.8 thousand square km. It is 10.1% of the territory of the Republic. The total arable land of the district is 83.3 thousand ha, and pasture land is 1210.5 thousand ha, which occupy 19.9 and 23.4 percent of the republic's arable land and pasture land, respectively.

The population of the district is equal to 574.2 thousand people. It makes up 35.9 percent of the population of the republic. Most of the population lives in villages. The level of urbanization is 29.9 percent. Uzbeks make up the main part of the national composition, i.e. 69.9 percent. Turkmens make up 13.6 percent, Kazakhs 9.0 percent, Karakalpaks 6.8 percent, and other nationalities 0.6 percent.

The industry of the South-Eastern region specializes in the processing of agricultural raw materials, that is, in the light and food industries. The difference of region from other regions is that all fields of farming and livestock are well developed in agriculture. In the structure of agriculture of the district, mainly farming dominates. Livestock specializes in suburban and pasture livestock in the direction of milk-meat and meat-wool. The number of cattle in the region increased from 125.8 thousand to 425.0 thousand in 2000-2022, that is, by 3.4 times. During this period, the share of livestock of this type in the republic increased from 33.3 percent to 36.4 percent. Cows make up 26.7% of the total large horned cattle. During the research period, the number of cows increased from 56.6 thousand to 113.6 thousand, i.e. by 2.0 times. During this period, the share of cows in the republic decreased from 35.1 percent to 33.7 percent.

During the research period, the number of sheep and goats in the South-Eastern region increased from 155,000 to 376,900, i.e. by 2.4 times. Its share in the republic decreased from 35.8 percent to 32.2 percent. Most of the sheep and goats are raised in Tortkul and Ellikkala districts. Karakul breeding is well developed in the region, accounting for 79.4 percent of the total karakul sheeps in the republic. This figure was 60.4 percent in 2000. In 2000-2022, the number of Karakul sheep increased from 142.2 thousand to 230.6 thousand, i.e. by 162.2 percent. 55.7% of sheep of this type are bred in Tortkul district.

Although the number of goats in the South-Eastern region is small compared to other regions, it is raised in all districts. During the research period, the number of horse breeding increased from 4.0 thousand to 5.5 thousand or 138.0 percent. The share of horses in the republic decreased from 24.1 percent to 20.7 percent. The region has favourable natural and climatic conditions for the development of horse breeding. Despite the fact that the region has large pastures, the field of camel breeding is not well developed. Camel breeding is slightly developed in Tortkul and Ellikkala districts. 1 percent of the total number of camels in the district corresponds to Beruni district. During the research period, the number of camels decreased from 1.9 thousand to 0.9 thousand. As a result, its share in the republic decreased from 43.7 percent to 18.2 percent.

According to its natural geographical location, the North-Eastern region is located in the Northeastern part of the Amudarya delta, in the Northwestern part of the Kyzylkum desert. Administratively, it consists of Karauzak and Takhtakupir districts. It borders the Republic of Kazakhstan to the north, northeast, and the Navoi region to the east. The area of the district is 27,000 square km, which is 16.2% of the territory of the republic. Cultivated areas are 65.1 thousand ha, and pasture areas are 1811.8 thousand ha. The share of arable and pasture land in the republic is 15.6 and 35.7 percent, respectively. The population of the district is 93.7 thousand people, that is, 4.9% of the population of the republic. The level of urbanization is 35.3 percent.

Heavy industry in this region is almost undeveloped. Its industry is specialized only in the processing of agricultural products, that is, in the light and food industry. In agriculture, livestock

dominates over farming. Livestock specializes in meat-milk and meat-wool cattle breeding, sheep and goat breeding, and horse breeding. During the research period, the number of cattle in the North-Eastern region increased from 29.8 thousand to 84.0 thousand, that is, by 2.8 times. During this period, the share of livestock of this type in the republic decreased from 7.9 percent to 7.2 percent. Cows make up 40.1% of the total large horned cattle in the district. During this period, the number of cows increased from 13,300 to 34,400, that is, by 2.6 times. As a result, the share of cows in the region increased from 8.3 percent to 10.2 percent.

During the research period, the number of sheep and goats in the Central region increased from 98.4 thousand to 251.0 thousand, i.e. by 2.5 times. The share of livestock of this type in the republic decreased from 22.8 percent to 21.5 percent. Although karakul breeding is well developed in the region, the number of karakul sheep is decreasing in recent years. For example, in 2000-2022, their share in the republic decreased from 24.5 percent to 11.6 percent. In the North-Eastern region, horse breeding is very well developed. During the research period, the number of horse breeding increased from 2.8 thousand to 5.1 thousand or 183.6 percent. This process was higher than the national average. For this reason, the share of horse breeding in the republic increased from 16.8 percent to 19.3 percent. In the region, there are more opportunities for the development of camel breeding, as well as horse breeding. The number of camels has been around 0.8 thousand for several years, and its share in the republic is 17.3 percent.

The Western region covers the vast western part of Karakalpakstan, the Ustyurt plateau from a natural geographical point of view, and Kungrad district from the administrative point of view. Its area is 76,000 square km, it occupies 45.7% of the territory of the republic, and 16.9% of the total area of our country. There are 38.7 thousand hectares of arable land and 1692.7 thousand hectares of pastures in the district. 9.3% of the total arable land and 33.4% of the pasture land in the republic belong to this region.

The population of the Western region is equal to 131.6 thousand people. It is 6.8% of the population of the republic. Due to the formation of industries, especially heavy industry, the majority of the population lives in cities. The level of urbanization is 63.1 percent.

The territory of the region is rich in mineral resources, and this situation became the main factor in the collapse of heavy industry, oil and gas chemistry, as well as building materials production industry in Kungrad district. In agriculture, farming and livestock are developed equally. Animal husbandry specializes in suburban and pasture livestock in the direction of milk-meat, meat-milk and meat-wool. There are wide opportunities for the development of pasture livestock in the region.

In the Western region, the number of large horned cattle increased from 25,700 to 68,900 in 2000-2022, i.e. by 2.7 times. During this period, the share of livestock of this type in the republic decreased from 6.8 percent to 5.9 percent. Cows make up 29.7% of the total large horned cattle in the district. During the research period, the number of cows increased from 10,700 to 20,500, i.e. by 191%. As a result, the share of cows in the republic decreased from 6.7 percent to 6.1 percent.

During the research period, the number of sheep and goats in the Western region increased from 53,200 to 102,100, i.e. by 192.1%. Its share in the republic decreased from 12.3 percent to 8.7 percent. Although karakul breeding is well developed in the region, its number is decreasing in recent years. For example, during the research period, the number of Karakul sheep in the region decreased from 31,200 to 24,600. As a result, the share of sheep of this type in the republic decreased from 13.3 percent to 8.5 percent. Horse breeding is well developed in the Central region. During the research period, the number of horses increased from 1.2 thousand to 1.9 thousand or 158.9 percent. In the district, the share of horses in the republic has been around 7.3 percent for several years.

The presence of large pastures in the region is the main factor in the development of camel breeding. The share of camels in the republic is 31.3 percent (2022). This figure was equal to 19.5% in

2000. Their number increased from 0.9 thousand to 1.5 thousand, i.e. by 172.2 percent. Northern region occupies a large Northern part of Karakalpakstan, and only Muynak district is included in it. Its area is 37,900 square km and occupies 22.8 percent of the territory of the republic. There are 8.5 thousand hectares of arable land and 136.8 thousand hectares of pastures in the district. 2.0% of the total arable land and 2.7% of the pasture land in the republic belong to this region. The population of the Northern region is equal to 32.3 thousand people. It is 1.7% of the population of the republic. The level of urbanization is 43.7 percent.

The territory of the district, especially the dried part of the Aral Sea, is rich in mineral resources. In the future, this situation may be the main factor in the formation of heavy industry, oil-gas chemistry and building materials production industry in the region. Agriculture is poor developed. There are wide opportunities for the development of pasture livestock in the region.

The number of large horned cattle in the Northern region increased from 10,500 to 29,300 in 2000-2022, i.e. by 2.8 times. During this period, the share of livestock of this type in the republic decreased from 2.8 percent to 2.5 percent. Cows make up 36.2% of the total large horned cattle in the district. During the research period, the number of cows increased from 4.1 thousand to 10.6 thousand, that is, by 2.6 times. As a result, the share of cows in the republic increased from 2.5 percent to 3.1 percent.

During the research period, the number of sheep and goats in the Northern region increased from 5.2 thousand to 32.5 thousand, i.e. by 6.2 times. Due to the high increase in the number of livestock of this type, its share in the republic increased from 1.2% to 2.8%. Horse breeding is well developed in the Northern region. For example, 7.4 percent of the total number of horses in the republic corresponds to the district. This indicator was equal to 9.6% in 2000. During the research period, the number of horses increased from 1.6 thousand to 2.0 thousand or 124.0 percent. Despite the presence of large pastures in the region, cattle breeding and camel breeding are not developed at all.

In conclusion, the existence of natural and geographical regional differences of the Republic of Karakalpakstan requires regionalization from the point of view of economy, especially livestock. Because, by evaluating the natural and economic possibilities of the separated regions from an economic-geographical point of view, it determines the specialization of the economy and the location of the livestock sector.

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Rezyume: *Ushbu maqolada Qoraqalpog‘iston Respublikasi chorvachilik tarmog‘i o‘rganilib, iqtisodiy-geografik jihatdan rayonlashtirilgan. Maqolada Qoraqalpog‘iston chorvachilik bo‘yicha beshta rayonga ajratilgan. Bular Markaziy, Janubi-Sharqiy, Shimoli-Sharqiy, Shimoliy va G‘arbiy rayonlardir. Markaziy rayonga – Amudaryo, Bozataw, Kegeyli, Qonliko‘l, Nukus, Taxiyoatosh, Xo‘jayli, Chimboy va Shumanay tumanlari, Janubi-sharqiy rayonga – Beruniy, To‘rtko‘l va Ellikqal‘a tumanlari, Shimoli-sharqiy rayonga – Qorao‘zak va Taxtakopir tumanlari, G‘arbiy rayonga – Qo‘ng‘irot tumani va Shimoliy rayonga — Mo‘ynoq tumani kiradi.*

Резюме: *В данной статье изучена животноводческая отрасль Республики Каракалпакстан и она районирована экономически географически. В статье Каракалпакстан по животноводству*

разделен на пять регионов. Это Центральный, Юго-Восточный, Северо-Восточный, Северный и Западный районы. Центральный район - Амударьинский, Бозатауский, Кегейлинский, Канлыкульский, Нукусский, Тахиаташский, Ходжейлинский, Чимбайский и Шуманайский районы, Юго-восточный район - Берунийский, Торткульский и Эликкалинский районы, Северо-восточный район - Караузякский и Тахтакупырский районы, Западный район - Кунградский район и Северный район – Муйнакский район.

Kalit so'zlar: chorvachilik tarmog'i, hududiy tizim, rayonlashtirish, ixtisoslashuv, yaylov chorvachiligi.

Ключевые слова: животноводство, территориальная система, районирование, специализация, пастбищное животноводство.

UDC 666.3.022:666.762.11

ESTABLISHING THE SUITABILITY OF SLIDER DEPOSITS OF RESERVOIRS FOR CERAMIC MASSES

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Summary: At this time, for the industry of ceramic building materials, the issue of a significant expansion of the raw material base and the search for new sources of mineral raw materials is relevant. For these purposes, new non-traditional raw materials are proposed - bottom sediments of reservoirs.

Key words: silt deposits, microsilica waste, grinding, mineralogical composition, sintering, roasting.

Table 1. Chemical composition of mineral silts.

The content of components wt. %	Silt deposits of reservoirs	
	Tuyabuguz silt	Pachkamar silt
SiO ₂	45,88-48,58	55,04-60,06
Fe ₂ O ₃	5,81-6,61	3,20-4,20
FeO	1,26-1,76	0,79-1,00
TiO ₂	0,55-0,60	0,45-0,50
MnO	0,08-0,09	0,06-0,07
Al ₂ O ₃	12,21-13,94	9,62-11,44
CaO	10,20-12,64	8,40-8,96
MgO	0,60-3,20	1,60-2,40
K ₂ O	2,50-2,66	2,36-2,50
Na ₂ O	0,84-1,00	1,56-1,66
P ₂ O ₃	0,08-0,12	0,23-0,31
CO ₂	9,35-10,45	8,25-8,80
H ₂ O	0,94-2,28	1,18-1,62
SO ₃	0,22-0,47	0,42-0,44
Σ _{обш}	0,12-0,20	0,17-0,25
ΠΠΠΠ	14,62-16,02	11,56-13,64

This paper presents the results of a study of silt deposits of the Tuyabuguz and Pachkamar reservoirs in order to obtain wall ceramics in combination with kaolin waste from the Angren deposit. The chemical composition of the mineral silts of the Tuyabuguz and Pachkamar reservoirs are given in Table 1.

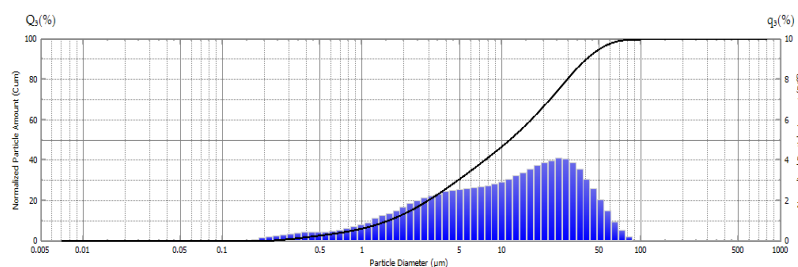


Figure 1. Granulometric composition of silt deposits

Tuyabuguz reservoir

Based on the results of the studies, it was determined that the granulometric composition of these silts is dominated by a fraction with an average dimension of less than 0.05 mm, which is 80-85% and is a fine silt and clay substance.

The average content of the silty fraction in them is 37.60%, with the fine silty fraction predominating (35.90%). The clay fraction ranges from 44.35 to 82.09%, 62.32% on average, and the degree of fineness varies from 42.9 to 49.3%, 46.8% on average. The content of the sand fraction is insignificant, about 0.08%. In general, according to the granulometric composition, mineral silts can be attributed to medium and highly dispersed formations: the content of the <0.001 mm fraction in them varies from 21.87 to 39.72%, on average 29.19%.

The data of differential thermal analysis also confirms the predominance of hydromicas in the composition of clayey silt deposits of the Tuyabuguz reservoir. The derivatograms of silts are characterized by three endothermic effects, and from the first to the third their intensity increases, which is typical for hydromicas. The first one, the weakest one, manifests itself in the range of 88-100°C and is associated with the loss of low-temperature interlayer water. The second is associated with the loss of hydroxide ions, and has a maximum in the range of 570-600°C. The third endothermic effect is the strongest and is associated with the destruction of the crystal lattice, observed in the range of

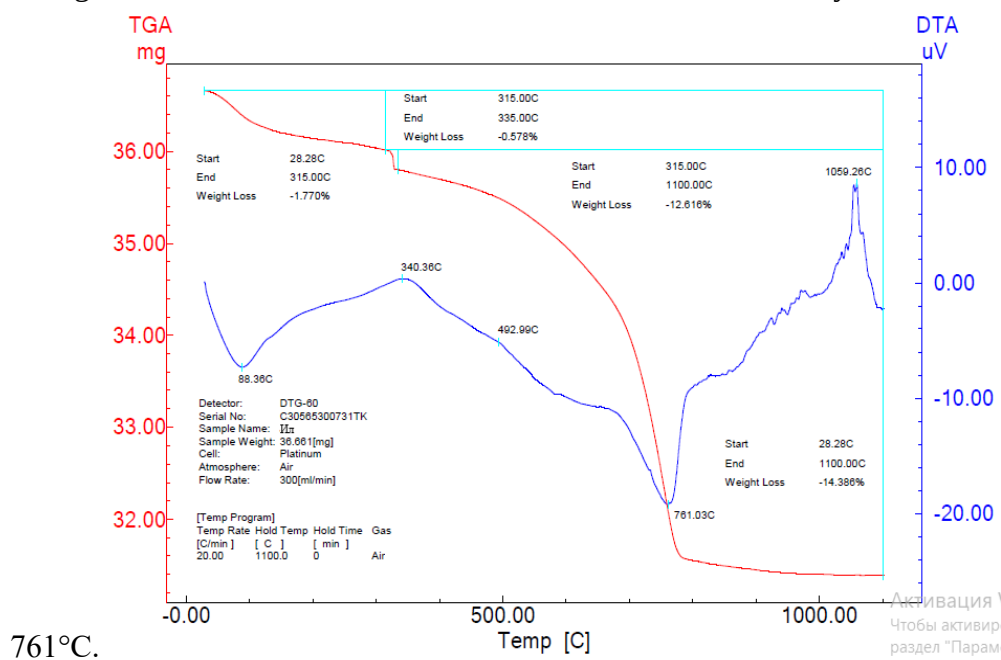


Fig.2. Results of differential thermal analysis of a sample of silt deposits of the Tuyabuguz reservoir

The high intensity of the third endothermic effect indicates a noticeable presence of carbonate minerals. Two exothermic effects are also noted on DTA: the first one, in the range of 340-492°C, is associated with the burnout of iron and organic hydroxides; the second in the range of 905-1059°C-characterizes the beginning of crystallization of amorphous products of rock decomposition into a new mineral phase.

During high-temperature processing, the sintering process during heating of the samples was evaluated by determining their above characteristics, according to the standard method, the results of which are shown in Table 2. From the data of Table 2. it can be seen that the value of the total linear shrinkage of the samples of the developed compositions fired at 1000°C based on the silts of the Tuyabuguz reservoir is 5.68 and 6.92%, respectively.

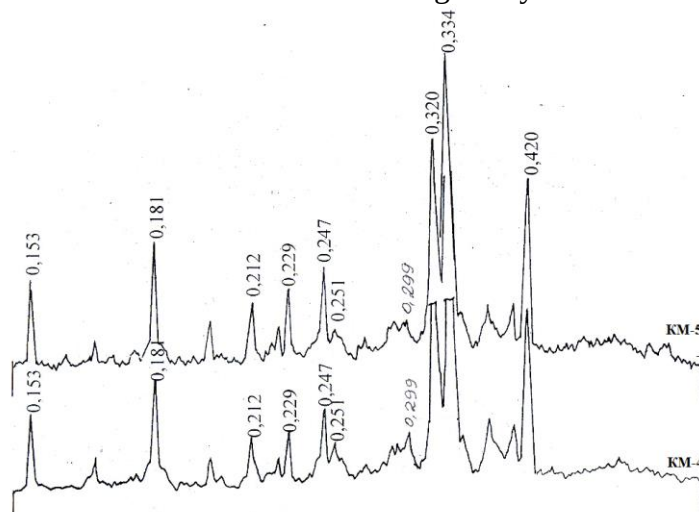
Table 2. Composition and properties of samples of ceramic wall materials fired at a temperature of 1000°C based on compositions

"silt - kaolin"

Compound			Properties				
samples	silt Tby	kaolin	Total linear shrinkage, %	water absorption, %	Tensile strength, in MPa		frosty bone. (number of cycles)
					at compression	at bending	
KM-1	100	-	5,78	21,91	11,41	4,68	3-5
KM-2	-	100	7,67	19,42	11,80	4,83	4-7
KM-3	90	10	5,68-5,70	19,50	15,97	5,98	16-21
KM-4	80	20	6,62-6,92	17,85	33,95	6,72	25-33
KM-5	70	30	5,96-6,76	18,68	27,18	6,02	24-29

Thus, fired samples based on the developed charge compositions in terms of linear shrinkage meet the requirements for the production of building bricks. It is also noted that in the process of sintering in the solid state of samples of "silt-kaolin" compositions of various compositions, with an increase in the content of silt deposits in ceramic masses, sintering improves, due to the fusibility of minerals from silt deposits of reservoirs.

Table 2 shows that the compressive strength of samples of wall material in the form of bricks obtained on the basis of Tuyabuguz silt, reservoirs and kaolin waste was 11.41–33.95 MPa, and the bending strength was 4.68–6.72 MPa. This exceeds the indicators of products manufactured by the plant. The frost resistance of the resulting bricks is 25-33 cycles of freezing and thawing. In terms of physical, mechanical and technological characteristics, the obtained samples of bricks based on silt deposits of reservoirs, the Tuyabuguz deposit and kaolin waste from the Angrensky coal mine meet the requirements



for building ceramic materials.

Fig. 2. X-ray pattern of a sample of silt deposits of the Tuyabuguz reservoir

The results of X-ray phase analysis showed that the phase transformations that occur during the firing of a mixture of "silt-kaolin" compositions mainly form the minerals anorthite, wollastonite and mullite, which determine the high physical and mechanical properties of the samples. Judging by the X-ray patterns of samples fired at different temperatures, the formation of mullite is observed at a temperature of 950°C. It can be noted that the content of mullite increases with increasing temperature. At the same time, it should be noted that in connection with the formation of a strong structure in the studied samples, an increase in strength based on these minerals is observed. In the process of roasting charge compositions with a high content of clay silt from reservoirs, intensive crystallization of the above aluminosilicate minerals is observed at temperatures of 950 - 1050°C.

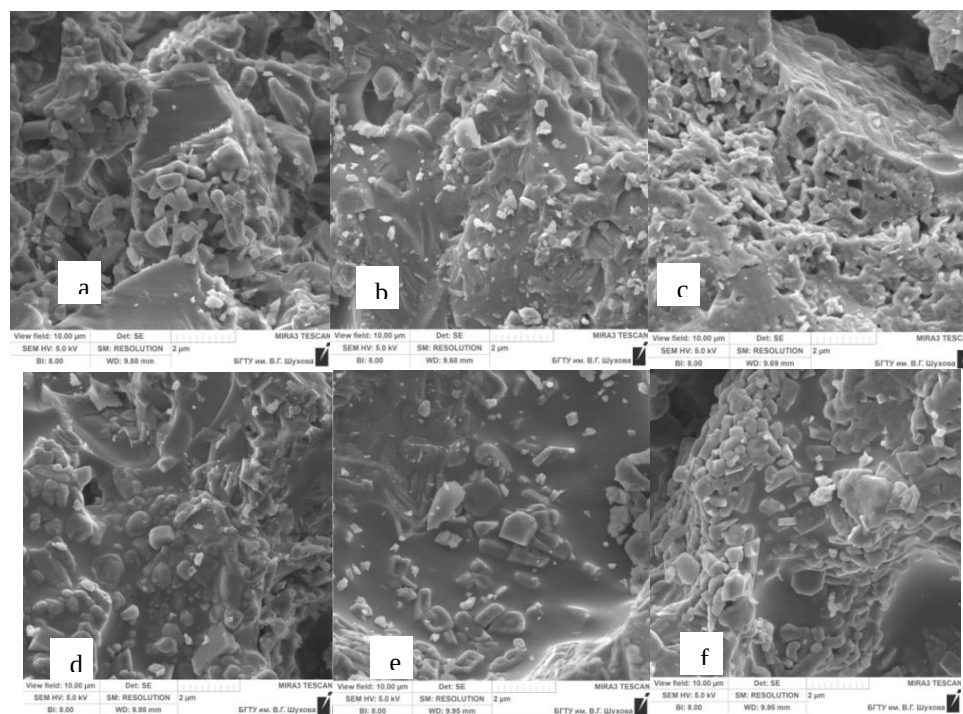


**Fig.3. Electron microscopic images of fired samples at a temperature of 950 -1050°C
Where: KM-4-a-b-c; KM-5-d-e-f**

The electron microscopic analysis of the investigated fired samples of optimal compositions KM-4 and KM-5 based on the compositions "silt Tbvkh-kaolin" also confirms the formation of minerals - prismatic anorthite, tabular wollastonite and acicular mullite [7].

In order to establish the optimal technological parameters for the manufacture of samples of ceramic bricks based on the silts of the Tuyabuguz reservoirs and the waste of the Angren secondary kaolin, physical and mechanical tests of prototypes of the composition KM-4-KM-5, in the form of a brick, were carried out.

The processing of the raw mix and the molding of bricks were carried out according to the classical technology of existing enterprises. The initial components were mixed at the above ratios, crushed to a grain size of 3.0 - 4.0 mm. Mixing of the mixture components with water was carried out in a joint way in a clay mixer. At the same time, the molding humidity in the compositions of silt Tbvkh-kaolin was 20.35-21.00%, respectively. Samples of ceramic masses were molded in a plastic way. Next, the samples were dried in laboratory dryers for 1 hour at 120°C. The firing was carried out in a silite furnace at a temperature of 1000°C with holding at the final temperature for 2 hours.

Thus, certain changes occur in the ceramic masses from the silt deposits of the reservoir composition with kaolin waste at high temperatures, such as the removal of hydrated moisture, the decomposition of carbonates, sulfates, etc. By introducing a refractory additive of kaolin waste into them, such undesirable phenomena were eliminated and the number of new formations of aluminosilicates in the form of anorthite, wollastonite and mullite minerals increased sharply, providing high performance of the materials obtained.

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Rezyume: *Xozirgi vaqtda keramik qurilish materiallari sanoati uchun xomashyo ba'zasini sezilarli darajada kengaytirish va mineral xomashyoning yangi manbalarini izlash masalasi dolzarb xisoblanadi. Ushbu maqsadlar uchun yangi no'anaviy xomashyo - suv omborlarining pastki cho'kindilari taklif etiladi.*

Резюме: *В настоящее время для промышленности керамических строительных материалов актуален вопрос значительного расширения сырьевой базы и поиска новых источников минерального сырья. Для этих целей предлагается новое нетрадиционное сырье – донные отложения водоемов.*

Kalit so'zlar: *gilsimon cho'kindi, mikrokremlnyom, kaolin, maydalash, mineral tarkib, kuydirish, pishirish*

Ключевые слова: *илистых отложения, отхода микрокремнезёма, измельчение, минералогический состав, спекания, обжиг.*

UDC 621.315.592

DEVELOPMENT AND CREATION OF EFFICIENT SOLAR CELLS BASED ON SILICON WITH HETEROVARIZONE STRUCTURES $\text{Ge}_x\text{Si}_{1-x}\text{-Si}$

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Summary: Alternative and renewable energy sources all over the world attract great and practical interest in science. The growing interest in them is due to environmental considerations on the one hand, and the limited nature of traditional earth resources on the other. A special place among alternative and renewable energy sources is occupied by photovoltaic converters of solar energy, the study of physics of which has turned into a separate scientific direction - photovoltaics. The development and creation of solar cells based on $\text{Ge}_x\text{Si}_{1-x}$ hetero and graded-gap structures is also very interesting. Since the production of such structures based on $\text{Ge}_x\text{Si}_{1-x}$ with certain parameters and structural allows one to significantly expand the spectral region of sensitivity and allows the creation of new types of photodetectors, sensors, and photocell

Keywords: renewable sources, energy, ecology, photovoltaic, solar, hetero and graded-gap structures, diffusion, temperature, sensor. photoelement

Alternative and renewable energy sources are attracting great and practical interest in science around the world. The growing interest in them is caused by environmental considerations, on the one hand, and the limitations of traditional earth resources, on the other [1.3]. A special place among alternative and renewable energy sources is occupied by photovoltaic solar energy converters, the study of the physics of which has turned into a separate scientific field of photovoltaics. The development and creation of photocells based on $\text{Ge}_x\text{Si}_{1-x}$ structures is also of very interesting attention. Since obtaining such structures on a basis with certain parameters and structure allows one to significantly expand the spectral range of sensitivity and allows the creation of new types of photodetectors, sensors and photocells. It is very important that the low temperature during the deposition of Ge and Si ensures the suppression of mutual diffusion and the Ge nanoclusters practically do not contain Si. Extremely small sizes of nanoclusters and nanorods with a high degree of ordering can be obtained by heteroepitaxy of the first submonolayer of a pseudomorphic film on an atomically clean reconstructed smooth or stepped silicon surface [4-6].

To manufacture a photocell, it is necessary to create a p-n junction. It is known that n-type germanium atoms are grown mainly by the Czochral method with the help of dopant atoms. As a result of diffusion, silicon was obtained with the structure shown in Fig. 1.

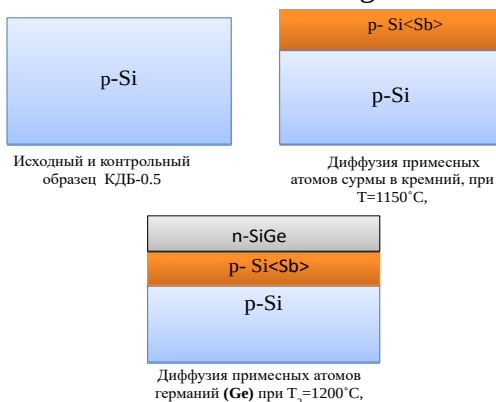


Fig. 1 Stages of technology for producing p-n junctions based on silicon.

Based on the above technology, germanium was diffused into silicon from the gas phase in which the pressure value was $P = 1$ atm, at a temperature $T = 1200$ °C for $t = 10$ hours. In Fig. 2 shows the current-voltage characteristics of the resulting p-n junction structures with binary compounds $\text{Ge}_x\text{Si}_{1-x}$, measured using a Keithley 2450 setup.

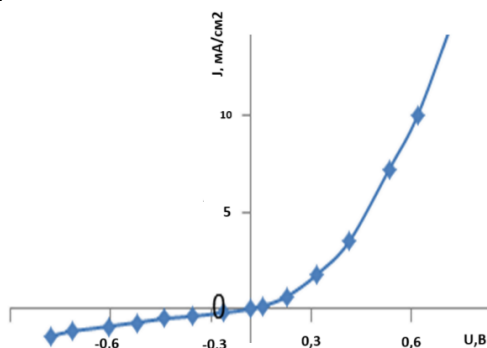


Fig. 2. Current-voltage characteristics of silicon samples doped with impurity atoms of germanium and antimony.

Figure 3 shows the topography of the front side of the sample obtained with a scanning electron microscope (Mira Tescan 3).

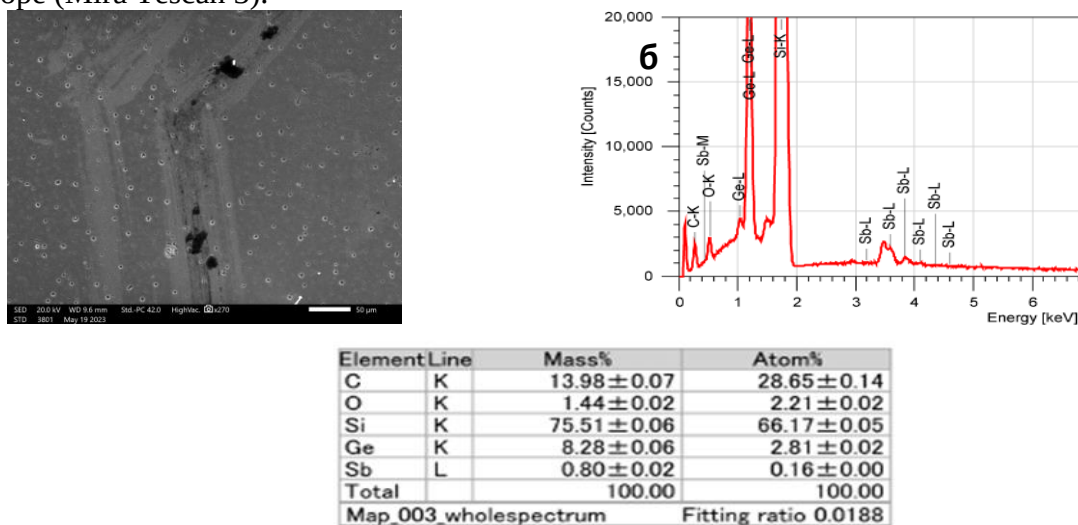


Fig.3. a) Topography of the surface of a silicon sample after doping with germanium, b) Results of X-ray energy dispersive microanalysis obtained on EDS. Elemental analysis of the surface of the samples showed that the concentration of silicon (in atomic percentage) was ~75.66%, carbon 13.98%, germanium ~8.28%, oxygen 1.44 and antimony 0.8%. It was assumed that a thin layer of an alloy compound with a composition of approximately $\text{Ge}_{0.1}\text{Si}_{0.9}$ would form on the silicon surface and in the front part.

The results of a study of the photoelectric properties of silicon samples doped with germanium atoms showed that the spectral sensitivity of these samples expands in the active region. Figure 4 shows the spectral dependence of the short-circuit current of the obtained p-n junction structures based on silicon doped with germanium atoms (curve 1) and after thermal annealing at a temperature $T_{\text{dg}} = 850$ °C, (curve 2) Measurements were carried out in an IKS-12 spectrometer ($\lambda = 0.496 \div 3.872$ μm) at radiation power density $P = 5 \cdot 10^{-6}$ W/cm². It has been established that the spectral dependence of the short circuit current in structures of the $\text{Ge}_x\text{Si}_{1-x}$ type, formed in the silicon crystal lattice, differs significantly from the values of

the short circuit current in those subjected to additional thermal annealing, that is, the photosensitivity of the samples has shifted from the infrared region to the visible. The results obtained can be explained by the absorption of incident photons by germanium atoms in the studied spectral region.

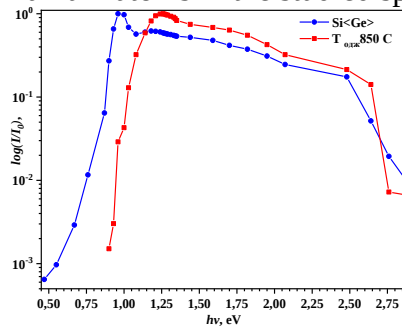


Fig.4. Spectral dependence of the short-circuit current of silicon samples with a p-n junction 1- SiGe after diffusion $T_{dz}=1200\text{ }^{\circ}\text{C}$, 2 - SiGe after thermal annealing at a temperature $T_{dz}=850\text{ }^{\circ}\text{C}$.

After diffusion, a sunlight simulator based on an incandescent lamp with correction filters was used to carry out measurements under the same conditions. Table 1 shows the parameters of a solar cell without germanium atoms, the parameters of a solar cell with germanium clusters, and the parameters of a solar cell with germanium clusters after treatment at 850°C for 3 hours to increase the formation of SiGe microjunctions in the silicon crystal lattice.

PV parameters based on Table-1

PV	SiSb	Si/SiGe
After diffusion of surma with $T_{\text{diff}}=1200\text{ }^{\circ}\text{C}$		
$J_{\text{shc}}, \text{mA}/\text{sm}^2$	16.2	17.6
U_{xx}, mV	384	426
After HT at $T_{\text{HT}}=850\text{ }^{\circ}\text{C}$		
$J_{\text{shc}}, \text{mA}/\text{sm}^2$	18,9	19,3
U_{xx}, mV	412	423

Fabrication of a solar cell based on SiGe heterojunction material, as mentioned above, the p-n junction is formed using antimony atoms and the depth of this n-junction was $0.5\text{ }\mu\text{m}$. The contacts of the current collector were made by thermal spraying of nickel through a mask in a vacuum [7]. Then POSK-50/18 was pressed into the mixture SiO_2 layer $1000\text{ }\text{\AA}$ thick was used as a luminous coating. The solar cells are made in the shape of a parallelepiped with dimensions of $1.5\text{ sm} \times 2\text{ sm}$. Figure 5 shows the design of a solar cell with a reverse charge.

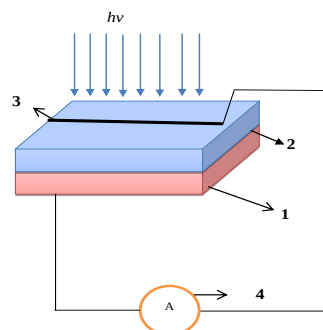


Fig. 5. Schematic diagram of a silicon-based photoreceiver with heterostructures measuring the photoelectric properties of a sample: 1-single crystal substrate; 2) heterojunction $\text{Ge}_x\text{Si}_{1-x}$ -Si, 3-metal contact, 4 ammeter.

It is noted that germanium doping can result in denser, small-sized voids that can be easily eliminated by high-temperature annealing, and can improve the integrity of the gate oxide of

semiconductor devices. Meanwhile, the deposition of oxygen in CZ silicon can be enhanced by germanium, so that the internal gettering ability of the wafers is improved. In addition, it has been reported that germanium can suppress the formation of thermal donors (TDs) [8].

Thus, based on silicon doped with impurity germanium atoms, it can be used to create photodiodes with an extended range of spectral sensitivity and efficient solar cells.

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Rezyume: Dunyo bo'ylab muqobil va qayta tiklanadigan energiya manbalari ilm-fanda katta va amaliy qiziqish uyg'otmoqda. Ularga qiziqishning tobora ortib borishi bir tomondan atrof-muhit nuqtai nazaridan, boshqa tomondan an'anaviy er resurslarining cheklanganligi bilan bog'liq. Muqobil va qayta tiklanadigan energiya manbalari orasida fizikani o'rganish alohida ilmiy yo'nalishga - fotovoltaikaga aylangan quyosh energiyasining fotoelektrik konvertorlari alohida o'rin tutadi. Bugungi kunda $\text{Ge}_x\text{Si}_{1-x}$ asosida quyosh elementlari rivojlanishi va geterovarizonali strukturalar yaratilishi ham juda qiziq. $\text{Ge}_x\text{Si}_{1-x}$ asosidagi bunday strukturalarni ma'lum parametrlar va konstruksiyalar asosida ishlab chiqarish sezgirlikning spektral mintaqasini sezilarli darajada kengaytirishga imkon beradi va yangi turdagi fotodetektorlar, datchiklar va fotoelementlarni yaratishga imkon beradi.

Резюме: Альтернативные и возобновляемые источники энергии во всем мире привлекают большой и практический интерес в науке. Растущий интерес к ним вызван экологическими соображениями с одной стороны, и ограниченностью традиционных земных ресурсов – с другой. Особое место среди альтернативных и возобновляемых источников энергии занимают фотоэлектрические преобразователи солнечной энергии, исследование физики которых превратилось в отдельное научное направление – фотовольтаику. Разработка и создание фотоэлементов на основе $\text{Ge}_x\text{Si}_{1-x}$ структур, также представляет очень интересное внимание. Так как получение таких структур на основе с определенными параметрами и структурной позволяет существенно расширить спектральную область чувствительности и позволяет создание новых типов фотоприемников, датчиков и фотоэлементов.

Kalit so'zlar: qayta tiklanadigan manbalar, energiya, ekologiya, fotovoltaik, quyosh, getero va vorizon tuzilmalari, diffuziya, harorat, datchik, fotoelement

Ключевые слова: возобновляемые источники, энергии, экологически, фотоэлектрические, солнечны, гетеро и варизонных, структур, диффузия, температура, датчик, фотоэлемент

INVESTIGATION OF THE EFFECT OF (Mn) IMPURITY ON HIGH-VOLTAGE p^0-n^0 HETEROJUNCTIONS BASED ON A LOW-DOPED (GaAs) LAYER.

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Summary: Experiments have been carried out and the effect of Mn impurities on high-voltage $p-n$ heterojunction based on a lightly doped gallium arsenide layer has been studied. The influence of the Mn impurity on the position of the rope transition was studied, the concentration and distribution of the majority charge carriers, the diffusion length of minority charge carriers, the mobility of charge carriers, and the appearance of deep levels in a lightly doped gallium arsenide layer were determined.

Keywords: Heterojunction, high-voltage $p-n$ junctions, lightly doped GaAs layers, diffusion lengths and charge carrier mobilities, deep levels, acceptor and donor levels.

Introduction: In modern microelectronics, the use of large complex semiconductor structures, which are formed by the joint use of different chemical elements - heterostructures, is of increasing interest. Heterojunctions with different band gaps and different degrees of doping have found wide practical application in emitting and photovoltaic devices (LEDs, lasers, photodiodes, etc.). The potential well formed by the peak in the transition energy diagram makes it possible to increase the efficiency. light-emitting electronic devices.

It is of interest to study the effect of isovalent atoms on the process of formation of smooth p^2-n junctions, since their use makes it possible to change the concentration level and the spectrum of small impurities and deep-level traps due to interaction with background impurities in the melt and changes in intrinsic point defects in epitaxial layers.

INVESTIGATION OF THE EFFECT OF (Mn) IMPURITY ON HIGH-VOLTAGE p^0-n^0 HETEROJUNCTIONS BASED ON A LOW-DOPED (GaAs) LAYER

Currently, epitaxial methods for obtaining single-crystal layers are widely used for the manufacture of various semiconductor devices [1]. Epitaxial growth methods make it possible to combine in time the process of crystallization of a semiconductor material and the preparation of a device structure. Gas-transport, molecular-beam, and liquid-phase epitaxial (LPE) have received the main distribution.

Ideal sticking of crystal lattices into a semiconductor heterojunction is possible using LPE. One of the most promising areas in the rapidly developing field of semiconductor micro-, opto-, and nano electronics is the development of methods for improving the perfection of the gallium arsenide heterostructure and controlling the electrical parameters of semiconductor devices. Understanding the role of impurities and the resulting defects is of decisive importance for explaining a number of phenomena from diffusion to one-way injection, or for constructing a theory of the processes occurring in doped materials.

Various studies in the field of semiconductor metallurgy, namely the study of the features of the processes of interaction of various impurities and defects in the structure of a semiconductor, led to the need to create and produce new materials with different properties, which can be achieved by doping with various impurities.

In this regard, there is a growing need to study the processes of interaction of various impurities and the formation of defects in a lightly doped gallium arsenide layer doped with impurities of transition metals and rare earth elements in order to develop methods for controlled stabilization of the parameters of semiconductor devices. Despite the huge number of experimental results, the processes of formation

and development of the defect structure of the gallium arsenide heterostructure doped with mixtures of transition elements.

The purpose of this work is:

- determine the position of p^0 -by transitions;
- determine the concentration and distribution of the main carriers the charge of the lightly doped GaAs layer;
- determine the diffusion length of NCC in lightly doped GaAs layers;
- determine the mobility of charge carriers in lightly doped epitaxial layers of GaAs;
- study the behavior of Mn and Ag atoms in GaAs and determine the influence technological regimes of doping on the parameters of deep centers, forming by these impurities;
- study the effect of Mn and A atoms and the processes of thermal defect formation in lightly doped GaAs layers;
- study the processes of degradation of deep centers in lightly doped layers GaAs at high operating temperatures;
- study the effect of additional introduced impurities on the process of obtaining a transition in lightly doped GaAs layers.

To solve the tasks set, we used the following methods:

After growing the epitaxial structures, first of all, the layer thicknesses, their planarity, and the location of the p–n junction were determined. To determine the location of the ro-over transition or the space charge region (SCR), the method of the electro-optical effect was used [2]. The electro-optical effect is manifested in the appearance of a double beam of penetration in an electric field. In the case of an epitaxial structure with a rho junction, double beam refraction should appear in the SCR due to the indication of optical anisotropy at the rho junction. Microscope MIK 5 was used in the studies.

To determine the concentration and nature of the distribution of the main charge carriers, the capacitance-voltage method was used using a mercury probe with layer-by-layer etching of gallium arsenide layers. A typical distribution of the concentration of charge carriers in one of the obtained rover structures is shown in Fig.1.

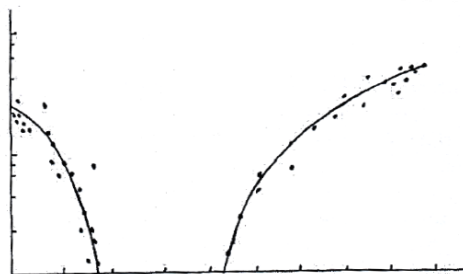


Fig-1. Carrier concentration distributions are a method for studying the charge distribution in one p^0 - n^0

The diffusion length of NCC is the most important characteristic of any semiconductor material [5]. To determine the diffusion length of NCCs in lightly doped GaAs layers introduced with Mn and Ag impurities, we used a method for studying the distribution of current induced by an electron probe of small diameter, and is determined by the expression $I = I_0 \exp(-x/L)$ (where x is the distance from the excitation region to by transition, L is the radius of the region of excitation. Diffusion lengths L in GaAs determined by this method from the slope of the dependence $\ln I = f(x)$, reached 7–10 μm at zero bias and increased to $\geq 90 \mu\text{m}$ at $U_p = 100 \text{ V}$. The measurements were carried out using a scanning electron microscope of an IXA-5A micro analyzer. On fig. Figure 2 shows the dependences of the electron diffusion length on the

current in a lightly doped layer 40 μm thick. It can be seen that starting current densities are 1 50 A/cm². the diffusion length L_e practically does not change and reaches values of 75–85 μm . An increase in L in the region of lower currents is apparently related to the saturation of the electron capture punters.

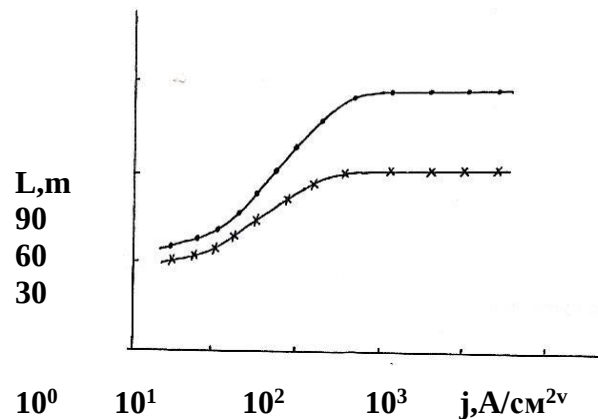


Fig.2 -Typical dependences $L_n = f(I)$ in $p_0 = \text{GaAs}$ layers. 1 – $p^0 - 5 \cdot 10^{15} \text{ cm}^{-3}$; 2 – $p^0 - 2 \cdot 10^{15} \text{ cm}^{-3}$.

The charge carrier mobility's were determined by measuring the Hollow effect. L la in epitaxial layers grown on the floor of insulating substrates. The measurements were carried out using the Van der I solder on samples with six osmic contacts obtained by fusion Indian droplets into the epitaxial layer. The values of the electron mobility in GaAs layers are within 5000+ 6000 $\text{cm}^2/\text{V}\cdot\text{sec}$, and the mobility of holes in ro $n^0\text{-GaAs}$ layers 3000+5000 $\text{cm}^2/\text{V}\cdot\text{sec}$. Results research mobility of major charge carriers in areas showed that there is a high degree of compensation in the epidictic al layers 3. As follows from the figure, the degree of compensation in the by-layer r-on the transition. This character depends increases as you approach mobility may indicate suggest that the total concentration of infected centers in layer decreases with increasing layer thickness and with decreasing layer crystallization temperature.

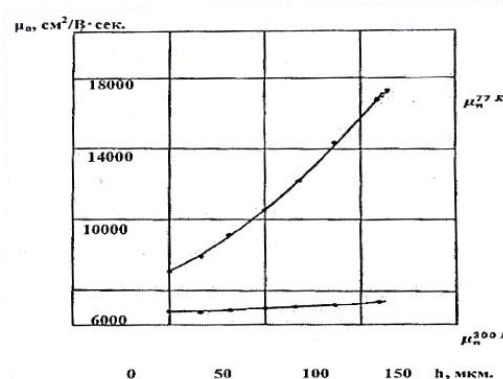


Fig.3- Electron mobility in a layer of lightly doped layers of introduced-lightly doped GaAs

To determine the energy parameters of deep levels in lightly doped layers introduced with Mn and Ag impurities, the method of no stationary capacitive deep level spectroscopy (DLTS) and photo capacitance (PE) was used. In all layers obtained by the LPE method, in addition to shallow acceptor and donor levels, deep levels $A(E_c + 0.4 \text{ eV})$, $B(E_c + 0.54 \text{ eV})$, $C(E_c + 68 \text{ eV})$ were found (Fig. 1). The cross sections for capturing deep levels in this case correspond to the value $\sigma = 8 \cdot 10^{-17} \text{ cm}^2$, $6 \cdot 10^{13} \text{ cm}^2$, $4 \cdot 10^{-17} \text{ cm}^2$.

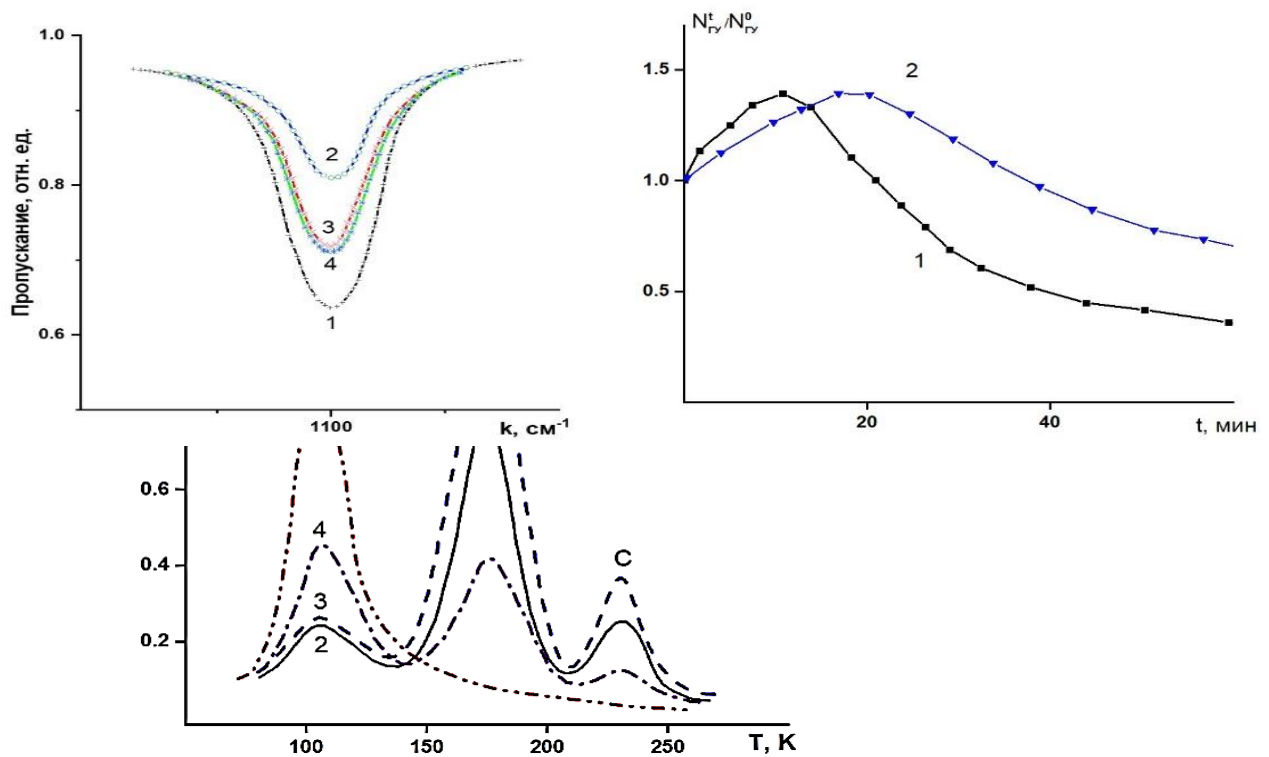


Fig.4. The DLTS spectrum is one of the samples of the heavily doped with Mn.

In the literature, these levels are designated HL5, HL3, HL2 [3-4]. The recombination properties of the p0 region are largely determined by deep acceptors. nym A and B centers. In this case, these centers play the main role in the p-part of the p0-region. In p0-GaAs, they are detected by capacitance spectroscopy (LLTS) and attributed to a growth defect, they are traps for holes, and their concentration decreases exponentially with decreasing growth temperature. The IR absorption spectrum of these samples, doped with Mn impurity at temperatures from 20 0C to 200 0C, is presented in ras. - 5, and the kinetics of the influence of temperature in the range from 20 0C to 200 0C on deep levels is shown in fig.6.

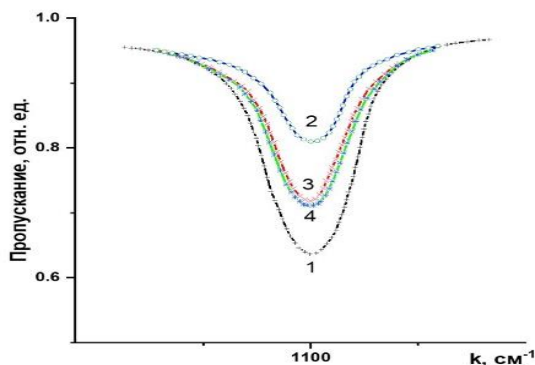


Fig.5 - IR absorption spectrum doped with various operating temperatures

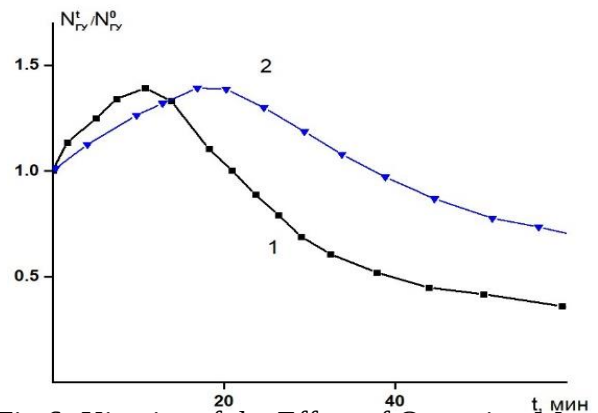


Fig.6- Kinetics of the Effect of Operating Mn at temperatures on HL samples doped with Mn

Along with shallow acceptors and shallow donors, deep acceptors determine the position of the p0-n0 transition and the size of the SCR. The part of the p0 layer adjacent to the substrate has a relatively

high concentration of small acceptors, which is higher than the concentration of small donors and sponge acceptors. As mixing from the substrate deep into the layer y, the difference $N_{d.m.} - N_{m.a.}$ decreases, and then becomes equal to zero and changes sign, however, due to the presence of deep acceptors, the conductivity type of the layer does not change. If $0 < N_{d.m.} - N_{m.} < N_{a.r.}$, then the Fermi level will be close to the position of the first deep acceptor level - A. $< N_{d.m.} - N_{m.} < N_{a.g.}$, the Fermi level will approach the position of the second level - B and beyond the third level - C. The estimates show that the resistivity of the region of non-field ionization of centers with levels A, B and C at 300 K is 106 Ohm·cm and more. Layer coordinate, where $N_{d.m.} = N_{a.m} + 2N_{a.g}$ is the location of the p0-n0 transition. Further, in the n0-type layer, the electron concentration will be determined by the decrease in $N_{d.m.} - N_{a.g.}$. Therefore, the p0 - region consists of two parts - a low-resistance p0 - and a high-resistance i -part, and the p0-n0 transition is located on the border of the i - and n0 - regions.

CONCLUSION. In conclusion, we note that

- The positions of the p0-n0 transition or the space charge region of the lightly doped GaAs layer doped with Mn and Ag impurities were determined. The thickness of the p0-region provides the values of the transfer coefficient and the recombination properties of the resulting p0-n0 transitions [6].

- Studied the nature and profile of the distribution of the concentration of the main charge carriers. The concentration of carriers in p0- and n0-regions ranged from $1 \cdot 10^{15}$ to $0.1 \cdot 10^{15}$ cm⁻³.

- Determined the mobility of charge carriers. The mobility of charge carriers was, in the n0 - layer $\mu_n \approx (5 \div 6) \cdot 10^3$ cm²/V·sec, and p0 - layer $\mu_p \approx (400 \div 450)$ cm²/V·sec.

- The diffusion lengths of NCCs in lightly doped GaAs layers doped with Mn and Ag impurities were determined;

- A comprehensive study of the properties of a weakly doped GaAs layer doped with Mn and Ag impurities was carried out and it was found that these impurities form deep levels with ionization energies $E_c - 0.4$ eV, $E_c - 0.54$ eV, $E_c = 0.68$ eV in n0-GaAs <Mn> and $E_c - 0.21$ eV, $E_c - 0.82$ eV, $E_v - 0.55$ eV in GaAs <Ag>.

- The processes of the influence of deep centers created by Mn and Ag impurities have been studied and it has been established that impurities are unstable in the gallium arsenide lattice with changes in operating temperatures and the kinetics of the influence of temperature on deep levels is nonlinear.

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Rezyume: Tajribalar o'tkazildi va Mn aralashmalarining engil qo'shilgan galliy arsenid qatlami asosidagi yuqori kuchlanishli p-n geterobirikmaga ta'siri o'rganildi. Mn nopokligining arqon o'tish holatiga ta'siri, ko'pchilik zaryad tashuvchilarning kontsentratsiyasi va taqsimlanishi, ozchilik zaryad

tashuvchilarning diffuziya uzunligi, zaryad tashuvchilarning harakatchanligi va engil dopingda chuqur darajalarning paydo bo'lishi o'rganildi. galliy arsenid qatlami aniqlangan.

Резюме: Проведены эксперименты и изучено влияние примесей Mn на высоковольтный p-n-гетеропереход на основе слаболегированного слоя арсенида галлия. Изучено влияние примеси Mn на положение веревочного перехода, концентрацию и распределение основных носителей заряда, диффузионную длину неосновных носителей заряда, подвижность носителей заряда и появление глубоких уровней в слаболегированном определяли слой арсенида галлия.

Kalit so'zlar: Heterounction, yuqori voltli p-n o'tishlari, engil qo'shilgan GaAs qatlamlari, diffuziya uzunligi va zaryad tashuvchining harakatchanligi, chuqur darajalar, qabul qiluvchi va donor darajalari.

Ключевые слова: Гетеропереход, высоковольтные p-n-переходы, слаболегированные слои GaAs, диффузионные длины и подвижность носителей заряда, глубокие уровни, акцепторные и донорные уровни.

UDC 58

STUDYING THE INFLUENCE OF BIOLOGICAL ACTIVE SUBSTANCE ON THE GERMINATION OF SORGHUM SEEDS IN LABORATORY CONDITIONS

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Summary: *This article presents data on the study of germination and germination of sorghum plant seeds in laboratory conditions under the influence of the biologically active substance root. The seeds of Sorghum cernuum L. were used for the experiment.*

Key words: *biological active substances, sorghum seeds, growth, concentration, laboratory.*

The normal processes of growth and development of plant cells depend on a number of chemicals. These include things called hormones. Hormones are synthesized in the plant itself in sufficient quantities. That is why they are called phytohormones. It has been established that higher plants have several classes of hormones that regulate growth, including auxins, gibberellins, cytokinins, abscisic acid, ethylene and others. Phytohormones and their synthesis products are widely used in plant growing. Of these, heteroauxin is used to accelerate the growth of plant roots. In addition, root also takes its place among biostimulants that accelerate plant growth.

Kornevin is a light-colored crystalline powder, a biostimulant belonging to the auxin group. It contains indolyl butyric acid (more than 5 g/kg IBA) and the principle of its action is that it acts on the integumentary tissue of the plant and stimulates the formation of callus (living cells formed on the surface of the wound) and roots. And when IBA itself enters the soil, under the influence of water and heat, as a result of natural synthesis, it turns into heteroauxin - a phytohormone that accelerates root formation. Thus, kornevin in a pure solution is more effective than heteroauxin, but its effect is longer. In addition to indolylic butyric acid, kornevin contains microelements: potassium and phosphorus, as well as macroelements: manganese, molybdenum, etc. In this work, we observed the process of seed growth using kornevin instead of heteroauxin. The experiment was carried out in laboratory conditions at the Faculty of Biology of Karakalpak State University from May 2, 2023 [1]. The seeds of the sorghum plant Soghum cernuum L. were used for the experiment (Fig. 1).

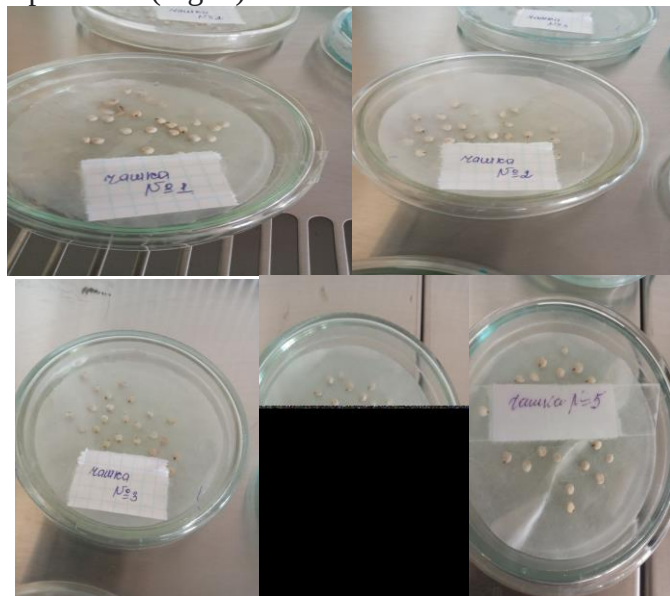


Fig.1. The sorghum seeds obtained for the experiment were placed in 5 Petri dishes.

The experiment was carried out in laboratory conditions according to accepted methods. To do this, we needed sorghum seeds, various concentrated kornevin solutions, Petri dishes, filter paper, pipettes, flasks, test tubes and a 10 ml beaker.

For the experiment, we counted 30 pieces of sorghum and placed them in 5 Petri dishes (Fig. 2). For control, we took water and Kornevin solutions with a concentration of 0.01%; 0.001%; 0.0001%; 0.00001%.

During the work, using a 0.01% solution of rootin, diluted solutions with a volume of less than 9 ml were prepared in clean test tubes:

1. plain water;
2. 0.01% solution;
3. 0.001% solution;
4. 0.0001% solution;
5. 0.00001% solution.

To prepare these solutions, 9 ml of ordinary water is placed in the first test tube on a stand. 9 ml of 0.01% kornevin solution is poured into the second test tube. After this, take 1 ml of a 0.01% root solution into a clean (10 ml measuring) test tube with a capacity of 10 ml, fill it with 9 ml of clean water, mix and pour 9 ml of it into the third test tube. Add 9 ml of water to the remaining 1 ml of solution, stirring well, and place a fourth test tube in it. The remaining 1 ml of 0.0001% solution is mixed with 9 ml of pure water, placed in the fifth test tube and mixed.



Fig.2. The process of performing laboratory work

After preparing the solutions, 5 small Petri dishes with filter paper were prepared, 30 seeds were placed in them and the dishes were labeled. After this, the above-mentioned prepared solutions were placed in small Petri dishes. Petri dishes with seeds filled with solutions were placed in a thermostat with a temperature of 20-25°C. Seed growth was monitored every day. Our work in methodological terms is

completed. For the experiment, the seeds were planted on May 2, 2023, and the counting of sprouted seeds began on May 3. The results of the experiment are shown in Tables 1 and 2.

Table 1

The influence of root on the germination of sorghum seeds

No. Petri dishes	Options	Number of developed seedlings on day 2	Number of developed seedlings on day 3	Number of developed seedlings on day 5	Germination rate (%)
№ 1	Контроль	23	29	29	97%
№ 2	0,01%	20	19	26	86,6%
№ 3	0,001%	27	30	30	100%
№ 4	0,0001%	26	29	29	97%
№ 5	0,00001%	28	30	30	100%

Moreover, after 5 days of seed germination, we saw that 100% of the seeds sprouted in a Petri dish containing 0.001% and 0.00001% kornevin solutions. Within 5 days from the day of the experiment, the length of the grown seed roots in each Petri dish was measured.

Table 2

Average length of rhizomes of seeds germinated in solutions of different biostimulant concentrations

No. Petri dish	Options	Germination Seed Length 3 may	Length of average seed germination in mm, May 4	Medium length seed germination in mm, May 6
№ 1	Control	Start	13±2	13±7
№ 2	0,01%	-//-	10±2	14±4
№ 3	0,001%	-//-	16±6	16±9
№ 4	0,0001%	-//-	17±7	20±6
№ 5	0,00001%	-//-	16±9	34±7

At the end of the experiment, when treating sorghum seeds with solutions of the biological active substance kornevin of different concentrations, good results were obtained. However, when a solution with a concentration of less than 0.00001% was introduced, the growth length of the seed reached 34 mm and the seed germination rate was 100%. As the concentration increased, the stimulating effect of root on root growth decreased

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Rezyume: Ushbu maqolada biologik faol moddalari ta'sirida laboratoriya sharoitida jo'xori o'simlik urug'larining unib chiqishini o'rganish bo'yicha ma'lumotlar keltirilgan. Tajriba uchun jo'xori *Cernuum L.* urug'lari ishlatilgan.

Резюме: В данной статье представлены данные по изучению прорастания и всхожести семян растения сорго в лабораторных условиях под воздействием биологически активного вещества. Для эксперимента использовали семена сорго *Cernuum L.*

Kalit so'zlar: biologik faol moddalar, jo'xori urug'lari, konsentratsiya, laboratoriya.

Ключевые слова: биологические активные вещества, семена сорго, концентрация, лаборатория.

ON SOLVING INTEGER LINEAR OPTIMIZATION PROBLEMS

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Summary: *The paper deals with the essence and efficiency of various methods of linear integer programming for solving optimization problems with integer condition.*

Key words: *linear programming, discrete programming, linear integer programming methods, approximate methods of discrete programming, integer condition.*

Linear programming is a set of methods used in mathematical programming, also called mathematical optimization. Linear programming is used in scientific computing, economics, technical sciences, manufacturing, transportation, military, logistics, energy, etc.

There are a large number of economic problems that belong to linear programming and require integer solutions; their output variables (solution elements) are represented by integers. These include, for example, problems in which the variables mean the number of units of indivisible products. It is necessary to search for the optimal solution of such problems.

Let us consider an example of such an economic problem. The company produces n types of products: Product_1, Product_2, ..., Product_n. To produce a unit of Product_1, it is necessary to spend a_{11} amounts of raw materials of the first type, a_{21} – raw materials of the second type, ..., a_{m1} – raw materials of the m th type. To produce a unit of Product_2, it is necessary to spend a_{12} amounts of raw materials of the first type, a_{22} – raw materials of the second type, ..., a_{m2} – raw materials of the m th type, etc. to produce a unit of Product_n, it is necessary to spend a_{1n} amounts of raw materials of the first type, a_{2n} – raw materials of the second type, ..., a_{mn} – raw materials of the m th type. Production is provided with raw materials of each type in quantities of $b_1, b_2, \dots, b_m$ values, respectively. The market price of a unit of Product_1 is equal to C_1 c.u., and the market price of a unit of Product_2 is C_2 c.u., ..., Product_n is C_n c.u. It is required to draw up an optimal plan for the production of the company's products, ensuring maximum revenue from their sale.

The solution of these problems is currently carried out by a large variety of methods. In total, there are three main methods for solving integer optimization problems:

- 1) cutoff methods;
- 2) combinatorial methods;
- 3) approximate methods.

The basis of cutoff methods is that the problem is first solved without the integer condition. If the obtained result is an integer, the problem is considered solved. Otherwise, a new one is added to the constraints of the problem, called a proper cutoff, which has the following properties:

- be linear;
- cut off the found optimal integer plan;
- not cut off any integer plan.

The problem is then solved subject to the newly introduced constraint, and if the answer is again not integer, a new constraint is also introduced.

1. It is necessary to solve the problem without taking into account the condition of integrability by simplex method. The solution will be optimal if all components of the optimal plan are integer.

2. Otherwise, it is necessary to choose the component with the largest integer part, and by the equation of the system (5) form the correct cutoff (6).

3. An additional non-negative integer variable is introduced into the resulting inequality, which transforms it into an equiprobable equation. It is necessary to include this equation in the constraint system (2).

4. The generated extended problem should be solved by simplex method to obtain an integer optimal plan; otherwise, we should return to point 2 of the algorithm.

The problem to be solved does not have an integer optimal solution if an equation with a non-integer free term and integer remaining coefficients appears in the process of its solution. In addition to Gomori's method, other combinatorial methods can be used to solve integer optimization problems:

- method of branches and bounds;
- method of sequential analysis of variants;
- method based on sequential calculation;
- the method of Fora and Malgrange.

Combinatorial methods, unlike cutoff methods, are less prone to rounding errors and are quite simple, but their capabilities are limited to solving problems of small dimensionality.

In a comparative characterization of the computational labor intensity of combinatorial methods and cutoff methods, it can be noted that combinatorial methods are characterized by simpler arithmetic but somewhat more complex logic. And the implementation of these methods suggests that the behavior of combinatorial methods is characterized by less "unpredictability".

The method based on sequential calculation consists in finding the extremum of a function defined on all subsets of a given finite set, and is quite simple, but it allows solving problems of small dimension only. Its capabilities are extremely limited.

In terms of methodology, sequential option analysis is a natural generalization of the ideas of sequential decision making. However, sequential option analysis is closely related to dynamic programming. The dynamic programming algorithm can be considered as a special case of sequential option analysis, when the Bellman optimality principle is the basis of selection rules. In the scheme of this method, the problem condition is represented as a description of a set of variants. The solution takes the form of a multistage structure resembling the structure of a complex experience. Each stage is associated with checking whether a subset of variants has certain properties (which is reduced to obtaining the outcomes of experiments) and either leads to a direct reduction of the initial set of variants or prepares the possibility of such a reduction in the future.

Also the combinatorial methods include the method of Fora and Malgrange. In 1963, their note announced a method for solving linear programming problems with Boolean variables. They called their approach the "Boolean method". Le Graf and Malgrange then extended this method to general integer linear programming problems. Then Fora and Malgrange discovered another method for solving integer linear programming problems, which is close in scheme to the method of Le Graf and Malgrange, but differs from it by additional features.

The method of Fora and Malgrange is divided into two stages – search for an initial plan and its improvement. In the first stage, an initial plan is searched for and in the second stage, an interactive search of plans is performed to find the best option. Before the calculations, the unknowns sought should be ordered according to the decreasing coefficients of the target function. The initial plan is formed as follows: starting from the first variable to be searched, an attempt is made to assign 1. If the constraint is

violated, the variable is assigned the value 0. After consecutive review of all variables, the initial plan is formed. The second stage is an interactive process of enumerating effective variants of the plan. The next plan is obtained from the previous one as follows:

1. The "lowest unit" in the generated plan is searched for: the rightmost unit after which there is at least one 0. If the "lowest unit" is found, we proceed to step 2; otherwise, we proceed to step 5.
2. In the new plan, a 0 is put in place of the "lowest unit".
3. All values of variables to the left of the "junior unit" are transferred unchanged to the formed version of the plan.
4. The values of variables in the formed plan to the right of the "junior unit" are determined by successive enumeration and assignment of 1, if restrictions allow, or 0; otherwise - transition to step 1.
5. For the obtained variants of the plan the value of the function, i.e. the value of the prevented damage, is calculated. The optimal variant is the one with the maximum value of preventable damage.

But the more widespread method is the method of branches and boundaries. The essence of the method consists in successive partitioning of the admissible set of solutions into subsets, considering only those of them that appear to be promising according to some attributes and discarding unpromising solutions. The solution continues until an integer solution to the problem is found.

Problems of integer linear programming by the method of branches and bounds are solved as follows:

1. The problem (of maximizing the linear function Z) should be solved by the simplex method. In the process of its solution we will know the lower and upper bounds for each variable.
2. Suppose that the first component x_1^* of the optimal plan X^* of the problem does not satisfy the integer condition. On this basis, we exclude the region where is the integer part of the number.
3. Then two problems with added constraints are formed from the problem.
4. Then we solve one of these problems (in any order); depending on the solution, the list of problems can either increase or decrease.
5. If a non-integer optimal plan is obtained in one of the problems, this problem is excluded from the list. Otherwise, if an integer optimal plan is obtained, new tasks are formed from it.
6. If the obtained basis solution satisfies the condition of integrability, this value is taken as the optimal solution of the function of the obtained optimal solution.
7. The process continues until all the problems are solved.

The main disadvantage of the method of branches and bounds is that it is necessary to solve the whole problem, which requires significant time expenditure if it is a problem of large dimension. But despite the noted disadvantage of the method, we can conclude that it is the most reliable means of solving the ILP.

Since the above methods of solving the ILP have a high complexity of computable procedures, the use of approximate methods becomes relevant. This is especially important for applied problems that have large dimensionality and specific constraints. It is in this type of problems that fast obtaining of an approximate answer is most needed. In addition, the advantage of the approximate method is that it provides for solving problems using inaccurate initial information. Approximate methods of discrete programming include a method using random search. Let us consider its application.

The problem is posed in an ordinary way. All coefficients must be non-negative numbers. For example: it is necessary to find the maximum under the constraints.

This system is solved by the method of iterations. Its essence is that first a random set of solutions is chosen, and then the values are calculated.

Then we change the component X_k with equal probability. This results in a new vector X_{k+1} . When all take values equal to Δ_i , the solution is found. This method can also be improved,

which allows extending its application to applications of high dimensionality. The essence of these improvements is quite simple. When solving such applied problems, it is necessary to search not for one definite plan, but for a series of approximate to optimal plans, one of which will be chosen later on in the final analysis of the problem. Also, a large problem can be divided arbitrarily into several subproblems and for each subproblem a series of near-optimal plans can be found.

After all the obtained combinations of plans are considered and the most suitable ones for the problem as a whole are selected among them.

Also to the approximate methods of solving integer optimization problems belongs the rounding method, the essence of which is that the weakened problem is solved (as a linear programming problem), and the obtained answer is rounded to an integer. This method has a number of disadvantages: the obtained rounded answer may be very different from the optimal answer or the solution may be inadmissible.

Thus, linear integer programming methods are effective for solving optimization problems with integer condition.

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Rezyume. *Maqolada butun sonli optimallashtirish masalalarini yechishda har xil chiziqli butun sonli dasturlash usullarining mohiyati va samaradorligi ko'rib chiqiladi.*

Резюме. *В работе рассматривается суть и эффективность разнообразных методов линейного целочисленного программирования для решения оптимизационных задач с условием целочисленности.*

Kalit so'zlar: *chiziqli dasturlash, diskret dasturlash, chiziqli butun sonli dasturlash usullari, taqribiy diskret dasturlash usullari, butun son bo'lish sharti.*

Ключевые слова: *линейное программирование, дискретное программирование, методы линейного целочисленного программирования, приближенные методы дискретного программирования, условие целочисленности.*

CALCULATION OF CONTRIBUTIONS OF DIFFERENT TYPES OF FEATURES BASED ON DATA VISUALIZATION IN CLASSIFICATION TASKS

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Summary: *The detection of hidden regularities in databases when calculating the contributions of nominal features in problems based on the results of displaying the presented objects of classes in two-dimensional feature spaces is considered.*

Keywords: *classification, data visualization, uncovered patterns, calculation of contributions.*

It is believed that the set of valid objects $E_0 = \{S_1, \dots, S_m\}$ represent a training sample in which representatives l of non-overlapping classes $K_1, \dots, K_l$ are specified. The description of objects is made using n nominal features [4].

For the geometric representation of data, the method of data visualization in [3] is used. One of the current approaches to the problem of decision-making in conditions of incomplete information is the use of artificial neural networks. One of the ways to explain the decision-making process of a neural network is the selection of informative sets of features. The work [1] includes the calculation of the contributions of different types of features in classification with a "teacher", the formation and selection of latent informative features in classification problems used to model the process of intuitive decision-making.

Using the following formula, the value of the contribution of each nominal feature p to the class division is determined

$$\lambda_p = \frac{\sum_{i=1}^l \sum_{j=1}^{u_p} z_{pj}^i (z_{pj}^i - 1)}{\sum_{i=1}^l \tau_i} - \frac{\sum_{i=1}^l \sum_{j=1}^{u_p} z_{pj}^i \overline{z_{pj}^i}}{\sum_{i=1}^l b_{ip} \overline{b_{ip}}}, \quad (1)$$

where $z_{pj}^i, \overline{z_{pj}^i}$ is the number of values of the j -th gradations of the p -th feature, respectively of the class K_i and its complement $CK_i = E_0 \setminus K_i$, u_p - the number of gradations of the p -th feature, l_{ip} - the number of gradations of the p -th feature respectively K_i , $b_{ip}, \overline{b_{ip}}$ - the number of gradations of the p -th feature without omissions respectively in K_i and CK_i ,

$$\tau_i = \begin{cases} (b_{ip} - l_{ip} + 1)(b_{ip} - l_{ip}), & \text{если } l_{ip} > l, \\ b_{ip}(b_{ip} - 1), & \text{если } l_{ip} \leq l. \end{cases}$$

Ordering a set of values $\{\lambda_p\}$ allows for a directed selection of informative sets of features.

In the computational experiment of displaying objects in a two-dimensional feature space and calculating the contributions of signs, sociological survey data were used on 24 questions for 50 people. A training sample of 100 objects, the first class in which was represented by Uzbeks, the

second by Koreans. Each question of the training sample was considered as a nominal feature. Gradations of nominal features are the options for answering questionnaire questions. Each question has up to five possible answers to which an integer is mapped by a set of gradations [2]. The mapping of the objects on the plane is shown in Figure 1 [4]. Here, a visual clustering of the sample into four non-intersecting groups G1, G2, G3 and G4 is carried out.

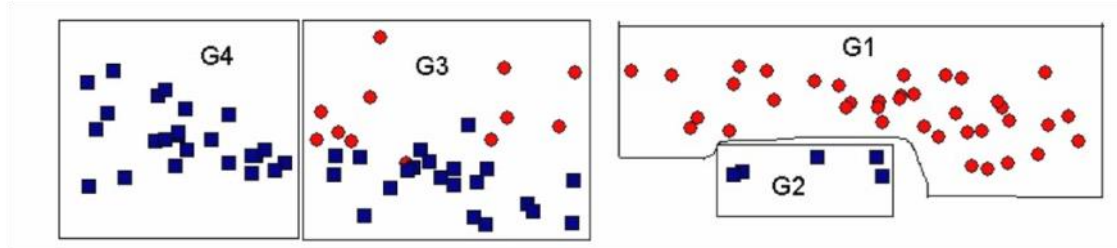


Figure 1. Displaying Object Relationships on a Plane

The detection of hidden patterns in databases is considered when in terms of the number of contributions by (1) in the classification tasks by locations of non-overlapping groups G1 and G2, G2 and G4, G1 and G4, G3 Figure 1.

Hypothesis: When calculating the contributions of different types of features among non-overlapping groups, G1 and G4 have a maximum value than the others.

To test the hypothesis, the values of the contributions are calculated in descending order and of each individual feature of non-intersecting groups G1 and G2, G2 and G4, G1 and G4, G3 in the decision-making process. In the results of testing the hypothesis, the values of the contributions of two nominal features are given, as follows:

Values of contributions of two nominal features according to G1 and G2

№	Signs	Values of deposits
1	<i>How do I feel when I encounter an unexpected obstacle?</i>	0,480
2	<i>What emotions am I experiencing in this case?</i>	0,379

Values of contributions of two nominal features according to G2 and G4

№	Signs	Values of deposits
1	<i>How do I feel when I encounter an unexpected obstacle?</i>	0,887
2	<i>What emotions am I experiencing in this case?</i>	0,454

Values of contributions of two nominal features according to G1 and G4

№	Signs	Values of deposits
1	<i>How do I feel when I encounter an unexpected obstacle?</i>	0,962
2	<i>What emotions am I experiencing in this case?</i>	0,630

Values of contributions of two nominal features according to G3

№	Signs	Values of deposits
1	<i>How do I feel when I encounter an unexpected obstacle?</i>	0,362
2	<i>What emotions am I experiencing in this case?</i>	0,304

It can be seen from the results that in all groups the order of calculating the contributions is the same, but their values are different and depend on the positions of the groups. The results of testing the

hypothesis of calculating the contributions of two nominal features for different groups confirm the truth of this hypothesis.

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Rezyume: *Ikki o'lchovli xususiyat fazolarida sinflarning taqdim etilgan ob'ektlarini ko'rsatish natijalari bo'yicha masalalarda nominal xususiyatlarning hissasini hisoblashda ma'lumotlar bazalarida yashirin qonuniyatlarni aniqlash ko'rib chiqiladi.*

Резюме: *Рассмотрено выявление скрытых закономерностей в базах данных при расчете вкладов номинальных признаков в задачах по результатам отображения представленных объектов классов в двумерных пространствах признаков.*

Kalit so'zlar: *tasniflash, ma'lumotlarni vizualizatsiya qilish, ochilmagan naqshlar, hissalarini hisoblash.*

Ключевые слова: *классификация, визуализация данных, выявленные закономерности, расчет вкладов.*

**MODELING OF THE THREE-CRITERIA ECOLOGICAL-ECONOMIC PROBLEM
OF LOCATION AND SPECIALIZATION OF AGRICULTURAL PRODUCTION**

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Summary: *The article examines the setup of the three-criteria problem. For three-criterial problem aided by Lagrange function an ambivalent problem is constructed. Using methods of qualitative analysis, dimensions of norms of water expenditures are determined for cultivation in crop and cattle production accordingly.*

Key words: *three-criterial model, complex of criteria, duality, optimality, ecology-economic model, maximum, minimum, vector optimization, much criteria optimization, parametrical task.*

Currently, most optimization works are devoted to ordinary single-criteria problems. Numerical methods for multicriteria problems are less developed. With a multi-criteria approach to optimization of developing systems, compared to a single-criteria approach, the internal essence of the dynamic process is adequately reflected, since various aspects of its development are taken into account. However, the implementation of the multicriteria problems that arise in this case encounters great difficulties. For example, a complete description of the set of all effective solutions to a multicriteria problem (Pareto set), on the one hand, is labor-intensive, and on the other hand, still does not finally solve the problem, since the last word belongs to the expert. Therefore, it is necessary to provide the expert with information for decision-making in such a form as to make the selection process the most convenient and natural [4].

Among the optimization methods, we will distinguish between optimization methods based on a given criterion (scalar optimization) and multicriteria optimization methods (vector optimization).

In cases where, when researching and designing complex technical systems or when solving economic problems, it is necessary to take into account a number of requirements and goals that cannot be formulated by a single optimality criterion, it is necessary to apply multicriteria optimization methods [1-3]. It should be noted that recently there has been significant progress in the research of optimization environmental and economic problems. As a result of this, the theoretical development and practical use of environmental-economic deterministic and stochastic models, adapted to solve various problems of the national economy, have been significantly intensified [4].

Therefore, this area of research is relevant in theoretical and practical terms.

The proposed work considers a deterministic version of modeling a three-criteria ecological-economic model of location and specialization of agricultural production. There are two directions in the study of optimization problems: methods of numerical solutions and methods of qualitative analysis of optimization problems. Using methods of qualitative analysis, the size of norms for water consumption is determined for the cultivation of crop and livestock products, respectively. In order to formulate a three-criteria problem, we introduce the following notation: a_{ij} - prolificness j - culture in i - farm; x_{ij} - square, allocated in the i -farm for the j - crop; y_{ij} --quantity of the j - crop product used as feed in the i -th farm; z_{iv} - quantity v - livestock products produced in i – farm; P_{ij} - profit received from producing a unit of output j - culture in i - farm; $\hat{P}_{iv}$ - profit received per unit of livestock v -type in

i - farm; β_{ij} - norm of water consumption for cultivation j - crop in i - farm; $\hat{\beta}_{iv}$ - rate of water consumption for livestock products v - kind в i - farm; A_j - government order or local consumer demand for j - crop products; B_v -government order or local consumer demand for v - livestock products;

χ_{jl} - unit conversion factor j - crop production into feed units l - type of feed; b_{ivl} -number of feed units l - type of feed in the diet used in the production of the unit v - type of livestock products in i - farm t_{ij} - specific labor intensity j - th crop crop, i - farm ; τ_{iv} -specific labor intensity v - livestock products i - farm; T_i - quantity of labor resources i -м farm, S_i - total volume of land i - farm; I - set of farm indices; J_1^i - set of crop production indices i - farm; J_2^i - many livestock production indices i - farm; L - many feed indices; q_{ij} - unit costs for cultivation j - crop culture i - farm; $\hat{q}_{iv}$ - unit costs for cultivation v - livestock products i - farm.

Taking into account the introduced notations, we formulate a three-criteria deterministic ecological-economic problem of location and specialization of agricultural production:

$$F_1(x, z) = \sum_{i \in I} \sum_{j \in J_1^i} q_{ij} x_{ij} + \sum_{v \in J_2^i} \hat{q}_{iv} z_{iv} \rightarrow \min \quad (1)$$

(minimum capital investment)

$$F_2(x, z) = \sum_{i \in I} \sum_{j \in J_1^i} P_{ij} a_{ij} x_{ij} + \sum_{i \in I} \sum_{v \in J_2^i} \hat{P}_{iv} z_{iv} \rightarrow \max \quad (2)$$

(maximum profit)

$$F_3(x, z) = \sum_{i \in I} \sum_{j \in J_1^i} \beta_{ij} x_{ij} + \sum_{i \in I} \sum_{v \in J_2^i} \hat{\beta}_{iv} z_{iv} \rightarrow \min \quad (3)$$

(minimum water consumption)

$$\sum_{i \in I} a_{ij} x_{ij} - \sum_{i \in I} y_{ij} \geq A_j, \quad j \in J_1^i \quad (4)$$

(production of crop products)

$$\sum_{i \in I} z_{iv} \geq B_v, v \in J_2^i \quad (5)$$

(livestock production)

$$\sum_{l \in L} \sum_{j \in J_2^i} \chi_{jl} y_{ij} - \sum_{v \in J_2^i} b_{ivl} z_{iv} \geq 0, \quad (i \in I, l \in L) \quad (6)$$

(feed restrictions)

$$\sum_{j \in J_1^i} t_{ij} x_{ij} + \sum_{v \in J_2^i} \tau_{iv} z_{iv} \leq T_i, \quad (i \in I) \quad (7)$$

(restrictions on labor resources)

$$\sum_{j \in J_1^i} x_{ij} \leq S_i, \quad (i \in I) \quad (8)$$

(restrictions on land resources)

$$x_{ij} \geq 0, y_{ij} \geq 0, z_{ij} \geq 0, \quad (i \in I, j \in J_1^i, v \in J_2^i) \quad (9)$$

Thus, the task is to minimize capital investments, maximize the total volume of crop and livestock production and minimize the total volume of water consumption in certain proportions, provided (4)-(9).

The three-criteria problem (1)-(9) is reduced to a parametric linear programming problem. To do this, we introduce the parameters $\alpha_1 \geq 0, \alpha_2 \geq 0, \alpha_3 \geq 0$, and create a complex criterion (1)-(3):

$$\begin{aligned} \phi_1 = (x, z, \alpha_1, \alpha_2, \alpha_3) &= -\alpha_1 F_1(x, z) + \alpha_2 F_2(x, z) - \alpha_3 F_3(x, z) \\ &= -\alpha_1 \sum_{i \in I} \sum_{j \in J_1^i} q_{ij} x_{ij} - \alpha_1 \sum_{v \in J_2^i} \hat{q}_{iv} z_{iv} \\ &+ \alpha_2 \sum_{i \in I} \sum_{j \in J_1^i} P_{ij} a_{ij} x_{ij} + \alpha_2 \sum_{i \in I} \sum_{v \in J_2^i} \hat{P}_{iv} z_{iv} \\ &- \alpha_3 \sum_{i \in I} \sum_{j \in J_1^i} \beta_{ij} x_{ij} - \alpha_3 \sum_{i \in I} \sum_{v \in J_2^i} \hat{\beta}_{iv} z_{iv} \rightarrow \max \end{aligned} \quad (10)$$

under restrictions (4)-(9).

In order to obtain a specific form of the dual problem to problem (10), (4)-(9), we construct Lagrange functions for this problem, which has the form:

$$\begin{aligned} L(x, y, z, u, v, d, \lambda) &= -\alpha_1 F_1(x, y, z) + \alpha_2 F_2(x, y, z) - \alpha_3 F_3(x, y, z) \\ &+ \sum_{j \in J_1^i} (u_j, \sum_{i \in I} a_{ij} - \sum_{i \in I} y_{ij} - A_j) + \sum_{v \in J_2^i} (v_v, \sum_{i \in I} z_{iv} - B_v) \\ &+ \sum_{i \in I} (d_i, \sum_{j \in J_1^i} x_{ij} - \sum_{v \in J_2^i} b_{iv} z_{iv}) \\ &+ \sum_{i \in I} (\lambda_i T_i - \sum_{j \in J_1^i} t_{ij} x_{ij} - \sum_{v \in J_2^i} \tau_{iv} z_{iv}) + \sum_{i \in I} (\omega_i S_i - \sum_{j \in J_1^i} x_{ij}) \end{aligned} \quad (11)$$

Let us transform the Lagrange function to the following form:

$$L(x, y, z, u, v, d, \lambda) = -\alpha_1 \sum_{i \in I} \sum_{j \in J_1^i} q_{ij} x_{ij} - \alpha_1 \sum_{v \in J_2^i} \hat{q}_{iv} z_{iv} + \alpha_2 \sum_{i \in I} \sum_{j \in J_1^i} P_{ij} a_{ij} x_{ij} \quad (13)$$

$$\begin{aligned}
 & + \alpha_2 \sum_{i \in I} \sum_{v \in J_2^i} \hat{P}_{iv} z_{iv} + \alpha_3 \sum_{i \in I} \sum_{j \in J_1^i} \beta_{ij} x_{ij} \\
 & + \alpha_3 \sum_{i \in I} \sum_{v \in J_2^i} \hat{\beta}_{iv} z_{iv} + \sum_{j \in J_1^i} A_j U_j + \sum_{j \in J_1^i} \sum_{i \in I} a_{ij} x_{ij} u_j - \sum_{j \in J_1^i} \sum_{i \in I} y_{ij} u_j \\
 & + \sum_{v \in J_2^i} B_v v_v + \sum_{v \in J_2^i} \sum_{i \in I} z_{iv} v_v + \sum_{l \in L} \sum_{i \in I} \sum_{j \in J_1^i} \chi_{jl} y_{ij} d_i - \sum_{i \in I} \sum_{v \in J_2^i} b_{ivl} z_{iv} d_i \\
 & + \sum_{i \in I} T_i \lambda_i - \sum_{i \in I} \sum_{j \in J_1^i} t_{ij} x_{ij} \lambda_i - \sum_{i \in I} \sum_{v \in J_2^i} \tau_{iv} z_{iv} \lambda_i + \sum_{i \in I} S_i \omega_i \\
 & - \sum_{i \in I} \sum_{j \in J_1^i} x_{ij} \omega_i = \sum_{i \in I} T_i \lambda_i + \sum_{i \in I} S_i \omega_i - \sum_{j \in J_1^i} A_j u_j + \sum_{v \in J_2^i} B_v v_v \\
 & + \sum_{i \in I} \sum_{j \in J_1^i} (\alpha_2 P_{ij} a_{ij} - \alpha_1 q_{ij} - \alpha_3 \beta_{ij} + a_{ij} u_j - t_{ij} \lambda_i - \omega_i, x_{ij}) \\
 & + \sum_{i \in I} \sum_{v \in J_2^i} (\alpha_2 \hat{P}_{iv} - \alpha_1 \hat{q}_{iv} - \alpha_3 \hat{\beta}_{iv} + v_v - b_{ivl} d_i - \tau_{iv} \lambda_i, z_{iv}) \\
 & + \sum_{i \in I} \sum_{j \in J_1^i} \left(\sum_{l \in L} \chi_{jl} d_i - u_j, y_{ij} \right)
 \end{aligned}$$

We write the transformed Lagrange function in the form:

$$\begin{aligned}
 L(x, y, z, u, v, d, \lambda) & = \sum_{i \in I} T_i \lambda_i + \sum_{i \in I} S_i \omega_i - \sum_{j \in J_1^i} A_j u_j + \sum_{v \in J_2^i} B_v v_v \\
 & + \sum_{i \in I} \sum_{j \in J_1^i} (\alpha_2 P_{ij} a_{ij} - \alpha_1 q_{ij} - \alpha_3 \beta_{ij} + a_{ij} u_j - t_{ij} \lambda_i - \omega_i, x_{ij}) \\
 & + \sum_{i \in I} \sum_{v \in J_2^i} (\alpha_2 \hat{P}_{iv} - \alpha_1 \hat{q}_{iv} - \alpha_3 \hat{\beta}_{iv} + v_v - b_{ivl} d_i - \tau_{iv} \lambda_i, z_{iv}) \\
 & + \sum_{i \in I} \sum_{j \in J_1^i} (\chi_{jl} d_i - u_j, y_{ij})
 \end{aligned} \tag{14}$$

From the Lagrange function (3), we successively take the maximum and then the minimum, we can define the problem dual to problem (10), (4)-(9), in the following form:

$$\Phi_2(u, v, d, \lambda, \omega) = \sum_{i \in I} T_i \lambda_i + \sum_{i \in I} S_i \omega_i - \sum_{j \in J_1^i} A_j u_j + \sum_{v \in J_2^i} B_v v_v \rightarrow \min \tag{15}$$

$$t_{ij} \lambda_i + \omega_i - a_{ij} u_j \geq \alpha_2 P_{ij} a_{ij} - \alpha_1 q_{ij} - \alpha_3 \beta_{ij} \quad (j \in J_1^i, i \in I) \tag{16}$$

$$b_{ivl} + \tau_{iv} \lambda_i - v_v \geq \alpha_2 \hat{P}_{iv} - \alpha_1 \hat{q}_{iv} - \alpha_3 \hat{\beta}_{iv} \quad (i \in I, v \in J_2^i, l \in L) \tag{17}$$

$$\chi_{jl}d_i - U_j \leq 0 \quad (j \in J_1^i, i \in I, l \in L) \quad (18)$$

$$u_i \geq 0, v_v \geq 0, d_i \geq 0, \lambda_i \geq 0, \omega_i \geq 0 \quad (i \in I) \quad (19)$$

Where u_j - means the assessment of government orders for crop products j - kind; v_v - assessment of government orders for livestock products v - kind; d_i - feed resource assessment i - farm; λ_i - labor resource assessment i - farm; ω_i - land resource assessment i - farm.

To solve problem (1)-(9), methods developed in the work are used [4].

It should be noted that problems (10), (4)-(9) and (11)-(15) are mutually dual problems of parametric linear programming. Therefore, the first and second duality theorems are valid for them, respectively. [5].

Theorem 1. If one of the problems of the dual pair (10), (4)-(9) and (11)-(15) has a solution for any values $\alpha_1 \geq 0, \alpha_2 \geq 0, \alpha_3 \geq 0$, then the other problem is also solvable. Moreover, for any optimal solutions $\{x_{ij}^*, z_{iv}^*\}$ и $\{\lambda_i^*, \omega_i^*, u_i^*, v_{iv}^*\}$ there is equality:

$$\phi_1 = (x^*, z^*, y^*, \alpha_1, \alpha_2, \alpha_3) = \phi_2(u^*, v^*, d^*, \lambda^*, 10^*) \quad (20)$$

Theorem 2. In order for a feasible solution $\{x_{ij}^*, y_{ij}^*, z_{iv}^*\}$ tasks (10), (4)-(9) was optimal, necessary and sufficient for such quantities to exist $\{u_i^*, v_{iv}^*, d_i^*, \lambda_i^*, \omega_i^*\}$ so that the relations are fulfilled:

$$+t_{ij}\lambda_i + \omega_i - a_{ij}u_j \geq \alpha_2 P_{ij}a_{ij} - \alpha_1 q_{ij} - \alpha_3 \beta_{ij} \quad (21)$$

$$\sum_{l \in L} \chi_{jl} d_{il} - u_j \leq 0, \quad (j \in J_1^i, i \in I) \quad (22)$$

$$b_{ivl}d_i + \tau_{iv}\lambda_i - v_v \geq \alpha_2 \hat{P}_{iv} - \alpha_1 \hat{q}_{iv} - \alpha_3 \hat{\beta}_{iv} \quad (i \in I, v \in J_2^i, l \in L) \quad (23)$$

$$(x_{ij}^*, t_{ij}^* \lambda_i^* + \omega_i^* - a_{ij}^* u_j^* - \alpha_2 P_{ij} a_{ij} - \alpha_1 q_{ij} - \alpha_3 \beta_{ij}) = 0 \quad (24)$$

$$y_{ij}^*, \sum_{l \in L} \chi_{jl} d_{il}^* - u_j^* = 0 \quad (25)$$

$$(z_{iv}^* \sum_{l \in L} \chi_{jl} d_i^* - \tau_{iv} \lambda_i^* - v_v - \alpha_2 \hat{P}_{iv} + \alpha_1 \hat{q}_{iv} + \alpha_3 \hat{\beta}_{iv}) = 0 \quad (26)$$

$$(u_j^*, \sum_{i \in I} a_{ij} x_{ij}^* - \sum_{i \in I} y_{ij}^* - A_j) = 0 \quad (27)$$

$$(v_v^*, \sum_{i \in I} z_{iv}^* - \beta_v) = 0 \quad (28)$$

$$(d_{il}^*, \sum_{j \in J_2^i} \chi_{jl} y_{ij}^* - \sum_{v \in J_2^i} b_{ivl} z_{iv}^*) = 0 \quad (25)$$

$$(\lambda_i^*, T_i - \sum_{j \in J_2^i} t_{ij} x_{ij}^* - \sum_{v \in J_2^i} \tau_{iv} z_{iv}^*) = 0 \quad (26)$$

$$(\omega_i^*, S_i - \sum_{j \in J_2^i} x_{ij}^*) = 0 \quad (27)$$

From relations (20), (22) we find the size of the rate of water consumption for cultivation j -crops and livestock products - kind i -farm:

$$\alpha_3 \beta_{ij} = [(\alpha_2 P_{ij} a_{ij} - \alpha_1 q_{ij}) + (a_{ij} u_j^* - t_{ij} \lambda_i^* - \omega_i^*)] \quad (28)$$

$$\alpha_3 \hat{\beta}_{iv} = [(\alpha_2 \hat{P}_{iv} - \alpha_1 \hat{q}_{iv}) - (\sum_{l \in L} \chi_{jl} d_i^* + \tau_{iv} \lambda_i^* - v_v^*)] \quad (29)$$

Thus, this article discusses the formulation of a three-criteria problem. For a three-criteria problem, a dual problem is constructed using the Lagrange function. Using qualitative analysis methods, the size of water consumption norms for cultivating crop and livestock products, respectively, is determined.

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Rezyume: Maqolada uchta mezonli muammoning o'rnatilishi ko'rib chiqiladi. Lagrange funksiyasi yordamida uch kriterli masala uchun ambivalent masala tuziladi. Sifatli tahlil usullaridan foydalangan holda, shunga mos ravishda o'simlikchilik va chorvachilikda etishtirish uchun suv sarfi normalarining o'lchamlari aniqlanadi.

Резюме: В статье рассматривается постановка задачи трех критериев. Для трехкритериальной задачи с использованием функции Лагранжа построена амбивалентная задача. Методами качественного анализа определяются размеры норм затрат воды на выращивание в растениеводстве и животноводстве соответственно.

Tayanch iboralar: uch kriterli model, mezonlar majmuasi, ikkilik, optimallik, ekologiya-iqtisodiy model, maksimal, minimum, vektor optimallashtirish, ko'p mezonli optimallashtirish, parametrik vazifa.

Ключевые слова: трехкритериальная модель, комплекс критериев, двойственность, оптимальность, эколого-экономическая модель, максимум, минимум, векторная оптимизация, многокритериальная оптимизация, параметрическая задача.

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METHOD FOR OPTIMIZING SQL QUERIES IN DATABASE MANAGEMENT SYSTEMS

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Summary: *The article discusses methods for optimizing SQL queries in a database management system (DBMS). The methods discussed are based on the use of indexes and query optimization by choosing the most efficient execution plan. This article describes the different types of indexes, their uses, and how they affect query performance. It also discusses query optimization techniques such as using optimization options, aggregate functions, and table joins. The article may be useful to database developers and specialists working with DBMS.*

Key words: *SQL, DBMS, query optimization, indexes, performance, optimization options, aggregation, table joins.*

In today's world, databases are an integral part of many applications. They are used for storing, processing, and analyzing large amounts of data. For working with databases the **Structured Query Language (SQL Language)** is used, which allows you to create and modify data in the database. However, when working with SQL queries, there are problems related to performance and execution efficiency. One of the ways to optimize SQL queries is to use the optimization method, which is based on the use of indexes and various optimization parameters. In this article, we will look at the basic principles of the method of optimizing SQL queries in database management systems.

SQL (Structured Structured Query Language) is a query language for working with databases. It allows you to create, modify, and delete data, as well as perform various operations with it. SQL consists of commands that can be used to create tables, add, modify, and delete data, perform queries, and much more.

SQL query optimization – is the process of improving query performance by optimizing query structure, using indexes, and other techniques. Query optimization can significantly improve database performance, which in turn can improve the performance of applications that use this database.

Optimizing SQL queries can help improve the performance of the database and the applications that work with it. To do this, you need to optimize the table structure, use indexes, and select the correct connection type. It is also important to monitor the number of columns in queries and the type of data they contain. The method of optimizing SQL queries is an important aspect of working with databases. It allows you to improve the performance and efficiency of working with data, as well as reduce the load on the database server. There are many ways to optimize SQL queries, such as using indexes, optimizing the table structure, and choosing the right connection type. It is important to understand which queries require optimization and apply appropriate techniques to improve their performance.

One of the main methods for optimizing SQL queries is the use of indexes. Indexes –are data structures that allow you to quickly find the necessary data in a table. [1] They are created to speed up query execution and improve database performance.

There are several types of indexes:

- **Column indexes** - indexes that are created for one or more columns of a table. They are used to quickly search for records that contain a given value in a specific column.

- **Range indexes** - indexes that are created for ranges of values in a column. They are used to quickly search for all records whose values are in the specified range.

- **Full-text indexes** - indexes that are used to search for text data in a table. They allow you to quickly find entries that contain the specified text in a specific column or combination of columns.

- **Clustered table indexes** - indexes where data is stored in the sorted order of the table. This allows you to speed up the operations of inserting, updating, and deleting records.

- **Non - clustered indexes** - indexes where data is not stored in the sorted order of the table, but are arranged by index key. This makes it faster to perform search operations, but slower to perform update and delete operations.

To create an index, run the following command:

```
CREATE INDEX index_name ON table_name (column_list);
```

Where index_name is the index name, table_name is the table name, and column_list is the list of columns for which the index is being created.

For example, to create an index based on the id column in the users table, run the command:

```
CREATE INDEX idx_users_id ON users (id);
```

Once the index is created, you can use it to speed up query execution. For example, if you want to find all records with id greater than 100, you can use the following query:

```
SELECT * FROM users WHERE id > 100;
```

Indexes allow you to speed up the search for data in a table, which can significantly improve query performance. In addition, indexes help avoid repeated queries to the table, which also improves performance. Another way to optimize SQL queries is to choose the right connection type. For example, using a key join instead of a value join can significantly speed up query execution. [2]

A well-chosen connection can significantly improve the performance of your query. There are several types of connections:

- **INNER JOIN** - used to join two tables, where each record from the first table is linked to one record from the second table.

For example:

```
SELECT first_table.column1, second_table.column2
```

```
FROM first_table
```

```
INNER JOIN second_table ON first_table.id = second_table.fk_id;
```

- **LEFT EXTERNAL JOIN** - used to join two tables, where all records from the first table are linked to one or more records from the second table.

For example:

```
SELECT left_table.*, right_table.column
```

```
FROM left_table
```

```
LEFT JOIN right_table ON left_table.foreign_key = right_table.primary_key;
```

- **Right external connection (RIGHT JOIN)** - similar to the left external connection, only on the other side.

For example:

```
SELECT right_table.*, left_table.column
```

```
FROM right_table
```

```
RIGHT JOIN left_table ON right_table.foreign_key = left_table.primary_key;
```

- **FULL OUTER JOIN**-merges all records from both tables, including those that are not related to each other.

```
SELECT full_table.*
```


FROM full_table

FULL OUTER JOIN other_table ON full_table.key = other_table.foreign_key;

In addition, there are several types of connections based on the condition:

- AND (AND) - used to connect two tables when both tables must meet the specified condition.
- OR - used to connect two tables when at least one of the tables must meet the specified condition.

condition.

It is also important to consider the number of columns in the query and their type. For example, if a query uses a large number of columns, it may slow down its execution. In addition, using columns with a large number of values can also slow down the query execution.

The number of columns in the query should be minimal and only necessary for completing the task. The column type must be defined in advance and correspond to the type of data that will be stored in this column. Another method of optimizing SQL queries is the use of parameters, i.e. passing parameters to the query instead of using variables in the code. Using parameters in queries can significantly improve the performance of an SQL query. Parameters allow you to pass values to the request in advance, which allows you to avoid re-executing the request when changing the values in the request. For example, if you use variables to pass values to a query, then each time the value of the variable changes, the query will be executed anew. This can lead to lower performance and longer response times. Using parameters in the request avoids this, since the values are passed in advance and do not change during the request execution. This allows you to optimize query execution and improve its performance. In addition to these methods for optimizing SQL queries, there are several ways to optimize query performance:

Eliminate unnecessary operations: Remove unnecessary operations such as UNION, ORDER BY, etc. [2] Removing unnecessary operations can significantly speed up the execution of an SQL query and improve its performance. For example, if a query uses a UNION operation that combines the results of several queries, you can replace it with a more efficient JOIN query. You can also delete the ORDER BY and LIMIT operations if they are not needed to get the desired result. This will help you reduce the number of operations and increase query performance.

Using stored procedures: Write stored procedures that can be called repeatedly, which reduces the number of database accesses and speeds up query execution.

Use caching: Use a cache to store frequently accessed data to avoid repeated database queries.

Optimize data retrieval queries: Use aggregation functions such as SUM, AVG, and COUNT to reduce the number of data fetching operations from a table.

Using Table Query optimization: Optimize queries for working with tables that contain a large amount of data. Optimizing queries for tables is a complex task that requires analysis and experimentation. However, using these methods correctly can significantly improve system performance and speed up query execution.

Aggregation is a very important tool for optimizing SQL queries and can significantly improve query performance. Aggregation is the process of grouping values in a table by a specific criterion and calculating the total value for each group. [3] When optimizing SQL queries, aggregation can be used to reduce the number of rows returned by the query, as well as to speed up query execution. For example, if we want to get the sum of all values in the price column for all rows in the products table, we can use the following SQL query:

SELECT SUM (price) AS summa_cenes FROM products;

In this query, we use the aggregate function SUM to sum all the values in the price column. We then use the alias "summa_cenes" for the query result, so that we can easily determine which value is the sum of all prices. However, if we have a very large "products" table and only want to get the sum of prices

for each product, we can use aggregation along with grouping. For example: SELECT product, SUM (price) AS price_product FROM products GROUP BY product;

Here we group the rows by the product field and calculate the sum of the values in the price column for each group. Thus, we get a table in which for each product its price is indicated.

In conclusion, it is important to ensure that queries are optimized for a particular database and its characteristics. Each database has its own characteristics and limitations, so queries should be optimized for a specific database. For example, if the database has limited memory, queries that use a large amount of data may slow down.

You can also note that optimizing SQL queries is an important step in improving database performance. Proper query optimization can significantly improve query execution speed, reduce server load, and improve data processing efficiency. The article discusses various methods for optimizing SQL queries, such as using indexes, optimizing queries for performing JOIN operations, using aggregate functions, and others. It is important to understand that query optimization should be based on an analysis of specific requirements for the database and its operation. In addition, many factors need to be considered for query optimization, such as the data type, functions used, indexes, and so on. It is also important to understand that each request is unique and requires an individual approach. In general, the method of optimizing SQL queries can significantly improve the performance of working with databases and reduce the load on the server. Therefore, it is important to use this method when working with databases to achieve maximum efficiency and performance.

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Rezyume: Maqolada ma'lumotlar bazasini boshqarish tizimining (DBMS) SQL so'rovlarini optimallashtirish usullari muhokama qilinadi. Ko'rib chiqilayotgan usullar indekslardan foydalanishga va eng samarali bajarish rejasini tanlash orqali so'rovlarni optimallashtirishga asoslangan. Ushbu maqolada indekslarning har xil turlari, ulardan foydalanish va so'rovlar ishlashiga ta'siri tasvirlangan. So'rovlarni optimallashtirish usullari, masalan, optimallashtirish parametrlaridan foydalanish, yig'ish funktsiyalari va jadvallarni birlashtirish. Maqola ma'lumotlar bazasini ishlab chiquvchilar va DBMS bilan ishlaydigan mutaxassislar uchun foydali bo'lishi mumkin.

Резюме: В статье рассматриваются методы оптимизации SQL-запросов системы управления базами данных (СУБД). Рассматриваемые методы основаны на использовании индексов и оптимизации запросов путем выбора наиболее эффективного плана выполнения. В статье описываются различные типы индексов, их применение и влияние на производительность запросов. Также рассматриваются методы оптимизации запросов, такие как использование параметров оптимизации, агрегатных функций и объединений таблиц. Статья может быть полезна разработчикам баз данных и специалистам, работающим с СУБД.

Kalit so'zlar. SQL, DBMS, so'rovlarni optimallashtirish, indekslar, unumdorlik, optimallashtirish parametrlari, agregatsiya, jadvallarni birlashtirish.

Ключевые слово. SQL, СУБД, оптимизация запросов, индексы, производительность, параметры оптимизации, агрегирование, объединения таблиц.

**SOLVING THE MAGNETELASTIC PROBLEM OF THIN
ANISOTROPIC PLATES OF COMPLEX SHAPE**

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Summary: *This article is devoted to solving the problem of magnetoelastic geometric nonlinear deformation of anisotropic plates of thin complex shape. In solving the researched problem, computational experiments are performed for plates made of different materials (anisotropic) with different boundary conditions, positive results are obtained and analyzed.*

Key words: *Mathematical model, anisotropic plate, geometric nonlinearity, Hamilton-Ostrogradsky variational principle, calculation algorithm, Bubnov-Galerkin method, R-function method (RFM).*

Nowadays, research work such as the development of various mathematical models and studying the effects of some factors based on the theory of magnetostriction, the theory of electrical conductivity of electromagnetic fields in the field of engineering, in particular, the theory of the interdependence of two or more physical fields is developing consistently.

Optimizing modern constructions and carrying out work such as calculation and design requires that these elements be durable and reliable in operation for a long time, and this, in turn, presents researchers with the problem of automating all classification issues. Problems of this type differ not only in physical parameters, but also in the constructive form of the field under study. Therefore, one of the most important tasks is to study the processes of geometric nonlinear deformation, taking into account the anisotropic properties of plates with a complex structural shape under the influence of an electromagnetic field.

Several scientists in solving a system of equations expressing the magnetoelasticity of a thin plate of complex constructive form, building a discrete model relatively to phase variables and developing computational algorithms: S.A.Ambartsumyan, G.E.Bagdasaryan, V.L.Rvachev, L.V.Kurpa, L.V.Molchenko, I.T.Selezov, M.R.Korotkina, H.A.Rakhmatulin, V.K.Kabulov, Sh.A.Nazirov, T.Yuldashev, R.Indiaminov, F.M.Nuraliev conducted the scientific research works [1-6].

Mathematical model of magneto elastic thin plate.

Based on the Hamilton-Ostrogradsky variational principle, a mathematical model in the form of a system of special derivative differential equations with initial and boundary conditions for the displacement of a thin anisotropic plate in an electromagnetic field is developed using the Cauchy relationship, Hooke's law, and Maxwell's electromagnetic tensor [1, 9-11].

A thin anisotropic plate of flexible thickness h placed in an electromagnetic field is made of conductive material, and electromagnetic forces are given in advance. External current and charges are assumed to be absent [1-5]. The plate is located in the Cartesian coordinate system x, y, z so that x, y overlaps with the middle plane.

An overview of the Hamilton-Ostrogradsky variational principle [1, 9-11]:

$$\int_t (\delta K - \delta \Pi + \delta A) dt = 0; \quad (1)$$

Here: δ – variation derivative; K – kinetic energy; Π – potential energy; A – external volume and work done by surface forces.

Based on the Hamilton-Ostrogradsky variational principle (1) above, we calculate the change of kinetic and potential energy and the work done by external forces. As a result, a geometrical nonlinear mathematical model with initial and boundary conditions for anisotropic flexible thin plates located in the following (2) - (4) electromagnetic field is formed [10]:

$$\left\{ \begin{array}{l} -\rho h \frac{\partial^2 u}{\partial t^2} + \frac{\partial N_{11}}{\partial x} + \frac{1}{2} \frac{\partial N_{12}}{\partial y} + N_x + R_x + q_x + T_{zx} = 0, \\ -\rho h \frac{\partial^2 v}{\partial t^2} + \frac{1}{2} \frac{\partial N_{12}}{\partial x} + \frac{\partial N_{22}}{\partial y} + N_y + R_y + q_y + T_{zy} = 0, \\ -\rho h \frac{\partial^2 w}{\partial t^2} + \frac{\partial}{\partial x} \left(N_{11} \frac{\partial w}{\partial x} + \frac{1}{2} N_{12} \frac{\partial w}{\partial y} \right) + \frac{\partial}{\partial y} \left(\frac{1}{2} N_{12} \frac{\partial w}{\partial x} + N_{22} \frac{\partial w}{\partial y} \right) + \\ + \frac{\partial^2 M_{11}}{\partial x^2} + \frac{\partial^2 M_{12}}{\partial x \partial y} + \frac{\partial^2 M_{22}}{\partial y^2} + N_z + R_z + q_z + T_{zz} = 0, \end{array} \right. \quad (2)$$

Initial conditions:

$$\rho h \frac{\partial u}{\partial t} \delta u \Big|_t = 0, \rho h \frac{\partial v}{\partial t} \delta v \Big|_t = 0, \rho h \frac{\partial w}{\partial t} \delta w \Big|_t = 0, \rho \frac{h^3}{12} \frac{\partial^2 w}{\partial t \partial x} \delta w \Big|_{x|_t} = 0, \rho \frac{h^3}{12} \frac{\partial^2 w}{\partial t \partial y} \delta w \Big|_{y|_t} = 0; \quad (3)$$

Boundary conditions:

$$\left\{ \begin{array}{l} N_{11} \delta u \Big|_x = 0, \frac{1}{2} N_{12} \delta v \Big|_x = 0, -M_{11} \delta \frac{\partial w}{\partial x} \Big|_x = 0, -\frac{1}{2} M_{12} \delta \frac{\partial w}{\partial y} \Big|_x = 0, \\ \left[N_{11} \frac{\partial w}{\partial x} + \frac{1}{2} N_{12} \frac{\partial w}{\partial y} - \frac{\partial M_{11}}{\partial x} - \frac{1}{2} \frac{\partial M_{12}}{\partial y} \right] \delta w \Big|_x = 0, \\ \left[(N_{Px} + N_{Txx}) \delta u + (N_{Py} + N_{Txy}) \delta v + (N_{Pz} + N_{Txz}) \delta w \right] \Big|_x = 0, \\ N_{22} \delta v \Big|_y = 0, \frac{1}{2} N_{12} \delta u \Big|_y = 0, -M_{22} \delta \frac{\partial w}{\partial y} \Big|_y = 0, -\frac{1}{2} M_{12} \delta \frac{\partial w}{\partial x} \Big|_y = 0, \\ \left[N_{22} \frac{\partial w}{\partial y} + \frac{1}{2} N_{12} \frac{\partial w}{\partial x} - \frac{\partial M_{22}}{\partial y} - \frac{1}{2} \frac{\partial M_{12}}{\partial x} \right] \delta w \Big|_y = 0, \\ \left[(N_{Fy} + N_{Tyx}) \delta u + (N_{Fx} + N_{Tyy}) \delta v + (N_{Fz} + N_{Tyx}) \delta w \right] \Big|_y = 0. \end{array} \right. \quad (4)$$

Here: u, v, w – displacements; ρ – the density of the plate material; h – plate thickness;

M_{11}, M_{22}, M_{12} - bending and twisting moments; N_{11}, N_{22}, N_{12} - normal and impact forces;

$N_x, N_y, N_z, R_x, R_y, R_z$ – volume forces organizers; $T_{zx}, T_{zy}, T_{zz}, q_x, q_y, q_z$ – organizers of t-surface forces;

$N_{Px}, N_{Py}, N_{Pz}, N_{Fx}, N_{Fy}, N_{Fz}, N_{Txx}, N_{Txy}, N_{Txz}, N_{Tyx}, N_{Tyy}, N_{Tyz}$ – the organizers of the contour forces.

Taking into account the anisotropic materiality of the plate we are studying, the above moments and forces are determined by the following relations [1, 9-11]:

$$\begin{aligned} N_{11} &= \int_{-h/2}^{h/2} \sigma_{11} dz, N_{22} = \int_{-h/2}^{h/2} \sigma_{22} dz, M_{11} = \int_{-h/2}^{h/2} z \sigma_{11} dz, \\ M_{22} &= \int_{-h/2}^{h/2} z \sigma_{22} dz, N_{12} = \int_{-h/2}^{h/2} \sigma_{12} dz, M_{12} = \int_{-h/2}^{h/2} z \sigma_{12} dz. \end{aligned} \quad (5)$$

Here:

$$\begin{aligned} \sigma_{11} &= B_{11}e_{11} + B_{12}e_{22} + B_{16}e_{12}, \\ \sigma_{22} &= B_{12}e_{11} + B_{22}e_{22} + B_{26}e_{12}, \\ \sigma_{12} &= B_{16}e_{11} + B_{26}e_{22} + B_{66}e_{12}. \end{aligned} \quad (6)$$

In this case, e_{11}, e_{12}, e_{22} – the components of the deformation tensor; $\sigma_{11}, \sigma_{12}, \sigma_{22}$ – voltage tensor components; B_{ij} ($i, j = 1, 2, 6$) – elastic constants of plate material [2,3].

Now we determine (5) and add (2) - (4) and as a result we get a geometric nonlinear mathematical model of the problem of vibration of thin anisotropic plates located in an electromagnetic field [10-11].

This problem was solved under the appropriate boundary conditions, with the boundaries of the investigated thin complex-shaped plate tightly fixed [6-8,12].

Computational algorithm of numerical solution of the problem.

In order to numerically solve the problems (2) - (4) presented above, a computational algorithm was developed that uses the analytical R-function method (RFM), the Newmark method, the variational Bubnov-Galerkin method, and a number of numerical methods for magneto-elastic plates with a complex structural shape. [4-5, 7, 9-10]. The problem-solving process consists of the following steps:

1. Application of the linearization method in solving systems of differential equations with nonlinear partial derivatives.
2. Construction of a sequence of coordinate functions corresponding to the given boundary conditions (structures of solutions) using V.L. Rvachev's R-function method (RFM).
3. Discretization with respect to spatial variables, discrete equations, that is, construction of discrete equations using the Newmark method and the Bubnov-Galerkin variational method.
4. Solving discrete equations and finding unknown components of structures of solutions.
5. Identify unknown functions. Determination of tangential and normal displacements of the middle surface of the plate.

When solving the problem using iterative numerical methods based on the above steps, the functions $u_i(x, y, t), v_i(x, y, t)$ and $w_i(x, y, t)$ are determined for each iteration.

The iteration step continues until condition $\max \{|u_i - u_{i-1}|, |v_i - v_{i-1}|, |w_i - w_{i-1}|\} \leq \varepsilon$ is met. Here ε – is the fixed precision.

Computational experiments.

As an example, let's consider a plate of complex shape, which is used in the production of transformers and is under the influence of electromagnetic field forces (Figure 1).

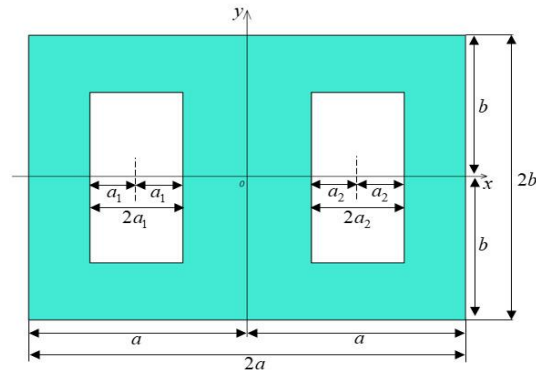


Figure 1. A plate with a complex structural shape.

Now, we study the process of magnetoelastic geometrical nonlinear deformation of thin anisotropic plates of complex shape. Based on the calculation algorithm developed, the problem was solved and the obtained results were analyzed [6-8,12].

Calculation experiment-1. From the results of this calculation experiment, it was found that the influence of the electromagnetic field forces on the bending of the thin anisotropic plate along the Oz axis is 19%. The obtained graphical results are presented (Figure 2).

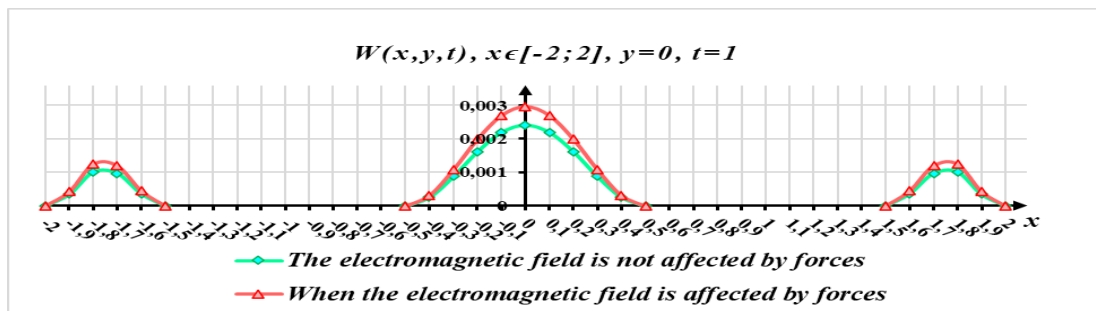


Figure 2. Effect of electromagnetic field forces on an anisotropic plate of thin complex shape.

Calculation experiment-2. The following results were obtained when the thickness of an anisotropic plate with a thin complex shape was $h=0.02$, $h=0.03$, $h=0.04$ and $h=0.05$ (Figure 3).

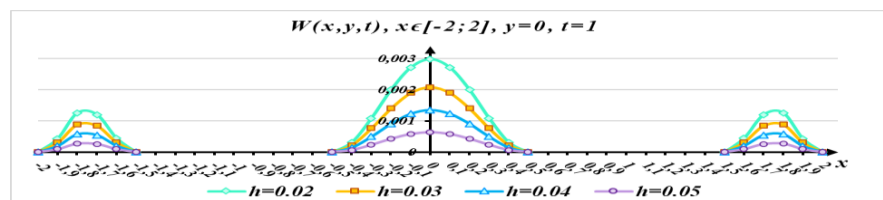


Figure 3. Graphical analysis of plate thickness changes

Calculation experiment-3. Experiments were conducted and results were obtained in different cases of the dimensions of two right-angled rectangles cutting the plate under study (Figure 4).

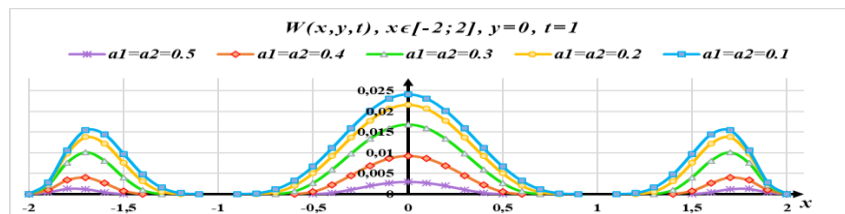


Figure 4. Analysis of changes in the geometric dimensions of the plate

From the results obtained by changing the geometrical parameters of the complex area under investigation in the calculation experiment 2, 3 above, it was found that, as the thickness of the plate increases, the bending decreases. In the second study, it was found that as the dimensions of the two right-angled rectangles intersecting the plate decreased, the bending increased.

Conclusion.

In this article, computational experiments were conducted to study the effect of electromagnetic field forces on the geometric nonlinear deformation process of thin complex-shaped anisotropic plates, and the obtained results were analyzed.

The problem of magnetoelasticity of thin anisotropic plates under the influence of an electromagnetic field under the influence of an electromagnetic field was solved in computational experiments. Graphical representations were provided to analyze the obtained results.

The results of the research show that electromagnetic field forces have a small influence on the deformation process of magnetoelastic anisotropic plates of thin complex shape.

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Rezyume: *Mazkur maqola yupqa murakkab shakldagi anizotrop plastinalarning magnitelastiklik geometrik nochiziqli deformatsiyalanish masalasini yechishga bag'ishlanadi. Tadqiq qilinayotgan*

masalani yechishda turli chegaraviy shartlarda va xar hil materiallardan tayyorlangan (anizotrop) plastinalar uchun hisoblash tajribalari bajarilgan, ijobiy natijalar olingan va tahlil qilingan.

Резюме: Данная статья посвящена решению задачи магнитоупругого геометрического нелинейного деформирования анизотропных пластин тонкой сложной формы. При решении исследуемой задачи проведены вычислительные эксперименты на пластинах из разных материалов (анизотропных) с разными граничными условиями, получены и проанализированы положительные результаты.

Kalit soʻzlar: Matematik model, anizotrop plastina, geometrik nochiziq, Gamilton-Ostrogradskiy variatsion tamoyili, hisoblash algoritmi, Bubnov-Galerkin usuli, R-funksiya usuli (RFM).

Ключевые слова: Математическая модель, анизотропная пластина, геометрическая нелинейность, вариационный принцип Гамильтона-Остроградского, алгоритм расчета, метод Бубнова-Галеркина, метод R-функции (RFM).

REGULARIZATION OF PARABOLIC RADON TRANSFORM

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Summary: *The article considers the solution of the integral geometry problem on a family of parabolas with a given weight function. Such problems arise when modeling medical imaging problems, in particular, in computer and magnetic resonance imaging problems, as well as in the analysis of geological formations.*

Using the regularization method of Tikhonov constructs a sequence of approximate solutions to the exact solution of the problem. A numerical algorithm was constructed using the discrete Fourier transform and a numerical experiment was carried out with a test function. A numerical experiment showed that with an optimal choice of the regularization parameter, the developed algorithm effectively restores the desired solution.

Key words: *integral geometry problem, ill-posed problems, inversion formula.*

Introduction. Integral geometry includes analysis, geometry and numerical mathematics. It has direct applications in partial differential equations, group representations, and the applied mathematical field of tomography. The fundamental problem of integral geometry is to determine the properties of a function in a plane or three-dimensional space or in other manifolds based on knowledge of integrals over lines, planes, hyperplanes, spheres or other submanifolds.

The history of integral geometry begins in the early 1900s with the works of I. Radon, P. Funk, G. Lorentz and many others. In 1917, I. Radon proved the inverse transformation formula for a function, which became known as the classical Radon transformation: if l – a line is in a plane and f – an integrable function, then

$$R_L f(l) = \int_{x \in l} f(x) ds \quad (1)$$

where is ds – the measure of the arc length on a straight line l [1].

At the end of the 1950s, I. Gelfand and M. Graev obtained relations between harmonic analysis on simplex Lie groups and Radon transformations on horizontal spheres, which are transformations of the orbits of maximal unipotent groups [2].

Tomography is one of the most practical and useful applications of integral geometry, and has stimulated excellent research of a pure and applied nature. The most well-known type of tomography is X-ray tomography (X-ray CT), which is the Radon transform defined in equation (1). X-ray tomography was introduced to the wider mathematical community in the late 1970s, partly through the introduction of the following papers [3, 4].

In [5], the problem of recovering a function from a family of parabolas in the upper half-plane with a weight function of a new type was considered. Theorems for the uniqueness and existence of a solution to the problem are proven and an inversion formula is derived. It is shown that the solution to the problem is weakly ill-posed, that is, estimates of stability in spaces of finite smoothness are obtained. The problem of integral geometry with perturbation in the same family was considered in [6].

In [7, 8, 9], problems of integral geometry with a weight function were considered. In these works, the uniqueness of the problem was proved and a formula for handling a sequential approximate solution was obtained, and on the basis of these same formulas the adequacy of these problems was shown.

1. INVERSION FORMULA

Consider the operator equation

$$\int_{\Upsilon(x,y)} g(x, \xi) u(\xi, \eta) d\xi = f(x, y), \quad (2)$$

where an arbitrary family curve is represented by the expression

$$\Upsilon(x, y) = \left\{ (\xi, \eta) : (x - \xi)^2 + \eta = y, 0 \leq \eta \leq y \leq H, -\infty < x < \infty \right\}.$$

Required by $f(x, y)$ find the function from equation (2) $u(x, y)$. In this case, it is desirable, of course, to obtain an analytical formula expressing $u(x, y)$ through $f(x, y)$ that possible only in exceptional cases.

The solution to equation (2) was obtained in [4] and has the following form:

$$\hat{u}(\lambda, y) = \frac{1}{\pi} \frac{\partial}{\partial y} \int_0^y \frac{ch(\lambda \sqrt{y - \eta})}{\sqrt{y - \eta}} \cdot \hat{f}(\lambda, \eta) d\eta. \quad (3)$$

The question of constructing a function from $f(x, y)$ a function $u(x, y)$ in the general case requires the creation of special computational algorithms based on the general theory of ill-posed problems. In this regard, it is advisable to raise the question of constructing an algorithm using Tikhonov regularization to solve equation (3).

Firstly, in formula (2) you can notice that the inverse Fourier transform does not exist, since for a fixed $0 \leq \eta \leq y \leq H$ $ch(\lambda \sqrt{y - \eta})$ tend to infinity at $|\lambda| \rightarrow \infty$.

Secondly, when instead of $f(\lambda, \cdot)$ measured $f^\delta(\lambda, \cdot) = f(\lambda, \cdot) + \delta f(\lambda, \cdot)$, where $\delta f(\lambda, \cdot)$ – the measurement error. The Fourier transform can be written as

$$f^\delta(\lambda, \cdot) = \int_{-\infty}^{+\infty} f(x, \cdot) e^{i\lambda x} dx + \int_{-\infty}^{+\infty} \delta f(x, \cdot) e^{i\lambda x} dx$$

where $\int_{-\infty}^{+\infty} \delta f(x, \cdot) e^{i\lambda x} dx$ is the Fourier transform of the noise, which usually contains a white noise component. Since when $\lambda \rightarrow \infty$

$$\int_{-\infty}^{+\infty} \delta f(x, \cdot) e^{i\lambda x} dx \rightarrow const$$

and the integral $f^\delta(\lambda, \cdot)$ diverges.

If we want to construct approximate solutions for the last equation, stable to small deviations of the right-hand side $f(x, y)$, using the inverse Fourier transform, then we need to suppress the influence of

high frequencies λ . Based on the idea of A.N. Tikhonov on the regularization of ill-posed problems, we will construct a sequence of approximate solutions to the exact solution of problem (1).

An approximate solution for equation (2) in the class of twice continuously differentiable functions of compact support can be written in the following form

$$u_{\alpha}(x, y) = \frac{1}{\pi} \frac{\partial}{\partial y} \int_0^{y+\infty} \int_{-\infty}^{\infty} \frac{L(\lambda) \hat{f}(\lambda, \eta) e^{-i\lambda x}}{L(\lambda) + \alpha^2 (1 + \lambda^2)} \frac{1}{\sqrt{y - \eta}} d\lambda d\eta \quad (4)$$

where is $\alpha > 0$ – the regularization parameter, $L(\lambda) = ch^2(\lambda\sqrt{y - \eta})$.

2. NUMERICAL EXPERIMENT

Let us introduce uniform grids along x, y , $x \in [-a, a], y \in [c, d]$,

$$x_k = -a + kh_x, \quad y_j = c + jh_y, \quad \text{where } h_x = \frac{2a}{n_x}, h_y = \frac{d - c}{n_y}.$$

The discrete Fourier transform for a function $f(x_i, \cdot)$ is determined by the formula

$$\hat{f}(\lambda_m, \cdot) = \sum_{k=0}^{n_x-1} f(x_k, \cdot) e^{i\lambda_m x_k} = \sum_{k=0}^{n_x-1} f(x_k, \cdot) e^{i2\pi km/n_x}, \quad m = 0, 1, \dots, n_x - 1$$

where $\lambda_m = m\Delta\lambda$, $\Delta\lambda = \frac{2\pi}{T}$.

Inverse discrete Fourier transform

$$f(x_k, \cdot) = \sum_{m=0}^{n_x-1} \hat{f}(\lambda_m, \cdot) e^{-i2\pi km/n_x}, \quad k = 0, 1, \dots, n_x - 1$$

Taking into account the above, we rewrite the inversion formula in the following form

$$u_{\alpha}(x_k, y_j) = \frac{1}{\pi} \frac{\partial}{\partial y} \int_0^{y_j} \frac{F(x_k, y_j, \eta) d\eta}{\sqrt{y_j - \eta}} \quad (5)$$

$$\text{where } F(x_k, y_j, \eta) = \int_{-a}^{+a} \frac{ch^2(\lambda\sqrt{y_j - \eta}) \hat{f}(\lambda, \eta) e^{-i\lambda x_k}}{ch^2(\lambda\sqrt{y_j - \eta}) + \alpha^2 (1 + \lambda^2)} d\lambda$$

After calculating the values of the functions, $F(x_k, y_j, \eta)$ we calculate integral (5) using non-standard quadrature formulas that explicitly take into account the nature of the singularity.

The regularization parameter α is found according to the following scheme [10]. For a number of values α_r , $r = 1, 2, \dots$ we calculate

$$\sigma(\alpha) = \frac{\|u(x, y) - u_{\alpha}(x, y)\|_{L_2}}{\|u(x, y)\|_{L_2}} \quad (6)$$

We choose α_{opt} the one that minimizes ratio (6).

We use the following function as a test example

$$u(x, y) = \frac{e^{-y-0.5}}{1+x^2}$$

Let's calculate the required values using formula (5) in a rectangle $x \in [-1; 1], y \in [0; 0.5]$.

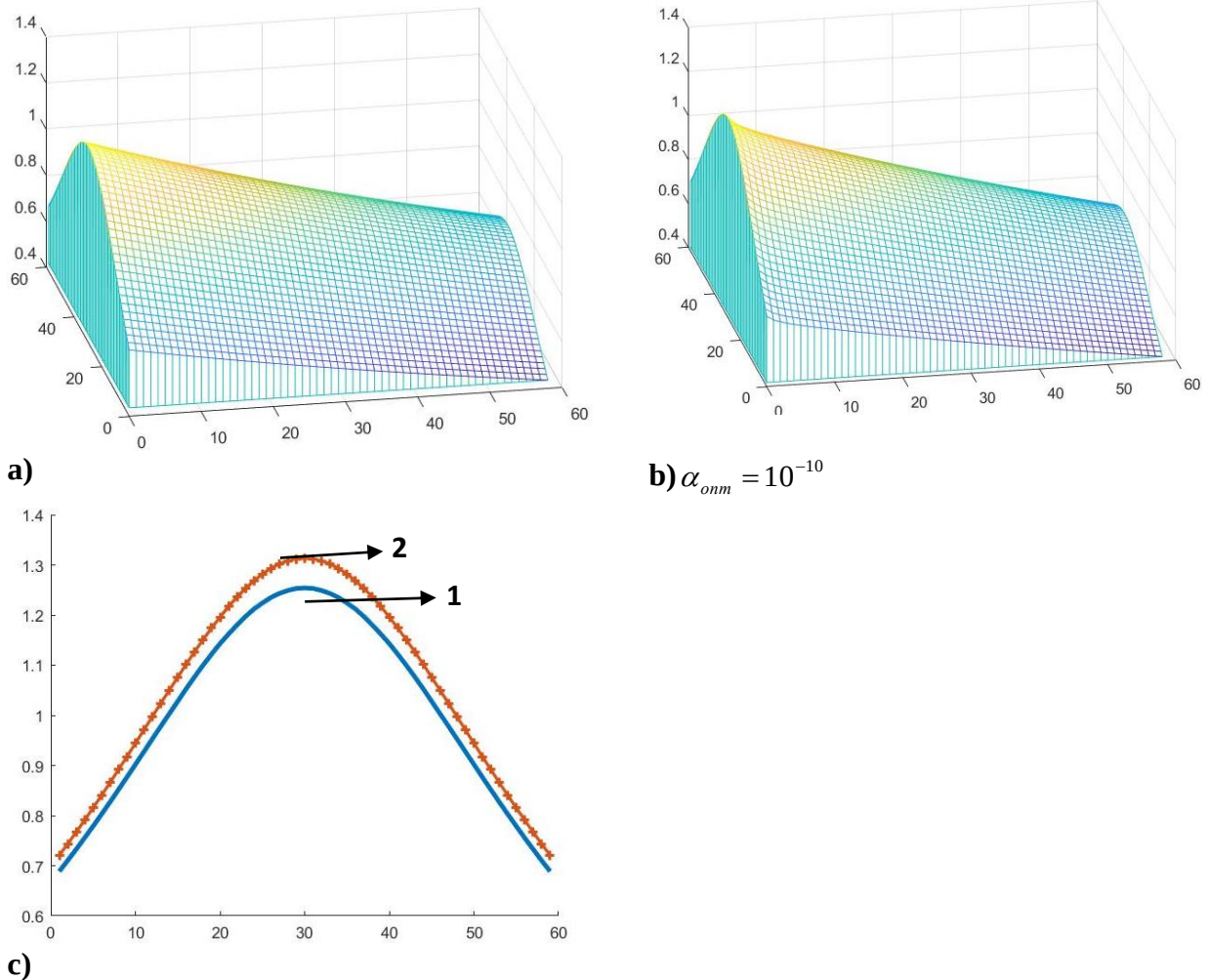


Fig.1. Results of restoring the test function a) original function, b) result of restoration at $n_x = 64$ $n_y = 64$, c) 1-exact solution 2-recovered solution

Fig.1 shows the results of a numerical experiment when the right-hand side in equation (2) is specified exactly. From Fig.1b it is clear that when $\alpha_{omni} = 10^{-10}$ the developed algorithm based on Tikhonov's regularization restores the desired function with a relative error $\sigma(\alpha_{opt}) = 0.0179$.

Let instead of $f(x, y)$ from equation (1) we have $f^\delta(x, \cdot) = f(x, \cdot)(1 + \theta_i \cdot \delta)$, where θ_i are random numbers from the range $-1 \leq \theta_i \leq 1$. In Fig. 2 we present the results of restoration for $\delta = 0.01$ and $\delta = 0.05$.

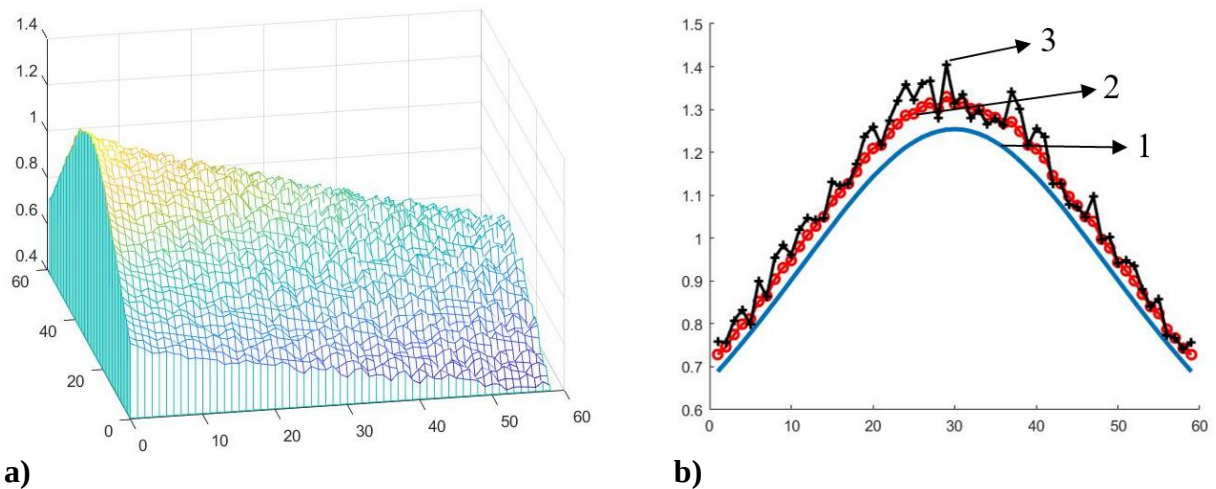


Fig.2. Reconstruction from the approximate right-hand side a) recovery when $\alpha_{opt} = 10^{-10}$, b) 1-exact solution 2-recovery when $\delta = 0.01$ 3-recovery solution when $\delta = 0.05$

Fig.2a shows the reconstructed solution when $\delta = 0.01$. Figure 2b shows cross sections of the reconstructed function. When the noise 1% is an approximate solution, it can be restored with a minimum relative error. But when noise 5% cannot be restored to an approximate solution due to the influence of high frequencies.

Conclusion. This study considered the development of an approximate solution for the problem of integral geometry in a strip, on a family of parabolic type curves. A formula is obtained for the Fourier transform of the solution to this problem of integral geometry in the class of smooth bounded functions. Using the concept of regularization of ill-posed problems, a sequence of approximate solutions tending to an exact solution of the problem is developed. As part of the study, numerical experiments were carried out with precisely and approximately determined integral data. The results of numerical experiments confirmed the effectiveness of the developed algorithm for accurate restoration of test functions in the case of exactly or approximately specified integral data. This approach can be successfully applied in problems of reconstructing the internal structures of objects based on integral data.

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Rezyume: Ushbu maqolada berilgan vazn funktsiyasi bilan integral geometriya masalasini yechish qaraladi. Bu turdagi masalalar tibbiyotda, shuning bilan birga kompyuter tomografiyasi masalasin, geologiya masalalarini modellashtirishda qaraladi.

Masala kuchli nokorrekt masalalar tipiga kirishi ko'rsatilgan va Tixonov regularizatsiyasi yordamida aniq yechimga yaqin taqribiy yechim olingan.

Diskret Fure almashtirishi asosida masalani echish algoritmi qurilgan va test funktsiyasi bilan sonli tajribalar o'tkazilgan. Sonli tajriba natijasi optimal regularizatsiya parametri tog'ri tanlab olinganda masala echimini effektiv tiklashi ko'rsatilgan.

Резюме: В статье рассматривается решение задачи интегральной геометрии на семействе парабол с заданной весовой функцией. Подобные проблемы возникают при моделировании задач медицинской визуализации, в частности, в задачах компьютерной томографии, а также при анализе геологических образований.

В работе с помощью метода регуляризации Тихонова строится последовательность приближенных решений точного решения задачи. Построен численный алгоритм с использованием дискретного преобразования Фурье и проведен численный эксперимент с тестовой функцией. Численный эксперимент показал, что при оптимальном выборе параметра регуляризации разработанный алгоритм эффективно восстанавливает искомое решение.

Kalit so'zlar: integral geometriya masalasi, nokorrekt masalalar, tiklash formulasi.

Ключевые слова: задача интегральной геометрии, некорректные задачи, формула обращения.

AGGREGATES BASED ON WASTE GLASS PRODUCTS FOR THE PRODUCTION OF CONSTRUCTION MATERIALS

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Summary: *The problem of the shortage of natural raw materials for the production of construction materials has not lost its relevance in recent years. This is due to the rapidly developing pace of construction. In this regard, the task of the construction industry is to reorient enterprises towards the consumption of man-made raw materials. In terms of its structure and physicochemical properties, cullet is a mineral resource of anthropogenic origin. The amount of unused cullet in some regions of our country reaches 100%. While the recycling of this type of raw material will provide a significant economic and environmental effect. The study showed that the technology for producing building materials based on cullet is quite simple and does not require special equipment or large material investments. After preliminary purification and separation into fractions, the raw material (cullet) can be used to produce a wide range of composite materials.*

Key words: *concrete, glass cullet, composite materials, strength, Portland cement, aggregate, sand.*

Introduction. In recent years, new technologies have been developed for the production of concrete, which has been and remains the most important material in construction. Advanced concrete production technologies are based on the study of chemical processes occurring in cement stone. For this purpose, complex modified additives of a new generation, advanced methods for selecting, developing and optimizing the composition of concrete are used. Mineral additives have long become an essential component in any construction concrete. They are introduced in fairly large quantities and, in comparison with other types of additives, have the most widespread effect on the structure and properties of concrete.

In many countries, glass processing is a profitable business that is actively developing. However, in our Republic this activity is most likely perceived as exotic. This is primarily due to the fact that in our country the sorting of municipal household waste among the population has not been established. Work on collecting and sorting urban household waste began just a few years ago (5-6 years). But not all regions of Uzbekistan have waste processing complexes. In this regard, cullet, which is purchased at a favorable price from enterprises working with glass, is the most convenient type of raw material. It does not require lengthy sorting and processing and is ready for processing almost immediately. The most popular type of products made from cullet are foam materials. They are widely used for construction, as well as the production of building materials.

The most common method for recycling mineral waste in Uzbekistan is its burial. From an economic and environmental point of view, such a practice not only damages soils, groundwater, litters areas during the disposal of solid household waste, but is also lost without the possibility of restoring natural resources that were once extracted and processed into materials and products. To reduce waste and losses of raw materials and materials at all stages of their processing, storage and transportation and their more complete use in the production of secondary resources and by-products, it is necessary to create and implement low-waste and non-waste technologies, to improve the quality management of raw materials and finished products. Issues of environmental safety and waste recycling are relevant for all industries. Using cullet from this point of view is an excellent way to solve the problem of its disposal.

The most common method of recycling cullet is concrete manufacturing technology [1-3]. The work aimed at using glass waste is based on the theoretical proposition that glass in a finely dispersed state at elevated temperatures in an alkaline environment has astringent properties and is capable of

forming a durable building material as a result of solidification of the solid phase. After sorting, crushing, grinding and scattering into fractions, glass can be considered fully prepared for the production of building materials.

When cullet is introduced into concrete as a filler, it causes the interaction of amorphous silica, which is part of the glass, with cement alkalis. In works [1-4], the conditions for the development and alkali-silicate interaction in concrete were analyzed and it was found that the result of the interaction of cement material with cullet filler is influenced by the degree of glass dispersion, the use of amorphous silica as an active dispersed hydraulic additive, chemical modification of glass, consisting in the removal of Na⁺ ions from the surface in the process of ion-exchange modification of the surface.

The authors [1-3, 6] experimentally established that the size of destruction and, as a consequence, a decrease in the strength of the cement matrix, depends on the degree of dispersion of the introduced cullet. Thus, in [4] it is shown that glass with a particle size of 1-4 mm, when introduced into a concrete matrix, causes an expansion of samples of more than 0.2%, which is 5 times higher than the permissible values. It was established in [3] that it is advisable to use cullet of the 1.25-5 mm fraction in concrete as fillers. In this case, the strength of concrete composites will significantly exceed the strength of concrete, for example, with sand aggregate. An increase in the strength of concrete can be achieved by surface crystallization of coarse aggregate (fraction size more than 1 mm) at a temperature of 700-720°C, in the presence of crystallization centers, such as quartz glass powder. In this case, the expansion of the samples, leading to loss of strength, is reduced by 2-7 times compared to samples obtained with unmodified filler.

Cullet is broken glass that is formed during the production and use of glass products and sheet glass. Cullet - extracted from solid household waste, contains inorganic refractory impurities (corundum, mullite, quartz, porcelain, etc.), impurities of magnetic and non-magnetic metals (tin cans, metal stoppers, rings, etc.), as well as organic impurities (paper, cardboard, plastic). Therefore, cullet recovered from municipal waste and intended for recycling must be processed in such a way that the quality of the glass does not change during its use. From the point of view of efficiency and quality of selection of secondary resources, in particular cullet, it is preferable to sort municipal solid waste at the sources of their formation. It should be noted that from an environmental point of view, glass is difficult to recycle waste. This is a corrosion-resistant material that is not destroyed by water, frost, strong and weak organic and mineral acids, salts, and bacteria. Glass can be preserved without damage for hundreds of years. The cullet preparation scheme includes: glass collection, crushing, cleaning from foreign impurities, grinding. After sorting, crushing and sieving into fractions, glass can be used in concrete as coarse and fine aggregate, and finely ground powder as a binder.

Materials and methods. Cullet in a finely dispersed state is an autoclave-hardening hydraulic binder, but under natural conditions and when steamed it does not exhibit astringent properties. Therefore, various types of glass waste are used as a binder in cementless concrete. Ground glass reacts with cement hydrates, resulting in an improved chemical composition of the cement. The cement becomes stronger and more durable and does not absorb water as quickly as regular cement. The activity of cullet binder is influenced by its chemical composition, grinding fineness, water-binder ratio and autoclave processing parameters. As the grinding fineness of the binder increases, its specific surface area increases, resulting in an increase in its solubility and the number of points of contact between the particles of cullet and filler. This is associated with an increase in the strength of glass concrete.

Concrete reinforced with special fiberglass is called glass concrete or glass fiber reinforced concrete, this versatile building material is truly remarkable and unique. The technology for producing such concrete was developed more than 50 years ago in 1969. Glass concrete is a common name for a whole family of similar materials, which are increasingly used today in a variety of areas of

construction. Fiberglass concrete has made enormous contributions to the world of construction and has made the global construction industry more versatile, aesthetic and unique. Glass concrete is an efficient composite material characterized by excellent construction characteristics and, at the same time, it does not require significant energy costs for its production. This type of concrete consists of natural, environmentally friendly components and is produced today in a wide variety of construction products.

Results and discussion. Our research is aimed at substantiating the possibility of using cullet as a concrete filler, studying the physical and mechanical properties of the resulting concrete and identifying areas of its application when performing construction and installation work.

For experimental studies, additive-free Portland cement grade 400 from the Karakalpakcement LLC plant was used as a binder; crushed sand from granite crushed stone, as well as waste from the Karakalpaksteklotara LLC glass plant, were used as a fine aggregate.

Optimal concrete compositions were investigated and selected. The mobility of concrete mixtures varied from 4 to 8 cm. Optimal concrete compositions are determined by calculation and experimental methods: designing the concrete composition based on initial data using formulas, graphs and tables; clarification of concrete composition using trial batches; determination of the actual consumption of constituent materials per 1 m³ of concrete, based on the consumption of materials for the optimal test batch and the volume of this batch, experimentally calculated to determine the average density of the concrete mixture. Finally, the composition of concrete is expressed as the consumption of materials per 1 m³ of concrete or in parts by mass or volume relative to cement (W/C is always expressed by mass).

The work used various methods for studying materials and concrete in accordance with the requirements of State Standards. Studies of the quality of sand, crushed stone and glass cullet as concrete fillers were carried out in accordance with GOST 8735-88 "Sand for construction work. Test methods", GOST 8736-2014 "Sand for construction work. Technical conditions", GOST 8269.0-97 "Crushed stone and gravel from dense rocks and industrial waste for construction work. Methods of physical and mechanical tests", GOST 8267-93 "Crushed stone and gravel from dense rocks for construction work. Technical conditions". The selection of the composition and study of the properties of the concrete mixture were carried out in accordance with GOST 27006-86. "Concrete. Rules for selecting 6 compositions" and GOST 7473-2010 "Concrete mixtures. Technical conditions" and GOST 10181-2014 "Concrete mixtures. Test methods".

The physical and mechanical properties of concrete were determined on cube samples measuring 10x10x10 cm on a hydraulic press with a load mass of 125 and 250 tons. Before strength testing, concrete samples were measured and weighed with an error of no more than 1%. The strength characteristics of concrete samples were determined in accordance with the requirements of GOST 10180-2012 "Concrete. Methods for determining strength using control samples." To study the effect of broken glass on the strength characteristics of cement stone, several batches of concrete samples measuring 10x10x10 cm were made and kept for 3, 7 and 28 days under normal hardening conditions.

To study the effect of cullet of various sizes on the properties of concrete, the third batch of concrete samples was made. In this batch of concrete samples, crushed granite stone of a fraction of 5-10 mm was used as a filler, and crushed granite sand and broken glass of fractions of 2.5-5 and 5-10 mm were used as a fine aggregate. Cullet was introduced into the plastic concrete mixture in an amount of 50% by weight of fine aggregate, replacing crushed sand with a given amount of cullet. The composition of the concrete mixture is presented in Table 1.

Table 1. Composition of the concrete mixture

Batch number	1	2	3
Cullet fraction size, mm	5-10	2.5-5	0.5-1
Unit of measurement kg/m ³			

Non-additive cement	586	585	571
Crushed sand	419	418	408
Broken glass, mm	419	418	408
Crushed granite fractions 10-20 mm	628	627	612
Water	293	292	286
Water-cement ratio, %	0.5	0.5	0.5
Average density, kg/m ³	2345	2339	2286

When using cullet of a fraction of 5-10 mm as a fine aggregate, a fairly mobile mixture is obtained with little water separation. This is due to an increase in the proportion of aggregate with a large fraction size, which results in a decrease in water absorption. With a decrease in the size of the cullet dispersion fractions, an increase in the rigidity of the concrete mixture is observed due to the formation of van der Waals forces.

Cement grade 400 was used as the main binder for the manufacture of concrete samples. The results of tests of concrete samples kept for 7 and 28 days under normal hardening conditions for compressive strength are presented in Table. 2.

Table 2. Results of concrete strength tests

Sample age	Compressive Strength (MPa)		
	Cullet fraction size, mm		
	0.5-1	2.5-5	5-10
7 days	40.8	29.5	39.0
28 days	51.2	47.7	46.0

From the test results it is clear that the greatest result in terms of compressive strength and at 7 and 28 days of hardening was shown by concrete samples using cullet with a grain size of 0.5 to 1 mm, the lowest result - with a cullet grain size of less than 5 mm. Consequently, it is possible to use cullet of large fractions, preferably above 1.25 cm, as a filler in concrete, and the strength of these concretes is comparable to the strength of conventional crushed sand concrete. Comparing the test results (Tables 1 and 2), we can say that the strength of conventional concrete using natural and crushed sand exceeds the strength of concrete using cullet with a particle size of 0.5-1.0 mm. When the particle size of cullet with a grain size of less than 0.5 mm occurs, a sharp decrease in the strength of concrete occurs. This decrease in strength can be explained by the high specific surface area of the aggregate grains, which leads to a sharp decrease in the adhesion of glass grains to cement stone.

Conclusion. Thus, an analysis of literary sources has shown that currently cullet is a valuable secondary resource that allows reducing the costs of using scarce and expensive raw materials in the production of a wide range of building materials. The paper presents the results of studies of the properties and technical characteristics of materials obtained using cullet of various chemical and dispersed compositions.

It has been established that when replacing fine natural aggregate with cullet, as a result of the lack of adhesion between glass grains and cement stone, the strength of concrete decreases. When the amount of cullet in fine natural sand is 30%, the strength of concrete at the age of 28 days decreases by 9%. When crushed sand from durable granite is used as a fine aggregate, replacing 15% of sand with glass cullet does not affect the strength of concrete. And only when the content of cullet in the sand is more than 30%, it leads to a gradual decrease in the strength of concrete. When crushed sand was completely replaced with glass cullet, a clear maximum reduction in strength was revealed concrete (by 11.2% compared to the strength of concrete made only on crushed sand).

It has been revealed that it is possible to use glass cullet of large fractions, preferably above 1.25 cm, as a filler in concrete, and the strength of these concretes is comparable to the strength of conventional crushed sand concrete. Also, the strength of conventional concrete using natural and crushed sand exceeds

the strength of concrete using cullet with a particle size of 0.5-1.0 mm. When the particle size of cullet with a grain size of less than 0.315 mm occurs, a sharp decrease in the strength of concrete occurs. This decrease in strength can be explained by the high specific surface area of the aggregate grains, which leads to a sharp decrease in the adhesion of glass grains to cement stone.

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Rezyume: *Qurilish materiallari ishlab chiqarish uchun tabiiy xomashyo taqchilligi muammosi keyingi yillarda ham o'z dolzarbligini yo'qotmagan. Bu qurilishning jadal rivojlanayotgani bilan bog'liq. Shu munosabat bilan qurilish industriyasining vazifasi korxonalarni texnogen xom ashyoni iste'mol qilishga yo'naltirishdir. Tuzilishi va fizik-kimyoviy xususiyatlariga ko'ra kullet antropogen kelib chiqadigan mineral resurs hisoblanadi. Mamlakatimizning ayrim hududlarida foydalanilmagan kullet miqdori 100% ga etadi. Shu bilan birga, ushbu turdagi xom ashyoni qayta ishlash sezilarli iqtisodiy va ekologik ta'sir ko'rsatadi. Tadqiqot shuni ko'rsatdiki, kullet asosida qurilish materiallarini ishlab chiqarish texnologiyasi juda oddiy va maxsus uskunalar yoki katta moddiy investitsiyalar talab qilmaydi. Dastlabki tozalash va fraksiyalarga ajratilgandan so'ng, xom ashyo (kullet) keng turdagi kompozitsion materiallarni ishlab chiqarish uchun ishlatilishi mumkin.*

Резюме: *Проблема дефицита природного сырья для производства строительных материалов не теряет своей актуальности в последние годы. Это связано с бурно развивающимися темпами строительства. В связи с этим задачей строительной отрасли является переориентация предприятий на потребление техногенного сырья. По своей структуре и физико-химическим свойствам стеклобой является минеральным ресурсом антропогенного происхождения. Количество неиспользованного стеклобоя в некоторых регионах нашей страны достигает 100%. При этом переработка этого вида сырья даст значительный экономический и экологический эффект. Исследование показало, что технология производства строительных материалов на основе стеклобоя достаточно проста и не требует специального оборудования и больших материальных вложений. После предварительной очистки и разделения на фракции сырье (стеклобой) может быть использовано для производства широкого спектра композиционных материалов.*

Kalit so'zlar: beton, shisha kullet, kompozit materiallar, mustahkamlik, portlend tsement, agregat, qum.

Ключевые слова: бетон, стеклобой, композиционные материалы, прочность, портландцемент, заполнитель, песок.

FEATURE EXTRACTION ALGORITHM FOR VOICE COMMAND RECOGNITION SYSTEM

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Summary: *This article discusses a feature extraction algorithm for a voice command recognition system. At the same time, experimental research work was carried out on the recognition of voice commands in the Karkalpak language.*

Key words: *Voice signal, feature extraction, mfcc, hemming, FFT.*

The human voice is a remarkable and intricate tool of communication, capable of conveying a wealth of information through spoken words, tones, rhythms, and emotions. Voice signal processing has emerged as a fascinating field of study, focusing on extracting valuable insights from speech signals for a wide range of applications. At the core of this process lies voice signal feature extraction, a fundamental technique that enables the transformation of raw voice signals into meaningful and compact representations [1].

Voice signal feature extraction plays a pivotal role in numerous domains, including automatic speech recognition, speaker identification, emotion recognition, speech synthesis, and more. By distilling the complex characteristics of speech into informative features, researchers and practitioners can unlock the potential of voice signals, unraveling patterns, and uncovering hidden insights.

Human voice signal. A voice signal refers to the acoustic signal produced by the human vocal tract during speech or vocalization. It is the audible representation of human vocal communication. When we speak or make sounds, the vocal cords in our larynx vibrate, creating a source signal. This source signal is then filtered by the resonances of the vocal tract, including the throat, mouth, and nasal cavity, resulting in a specific frequency response and shaping the sound into recognizable speech [1, 6].

Voice signals are characterized by their waveform, spectral content, and temporal variations. The waveform represents the amplitude of the signal over time, and it varies based on the specific speech sounds being produced. The spectral content of a voice signal refers to the distribution of energy across different frequency components. Different speech sounds have distinct spectral characteristics, which can be analyzed to extract information about the phonemes, words, or other linguistic units being spoken.

Voice signals can be captured and recorded using various devices, such as microphones, and processed for different applications. In speech processing, voice signals are often analyzed and manipulated to perform tasks like automatic speech recognition, speaker recognition, speech synthesis, and emotion detection. Techniques like Fourier analysis, cepstral analysis, and linear predictive coding are commonly used for voice signal analysis and feature extraction.

A voice command recognition system typically consists of several components that work together to recognize and interpret spoken commands [2]. The structure of such a system can be divided into the following key components. The structure of this system is shown in Figure 1.

Audio Input: The system starts by capturing audio input from a microphone or any other audio source. The audio signal is then processed for further analysis.

Pre-processing: The captured audio signal undergoes pre-processing techniques to remove background noise, normalize the volume, and enhance the quality of the audio. This step ensures that the input is clean and suitable for analysis.

Feature Extraction: In this step, relevant features are extracted from the pre-processed audio signal. Commonly used features include Mel Frequency Cepstral Coefficients (MFCCs), which represent the spectral characteristics of the voice signal.

Acoustic Model: The extracted features are then used to train or build an acoustic model. This model represents the statistical relationship between the input audio features and the corresponding phonemes or words. It is typically built using machine learning algorithms like Hidden Markov Models (HMMs) or Deep Neural Networks (DNNs).

Command Recognition: The acoustic model and language model work together to recognize and interpret the spoken commands. The acoustic model calculates the probability of the observed audio features given a set of possible words, while the language model calculates the probability of a sequence of words given their context. These probabilities are combined to determine the most likely command or set of commands.

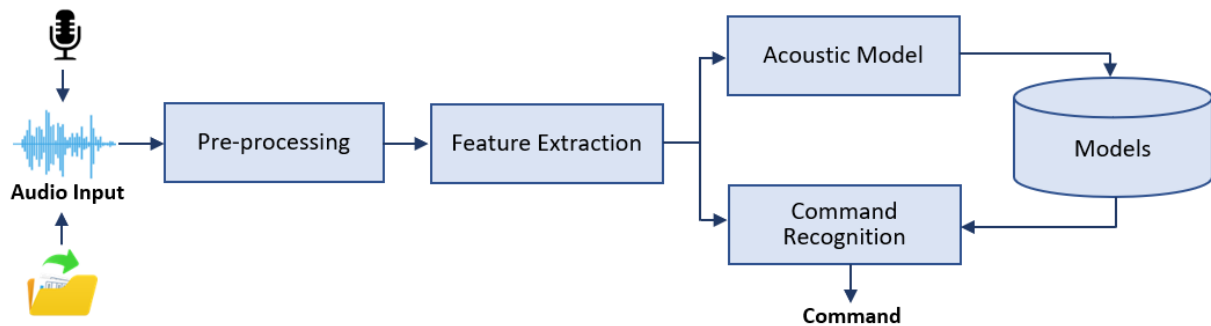


Figure 1: The structure of the voice command recognition system.

It's important to note that the specific implementation and algorithms used in a voice command recognition system can vary depending on the technology and application. However, the general structure outlined above provides a high-level overview of how such systems are typically designed.

Feature extraction is a crucial step in voice command recognition systems. It involves extracting relevant features from the pre-processed audio signal that can be used to train or build an acoustic model. Other features that may be extracted include pitch, formants, and various statistical measures such as mean and variance of the signal. These features provide information about the fundamental frequency, vocal tract shape, and other characteristics of the voice. The choice of features depends on the specific requirements and constraints of the application. Different feature extraction techniques may be used for different tasks, such as speaker identification, speech recognition, or emotion detection.

Once the features are extracted, they are typically used as input to train or build an acoustic model. This model represents the statistical relationship between the input audio features and the corresponding phonemes or words, enabling the system to recognize and interpret spoken commands accurately. When it comes to voice command recognition, feature extraction algorithms play a crucial role in capturing relevant information from the audio signals.

Mel-Frequency Cepstral Coefficients (MFCC)

MFCC stands for Mel-Frequency Cepstral Coefficients, which is a widely used algorithm for feature extraction in speech and audio signal processing. MFCC is particularly effective in capturing the spectral characteristics of the human voice and has been successfully applied in many applications, including automatic speech recognition (ASR) and speaker recognition.

Here is an overview of the steps involved in the MFCC algorithm:

1. Pre-emphasis: The first step is to apply pre-emphasis to the audio signal. Pre-emphasis [3] emphasizes the higher frequencies by boosting the high-frequency components and reducing the low-frequency components. This step helps to improve the stability of the subsequent steps. This action is performed by the following expression:

$$\tilde{x}[n] = x[n] - \alpha x[n-1]$$

where $\alpha \in (0, 1)$. the most common range for α is 0.95 to 0.97.

2. Framing: The pre-emphasized signal is divided into small frames of typically 20-40 milliseconds. Each frame is usually overlapped with the adjacent frames to ensure a smooth transition between them.

3. Windowing: A windowing function, such as the Hamming window [4], is applied to each frame to reduce spectral leakage caused by the sudden cutoff at the edges of the frame. Windowing tapers the signal smoothly to zero at the edges of the frame. The Hamming window is as follows:

$$w[n] = \begin{cases} 0.54 - 0.46 \cos\left(\frac{2\pi n}{N}\right), & 0 \leq n \leq N \\ 0, & \text{otherwise} \end{cases}$$

4. Fast Fourier Transform (FFT): The windowed frames are then passed through the FFT algorithm [5] to convert the time-domain signal into the frequency domain. This step calculates the magnitudes of various frequency components present in each frame. The FFT is performed using this expression:

$$H(n, k) = \sum_{n=1}^N x(n) w(n) e^{\frac{-i2\pi kn}{N}}$$

5. Mel Filtering: The magnitude spectrum obtained from the FFT is passed through a bank of Mel filters. Mel filters [6] are triangular-shaped filters that are spaced uniformly on the Mel frequency scale. These filters mimic the non-linear human auditory perception of sound and are designed to capture the characteristics of speech signals effectively. This expression converts the frequency to the Mel scale:

$$M(f) = 1125 \ln\left(1 + \frac{f}{700}\right)$$

6. Logarithm: After passing through the Mel filters, the resulting filterbank energies are transformed using the logarithm operation [6]. This step helps to compress the dynamic range and makes the features more robust to variations in signal intensity.

$$MSFB = 20 \log_{10}(S(n, k) \cdot F_m(k))$$

7. Discrete Cosine Transform (DCT): The log filterbank energies are then subjected to the DCT to decorrelate the features. The DCT coefficients represent the spectral envelope of the signal.

$$S_{MFCC_i} = \sum_{k=1}^M X_k \cos\left[i\left(k - \frac{1}{2}\right)\frac{\pi}{M}\right], i = 1, 2, \dots, M$$

8. Cepstral Coefficients: Finally, a subset of the resulting DCT coefficients, typically the lower-order coefficients, is selected as the MFCC features. These coefficients are referred to as Mel-Frequency Cepstral Coefficients and capture the dominant spectral characteristics of the audio signal.

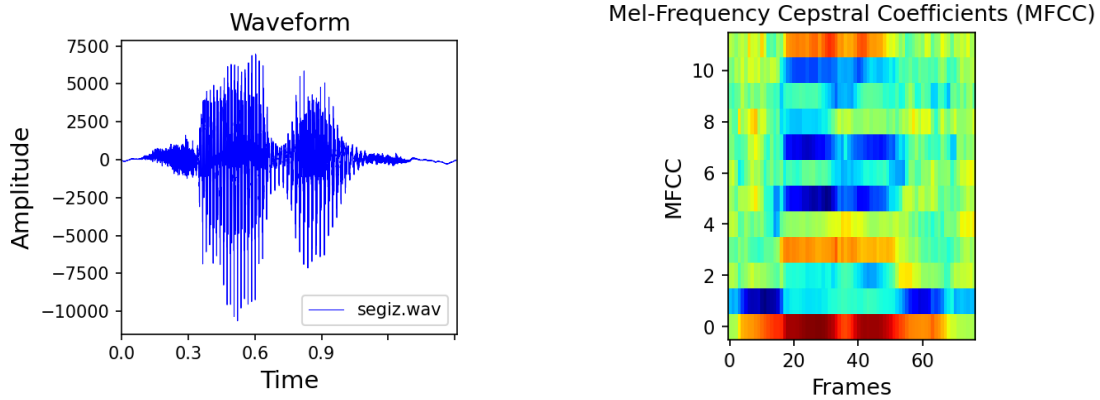


Figure. 2: Audio signal waveform and MFCC coefficients extracted from this signal.

MFCC algorithm offers several advantages, including robustness to noise, compact representation of the spectral information, and perceptual relevance to human speech perception. These features make MFCCs well-suited for speech recognition tasks.

Delta-delta coefficients. Delta-delta coefficients, also known as acceleration coefficients, are a higher-order extension of the standard delta coefficients in the context of MFCC (Mel-Frequency Cepstral Coefficients) feature extraction. While delta coefficients capture the rate of change of MFCC features over neighboring frames, delta-delta coefficients provide information about the acceleration or the rate of change of the delta coefficients [6].

The computation of delta-delta coefficients involves the following steps:

1. Compute the delta coefficients: First, the standard delta coefficients are calculated by taking the difference between consecutive MFCC feature vectors. This captures the rate of change of MFCC features over time. The delta coefficients are typically computed using a linear regression on neighboring frames.

$$\Delta_i = MFCC_{i+1} - MFCC_i$$

2. Compute the delta-delta coefficients: The delta-delta coefficients are then computed by applying the same procedure as in step 1, but this time on the delta coefficients obtained in step 1. The delta-delta coefficients represent the rate of change or acceleration of the delta coefficients.

$$\Delta\Delta_i = \Delta_{i+1} - \Delta_i$$

The purpose of using delta-delta coefficients is to capture higher-order temporal dynamics in the speech signal. They can provide additional information about the rate of change of MFCC features over successive frames, which can be useful in capturing dynamic aspects of speech, such as transitions between phonemes or transient characteristics. In practice, the delta-delta coefficients are often concatenated with the original MFCC and delta coefficients to form an extended feature vector that incorporates information about the temporal changes at multiple time scales. This extended feature representation can be particularly beneficial for speech and audio processing tasks that require modeling of temporal dynamics, such as speech recognition, speaker recognition, voice command recognition and emotion recognition. It's important to note that the computation of delta-delta coefficients assumes a certain context of neighboring frames, and the specific method for calculating them may vary based on the implementation or specific requirements of the application.

Experimental research. In this study, the application of the MFCC algorithm to solving the problem of voice command recognition was considered. For this issue, 10-word Karakalpak voice commands were used. An experimental study was conducted using the Python programming language. In the Python programming language, the sklearn [7] and python_speech_features [8] modules were used.

The MFCC algorithm was used to extract features from the voice signals, and the SVM method [9] was used to build a model of each voice command. Decision-making by comparing models was carried out using the KNN method. The obtained results are presented in Table 1 below.

Table 1. The results obtained.

Feature extraction	Model	Result
MFCC (12 features)	SVM	81%
MFCC + delta + delta		89%
MFCC (20 features)		91%

From the obtained results, it can be seen that MFCC (20 features) performed better in extracting features from audio signals and achieved a better result of 91%.

Summary. This article focuses on the Mel-Frequency Cepstral Coefficients (MFCC) algorithm, a widely used method for voice signal feature extraction. The MFCC algorithm plays a crucial role in capturing spectral characteristics and is widely employed in applications such as automatic speech recognition, speaker identification, and speech synthesis.

In conclusion, the article provides a comprehensive overview of the MFCC algorithm, detailing its steps and parameters, and highlighting its importance in voice signal feature extraction. It emphasizes the versatility and effectiveness of MFCCs in capturing spectral information, enabling accurate analysis and processing of voice signals in various applications.

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Rezyume: *Ushbu maqolada ovozli buyruqlarni tanib olish tizimi uchun belgilar to'plamini ajratib olish algoritmi muhokama qilinadi. Shu bilan birga, qoraqalpoq tilidagi ovozli buyruqlarni tanib olish bo'yicha eksperimental tadqiqot ishlari olib borildi.*

Резюме: *В данной статье рассматривается алгоритм извлечения признаков для системы распознавания голосовых команд. Одновременно проводились экспериментально-исследовательские работы по распознаванию голосовых команд на каркалпакском языке.*

Kalit so'zlar: *Ovoz signali, belgilar to'plamini ajratish, mfcc, hemming, FFT.*

Ключевые слова: *Голосовой сигнал, извлечение признаков, mfcc, hemming, FFT.*

UDC: 665.5

HYDRODYNAMIC PATTERNS IN GASOLINE FRACTION ISOMERIZATION REACTORS

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Summary: In this work, it is proved that the ideal compression reactor model can be applied to the industrial plant description of the process of isomerization of light gasoline fractions in a stationary catalyst bed reactor. Programming of the isomerization reactor model was performed in Borland Delphi. The correctness of the model was checked by experimentally obtained and calculated indicators in industrial isomerization devices.

Key words: gasoline, reforming, n-alkane, isomerizate, catalyst, reactor, constant.

Introduction: Today, the increase in the number of vehicles with internal combustion engines causes an increase in the demand for motor fuels. The large consumption of motor fuels, especially automobile gasoline, is considered one of the main factors for the seriousness of the environmental situation, and therefore the environmental requirements for this type of motor fuels are being strengthened. In accordance with these environmental requirements, the production of motor gasoline fractions with a high octane number, containing few aromatic hydrocarbons in the composition of fuel oil products, is of great importance.

The main components of automobile gasoline produced today are: reforming gasoline (up to 55%), catalytic cracking gasoline (up to 25%), isomerizate (up to 15%) and alkylate (up to 5%) [1].

Catalytic reforming-based gasolines contain less than 1 mg/kg of sulfur and 1% of olefinic hydrocarbons, which in turn increases the storage stability of these gasolines. However, according to the chemical mechanism of the process, the amount of aromatic hydrocarbons in the catalyst of the reforming process is up to 70%, and the amount of benzene is 8-11%, and this creates problems for the production of gasoline that meets modern environmental requirements. Catalytic reforming catalyst-based gasolines are characterized by a different distribution of detonation stability by fractions, which has a negative effect on the operational properties of the fuel. In gasoline based on catalytic cracking catalyst, aromatic hydrocarbons make up 30-40%, olefinic hydrocarbons make up 25-35%. In these gasolines, the detonation stability is relatively evenly distributed by fractions, and the octane number is equal to 90-93 points in the research method. However, the sulfur content is 1000 mg/kg, making it a problem to produce Euro-5 and Euro-6 compliant gasoline. Alkylate and isomerizate show a much higher indicator than the above gasoline components in terms of physico-chemical and operational properties. Therefore, in recent years in the developed countries of the world, much attention has been paid to the processes of alkylation and isomerization of automobile gasoline fractions, and gradually these processes are replacing catalytic reforming and cracking processes [2].

Main section: Calculation of the Reynolds criterion:

$$Re = \frac{\omega d \rho}{\mu} \quad (1)$$

here: ω - linear speed of flow in the catalyst bed (m/s), d - catalyst grain diameter (m), ρ – density (kg/m³), μ – dynamic viscosity (Pa·s).

$$Re = \frac{1,5704 \cdot 0,0011 \cdot 6,726}{0,00153} = 7,83 \quad (2)$$

Calculation of peche heat criterion:

$$Pe_T = RePr = \frac{\omega d s \rho}{\lambda} \quad (3)$$

here: Re – Reynolds criterion, Pr – criterion, ω – linear velocity of catalyst bed flow (m/s), d – catalyst grain diameter (m), s – heat capacity (J/(kg·K)), ρ – density (kg/m³), λ – thermal conductivity (J/(s·m·K)).

$$Pe_T = \frac{1,5704 \cdot 0,0011 \cdot 2217 \cdot 6,726}{0,138} = 192,47 \quad (4)$$

Calculation of the Pecle diffusion criterion:

$$Pe_D = \frac{uL}{E} \quad (5)$$

here: u – linear velocity (m/s), L – catalyst layer length (m), E – diffusion coefficient (m²/s).

$$\text{And so } Re < 100, \frac{E}{ud} = \frac{Re \cdot Sc}{192} = \frac{\omega d}{192D} \quad (6)$$

According to the experimental results, the diffusion coefficient for C₅-C₁₂ n-alkanes is equal to $D \approx 4,21 - 5,90 \cdot 10^{-7}$ m²/s.

$$Pe_D = \frac{192 \cdot L}{Re \cdot Sc \cdot d} = 192 \cdot \frac{D \cdot L}{u \cdot d^2} = 192 \cdot \frac{5,9 \cdot 10^{-7} \cdot 4,63}{1,5704 \cdot 0,0011^2} = 259,61 \quad (7)$$

Thus, heat-carrying convective currents and masses in the catalyst layer significantly increase the diffusion coefficient, so the reactor has a region of hydrodynamic regime for ideal compression.

($Pe_T > 100$, $Pe_D > 100$).

Calculation of the reaction zone of the process

Tile module is calculated by the following formula:

$$\Psi = R \sqrt{\frac{kC^{n-1}}{D_{cam}}} \quad (8)$$

here: k – reaction rate constant, R – catalyst grain size, n – reaction sequence, C – component concentration, D_{cam} – efficiency coefficient of diffusion.

The efficiency factor of catalyst particle application is calculated by the following formula:

$$\eta = \frac{1}{\Psi} \left[cth(\Psi) - \frac{1}{\Psi} \right] \quad (9)$$

here: Ψ – Tile module.

Table 1 shows the Tile indicators and efficiency factor calculation results for the first reaction sequence of n -pentane ↔ iso -pentane.

1-table

Tile parameter and efficiency factor values for $n - C_5H_{12} \leftrightarrow i - C_5H_{12}$ reactions

Reaksiya	That's right	Return
Tile parametr	$5,45 \cdot 10^{-5}$	$4,23 \cdot 10^{-5}$
Efficiency factor	0,993	0,998

According to the obtained results, we conclude that the reaction proceeds in the kinetic regions ($\varphi \rightarrow 0$, $\eta \rightarrow 1$).

An ideal compression reactor model can be used in the description of the industrial plant for the process of isomerization of light gasoline fractions in a stationary catalyst bed reactor.

The isomerization reactor model is presented in a system of differential equations for each component and heat balance [3]:

$$\begin{cases} G \cdot \frac{\partial C_i}{\partial z} + G \cdot \frac{\partial C_i}{\partial V} = \sum_{j=1}^m a_j \cdot r_{ij} \\ G \cdot \frac{\partial T}{\partial z} + G \cdot \frac{\partial T}{\partial V} = \frac{1}{\rho \cdot C_p^m} \cdot \sum_{j=1}^m Q_j \cdot a_j \cdot r_{ij} \end{cases} \quad (10)$$

Initial and boundary conditions:

When $z = 0$, $C_i = C_{io}$, $T = T_{en}$; When $V = 0$, $T = T_{en}$, $C_i = C_{io}$.

Here: G - raw material loading, m^3/s ; C_i - i component concentration, mol/m^3 ; Z - processed raw material volume, m^3 ; $i = 1, \dots, N$; $j = 1, \dots, M$; N - the number of substances participating in the reaction; M - number of reactions; r_j - rate of progress of j reactions, $\text{mol}/\text{m}^3 \cdot \text{s}$; V - isomerization reactor volume, m^3 ; T is the temperature in the reactor, $^\circ\text{C}$; ρ - density, mol/m^3 ; Q_j - thermal effect of j , J/mol ; C_p^m - specific heat capacity of the gas mixture, $\text{J}/(\text{mol} \cdot \text{grad})$; a - catalyst activity.

When the parameter t is replaced by $z = G \cdot t$, the process of deactivation of product residues on the surface of the catalyst shows a non-stationary appearance when the parameter G changes. $\partial C_i / \partial z$ shows the ratio of the concentration of component i to the deactivation of catalyst aging.

The model takes into account the decrease in catalyst activity over time. Catalyst activity is determined by the ratio of the current rate constant to the magnitude of the reaction rate in the first period (new catalyst activity) [4]:

$$a_j = \frac{k_{\text{current}}}{k_{\text{initial}}} \quad (11)$$

Here: k_{initial} - reaction rate constant on the new catalyst; k_{current} - reaction rate constant of a catalyst working for a certain time.

Programming of the isomerization reactor model was performed in Borland Delphi. The correctness of the model was checked by experimental and calculated parameters in industrial isomerization devices (Table 2).

2-table

Adequate evaluation of the model

Component	Raw material, mas.	Isomerizate, % mas.		
		calculated	exploitative	
nC_4	0,02	0,13	0,54	
iC_4	0,00	0,10	0,86	
nC_5	33,61	14,71	14,27	
iC_5	13,23	32,96	33,35	
nC_6	14,86	5,56	5,22	
$2MC_5$	14,69	14,00	13,90	
$3MC_5$	8,36	7,00	7,59	
$22MC_4$	0,39	11,30	11,08	
$23MC_4$	2,08	4,21	4,15	
CC_5		3,50	3,40	2,99
MCC_5		4,39	1,80	1,39

CC_6	0,39	0,54	0,94
C_6H_6	1,43	0,21	0,00
RMON (Research method octane number)	64,99	80,59	80,56

These obtained results show that the difference between the calculated and operational results is 1-2%, which means that the obtained results can be used in practice.

Conclusion: Hydrogenation of benzene with a chemical reaction rate constant of 5.61 1/sec was found for the first time in isomerization processes. Then, isomerization of C_6 monomethyl isomers to dimethyl isomers and hydrocracking reactions with a reaction rate constant of 10-1 1/sec. It was found that the rate of isomerization reactions of n-alkanes is 10-2 1/sec. The lowest chemical reaction rate constant in isomerization processes was determined in the scheme of changes in isomerization processes of naphthenes, 10-3 1/sec, and cyclization of isoalkanes, 10-5 1/sec.

The results of determining the rate constants of the chemical reactions involved in isomerization processes showed that the rate of formation of aromatic hydrocarbons in this process is low and the percentage of target reactions is high.

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Rezyume: Ushbu ishda yengil benzin fraksiyalarini statsionar katalizator qatlamli reaktorda izomerizatsiyalash jarayonini sanoat qurilmasini tushuntiruvchi yozuvda ideal siqib chiqarish reaktor modelini qo'llash mumkinligi isbotlandi. Izomerizatsiya reaktori modelini programmashtirish Borland Delphida bajarildi. Modelning to'g'riligi sanoat izomerizatsiya qurilmalarida tajribalar orqali olingan va hisoblangan ko'rsatkichlar bilan tekshirildi.

Резюме: В данной статье доказано, что модель идеального компрессионного реактора может быть использована при описании промышленного устройства процесса изомеризации легких бензиновых фракций в реакторе со стационарным слоем катализатора. Программирование модели реактора изомеризации выполнено в среде Borland Delphi. Корректность модели проверена экспериментальными полученными и рассчитанными показателями в промышленных установках изомеризации.

Kalit so'zlar: benzin, riforming, n-alkan, izomerizat, katalizator, reaktor, konstanta.

Ключевые слова: бензин, риформинг, n-алкан, изомеризат, катализатор, реактор, константа.

UDC: – 004

AN OBJECT-ORIENTED APPROACH TO EXPORTING DATA FROM AGRICULTURAL OPTIMIZATION PROBLEMS

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Summary: *This article examines the object-oriented approach to data mining and import in a programming language. In this, the possibilities of using programming languages from Visual Studio are presented. The benefits of using classes and objects in Visual Studio's object-oriented approach are presented. An object-oriented approach to data export and import enables solution analysis, analysis of alternative options, and post-optimization analysis. Moreover, as a result of the use of such methods, it is mentioned that having a user-friendly graphic interface enables the user to input data and read and analyze the output data.*

Key words: *Object-oriented programming, data export and import, data serialization and deserialization.*

Introduction. Today, mathematical models, optimization methods and programming languages are used to obtain effective results and draw conclusions when solving any relevant problems in science. The processes of data export and import are among the most convenient methods for solving complex problems based on mathematical modeling, that is, the ease of entering and storing data, the processing of data and the results of optimization. The result of such methods is to have a user-friendly graphical interface, and the user of the program is required to know how to input initial data, read output data, and analyze them [1].

Main part. In the modern world of information technology, where huge amounts of data are constantly processed and transferred between various systems, issues of effective data management are becoming increasingly important. In this context, programming using Visual Studio, one of the most popular integrated development environments, provides a wide range of tools for working with data. However, to provide a more convenient and structured interaction with databases, consideration of modern approaches to exporting and importing data is required [2].

The topic of this study focuses on the application of an object-oriented approach to the tasks of exporting and importing data in programming using Visual Studio. The object-oriented approach is based on the use of classes, objects and relationships between them to represent data in a more abstract and structured way. This approach brings object-oriented programming (OOP) principles to database management, which can greatly simplify the development, maintenance, and extension of data-driven applications. Despite existing tools and technologies, developers face a number of problems when working with data, such as inconvenience of interacting with databases, difficulties when updating the data structure, and loss of coherence between the code and the data model. Thus, there is a need for more efficient data management techniques in the Visual Studio environment.

The purpose of this research is to research and develop an object-oriented approach to exporting and importing data in programming using Visual Studio. We aim to provide a detailed discussion of the advantages and disadvantages of this approach, as well as suggest implementations and recommendations for improving the efficiency and ease of working with data. This study has important implications in the context of modern software development and data management. An

object-oriented approach can significantly improve the architecture and maintenance of applications, as well as provide more flexible mechanisms for exchanging data between different systems. This research will be useful both for developers seeking to optimize data processes and for researchers studying data management methods in the modern information environment.

Object-oriented programming (OOP) is a powerful software development methodology that is based on modeling real objects and their interactions within a program. In OOP, a program is represented as a collection of objects, each of which is an instance of a class. Classes define the state (variables) and behavior (methods) of objects, and objects interact with each other through interfaces provided by classes [3].

Using an object-oriented approach when working with databases provides several advantages:

- Data abstraction: OOP allows developers to model data as objects and classes, making the code more understandable and easier to work with. It operates on objects that are easier to understand and maintain than complex SQL queries and tables.

- Flexibility and extensibility: OOP supports the principle of inheritance and polymorphism, which makes the code more flexible and allows you to create new classes and objects without changing existing code. This is especially useful when changing the database structure.

- Interfacing code and data: OOP allows you to create classes and objects that reflect the structure of the data in the database. This provides a more reliable interface between code and data and reduces the risk of errors.

- Code reuse: Many ORM frameworks (such as Entity Framework) automatically generate database code based on data models. This can significantly reduce code duplication and simplify its maintenance [4].

Advantages and disadvantages of OOP in the context of data export and import:

Advantages:

- Code readability: OOP makes code more readable because data operations are represented as object methods, which allows you to more clearly track what operations are being performed on the data.

- Flexibility and extensibility: If the data format or export/import logic changes, changes can be made to the appropriate classes, minimizing the impact on other parts of the application.

- Interfacing with business logic: OOP allows you to easily integrate export and import logic with your application's business logic, which improves modularity and makes debugging easier.

Flaws:

- Configuration complexity: Configuring object-oriented data models to match the database can require additional time and effort.

- Performance: Incorrect use of OOP when working with large amounts of data can lead to poor performance due to high abstraction and additional queries to the database.

- Complexity for small tasks: For small and simple data export/import operations, OOP may seem redundant and inefficient.

Overall, an object-oriented approach to exporting and importing data can be a powerful tool, but its use should be considered based on the specific requirements and characteristics of the project.

To develop data models to represent the structure of a database using an object-oriented approach (OOP), need to define classes and objects that will represent the entities and relationships in your database [3].

The purpose of this study was to consider and analyze the object-based approach to working with databases in the Visual Studio environment [4]. The study examined the export and data method,

as well as the main approaches to working with databases, including the use of object-oriented data models

The research results show that the object-oriented approach to working with databases in Visual Studio has a number of significant advantages. Using data models and ORM frameworks such as Entity Framework allows developers to work with data in a more abstract and usable way. This makes it easier to create, modify, and maintain database-related code. In addition, the object-oriented approach makes applications more flexible and extensible.

Blocks considered to be the main constituents of the interactive software complex developed to solve ecological and economic issues of agricultural production were considered [5]:

- Data "IMPORT" block.
- Data "EXPORT" block.
- "HELP" block of the program.
- Comparative analysis unit.
- New issue organizing block.
- Method block.
- Optimization and solution block.
- Analysis after optimization.

[5] in the case of the analysis of the results of the export of the programming solution, several possibilities prevail. In this case, the following conditions are fulfilled in the "Results" window (Fig. 1):

a) solution analysis; b) variant analysis; c) post-optimization analysis.

Solution analysis is used to establish the following indicators:

- the optimal production program of farms (in particular, the creation of the optimal choice of the gross product and the amount of total water use based on the choice of the optimal placement of hectares);
- technical and economic indicators;
- volume of land, water, labor, ecological reserves, reserves of the main types of resources according to the possibilities.

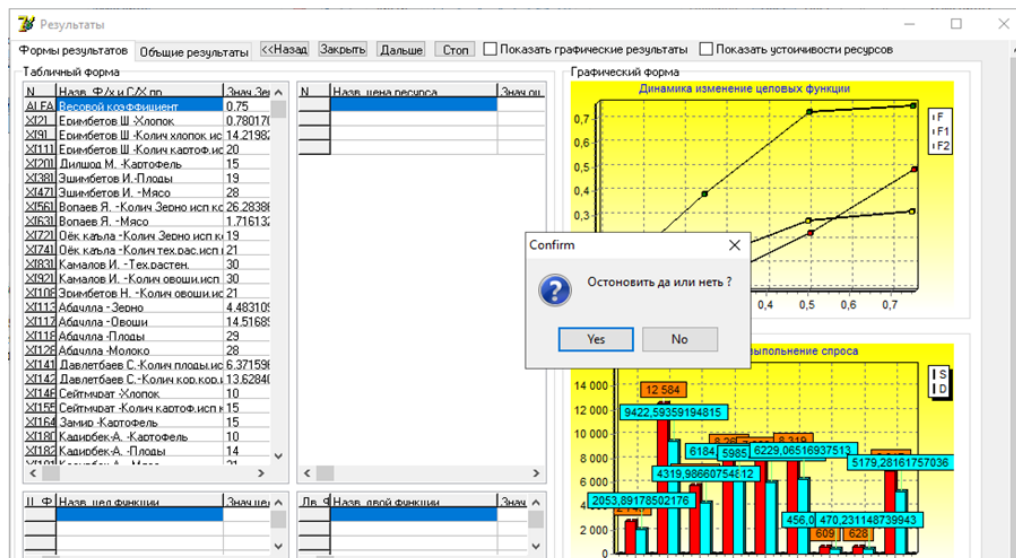


Fig 1. Object approach to exporting agricultural tabular, histogram and chart data

Conclusion. An object-oriented approach to data export and import is always effective as an expert judgment aid in making relevant decisions.

An object-oriented approach to data export and import provided the following key findings:

- creates a convenient opportunity for data storage and reuse;
- solution analysis is simplified;
- option analysis, or analysis of alternative options, creates an opportunity to choose an effective solution;
- post-optimization analysis, that is, increases the possibility of analyzing the visibility and value of each parameter.

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Rezyume: Ushbu maqolada dasturlash tilida ma'lumotlarni ekspert va intellektual tahlil qilishni ob'ektl yondashish uslubiylati qaraladi. Bunda dasturlash tillaridan Visual Studio dan foydalanish imkoniyatlari keltirilib o'tiladi. Visual Studio ob'ektga yo'naltirilgan yondashuvni amalga oshirishda sinflar va ob'ektlardan foydalanalishning afzalliklari keltirilgan. Ma'lumotlar eksport va import qilishning ob'ektl yondashish natijasida echim tahlilini, alternativ variantlar tahlilini va optimallashtirishdan keyingi tahlillarni o'tkazish imkoniyatini yaratiladiganligi keltiriladi. YAnada bunday usullardan foydalanish natijasida foydalanuvchilar uchun qulay grafik interfeysga ega bo'lishi bilan foydalanuvchi ma'lumotlarni kiritish va chiquvchi ma'lumotlarni o'qishni, tahlil qilishi imkoniyatini yaratiladigani keltirilib o'tiladi.

Резюме: В этой статье рассматривается объектно-ориентированный подход к интеллектуальному анализу и импорту данных на языке программирования. В нем представлены возможности использования языков программирования Visual Studio. Представлены преимущества использования классов и объектов в объектно-ориентированном подходе Visual Studio. Объектно-ориентированный подход к экспорту и импорту данных позволяет анализировать решения, анализ альтернативных вариантов и анализ после оптимизации. Более того, в результате использования таких методов отмечается, что наличие удобного графического интерфейса позволяет пользователю вводить данные, а также считывать и анализировать выходные данные.

Kalit so'zlar: Ob'ektga yo'naltirilgan dasturlash, ma'lumotlarni eksport va import qilish, ma'lumotlarni seriyalashtirish va seriyadan chiqarish.

Ключевые слова: Объектно-ориентированный программирование, экспорт и импорт данных, сериализации и десериализации данных.

DESIGNING FUNCTIONAL MODULES OF THE HARDWARE-SOFTWARE COMPLEX “SALIVA”

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Summary: *This article examines the process of designing functional modules of the hardware-software complex “SALIVA” for primary diagnosis of gastrointestinal tract diseases. It describes the preliminary analysis, architectural design, and detailed design of the modules. Throughout the work, the fundamental principles and methods of design are thoroughly studied, along with the specific requirements and characteristics associated with this system. The structure and functionality of each module, as well as its interaction with other modules within the hardware-software complex “SALIVA” for primary diagnosis of gastrointestinal tract diseases, are described in detail.*

Keywords: *design, functional modules, hardware-software complex, SALIVA, analysis, architectural design, detailed design, module interaction.*

INTRODUCTION.

During the design process of the functional modules of the hardware-software complex “SALIVA” the main principles and methods of design, as well as specific requirements related to this system, will be taken into account. Preliminary analysis will help determine the necessary functions and capabilities of each module, architectural design will ensure an optimal structure of the complex, and detailed design will allow for the development of modules considering all the details and peculiarities.

The key modules of the “SALIVA” complex will include the data collection module, the information storage and processing module, and the data presentation module. The data collection module will be responsible for gathering and registering information about saliva composition, including various indicators and parameters. The information storage and processing module will ensure data preservation, analysis, and processing using appropriate algorithms and methods. The data presentation module will provide information about saliva composition in a convenient and understandable format, as well as the ability to transmit this data for further analysis by a healthcare professional. An important aspect of the design will also be ensuring the interaction between the modules of the “SALIVA” complex. This will enable efficient data transmission between modules, ensuring their consistency and interaction within the overall system.

As a result of designing the functional modules of the hardware-software complex “SALIVA” an innovative tool for primary diagnosis of diseases based on the analysis of human saliva composition will be created. This complex will contribute to more accurate and faster diagnostics, allowing for timely initiation of treatment and improving prognoses for patients. Designing functional modules is a crucial stage in the development of the hardware-software complex “SALIVA”. During the design process, we pay special attention to analyzing the system's requirements and characteristics, architectural and detailed module design, as well as the interaction between modules.

The main objective of this project is to create functional modules that will ensure the efficient and reliable operation of the entire “SALIVA” system. In this article, we will provide a detailed examination of each module, its structure, functionality, and interaction with other modules. We will also discuss the specific requirements and considerations related to the “SALIVA” system, as well as potential challenges encountered during module development.

After a thorough analysis of the initial requirements, architectural and detailed design, we will present the results of our work and discuss them in the context of an overall project evaluation. Additionally, we will provide recommendations for enhancing and further developing the hardware-software complex “SALIVA”.

This endeavor necessitates a deep analysis of requirements, efficient module design, and interaction. The outcomes of this work are of significant importance for the future development of the “SALIVA” hardware-software complex, aiming to enhance its functionality and efficiency.

DESIGN OF THE FUNCTIONAL MODULE OF THE “SALIVA” HARDWARE AND SOFTWARE COMPLEX

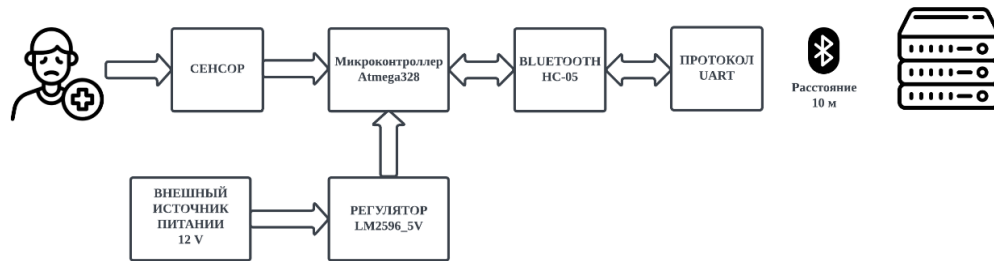


Figure 1. Functional module of the hardware-software complex “Saliva”.

The saliva sensor plays a crucial role in the hardware-software complex “Saliva”. It is responsible for detecting and analyzing the composition of a patient's saliva (Table 1). The sensor then transmits this information to the microprocessor [1-4].

Table 1. Composition of saliva in a healthy individual and a patient.

№	Saliva Composition	Healthy Patient (% and g/L)	Sick Patient (% and g/L)
1	Water	99,4-99,5 %	≥85-89 %
2	Organic and inorganic components	0,5-0,6 %	≤ 0,3 %
3	Protein	1,4-6,4 г/л	≤ 6,6 г/л
4	Mucin	0,8-6,0 г/л	≤ 6,5 г/л
5	Cholesterol	0,02-0,5 г/л	≤ 0,6 г/л
6	Glucose	0,1-0,3 г/л	≤0,35 г/л
7	Ammonium	0,01-0,12 г/л	≤0,13 г/л
8	Uric acid	0,005-0,03 г/л	≤0,035 г/л

The Atmega328 Microprocessor. The Atmega328 microprocessor is one of the most popular and widely used microcontrollers in the market. It is an 8-bit device based on the RISC architecture and belongs to the AVR family. The Atmega328 serves as a primary component of the popular Arduino Uno. Key features of the Atmega328 include:

- Operating frequency: up to 20 MHz
- Program memory size: 32 KB Flash
- Data memory size: 2 KB SRAM
- 23 programmable input/output pins (including 6 analog inputs)
- 3 timers/counters

- SPI, I2C, and UART interfaces
- Hardware multiplication and division
- Low power consumption
- Low voltage supply: 1.8-5.5 V

The Atmega328 is widely used in the development of various electronic devices, including mobile robots, sensor systems, automation systems, Internet of Things (IoT) applications, and many others. It is known for its ease of use, large developer community, extensive library support, and convenient programming [5-7].

The Bluetooth HC-05 Module. The Bluetooth HC-05 is a Bluetooth module that enables wireless communication between devices. The HC-05 is based on the Bluetooth CSR BC417143 chip, which supports the Bluetooth 2.0 + EDR (Enhanced Data Rate) standard.

Key features of the HC-05 include:

- Operating modes: Master and Slave
- Support for UART (Universal Asynchronous Receiver Transmitter) communication
- Communication range: up to 10 meters indoors or up to 30 meters in open spaces
- Support for data transfer rates: from 1200 bps to 460800 bps
- Built-in antenna connector
- I/O interface for module programming and control
- Power supply: 3.6 V to 6 V (typically powered by 5 V)

The HC-05 can be used for wireless data exchange between microcontrollers, smartphones, and other devices. The module can be applied in various applications such as wireless data transmission, remote control, sensor systems, and more [8-10].

The HC-05 is easily configurable using AT commands. During configuration, you can set the operating mode (Master or Slave), define the module's name, establish a password for secure connections, and more.

Its small size, low cost, and ease of use make the HC-05 a popular choice for establishing wireless connections in various electronics and robotics projects.

BUILDING THE ARCHITECTURE OF THE “SALIVA” HARDWARE AND SOFTWARE COMPLEX

After the design of the functional module of the hardware and software complex "Saliva" 11-13, the next step is to construct the architecture of the hardware and software complex "Saliva" (Figure 2).

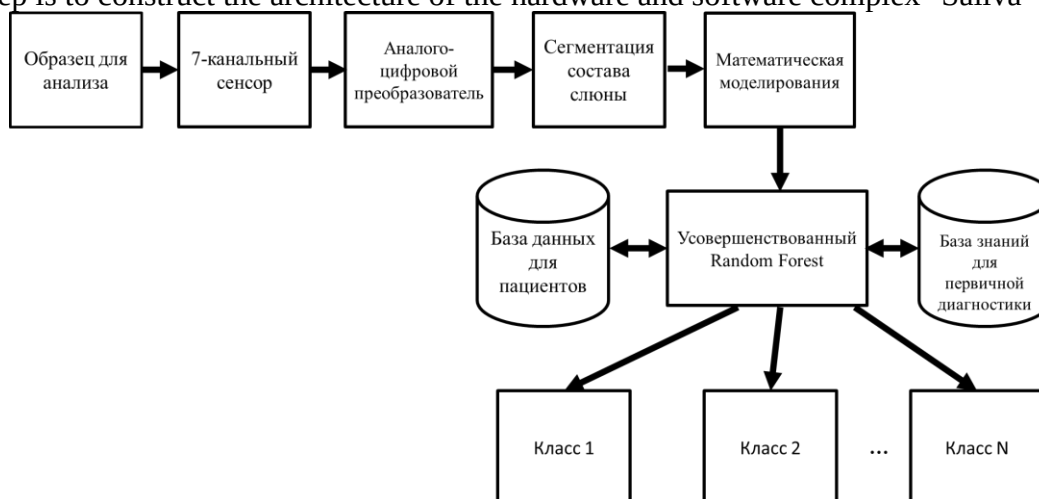


Figure 2. Architecture of the hardware and software complex “Saliva”

The hardware and software complex “Saliva” is a comprehensive system that enables the analysis of saliva for the diagnosis of gastrointestinal diseases. The principles of operation of this architecture include the following steps:

1. Saliva Collection: The patient provides a saliva sample using a specialized device, which can be provided at a clinic or be available for home use. The saliva collection device can vary from standard tubes to electronic devices capable of analyzing the sample immediately.

2. Sample Preparation: The collected saliva sample undergoes preparation for analysis.

3. Sample Analysis: The prepared saliva sample is analyzed using methods that characterize the biochemical composition of human saliva.

4. Results Processing: After the analysis, the results are processed and segmented to determine the composition of the patient's saliva. The next step involves mathematical modeling, taking into consideration factors that may influence or not influence the diagnosis of gastrointestinal diseases.

$$y = x_1 * w_1 + x_2 * w_2 + x_3 * w_3 + x_4 * w_4 + x_5 * w_5 + x_6 * w_6 + w_F * F + w_{Fn} * F_n + w_t * t + b$$

where:

x – parameters, w – determination of the importance of parameters

F – influencing factors, F_n – non-influencing factors,

w_t – reduction of primary diagnostic time, t – diagnostic time,

b – sample size for analysis

w_F – determination of the importance of influencing factors, w_{Fn} – determination of the importance of non-influencing factors

1. Diagnostic Process: In this step, the diagnostic process goes through five steps using an improved Random Forest algorithm.

2. Documentation and Data Storage: The obtained results can be documented and stored electronically or on other media for further analysis and comparison with subsequent samples.

3. Knowledge Base: The knowledge base on gastrointestinal tract (GIT) diseases contains information about various diseases related to the digestive system. Here are a few examples of such diseases:

- Gastritis: Inflammation of the stomach's mucous membrane, which can be caused by various factors such as infection, increased acidity, stress, certain medications, or autoimmune disorders. Symptoms may include pain or discomfort in the stomach, heartburn, nausea, vomiting.

- Stomach Ulcer: It is an ulcer on the stomach's mucous membrane, most commonly caused by the bacterium *Helicobacter pylori* or prolonged use of certain medications such as non-steroidal anti-inflammatory drugs. Symptoms may include pain in the epigastric area, nausea, vomiting, heartburn.

- *Helicobacter pylori* Infection: This bacterial infection is the main cause of stomach and duodenal ulcers. Saliva analysis can be used to detect the presence of this infection.

- Inflammatory Bowel Diseases (IBD): This group of chronic diseases includes Crohn's disease and ulcerative colitis, which cause inflammation of the intestines. Studies show that specific markers in saliva can indicate the activity of these diseases.

The operation of the hardware and software complex "Saliva" is based on a combination of technologies that allow for qualitative and highly accurate analysis of saliva and the use of the obtained data for diagnosis and monitoring of diseases [14-16].

CONCLUSION

In conclusion, this article presents the results of a research study dedicated to the design of functional modules for the hardware and software complex “SALIVA”. The authors have extensively discussed the key aspects of the design, including the hardware and software components of this

complex. The article provides readers with a comprehensive understanding of the “SALIVA” complex and its functional modules. The authors shed light on the importance of saliva-related research and provide examples of potential application areas for this complex, including medicine and scientific research.

Throughout the research study, the results of the work on designing the functional modules of “SALIVA” have been presented, along with an analysis of the advantages and limitations of this complex. The authors also identify potential directions for further research and improvements in the development of the complex. Overall, this article represents a valuable contribution to the field of hardware and software complex development for saliva analysis. It can serve as a starting point for further research and development in this area, while also inspiring new ideas and innovations in the design of hardware and software complexes.

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Rezyume: *Ushbu maqolada oshqozon-ichak trakti kasalliklarining birlamchi diagnostikasi uchun "SALIVA" apparat-dasturiy kompleksining funktsional modullarini loyihalash jarayoni ko'rib*

chiqiladi. Unda modullarning dastlabki tahlili, arxitektura dizayni va batafsil dizayni tasvirlangan. Ish davomida ushbu tizim bilan bog'liq bo'lgan o'ziga xos talablar va xususiyatlar bilan birga dizaynning asosiy tamoyillari va usullari chuqur o'rganiladi. Har bir modulning tuzilishi va funktsionalligi, shuningdek, oshqozon-ichak trakti kasalliklarini birlamchi diagnostika qilish uchun "SALIVA" apparat-dasturiy kompleksidagi boshqa modullar bilan o'zaro aloqasi batafsil bayon etilgan.

Резюме: В статье рассмотрен процесс проектирования функциональных модулей аппаратно-программного комплекса «САЛИВА» для первичной диагностики заболеваний желудочно-кишечного тракта. В нем описан предварительный анализ, архитектурное проектирование и детальное проектирование модулей. На протяжении всей работы тщательно изучаются фундаментальные принципы и методы проектирования, а также конкретные требования и характеристики, связанные с данной системой. Подробно описаны структура и функциональные возможности каждого модуля, а также его взаимодействие с другими модулями аппаратно-программного комплекса «САЛИВА» первичной диагностики заболеваний желудочно-кишечного тракта.

Kalit so'zlar: dizayn, funksional modullar, apparat-dasturiy ta'minot kompleksi, SALIVA, tahlil, arxitektura dizayni, batafsil loyihalash, modul o'zaro ta'siri.

Ключевые слова: проектирование, функциональные модули, программно-аппаратный комплекс, SALIVA, анализ, архитектурное проектирование, рабочее проектирование, взаимодействие модулей.

UDC 66.022.34: 666.9.031

THE DEVELOPMENT AND EXPLORATION OF A COMPOSITION OF POWDER HYDROPHOBIZATOR FOR EXPANDED VERMICULITE HYDROPHOBIZATION

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¹Karakalpak state university named after Berdakh, ²SUE "science and development"

Summary: *The paper presents the results of the development of a composition of hydrophobic powder for surface hydrophobization of porous aggregates. We have established that the use of hydrophobic powder during hydrophobization contributes to the creation of a hydrophobic layer on the surface of the porous filler, preventing the penetration of moisture, and leads to the improvement in the rheological properties of mortar mixtures in the manufacture of heat-insulating materials.*

Key words: *water repellent, porous filler, expanded vermiculite, heat-insulating materials.*

The need for environmentally friendly, highly efficient non-combustible heat - insulating materials in construction has currently increased significantly. Such perspective composites include heat-insulating materials using expanded vermiculite on various binders that determine their properties and applications [1.3].

Expanded vermiculite is used for the manufacture of heat-insulating products and as filler in acoustic plasters and heat-insulating products with a low volumetric weight due to its lightness, high temperature resistance (up to 1100 ° C) and sound-absorbing properties [2.17-21, 3.267, 4.].

The high porosity of expanded vermiculite causes an increase in water absorption of the material in the production of heat-insulating products, which in its turn leads to a deterioration of their properties.

Salts of fatty acids and some metals (copper, aluminum, zirconium, etc.), cationic surfactants (surfactants), as well as low- and high-molecular organosilicon organofluorine compounds are currently known hydrophobizers [5.120-121].

The developed compositions and methods of production of heat-insulating materials based on porous aggregates (expanded vermiculite, expanded perlite) have certain disadvantages. In particular, they differ in a certain complexity, duration and do not allow to obtain an environmentally friendly and at the same time durable and water-resistant material with good thermal insulation properties [6.4].

In this regard, we carried out a research on the development of the composition of a powder hydrophobizator for hydrophobization of expanded vermiculite. With volumetric hydrophobization of expanded vermiculite with a powder hydrophobizator, the loose structure of expanded materials and a low volumetric weight are preserved. A low water absorption coefficient is achieved at the same time, which helps to reduce the thermal conductivity of expanded vermiculite, mortar mixtures and products based on them [7.36-39].

When developing the composition of a powder hydrophobizer for hydrophobization of expanded vermiculite, we used a mixture consisting of calcium stearate and finely ground talcomagnesite produced from talcomagnesite ore of the Zinelbulak deposit located in the Karauzyak and Beruniy districts of the Republic of Karakalpakstan.

Laboratory compositions of a powder hydrophobizator for expanded vermiculite hydrophobization were obtained by mechanical activation and homogenization of calcium stearate and talcomagnesite in different proportions in a laboratory ball mill. The process of obtaining a powder hydrophobizator took 30 minutes. The change in the fractional composition of the powder hydrophobizator was studied every 5 minutes. At the end of the homogenization process, the resulting ton-dispersed mixture of the powder

hydrophobizator was subjected to determination of the fractional composition by sieving on a standard sieve No. 008. The results showed that within 30 minutes the residue on sieve No 008 decreases, while the specific surface area makes up 4550 - 5500 cm²/g. The research results are shown in Table 1.

The analysis of the obtained results showed that in the process of obtaining a powder hydrophobizator by the method of mechanical activation in a grinding unit, the mixture adhered to the mill wall and to grinding bodies (balls), the amount of which was up to 12% with a small amount of talcomagnesite (less than 30%).

It was found that with an increase in the content of talcmagnesite in the mixture up to 40%, the adhesion decreases sharply, and with a talcomagnesite content of up to 50%, adhesion is 0.5 - 1.0%. This positive phenomenon is explained by the presence of a flaky form of silicon oxide (SiO₂) particles in the composition of talcomagnesite, which in the process of mechanoactivation improves the grinding process and the production of a homogeneous powder hydrophobizator with increased hydrophobicity.

Table 1

The effect of the mechanical activation process on the fineness of the powder hydrophobizer grinding

№	Composition, in mass. %		Mechanical activation time	The remainder on the sieve № 008, %
	Calcium Stearate	Talcomagnesite		
1	60	40	-	7,1
2			5	5.4
3			10	3.5
4			15	2.4
5			20	1.9
6			25	1.2
7			30	1.1
8	40	60	-	8.2
9			5	5.4
10			10	4.6
11			15	3.2
12			20	2.8
13			25	2.2
14			30	2.1

It was obvious from the results of the study that the flaky shape of talcomagnesite particles increases the hydrophobicity of calcium stearate. In the process of grinding talcomagnesite is subjected to additional grinding. In this case, the particles of silicon oxide (SiO₂) have the form of microparticles, which can be seen from the results of sieve analysis. The presence of microparticles of silicon oxide (SiO₂) in the composition of the developed powder hydrophobizator contributes to the production of a finely dispersed loose mixture.

The developed compositions of powder hydrophobizer (PH) for hydrophobization of expanded vermiculite are shown in Table 2.

Table 2

Compositions of powder hydrophobizer (PH) for hydrophobization of expanded vermiculite

	Composition, in mass. %		Composition (PH), in mass. %	
	Expanded vermiculite	PH	Calcium stearate	Talcomagnesite
1	100	-	-	-
2	99,0	1,0	30,0	70,0
3	98,0	2,0		
4	97,0	3,0		
5	96,0	4,0		
6	95,0	5,0		
7	99,0	1,0	40	60
8	98,0	2,0		
9	97,0	3,0		
10	96,0	4,0		
11	95,0	5,0		
12	99,0	1,0	50	50
13	98,0	2,0		
14	97,0	3,0		
15	96,0	4,0		
16	95,0	5,0		
17	99,0	1,0	60	40
18	98,0	2,0		
19	97,0	3,0		
20	96,0	4,0		
21	95,0	5,0		

The study of solubility showed that the obtained powder hydrophobizing agent does not dissolve in water.

Based on laboratory studies, we have found that the composite mixture obtained by mechanical activation of calcium stearate and talcomagnesite can be used as a powder hydrophobizer for hydrophobization of expanded vermiculite.

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Rezyume: *Ishda g'ovakli agregatlarni sirt gidrofobizatsiyasi uchun kukunli hidrofobizator tarkibini ishlab chiqish natijalari keltirilgan. Gidrofobizatsiya paytida kukunli hidrofobizatoridan foydalanish kopchitilgan vermikulit yuzasida gidrofobik qatlam hosil bo'lishiga yordam beradi, bu namlikning kirib kelishiga to'sqinlik qiladi, bu esa issiqlik saqlovchi materiallarini ishlab chiqarishda aralashmalarining reologik xususiyatlarini yaxshilashga olib keladi.*

Резюме: *В работе приведены результаты разработки состава порошкового гидрофобизатора для поверхностной гидрофобизации пористых заполнителей. Установлено, что применение порошкового гидрофобизатора при гидрофобизации способствует созданию гидрофобного слоя на поверхности вспученного вермикулита, препятствующий проникновению влаги, что приводит к улучшению реологических свойств растворных смесей при изготовлении теплоизоляционных материалов.*

Kalit so'zlar: *gidrofobizator, g'ovakli to'ldiruvchi, kopchitilgan vermikulit, issiqlik saqlovchi materiallar.*

Ключевые слова: *гидрофобизатор, пористый заполнитель, вспученный вермикулит, теплоизоляционные материалы.*

WORKING WITH COMPUTER PROGRAMS IN THE DEVELOPMENT OF ARTISTIC AND PERFORMING SKILLS IN MUSIC LESSONS AS A COMPLEX OF NEW TOOLS OF MODERN CREATIVITY

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Summary: *This scientific article is based mainly on the results of the dissertation on the systematic methodology of studying and modeling the technological processes of developing the competencies of working with computer programs in improving the artistic and performance skills of students in music classes of general secondary education schools. Within the framework of further development of musical abilities of students of different ages, the place and role of modern musical programs is provided..*

Keywords: *Music, perception, computer programs, computer technology, information technology, interface, algorithm, learning process, musical creativity, modern musical instruments, technical music, electronic music, composer, unusual sound, timbre.*

Introduction.

The purpose of the scientific work is devoted to the study of modern tools of musical creation (composition, performance, music research). The rapid development of computer technologies and their widespread use in various types of music creation have created a number of problems that require their understanding and solution by modern musicology. In the 20th century, the impetus for the emergence and development of technical music (TM) and its variety - electronic music (EM) was provided by two factors:

- the desire of composers to search for new expressive means in music, a new musical language and, as a result, new instruments;
- rapid scientific and technical development in the field of electronics and further information technologies.

A bright "growth" of interest in unusual sounds, new timbres among musicians (and listeners), as well as a desire to at least somehow ease the unusually complex work of the composer and performer, as well as the emergence of the possibility of using new sounds. For this, information technology predetermined the use of computers in the process of music creation.

First of all, computers were not designed for this. Designers had to work hard, but without musicians they couldn't do anything. Now this method, it can be said, is ready to completely revolutionize musical thinking, and in a very short historical time (only on August 12, 1981, the world's first IBM 5150 personal computers were developed), this technology has united millions of people. Interest in his possibilities in the field of music was truly enormous. Addressing information technology and musical acoustics in their current relationship to music poses many complex challenges for researchers. Of course, the most important of them is the problem of the connection between artistic (musical) and natural scientific thinking, or the problem of the connection between figurative emotional perception of music and the accuracy and objectivity of the methods of knowing it.

However, objective criteria allow to gain knowledge only about the external, material manifestations of art. For representatives of the exact sciences, the spiritual essence of art, which forms the basis of aesthetic knowledge of music, will remain hidden for a long time, if not forever. In any case, information technologies and musical acoustics do not provide researchers with such

opportunities. Therefore, scientists face the whole problem of creating a method of understanding the spiritual essence of art. Attention to it is one of the goals of this work.

So, the connection of musical information technologies with the art of music as a dynamic, actively developing system, the specific features of the formation of this system, the formation of musical information technologies and musical acoustics as a result of the numerous effects of music. the field of study - these issues form the content of this work.

Main part:

The problems of the relationship between musical art and modern technical means were discussed long before the advent of personal computers, that is, before August 1981. It should be mentioned that in Russia R.Kh. Zaripov[2] worked unusually effectively in this direction. A. in the west. The works of Mol and his colleagues stand out. Thus, conditions were created for computer music technologies (computer acoustics) to acquire new qualities and enter the practice of musical art.

At the base of this "duet" there are at least three "pillars".

- First, and most importantly, experience in creative - composition and performance activities; Only this experience gives music the content, aesthetic essence associated with new technology (electronic, concrete, computer) and, of course, actively affects musical instruments.

- Secondly, these are theoretical and practical works in the field of electricity, electronics and informatics. They provided the creation and development of special equipment, software, and electronic musical instruments.

- Finally, and thirdly, it is specialized knowledge in the field of physical, musical acoustics, architectural acoustics, electroacoustics and auditory psychophysiology. They are specific to the development of the area under consideration. Computer technology and acoustics included in the system of musical knowledge have found various applications - in music composition and performance, music pedagogy and special musical research. This study focuses on the relationship between music computer technology and music, which has shaped the development of both the art and science of music. That is, we are talking about a holistic system that includes both musical creativity and knowledge of creativity using specific methods. The rapid development of computer technologies and their widespread use in various types of music creation have created a number of problems that require their understanding and solution by modern musicology. The relevance of this research is determined by the existing contradictions between:

- the level of spread of electronic music technologies in actual artistic practice and the level of theoretical understanding of various aspects of the use of electronic technologies in certain areas of music creation;

- possibilities of musical computer technologies in artistic practice (composition, notography, performance, research field, etc.) and the level of their implementation.

The purpose of the study. It consists of analyzing and theoretically justifying the system of relationships and interactions of traditional musical creative tools and new musical instruments as a means of learning and creating modern musical art.

A number of questions arise that require reflection during the research process:

- What motivated the emergence and development of technical and electronic music?
- How have these areas developed?
- What results (creative and technical) have been achieved in this area?
- What prospects (creative, scientific, technological and didactic) are expected and what problems will arise in connection with the rapid development of modern art?

These and other questions predetermine the range of tasks facing the researcher:

- to determine the specific forms of organization of the musical-computer knowledge system in connection with the traditional music art;
- to determine the development stages and directions of technical music;
- study and generalize the learning experience using music computer technologies;
- to compare the technological and artistic possibilities of technical music of the first half of the 20th century and modern electronic music;
- defining the terminology of modern music computer technologies (MIDI technologies, sequencing, notators, etc.);
- systematization of software and technical parts of modern musical instruments;
- to create methods of adaptation of traditional instruments in the virtual environment of music computer technologies.

This study is based on the systematic methodology of studying and modeling the technology of developing competences for working with computer programs (in the case of grades 5-7) in improving the artistic and performance skills of students in music lessons. The dissertation is primarily based on methodological principles, mainly developing theoretical and methodological principles and ideas of foreign musicology, instrumental and computer sciences (French composer and conductor, one of the leaders of the French musical avant-garde Pierre Louis Joseph Boulez 1925 -2016, French cellist and composer Jean -Batist Barrier 1707-1747, Dutch writer, actor and television presenter Albert Mol 1917-2004, Romanian composer, music theorist Giannis (Yannis or Iannis) Clearchou Xenakis 1922-2001, American psychologist and developer of the semantic differential method Charles Egerton Osgood 1916-1991 etc.). The analysis of the literature shows that the problem of this research project has been only partially covered so far, which indicates the need for a special study.

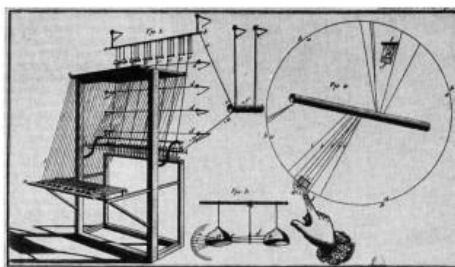
This work forms the basic requirements for the classification of audio equipment and software components and studies the specific features of modern computer notography (MIDI technology). As a field of application of music computer technologies, music art was chosen as a research object, its topic is the use of music computer technologies by musicians, specialists in various fields of art, as a means of solving artistic, creative, research, didactic and other problems. problems.

Methodological basis of the research. The methodological basis of the research determined the essence of the work, which consists of the following areas:

- to study the musical and historical conditions of the formation of technical music;
- playing music using computer technology;
- computer methods of music research;
- working with computer technologies in music lessons.

Before the study of electronic music, there were the following advances in the field of equipment development and creation of electronic musical instruments.

Undoubtedly, the first experiments on the use of electricity were carried out in the 18th century - the French Jesuit monk Jean-Baptiste Tilais Delaborde (1730 - 1777) developed a unique musical instrument called "**electroclave**"[4] (1759) that works with static electricity.



Later in the 19th century - innovations in electronic musical instruments, historically called "**galvanic music**" by Page (1837); later in the 19th century - an innovation called "**galvanic music**"[3] by Page (1837) was discovered. Then it became possible to transmit music concerts from one city to another by telephone.



In addition, after the research of the music scientist who made it possible to transmit various messages by radio, and the German physicist **Heinrich Rudolf Hertz**[7] (1857-1894) and the mature English experimental physicist and chemist of his time, **Michael Faraday**[10] (1791-1867), the Russian physicist **Alexander Stepanovich Popov**[9] (1859-1905), who in 1895 was able to make his contemporaries think with his research, in 1909 "for his contribution to the development of wireless telegraphy"



laureates of the Nobel Prize in Physics for the year: German physicist, inventor of the kinescope **Karl After Ferdinand Braun**[6] (1850-1918) and the Italian radio engineer **Guglielmo Giovanni Maria Marconi**[8] (1874-1937) created radio devices, it was finally possible to talk about attempts to produce sounds through electrical vibrations.



The accumulated experience made it possible to apply directly to music. The first electromusical instrument - telarmonium T.Ke-khilla appeared (1900). Finally, the first concert electronic musical instruments appeared - But the discovery of electroacoustic music itself was still far away. It



was reasonable to say that it could only appear on the basis of special electro-acoustic equipment



From the early stages of the development of electronics, various possibilities of use in the field of music were considered. Scientists were primarily interested in the possibilities of creating new instruments, "creating" sounds themselves, and transmitting sound. There is no point in arguing about who created the world's first electronic music synthesizer.

Composer and computer music researcher V.S. According to **Ulyanich**, in 1929, local engineer **E.A. Sholpo** used the optical synthesis method "Variafon" in the world's first synthesizer device[3].

Composer **E.N. Artemev**, in his lectures on electronic music at the Moscow Conservatory, calls "Variofon" the first synthesizer in the history of music [1]. Since then, electronic instruments have become a part of modern music and have greatly influenced the sound environment. Such global changes could not but affect different levels of musical thinking.

Currently, using algorithmic methods, Moscow musician and programmer **D. Zhalnin** has achieved excellent results in computer sound reproduction. The Americans believe their Mark-1, a computer-based synthesizer (1960), is also the world's first. Each is correct in its own way, because each of these devices is the first in its "family" or in itself.

It should be said about the development of electroacoustic equipment and synthesizers for musical purposes that in this regard, in our country, in particular, **I. D. Simonov, L. S. Termen, A. A. Volodin's** services are great. Currently, countless modifications of synthesizers have appeared. The most popular industrial versions of synthesizers are "Roland", "Korg", "Yamaha", "Casio", etc.

Providing technical specifications of synthesizers is not within the scope of tasks assigned to the research. This work is aimed at analyzing and evaluating the standard MIDI interface, samplers, sequencers, reverbs, mixers, acoustic systems, software, etc., and various methods used in composition work. It should be noted that new technology and new methods are used by musicians to create electronic works, edit sequencer sequences and process digital sound.

It is impossible without the music programs on the computer to run all of these. Every movement is controlled and controlled by the computer program.

The importance of the idea of using music-computer programs as a means of studying modern musical phenomena is that this is one of the first attempts to introduce a number of concepts, a complex of hardware and software tools, which were previously considered the competence of specific sciences, into musical treatment in Russia. The topic of this research is located at the intersection of music-theoretical problems of scientific and computer programming, which creates certain difficulties due to the novelty of digital sound science in musicology and the use of computer technologies hvmdv computer programs. The novelty of the thesis lies in the consideration of the interaction and interdependence of the wide range of possibilities of computer technology and musical computer software in the context of new musical instruments and their place in modern music art. This science is expressed in the implementation of opportunities to transfer the research to a higher level of knowledge of the musical work, when it becomes a means of researching the performance art (not only the technology of sound production and the system of knowledge about its perception).

The didactic aspect also looks new: the problems of training mature and modern specialists in computer music creativity and working with computer programs, studying the technical basis and technological principles of its application in the educational process.

In the form of results, the following rules are presented to the defense:

1) retrospective analysis of the formation and development of musical computer technologies and computer programs:

- describe the factors determining the development of this type of technology (computerization of musical activities, technicalization of creative musical processes, etc.).
- periodization of changes in music styles, composition techniques and music creation technologies;

2) Theoretical understanding of music computer programs as a new phenomenon in art, including:

- rules: the laws of the historical evolution of musical instruments (musical styles and creative methods of music creation and the process of speeding up their notation, the principle of mastering new timbre possibilities of electronic instruments). sound,
- specific characteristics of modern electronic musical instruments determined by principles of fundamentally different approach to sound generation and composer's creativity;
- musical computer programs as a new creative tool, as a factor stimulating the integration of scientific methods previously considered the competence of specific sciences into musicology, and as a factor determining the transition of research to a higher level of musical art knowledge;
- classification and characteristics of the fields of application of modern computer programs: musical creation - computerization of musical activities (creating, notating, writing and playing modern music);
- studying the art of music, which allows new technologies to identify new patterns (symbols) and integral features of music, algorithmize various types of composition and performance activities, obtain objective features of musical texture (agogics) and other components of creativity;

- training in musical art - analysis of musical works, mastering the history of music and performing arts, mastering music theory, mastering musical instruments and the art of arrangement, etc., in which these tools solve a complex of pedagogical, creative, psychological and practical exercises. technical problems.

Scientific results of the work. The scientific results of the work were tested in the author's lectures "Teaching experience in the field of music and computer technologies", "Methodological aspects of the organization of music and computer technologies" in general secondary schools of Andijan region, Namangan region and Fergana region under the administration of preschool and school education. In the experimental test works, the test works on the topics "Multimedia electronic manual for determining major tonalities" (visual), "Computer technologies in musical-aesthetic education of schoolchildren and students" were successfully based.

The following musical programs complete the dissertation work: a list of the author's publications on the topic of the dissertation; list of used literature; a list of scientific and methodological publications of original educational courses; dictionary (general and MIDI-interface); application tables and spectrograms of examples and pictures.

1. The history of electronic music, the development of technical methods of its creation and some artistic achievements (until about 1975).

Advances in the field of electronics gave a new impetus to the emergence and development of various musical creative directions. This is clear music (its origin is associated with the name of the French acoustic engineer and composer, professor of the Paris Conservatoire Pierre Schaeffer), Electronic music and its types - pure electronic music, live Electronic music (the very concept of "electronic music." around 1950, a German physicist introduced by W. Maer-Eppler). The reverse date for electronic music can practically be counted from 1951.

An example of the installation of "electric sounds" was first demonstrated by the German acoustician, Werner Maer-Eppler, a teacher of phonetics and communication technology at the University of Bonn, in 1951 at the summer courses of modern music in Darmstadt, and it aroused great interest. interest For further systematic work, another research laboratory - the Electronic Music Studio at Cologne Radio (Kolner Funkhaus Studio fur elektronische Musik) was established in addition to the Center for Electronic Music at the Institute of Phonetics of the University of Bonn.

2. Brief historical stages of the emergence and development of computer-acoustic music.

The birth of computer-acoustic music represents the first stage of computerization of musical activities (late 40s - mid-70s), where the elements of the music and sound system and various aspects of their interaction and interaction take an important place. The 20th century, from the first decades, was distinguished by the liberation of various parameters of sound from the well-known classical idiom that binds them. The computer opened up unlimited possibilities for newly synthesized sounds, changed the perception of sound and expanded the range of musical sound, which allowed the use of non-harmonic sound reliefs, all kinds of timbre structures, various resonance combinations and any combination of harmonics. and resonances from several fundamental tones. A multi-dimensional timbral and micro-acoustic perspective emerges, creating different "dimensions" of multiple sound spaces.

At the beginning of the 20th century, one can name many names of musicians who created original new music systems, principles of composition, and new instruments that anticipated the possibilities of the computer, including electric instruments. In the first half of the century, electric musical instruments appeared, in which mechanical acoustic vibrations were replaced by electrical

vibrations, sound on the membrane turned into mechanical vibrations. These devices gained practical development after the invention of vacuum tubes.

A variety of electric musical instruments appeared around the world (for example, in the United States - the Hammond electric organ, which was accompanied by an electric grand piano and silent films). Then these instruments caused a stir, famous innovative composers turned to them, especially E. Varese in the play "Equatorial" (1935), A. Onneger loved the Martineau waves used in the ballet Semiramis (1931). Oratorio "Joan of Arc at the Column" (1935) and others. Olive Messiaen created a composition for Martineau's wave sextet for the nocturnal water extravaganza on the Seine during the World Exhibition in Paris - "Feast of Beautiful Waters" (with mystical subtext) and the solo part of this instrument for his orchestral works - "Three Little Liturgies" (1944), "Torangalila" (1948) symphony. Composers were attracted by the unprecedented possibilities of sounds. In the second decade of the century, Edgard Varèse saw the future and sought to create music through sound resonance complexes.

In the 1930s, the first tape recorders appeared in Germany, but their widespread use by musicians began after World War II, when the multi-channel tape recorder, the first sound synthesizer, and the electric guitar were created in the United States (composer-inventor). Paul contributed less to the creation of the latter). In the United States, the musical use of electronic technologies was boosted by John Cage's spontaneous discoveries and free ideas, and sometimes his humor (sticking tape, then working with random numbers in the creation of music on a computer, etc.).

In 1948, in Paris, the acoustic engineer Pierre Schaeffer founded the first electromusic research group in French radio, which marked the beginning of the development of electro-acoustic music. He created "concrete music" by editing and changing tape recordings, mixed with the real sounds of nature, city, machinery, sounds of electric instruments ("Study of railways", "Study of turnstiles", etc.). Together with the composer Pierre Henri, Schaeffer created innovative compositions for sound and tape - "Symphony of One Man" (1950), opera "Orpheus" (1951).

In the early 1950s, an experimental electronic music studio of Cologne Radio was established. This is where the term "electronic music" appeared, and X. eEymeert, K. Stockhausen and D. Leeeegeeti's first eeleeektron works were created. Ligeti's "Articulation" (1958), "Volumes" (1962) and electronic pianos, as well as Stockhausen's pianos, discovered unique ways of creating new sound compositions by perfecting the acoustic properties of musical structures and detailed listening parameters characteristic of this composer. . Stockhausen's compositions were distinguished by the presence of repeated sounds in different aspects of space and time, which captured the imagination. For the first time, Stockhausen creates polyphony - a conversation of voices - by duplicating copies and dubbing them using a tape recorder from a recording of one short melody (a child's voice) ("Song of youth...").

In the 1960s, Stockhausen headed the Cologne Electronic Music Studio and the International Electronic Music Artists Group. He finds improvisation in adding sound recordings to the live sound of music, acoustic effects of various arrangements of ensembles of musicians in a natural landscape, experiments with acoustic spatiality, using moving sound sources, using moving sound sources. Later, he creates electronic compositions with the participation of traditional and ancient instruments, the sounds of which are modified by electronics, such as the voices of singers and readers.

Stockhausen has been lecturing on electronic music since the 1960s and has been hosting music festivals ever since. From 1958, Ligeti taught a course of lectures on electronic and serial music at the International Summer Seminars in Darmstadt (the review lectures at these seminars, along with

other modern art lectures, were attended by generals of the French army to gain ideas about the value of the culture of our time).

By the end of the 60s, several well-equipped electronic music studios were operating in Europe, where research and creative experiments were conducted on sound analysis and synthesis. By the mid-70s, there were more electronic music studios in the United States than in Europe - about two hundred, helped by Russian-American composer Vladimir Usachevsky. Together with the composer Otto Luenning, he established electronic music studios throughout the country, where computers began to appear earlier than in other countries, then personal computers.

In 1964, composer John Chowning, with the help of Bell Telephone Laboratory engineers Max Matthews and Stanford's David Poole, used a computer system from Stanford University's Artificial Intelligence Laboratory to create music computer programs. In 1967, Chou received a patent for his invention of the sound frequency modulation algorithm - a simple and elegant ability to create and control the time variation of the sound spectrum, that is, timbre synthesis. The method he discovered was widely used in computer-acoustic music composition and in the design of electric musical instruments (for the first time it was used in Yamaha electric organs).

3. Systematization and classification of performance parameters of synthesizers.

If we consider the issues of music theory (notation) from the point of view of computer technology programs, you will unexpectedly encounter phenomena that are not encountered in traditional genres of musical art. For example, quantization of the rhythmic pattern of a piece of music consists of smoothing out performance errors in the rhythmic pattern of a melody or textural accompaniment. The novelty can be considered the SKALE function, which allows to modify the tuning of the instrument with frets. A sequencer is a function of memorizing musical sequences and represents a type of event protocol (event) related to keystrokes (key numbering), velocity (velocity) of the keystrokes, etc. Finally, it became possible to actively intervene in shaping the timbre of a musical instrument, even to the point of imparting tones or effects characteristic of traditional sound, or completely changing the nature of the source material. Is this area of new knowledge music-theoretical or just technical? So how should we approach the musical process in relation to these characteristics? Is intuitive knowledge of the nature of sound enough, or is it necessary to study specific sciences to understand the technologies of synthesizing a certain musical effect? It is clear that these and other problems should be considered from the perspective of historically formed traditions.

The beginning of the 20th century was characterized by the rapid development of science and technology, primarily in the field of information technology. Naturally, no sphere of human activity can be outside the sphere of influence of this process. The concept of approach to the act of creativity has also changed, as new electronic tools require different ways of performing creative tasks. Modern music art is directly and inextricably linked with the development of music technologies and computer programs, composition, arrangement and performance techniques.

Undoubtedly, the scientific and technological revolutions of the 20th century in the field of acoustics and sound have opened up unprecedented possibilities. First of all, it is necessary to mention new and constantly improved methods of sound recording, sound equipment of modern concert halls and recording studios, electronic equipment of musical instruments, synthesizers and many other things. our century, and all these independent and very different practices emerged from theoretical disputes.

Of course there are other things. Technical innovations, with their great appeal, did not guarantee a natural and effective use in the mainstream of musical art. The abundance of new acoustic possibilities has opened a truly unlimited "freedom of choice" for the creator of means of realization of

artistic ideas and created unprecedented challenges. After all, creative freedom is necessary for the creator and is useful to him only within the framework of his ideological and artistic tasks.

As you know, music and technology have been connected since time immemorial. The conditions for turning the ideas of composers and composers into sonorous and communicatively effective music are not only the technical rules of composition, but also the work of the "sound machine". Already the oldest pipe was a simple musical and technical structure. The soft and fragile sounds of the harpsichord were necessary and sufficient to play the performances of Scarlatti, Rameau and Couperin. Piano music of the 18th and 19th centuries needed the hammer mechanism and all the improvements that allowed the piano to dominate the huge concert halls.

These few historical notes show one important pattern. The first has always been the leader in the union of music and technology. Music is "ordered", inventive thought is "suggested". But this is just a diagram. In the process of choosing technical means, for the time being, the decisive word belonged to the specific, internally controlled tasks of art. The emergence and implementation of artistic and creative tasks has never been a fixed movement in a straight line. There were hesitations, trials, and at the same time attraction to a certain point. This point was the proof of the artistic expressiveness of a certain medium and its aesthetic value.

Apparently, recently there has been a debate about the use of electronics in music, the possibility of replacing the creator-composer with a soulless machine. Today, the controversy has ended, and I'm not without reason: the artist has overcome the prejudice of humanism and mastered new tools - electronic tools, as he once mastered notography. Denial and skepticism paved the way for widespread computerization to become an everyday reality. For many composers, electronic media have turned from competitors to assistants, and it does not matter what happened in the technological chain, what equipment and programs were used. The main thing is to correctly manage the functionality of the equipment.

Currently, electronic technologies coexist peacefully with the academic culture that has developed over the centuries. Music naturally combined all valuable things collected by mankind: from the oldest folklore traditions to the newest methods of working with sound.

However, the field of musical electronics and artistic and expressive reflection is perhaps the most urgent problem, the solution of which opens new horizons and makes the expressive capabilities of modern electronic instruments anemic.

Summary.

To sum up: a lot of scientific literature, study guides and textbooks, monographs and dissertations related to the topic were viewed, studied, deeply analyzed, and the innovations adapted to the times were re-studied and applied to the experimental test.

This study was based on the technology of developing competences for working with computer programs in improving the artistic and performance skills of students in music lessons (in the case of 5-7 grades). Dissertation, first of all, is based on methodological principles, mainly develops theoretical and methodological principles and ideas of foreign musicology, instrumental and computer sciences. The analysis of the literature shows that the problem of this research project has been only partially covered so far, which indicates the need for a special study. The positive aspects of the obtained results were highlighted in the dissertation, and opinions, suggestions and scientific conclusions were given in turn.

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10. https://ru.wikipedia.org/wiki/Фарадей,_Майкл

Rezyume: *Ushbu ilmiy maqola asosan umumiy o'rta ta'lim musiqa sinflarida o'quvchilarning badiiy va ijrochilik mahoratini oshirishda kompyuter dasturlari bilan ishlash kompetensiyalarini shakllantirishning texnologik jarayonlarini o'rganish va modellashtirishning tizimli metodologiyasi mavzusidagi dissertatsiya natijalariga asoslangan. maktablar. Turli yoshdagi o'quvchilarning musiqiy qobiliyatlarini yanada rivojlantirish doirasida zamonaviy musiqa dasturlarining o'рни va roli ta'minlangan.*

Резюме: *Данная научная статья базируется преимущественно на результатах диссертационной работы по системной методике изучения и моделированию технологических процессов развития компетенций работы с компьютерными программами при совершенствовании художественно-исполнительских навыков учащихся музыкальных классов общего среднего образования. школы. В рамках дальнейшего развития музыкальных способностей учащихся разного возраста представлены место и роль современных музыкальных программ.*

Kalit so'zlar: *Musiqa, idrok, kompyuter dasturlari, kompyuter texnologiyalari, axborot texnologiyalari, interfeys, algoritm, o'quv jarayoni, musiqiy ijod, zamonaviy musiqa asboblari, texnik musiqa, elektron musiqa, bastakor, noodatiy tovush, tembr.*

Ключевые слова: *Музыка, восприятие, компьютерные программы, компьютерные технологии, информационные технологии, интерфейс, алгоритм, процесс обучения, музыкальное творчество, современные музыкальные инструменты, техническая музыка, электронная музыка, композитор, необычное звучание, тембр.*

THE NEED TO ORGANIZE THE ACTIVITIES OF AGRICULTURAL CLUSTERS AND THE THEORY OF ITS MANAGEMENT

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Summary: *The article scientifically substantiates the need to organize the activities of agroclusters, analyzes scientific views on its management. Also developed scientific proposals and practical recommendations aimed at improving the practice of organizing and managing agroclusters*

Keywords: *cluster, agrocluster, management, cluster management, competitiveness, global competitiveness, specialization, integration, food security, agriculture*

The efficiency of agroclusters is inextricably linked with the economic activity of small farms, peasant farms, agricultural enterprises and organizations that are part of it. At the same time, improvement of the socio-economic condition of the regions where agroclusters are established will be achieved. By organizing the activities of agroclusters in the regions, it will be possible to ensure national food security by providing the population with cheap and high-quality food products, by ensuring the employment of the population, strengthening their income base [1]. In particular, in most countries, by using the cluster approach in the development of agriculture, the competitiveness of products produced by agroclusters is being increased at the national and global level [2]. Also, according to the analysis of the world practice of agricultural development, it was determined that the more agroclusters are established in the country, the higher the global level of competitiveness of agriculture in those countries compared to other countries [3]. This situation today requires any country to approach the agricultural sector based on a cluster approach in order to achieve sustainable development of agriculture, including national food security.

Stages of development of scientific-theoretical views on the organization and management of agroclusters, increasing the efficiency of using innovative projects in the management of agroclusters and factors affecting it, priorities for improving the methodological foundations of agrocluster management, far abroad R. Claudio, R.G. Cooper, M. Delgado, D. Doloreux, I. Laure, G. It is reflected in the scientific research of economists like Linden.

According to the analysis of the world practice of the organization of agroclusters in agriculture, the effective solution of socio-economic problems in rural areas has been reflected in many scientific studies. In particular, positive trends such as ensuring the socio-economic and ecological stability of rural areas, moving agriculture to the path of innovative development, strengthening the implementation of scientific achievements in practice, creating new jobs, strengthening the population's income base, and ensuring national food security are agroclusters. its activity was manifested in the practice of the countries where it was established. Another important aspect of the cluster approach in the development of agriculture allows to dramatically increase the efficiency of production and processing of products.

At this point, it is worth saying that in our country, by clustering the form of economic management of economic entities engaged in agricultural activities, it is possible to solve various existing problems in the field. Including:

First of all, most of the agrarian entities engaged in the cultivation of fruits and vegetables in the agriculture of our country are in the form of small farms, and a unified system for the requirements for the quality of the products grown and processed by them has not yet been formed. According to the

analysis of the global practice of agrocluster development, the activities of economic entities engaged in small-scale agricultural activities in one geographical area are systematically summarized into a single agrocluster. As a result, the stability of the supply chain in their activity is ensured, and production efficiency increases. In this, together with product production, their quality management capabilities will expand;

and secondly, the lack of warehouses that allow for long-term storage of agricultural products during the productive season of agriculture, especially when harvesting is in full swing. Because of this, a significant part of the harvest will be taken to the markets for sale, and there is a possibility that the price of fruits and vegetables will drop sharply. A certain part of them becomes unfit for consumption due to the lack of proper storage conditions. As a result, agricultural entities may lose part of their income. By organizing the activities of specialized agroclusters in the regions, sufficient development of the infrastructure of the sector will be achieved through the construction of large warehouses that allow long-term storage of agricultural products. This allows to increase the level of capitalization of the agrocluster, together with the reduction of the economic damage in the amount of income that the agricultural entities can receive;

thirdly, the limitation of possibilities for packaging agricultural products that are grown and processed. Due to the increased load on the activities of processing and packaging units, especially in the conditions of productivity, they do not have time to fully package or process the products. In this case, a certain amount of products will be unfit for processing or packaging. This leads to a certain degree of damage to economic entities engaged in the cultivation of agricultural products;

fourthly, limited opportunities of small-scale agricultural entities to transport products. It is assumed that additional expenses will be incurred by agricultural entities for the transportation of the grown products. At the same time, the unevenness of roads during transportation of cultivated products has a negative effect on the quality of products. This can also lead to a certain volume of products becoming unfit for consumption;

fifth, more than half of the population of our country lives in rural areas. At the same time, the problem of unemployment in rural areas is relatively high, and the level of wages is relatively low.

The above-mentioned cases are the existing socio-economic problems in the agricultural development of our country, and they reflect the need to develop the activity of agroclusters in the territories of the republic. Also, in the economic literature, management of agrocluster activities is distinguished from other economic entities engaged in agricultural activities by the following characteristics:

- focus on expanding the participation of the group of agricultural entities included in the agrocluster in the general foreign market;
- the activity of agrocluster is aimed at effective use of the potential of agricultural development in the area where it is located;
- expanding the participation of agricultural entities, including other types of enterprises and organizations, in the development of agrocluster activities by using the privileges created by the state in the management of the agrocluster;
- formation of a stable internal supply chain between agricultural entities that are members of the agrocluster [4].

The level of global competitiveness of national agriculture in the practice of developed countries such as the USA, Germany, France, Finland, Austria, the Netherlands, including developing countries such as China, Malaysia, Indonesia, India, and developing countries such as Russia, Ukraine, Kazakhstan, Hungary, Slovenia it is planned to use the agrocluster management methodology in the

increase. According to the results of studies conducted by experts of the UN Food and Agriculture Organization, today more than 50.0% of the world's countries are widely using agrocluster management practices to increase agricultural competitiveness, ensure national food security, and ensure sustainable development of the sector [5].

Taking into account the above, it can be concluded that the transition to agro-cluster management practices in the quality improvement of the produced food products is the need of the hour for sustainable development of agriculture in our country, improvement of its global competitiveness indicators, improvement of the efficiency of introducing innovations in the sector. In this case, in-depth research of scientific studies on the formation and development of the cluster approach in economic literature is required.

In order to understand the essence of the practice of agrocluster management of agriculture, it is necessary to analyze its basis first. In general, agrocluster management is formed in connection with the term "cluster". The origin of the term cluster is derived from the English word "cluster", which lexically means the combination of various interconnected and interrelated elements, their gathering at one point (or place) [6]. Together with this, it also refers to different groups with a certain level of common characteristics.

In the field of science, the term "cluster" was first used in the exact and natural sciences, and entered the economic literature from the 70s of the 20th century. Swedish economists K. Fredrickson and L. Territorial studies carried out by the Lindmarks became important. In the course of the research, these scientists analyzed the activities of various enterprises located in the same region, established mutual economic relations, i.e. the organization of mutual cooperation between various enterprises in the production of one type of product, and used the term cluster to evaluate the overall result of their activities [7]. This prompted the formation of a cluster approach in the economic literature.

V. who lived for the first time in economic literature in the 19th century. Laundhardt, A. Weber and A. In the studies conducted by marshals, the characteristics characteristic of cluster management have been demonstrated. Industrial areas were selected as the object of research conducted by these scientists, and scientific conclusions were obtained regarding the development of economic efficiency and the geographical localization of production in relation to each other. But they focused not on these processes as a cluster approach, but on the existence of integrated relations between enterprises and organizations. At the same time, it was concluded that it is necessary to deepen the mutual integration relations between the enterprise organizations participating in it in order to increase the efficiency of the programs of localization of the production of a certain type of goods and the production of a new type of product in one region.

Also B. Johnson and B. In Laundvall's research, there are also calculated scientific views related to the theory of cluster management. In the concept of "development blocks" developed by them, there are scientific views that ensuring the interdependence between the activities of regional production associations (associations) and the activities of institutions providing educational services expands the possibilities of sustainable development of the national economy and increasing competitiveness at the global level [8].

By the 80s of the 20th century, M. In the studies carried out by Porter, an attempt was made to shed light on the essence of the term cluster as an economic category. In his opinion, "a cluster is a manifestation of the inter-sectoral integration of economic activities of enterprises, organizations and institutions located in a certain field, geographically in the same area." In this approach, we can see that cluster management is based on deep integrated relations between different enterprises and organizations involved in the production of one type of product [9].

M. Porter's research is characterized by the fact that he summarized the advantages of scientific views on integrative relations in previous studies and evaluated them as characteristics of cluster management. Also, when the scientist studied the development characteristics of the national economy of 10 leading countries in the world, it was determined that clustering increases the efficiency of using national competitive advantages and is a process that guarantees the development of the country's economy [10].

Increasing the efficiency of management of agricultural development by organizing the activities of agroclusters is also reflected in the research carried out by experts of international organizations. In particular, UN Food and Agriculture Organization expert E. According to Gálvez-Nogales, agroclusters are formed by entering into mutual integration relations between agriculture, food industry, scientific research institutes, services, etc. it is formed as a result of the establishment of joint inter-branch relations. This scientific view means that agroclusters can be formed in any situation. That is, it is stated in the tariff given by the scientist as "officially or unofficially", and the mutual cooperation relations between the entities engaged in agricultural activities in the process of production of products, even if an official cluster is not established, as a result of entering into integrated relations, a cluster approach to the management of their activities is formed. allows.

Also V.V. In the research carried out by Demichev, it was proved that it is possible to achieve a competitive advantage on the basis of cluster management by organizing agroclusters in areas with high agricultural development potential. A.S. According to Khukhrin, in the context of the development of agriculture, clusters are an integrated structure that is formed independently.

Based on the above-mentioned scientific views, it is possible to come to the conclusions that the organization of agrocluster activities is a natural phenomenon in the development of agriculture. The formation of agroclusters in agriculture calls for a radical improvement of its management practices. Here T.V. It is necessary to pay attention to Tsihan studies. The scientist believes that the joint management of the activities of the interrelated forms of agricultural management through the organization of agroclusters, together with a sharp increase in the efficiency of their economic activity, is guaranteed to achieve a competitive advantage. In particular, he distinguishes the following three features of the manifestation of agroclusters:

- agroclusters appear as intersectoral integration associations with a high level of aggregation;
- agroclusters are scientific research institutions engaged in scientific activity related to agriculture, as well as a territorially limited form of economic activity in related and industry-serving sectors (this refers to the activity of regional agroclusters established in one area);
- vertically organized agroclusters - this implies the unification of the interests of representatives of various sectors participating in all production processes until the product is ready for consumption.

Also, A.A. In the researches carried out by Migranyan, the following three different approaches are distinguished in the study of cluster activity:

- economic entities gathered around a large enterprise in a certain area appear as a cluster;
- the integration of enterprises and organizations in a vertical technological system that includes all links related to the production of ready-to-consume products, including scientific research, food supply, production, commerce and subsequent service;
- industry or network cluster.

Among local economists, Ch. In Muradov's opinion, "agrocluster - in addition to combining the processes of production, processing and sale of agricultural products into a single chain and using high-tech innovations, increasing the competitiveness of agricultural products in the domestic and foreign

markets, forming and developing the infrastructure complex in rural areas, encouraging rural residents to work to increase the level of employment and in the future will be composed of business entities that will work in improving the quality of agricultural products and the ecological environment. The tariff given by the scientist in relation to agroclusters serves to explain its essence in a broad sense. In particular, the scientist distinguishes the following features typical for the activity of agroclusters:

- regional specialization and localization of agricultural production;
- interactions between business entities of the network;
- the formation of technological interactions between various sectors that produce finished products from agricultural products.

At the same time, In the research conducted by U.Saidakhmedov, "clusters are groups of enterprises operating in the same or similar fields and located geographically close to each other. These enterprises should be technologically interrelated. In addition, these enterprises must be united for one common goal - to produce a competitive product." In this tariff, it is important that cluster management should be aimed at ensuring competitiveness. A similar scientific view of R.I.Israilov's opinion, "a cluster is a group of business entities and development institutions that are connected to a technological chain in a specific field, located in the same geographical area, are integrally related to each other, and are a mutually unifying process in order to ensure their competitiveness for a single goal."

Another local economist Q.Mamadaliev in his research puts forward the idea that "a cluster represents a set of economic structures localized in itself." In this tariff, priority is given to the improvement of the effectiveness of the localization programs implemented through the development of agroclusters. This approach is presented above in According to Ch.Muradov, it means that the characteristics characteristic of agroclusters are manifested in agrocluster management.

The technological chain of managing the activities of the developed agroclusters is characterized by the fact that it includes the period from the cultivation of agricultural products to its processing in industrial sectors, together with services such as storage, delivery, packaging of the grown products, until it reaches the consumer. At this point, it is worth noting that this technological chain, incorporating the product production cycle in the agrocluster activity, has the characteristic of constant repetition.

Based on the analysis of scientific and theoretical views on the development of agrocluster management in the development of agriculture, it was determined that there are the following features characteristic of its manifestation:

- geographical location of enterprises and organizations included in the agrocluster in one area;
- strengthening of intersectoral integration relations for the creation of a certain type of product;
- increase the efficiency of localization programs;
- improvement of the competitiveness of the products produced by the agrocluster;
- equal consideration of the interests of enterprises and organizations that are part of the agrocluster when making management decisions;
- a sharp increase in the level of innovative activity of the field where the agrocluster is established;
- high level of capitalization of agroclusters;
- breadth of financial opportunities;
- access to international markets, including increased opportunities to enter new markets, etc.

In general, the transition to management practices based on the agrocluster approach in the development of agriculture creates a basis for the effective use of the potential of agricultural

development in the context of increasingly complex economic relations at the national and global levels.

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Rezyume: *Maqolada agroklastarlar faoliyatini tashkil etish zarurligi ilmiy asoslab berilgan, uni boshqarish bo'yicha ilmiy qarashlar tahlil qilingan. Shuningdek, agroklastarlarni tashkil etish va boshqarish amaliyotini takomillashtirishga qaratilgan ilmiy taklif va amaliy tavsiyalar ishlab chiqildi.*

Резюме: *В статье научно обоснована необходимость организации деятельности агрокластеров, проанализированы научные взгляды на ее управление. Также разработаны научные предложения и практические рекомендации, направленные на совершенствование практики организации и управления агрокластерами.*

Kalit so'zlar: *klaster, agroklastar, menejment, klaster boshqaruvi, raqobatbardoshlik, global raqobatbardoshlik, ixtisoslashuv, integratsiya, oziq-ovqat xavfsizligi, qishloq xo'jaligi*

Ключевые слова: *кластер, агрокластер, менеджмент, кластерное управление, конкурентоспособность, глобальная конкурентоспособность, специализация, интеграция, продовольственная безопасность, сельское хозяйство.*

WAYS OF IMPLEMENTING THE CONCEPT OF WORKING WITH MUSIC COMPUTER PROGRAMS IN THE TRAINING OF MUSIC TEACHERS FOR HIGH SCHOOL MUSIC CLASSES

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Summary: *This article focuses on ways to implement the concept of working with musical computer programs in the training of musician teachers for music classes in general education schools within the framework of the thesis topic "Technology of developing competencies for working with computer programs in improving the artistic and performance skills of students in music lessons (in the case of grades 5-7)" highlighted and discussions of the results of the dissertation work are partially cited.*

Key words: *Digital technologies, musical creativity, education, computer programs, computer technology, technologies of creating musical works, new media, modern teacher, general secondary schools, new approach.*

Introduction.

Relevance of the research topic. The beginning of the 21st century was marked by the introduction of computer and communication technologies into all spheres of human activity. Global changes have occurred in the transmission and presentation of information. Digital technologies have permeated music creation and education. Advances in recording, music production technologies, combined with new media opportunities have defined areas of music development and distribution that did not exist before and require knowledge not available to musicians with academic music education.[4]

The development of a new approach to music education in general secondary schools is connected with the need to solve the current problems of public music pedagogy, including the current state of general music education. Thus, at the "Modern Music Education" conferences, musicologists and teachers of music sciences, despite the great creative achievements, the possibilities of music education in mass pedagogy are not being fully used, the teaching methodology in the general music education system is not being used significantly, as a result, why its level does not meet the requirements of the present time. they emphasized.

One of the ways to solve this problem is to look for new pedagogical technologies. It is necessary to improve them and create music programs that allow for flexible and versatile use of rich pedagogical tools and enormous computer capabilities in music education. The process of informatization of education is one of the most important in the system of professional development of teachers (including musicians). Today, it is increasingly used to solve this problem.

Internet. There are more opportunities associated with the use of modern network technologies. A network professional pedagogical community was formed that allows teachers to communicate with each other without leaving the educational institution. There are a number of challenges in this new field. Thus, many educational institutions are not always able to adapt to the rapidly changing world of digital technologies. There is a need to create mobile educational systems that can quickly adapt to the changing information and communication environment. The problem of training specialists who meet the modern requirements of music education arises.[8]

Thus, the dynamically developing music and musical computer programs set the possibility of creating a new professional and educational creative environment. Didactic aspects of the problem of computerization of music education in Russia, scientists and teachers Yu.N. Pare, I.B. Gorbunova, R.Kh. Zaripov, N.S. Sushkevich, N.A. Terenteva, I.M. Krasilnikov, E.V. Orlova, P.L. Zhivaikin, E. Mansfelders, A.P. Mentyukov, S.P. Polozov, M.V. Karaseva, S.B. Puchkov and others. In this direction, scientific articles and monographs, methodological and educational manuals, programs and music collections for students have been published. Since 2003, the magazine "Music and Electronics" has been published, which helps teachers to choose equipment for music lessons, repertoire, methods of conducting them, etc.[14]

Among the studies in the general methodological direction, we find E.Z. Para, V.P. Sradzheva, L.M. Sedunova, N.S. We highlight the scientific articles and works of Sushkevich, L.P. Kazantseva and others, which include scientific generalization of the psychological and pedagogical effects of musical computer programs. Today, serious work is being done on its use. Musical computer programs in the study of musical sciences, in particular, solfeggio, which is the subject of textbooks and a number of articles by M. V. Karaseva. An attempt to show the role of musical computer programs in musical creation and pedagogy is reflected in the dissertations of V. Beluntsov, Yu.N. Para, I.B. Gorbunova, S.V. Puchkova and others. During the research, we also got acquainted with the scientific publications of I.B. Gorbunova, G.G. Belova, E.V. Orlova, I.M. Krasilnikova and others on teaching musical computer programs in children's art schools and secondary schools. We also took into account the achievements of foreign scientists and practicing musicians E. Varese, K. Stockhausen, D. Mishra and others.[12]

Works on psychology and pedagogy also played an important role in the work on research - philosophy and aesthetics of P. Ya. Galperin, A. J. Brushlinsky, A. Yu. Kravtsov - R. Kh. Zaripov, E. V. Denisov, E. Artemev and The works of S. Ts. Kurbatskaya, Kohoutek and others on various aspects of musicology are undoubtedly important. However, despite the demand for information technology in music practice and the development of a number of theoretical issues, the topic remains "open". The introduction of musical computer programs into the educational system has not received enough attention, so a serious scientific synthesis of the work done in this area is required. [3]

The research problem is to analyze the role of musical computer programs in the modern music-educational process, to analyze the concept of music-computer pedagogical education and to improve the teaching of music sciences.

The object of research is the process of training a musician-pedagogue in the system of continuous music education at the university, university, and higher educational institutions and general secondary schools based on the wide use of musical computer programs.

The subject of research is the methodology of developing the educational potential of a future teacher-musician in the context of the development of musical computer programs.

The purpose of the work is to develop the theoretical basis and practice of the implementation of the concept of musical computer software education in the training of music teachers.

The research hypothesis is presented with a number of rules on ways to form the concept of effective musical pedagogical education in the context of the development and implementation of the concept of working in modern music computer programs.

This important problem can be solved if:

- understanding of the historical, artistic-aesthetic, worldview and methodological foundations of music and computer technologies, the experience of their penetration into musical-creative and musical-pedagogical activities will be a mandatory component of music-pedagogical education;

- on the basis of musical computer programs, the traditional methods, methods and methods of music pedagogical education will be further developed;

- the results of the research are used in the teaching of music sciences, including musical computer programs;

- in the conditions of modern information technologies, conditions are created for the formation of the educational potential of the musician-pedagogue.

The objectives of the study are as follows:

- historical and theoretical analysis of the issue;

- Development of ways to implement the integrated concept of higher music pedagogical education in the 21st century on the basis of musical computer programs;

- description of the concept of "music and computer technologies" in pedagogical, information technology, musical-aesthetic, social aspects;

- promoting an educational program using musical computer programs that provides professional retraining of musicians with higher and secondary music education;

- testing and introduction of elements and methods of musical computer programs to the practice of training students of higher music-pedagogical educational institutions;

- adaptation of the developed courses for 5th-7th GRADE students of in-depth music schools, children's music schools, children's art schools, children's art education centers and general secondary schools.

- use of programs in the context of changes and reforms in the general secondary education system.

The methodological basis of the research was a complex, systematic, dialectical approach, which allows combining the possibilities of traditional, classical methods and the possibilities of musical computer programs in training a musician-pedagogue. The music-educational process is considered as a complex system that establishes the connection between different approaches to the formation of adequate educational potential of the music teacher. [10]

The research is based on:

- methodological foundations of modern higher pedagogical education (G.A. Bordovsky, V.A. Bordovsky, V.V. Laptev, N.F. Radionova, A.P. Tryapitsyna);

- approaches to analyzing the essence of pedagogical technologies (V.P. Bespalko, G.A. Bordovsky, E.Z. Vlasova, E.S. Zair-Bek, M.V. Klarin, E.S. Po'lat);

- psychological-pedagogical concepts of step-by-step formation of mental and practical actions (P. Ya. Galperin, N. F. Talyzina);

- theories of developmental education (L.S. Vygotsky, V.V. Davidov, D.B. Elkonin);

- theories of the methodology and practice of informatization in education (Y.K. Baranovsky, A.P. Ershov, V.V. Laptev, E.I. Mashbits, V.M. Monakhov, V.G. Razumovsky, I.V. Robert, N.F. Talyzina)

- concepts of introducing information technologies to education (E.V. Baranova, E.Z. Vlasova, I.B. Gotskaya, V.V. Laptev, E.S. Po'lat, I.V. Robert, L.M. Sedunova, O.N. Shilova)

- the main principle of educating a musician as a unit of artistic and technical development.

The theoretical foundations of creating pedagogical education for working with music-computer programs are as follows:

- historical and theoretical analysis of stages of development from sound synthesis of acoustic instruments to electronic-acoustic music in working with music computer technologies and musical computer programs;

- creation of a professional educational methodological complex aimed at forming the personality of a teacher-musician with a system of modern knowledge and skills;
- organization of new creative forms in conducting lessons, including diverse connections between art and information technology education, reflecting the integration of various fields of knowledge typical of the modern educational field;
- formation of basic competencies, universal and intellectual skills that serve to form a well-developed person who can creatively express himself and is capable of continuous self-education.

Research methods. To achieve the objectives, the research used a number of interrelated and complementary methods:

- theoretical analysis of scientific and methodological literature and musical historical sources related to the development of music computer technologies and music computer programs;
- a systematic approach to understanding the essence of working with music computer technologies and musical computer programs in the context of the history of music pedagogy and the needs of modern music education;
- generalization of advanced musical-pedagogical experience, pedagogical observation;
- modeling ways and means of forming the worldview of a music teacher in the context of different fields of knowledge;
- use of observation and experimental results;
- analysis of empirical data obtained during the study;

The definition of this term is explained in the third chapter "Methodology of teaching music sciences using music computer technologies and music computer programs in the training of a musician teacher".

- relying on traditional psychological-pedagogical approaches during the experiment, interview, questioning, expert assessment and monitoring of teachers' activities.

Basic stages of logic and research. The research had the following logic:

1. Justification of the problem, the main goals and objectives of the research.
2. Defining a strategic research plan, including preliminary, theoretical and experimental stages.

A. The initial stage included the following tasks:

- study of scientific-theoretical sources, non-traditional approaches to forming and solving musical-educational problems, compilation of a bibliography;
- consideration of the philosophical and scientific side of the problem;
- analysis and comparison of practical experience in music education.

B. The theoretical stage of the research is to determine the specific ways and means of achieving the research goals and objectives:

- application of theoretical conclusions in the practice of teaching music sciences with the help of working with music computer technologies and music computer programs and formation of the relevant outlook of the musician-teacher;
- to identify topics and departments of music sciences where music computer technologies and music computer programs can be used;
- formation of new educational subjects based on music computer technologies and musical computer programs;
- development of the methodology of music education using music computer technologies and music computer programs.

V. The experimental part of the research (2003-2006) was based on practical testing of the proposed ideas:

- In the process of professional retraining of teachers with higher and secondary specialized music education on the basis of music computer technologies and musical computer programs, using music and computer technologies in general secondary educational institutions of Andijan region, Namangan region and Fergana region, affiliated to the preschool and school education department. in music education;

- Improving the qualifications of teachers of children's music schools, children's art schools on the programs "Musical computer - a new instrument for a musician", "Teaching music subjects using a synthesizer and computer in children's music schools, children's art schools"; and children's art schools; "Introduction to the Music Computer" for music teachers of general secondary schools;

- in the process of training future teachers studying at the bachelor's degree in "Fundamentals of electronic musical instruments and computer arrangement", "History of electronic music", "Additional musical instrument (electronic)".

Before the experiment, the goals and tasks were discussed and approved at the meetings of the "musical computer technologies and musical computer programs" teaching-methodological laboratory of general secondary educational institutions affiliated to the preschool and school education department of Andijan region, Namangan region and Fergana region, and the following was implemented in parallel with the experiment:

- software development, "Computer Music", "History of Electronic Music", "Fundamentals of Studio Recording", "Fundamentals of Composition, Instrumentation and Computer Arrangement", "Traditional and Computer Orchestration", "Recording Technologies", "Studio" subjects, etc. preparing for classes on;

- correction of programs in the context of the considered problems, discussion at the Department of Fine Arts and Music Education of the Andijan State Pedagogical Institute;

- expert assessment of the obtained results.

The scientific novelty of the elements of the dissertation research is as follows:

- the phenomenon of using music computer technologies and musical computer programs is understood as a new educational creative environment and is theoretically based;

- elements of modern higher pedagogical education model based on music computer technologies and musical computer programs were developed;

- Enriching the essence and conceptual apparatus of the categories "music-computer education", "music-computer modern technologies", "music-computer technologies - a new educational and creative environment", "music computer - a new musician's tool". the science of modern pedagogy was defined;

- the ways of implementing the new concept of music and computer education expressed in programs and teaching-methodical complexes for higher and general secondary schools were defined;

- a new system of training in music was founded, which organically combines "traditional forms of education and the use of modern information technologies;

- Innovative teaching and learning technology was created, based on the use of multimedia, distance and Internet technologies (along with traditional ones).

The theoretical significance of the research is that the ways to implement the concept of music computer technology and music computer software education have been found and justified, which allows for qualitative changes at all stages of training a musician teacher.

Practical significance of research.

1. The developed methods of implementation of the concept enrich pedagogical practice with new, advanced strategies and tactics of higher music and computer education, taking into account the socio-cultural reality, taking into account the forecast for professional retraining of music teachers.

- Higher music pedagogical education, as well as specialized education for secondary educational institutions, elements of professional education program for retraining of specialists in the field of music education, new curricula and subjects were created.

3. Elements of continuous music and computer education system including specialized, higher (bachelor) education and professional retraining were developed.

4. A principled new system of conducting classes based on the pedagogy of co-creation in terms of form, content and methodological techniques was created in specialized schools, general secondary schools and higher educational institutions.

The results of the dissertation research were approved at the seminar "New information technologies in modern music education and creation" in the "Music and computer technologies" base of general secondary educational institutions affiliated to the preschool and school education department of Andijan region, Namangan region and Fergana region. Since 2018, the work has been tested at the international scientific-practical conference "Modern Music Education" held annually at Andijan State University and Andijan State Pedagogical Institute. Its positive results were confirmed at seminars, meetings and presentations, master classes held for teachers of music and general education schools, music and music-pedagogy educational institutions. The training was held as part of training and course preparation of teachers with higher and secondary special vocational education under the professional retraining program "Teaching music sciences using music and computer technologies in secondary vocational education institutions". In the dissertation, it was also tested in teaching music education students of Andijan State University and Andijan State Pedagogical Institute.

Summary.

Reliability of research results and conclusions. Reliability and validity of research results and conclusions are ensured by a clear methodological basis and a comprehensive theoretical analysis of the problem. We also highlight a representative sample of respondents to the exploratory and formative experiments.

The following rules are provided for protection:

1. Methodical training of the future teacher-musician at the current stage should include understanding of music computer technologies and musical computer programs as a new educational creative environment.

2. The main element of the new educational creative environment is the music computer as a multi-functional polytimbral instrument for music teachers.

3. The proposed ways of implementing music computer technologies and music computer software pedagogical training at all stages of education meet the criteria of modern music and artistic processes.

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Rezyume: *Ushbu maqolada umumta'lim maktablarining musiqa darslari uchun musiqachi o'qituvchilarini tayyorlashda "Musiqaviy kompyuter dasturlari bilan ishlash konsepsiyasini amalga oshirish yo'llari" mavzusidagi dissertatsiya mavzusiga e'tibor qaratilgan. musiqa darslarida o'qituvchilarning badiiy va ijro mahorati (5-7-sinflar misolida)" mavzusi alohida ta'kidlangan va dissertatsiya ishi natijalari bo'yicha muhokamalar qisman keltirilgan.*

Резюме: *В данной статье рассматриваются пути реализации концепции работы с музыкальными компьютерными программами при подготовке учителей-музыкантов к музыкальным классам в общеобразовательных школах в рамках темы дипломной работы «Технология формирования компетенций по работе с компьютерными программами при совершенствовании художественно-исполнительские способности учащихся на уроках музыки (на примере 5-7 классов)» и частично приводятся обсуждения результатов диссертационной работы.*

Kalit so'zlar: *Raqamli texnologiyalar, musiqa ijodkorligi, ta'lim, kompyuter dasturlari, kompyuter texnologiyalari, musiqa asarlarini yaratish texnologiyalari, yangi media, zamonaviy o'qituvchi, umumiy o'rta ta'lim maktablari, yangicha yondashuv.*

Ключевые слова: *Цифровые технологии, музыкальное творчество, образование, компьютерные программы, компьютерные технологии, технологии создания музыкальных произведений, новые медиа, современный педагог, общеобразовательная школа, новый подход.*

THE ROLE OF PLACEMENT OF CROP TYPES IN INCREASING THE EFFICIENCY OF AGRICULTURAL PRODUCTION.

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Summary: *This article deals with the rational placement of agricultural products based on local opportunities, as well as the selection of agricultural products that require less resources and bring maximum profit.*

Key words: *agriculture, local opportunity, resource, product.*

Rational placement of agricultural crops, first of all, is carried out with the aim of improving the well-being of members of society through growing more quality products, by increasing the efficiency of use of land and water resources, fixed and working capital, and financial resources. At the same time, reducing the cost of growing products through the use of modern saving technologies and agrotechnical measures should be the basis. One of the conditions for the rational placement of agricultural crops is the ability to effectively use the characteristics of agricultural production and the factors influencing their placement. The placement of crops should be carried out from the point of view of the interests of individual producers and the interests of consumers. Because acting for a single goal - increasing the amount of income based on the results of your activities are not always interested in quality, safety of people's lives and the interests of consumers. Therefore, the interests of individual producers and consumers do not always coincide with the interests of society. It is the achievement of harmony of these interests that requires consideration in the placement of crops. [1] An important condition for the rational placement of agricultural crops, the presence of demand for the products planned for cultivation, the conditions of the domestic and foreign markets, taking into account its changes [2]. The issue of selling manufactured products in markets with high prices, at a time and volume that is useful for the manufacturer, should occupy one of the main places in market conditions. From this point of view, the maximum compliance of production with market requirements, or in other words, the placement of agricultural crops that produce products sold on the market provides the opportunity to increase the economic efficiency of farms. Taking into account market requirements when placing crops, first of all, requires finding an answer to the following traditional questions:

➤ What products should be grown? When finding an answer to this question, considering the demand of the domestic market for agricultural products of the republic and the demand of the external market, and converging on the possibility of entering these markets of farms;

➤ In what quantities should agricultural products be grown? This takes into account the real possibility of exporting and selling cultivated products on the foreign market, as well as, if such an opportunity is limited for specific farms and regions, the possibility of sales in domestic markets that are very profitable for producers, the amount of demand in these markets and its changes. In addition, it is necessary to determine what part of the available land, water and labor resources is for growing products of a certain type and the level of correspondence of this to other industries;

➤ The issue of how products are grown is resolved. Here the issue of the feasibility of growing these products on shirkat farms, on farms or on dehqan farms is clarified. The question of what technology to use when growing these products, its positive impact on the quality and cost of products is being resolved;

➤ Who should be the consumers of the products to be grown? Here, by providing for the cultivation of products for specific markets and consumers, the issues of producer connections with these markets, the possibility of establishing such connections and the availability of specialists in this field are resolved. Also, it is possible to supply products to consumers with the least losses, without reducing quality and at the lowest costs;

➤ Is the intended system for growing agricultural products capable of rapidly changing market conditions? The importance of answering this question is determined by the fact that in market conditions, especially in the conditions of our republic, which requires a certain time for the complete formation of market relations, demand in the market is not stable, and this case causes numerous harm to farms.

Each agricultural crop requires a specific system of machines, technological processes and specialist qualifications. In this aspect, the ability to adapt to the market through minimal costs and losses is the key to the financial stability of farms. And this requires paying attention to this issue when placing crops. One of the main conditions for the rational placement of agricultural crops is to maximize the amount of net income. This situation is the result and a necessary condition for the introduction of market relations. According to this, each agricultural enterprise must receive income based on the results of its activities and must ensure expanded reproduction. A lot of work is required in this area. One of them is the issue of liberating farmers from the concept of “taking care of the enterprise is the task of the state, our task is fulfilling tasks and plans” formed in the era of the Soviet administrative bureaucratic system and instilling in their consciousness the concept “the well-being of your life is in your hands.” And for this, the independence of the farmer is necessary. [3] Economic independence creates a sense of responsibility for the results of production activities. An enterprise operating within the framework of the law, conducting economically independent activities in the market, is looking for ways to increase income.

The question of maximizing the income received from acreage can be approached from different points of view. That is, some crops are grown to produce products necessary for society. But a crop that brings in little income or in conditions of free choice may not be sown by farms [1] For example, cotton today is considered a low-income industry from a microeconomic point of view for agricultural enterprises, but in a macroeconomic framework, it is a strategic product, is a competitive product on the world market, and occupies a separate place in our republic’s taking its place in the world market and in ensuring foreign exchange earnings. This means, therefore, the issue of placing crops that are profitable on a macroeconomic scale and low-income on a microeconomic scale must be approached from the point of view of the interests of society. But a market economy requires that the costs of production and the provision of services in the micro- and macroeconomic spheres of production must be covered by income and that economic entities have a certain level of profitability for the development of production. This means that enterprises serving agricultural crops, located for growing products in order to meet the needs of society, must use the tools used by the state to stimulate these enterprises. Such economic instruments should incentivize agricultural enterprises growing products for government needs through tax systems, logistics, or direct market prices [4]. That is, ensuring and effectively organizing the production of products necessary for society should be carried out by bureaucratic methods, and not by administrative - bureaucratic methods, but using the methods of a market economy. One of the conditions for the rational placement of agricultural crops is the achievement of sales of products produced by agricultural enterprises with full use of the opportunities for obtaining maximum income. The presence in the market of demand for a particular type of agricultural product and the magnitude of this demand does not indicate that each commodity producer

can sell its products at the highest prices. This requires the presence of equipped warehouses for storing products, a transport service system, competitive intermediary enterprises, and parts of procurement and processing enterprises. In many cases, one has to face many difficulties in the timely and low-cost sale of products grown by agricultural enterprises, associated with the insufficient production capacity of processing enterprises, the lack of capacity of procurement organizations to procure products in large quantities, poor quality of transport services or the distance of roads from producer to consumer. (processing enterprises, markets of other species), non-compliance of road conditions with requirements, limited possibilities for preserving grown products before delivery to consumers and other reasons. As a result, farmers are forced to lose part of their profits. The above issues must be fully taken into account when placing agricultural crops and resolved based on the development of the necessary solutions.

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Rezyume: *Ushbu maqolada qishloq xo'jaligi mahsulotlarini mahalliy imkoniyatlardan kelib chiqqan holda oqilana joylashtirish, shunindek, kam resurs talab qiladigan va maksimal foyda keltiradigan qishloq xo'jaligi mahsulotlarini tanlash masalalari ko'rib chiqilgan.*

Резюме: *В данной статье речь идет о рациональном размещении сельскохозяйственной продукции с учетом местных возможностей, а также выборе сельскохозяйственной продукции, требующей меньше ресурсов и приносящей максимальную прибыль.*

Kalit so'zlar: *qishloq xo'jaligi, mahalliy imkoniyat, resurs, mahsulot.*

Ключевые слова: *сельское хозяйство, местные возможности, ресурс, продукт.*

INVESTIGATION OF SOME MYCOTOXINS PRODUCED BY FUNGI FROM MEAT PRODUCTS

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Summary: To determine the mycotoxin contamination of meat products, it is important to determine the concentration of all mycotoxins related to these products. In the course of this study, quantitative indicators of the main mycotoxins of DON and ZEN present in chicken samples delivered to our laboratory were studied.

Keywords: mycotoxins; meat products; deoxynivalenol, zeralenone, conserogen, chromatography.

Mycotoxins are usually produced by species such as *Aspergillus*, *Fusarium* and *Penicillium* [1]. Numerous studies on mammals and birds have shown that mycotoxins have mutagenic, hepatotoxic, carcinogenic, teratogenic, immunosuppressive, nephrotoxic and embryotoxic effects [2]. Worldwide, aflatoxins (AF) ochratoxin a deoxyvalenol and zeralenones are the most medically important mycotoxins affecting human and animal food. According to the International Agency for Research on Cancer (IARC), aflatoxins produced mainly by *A. flavus* have been approved as carcinogenic substances affecting the liver, mainly causing hepatocellular carcinoma [3, 4].

Destruction of aflatoxins at extremely high temperatures (UHT), frying, sterilization, cooking and cold storage is impossible, and aflatoxins are considered resistant to heat and low temperatures. Many types of AF exist in nature, and the strongest are; B₁, B₂, G₁ and G₂ [5]. Ochratoxin a (OTA) is a secondary metabolite that is mainly produced by *Aspergillus* species, especially *A. ochraceus*, storage conditions in which tropical and subtropical regions are very favorable for the growth and reproduction of these fungi [6, 7]. The main types of OTA are A, B and C, which pose a serious danger to human and animal health [8]. The mechanism of the processes of formation, migration and detection of mycotoxins can be seen below in Fig. 1.

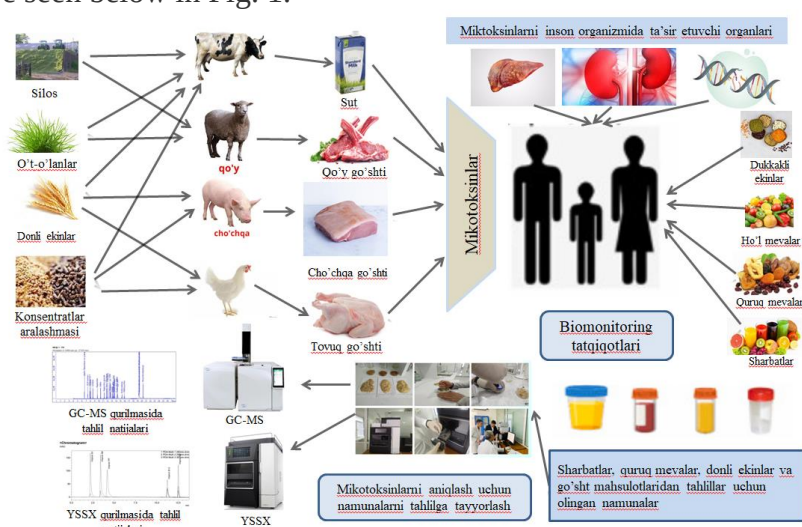


Figure 1. Migration of mycotoxins and its control.

The consumption of food and feed contaminated with mycotoxins, in turn, affects the health of humans and animals, since they exhibit special carcinogenicity and toxicity [9]. Studies studying the carcinogenic effect of many mycotoxins are especially common in animal feed and human food [10]. Mycotoxins can appear in animal feeds as a result of the growth of fungi during improper storage of feed or as a result of the introduction of improperly stored feed components. 25-40 °C warm weather and high humidity are optimal conditions for the development of fungi. Worldwide, at least one mycotoxin has been identified and detected in certain amounts in 76 percent of feed samples and feed ingredients. According to the World Mycotoxin Research Program, deoxynivalenol is the most common: 74%, fumonisin 55%, zearalenone 38%, aflatoxins 27% and coloratoxin a 26% were found in plants, animals and their products of origin [11].

MATERIALS AND METHODS

Chromatographic analysis has been performed in the Agilent 1260 Infinity II Rapid Resolution Liquid system. The pump G7111A 1260 Quat Pump VL, the autonomous sampler vialsampler G7129A 1260, the detector of the array of diodes UV-VIS is G7115A 1260 DAD and G7121A 1260 FLD were performed in the Chem Station program. For better dissolution of solutions, an ultrasonic bath “Guangdong gt Ultrasonic” has been used. HPLC pump flow rate 0.8 ml/min, thermostat temperature 30°C, mobile DON phase; acetonitrile/water in a ratio of 50:50, ZEN mobile phase in a ratio of 70:30 at 0.8 ml/min, injection volume of 5 µl, grain 210 Nm, and 240 Nm zone in the DAD detector, Infinity Lab Poroshel 20 EC-C18 (150 mm x 4.6 mm, 4 microns (Agilent Technologies USA) analytical report on the program “Chemstation”.

Chromatographic analysis has been performed in the Agilent 1260 Infinity II Rapid Resolution Liquid system. The pump G7111A 1260 Quat Pump VL, the autonomous sampler vialsampler G7129A 1260, the detector of the array of diodes UV-VIS is G7115A 1260 DAD and G7121A 1260 FLD were performed in the Chem Station program. For better dissolution of solutions, an ultrasonic bath “Guangdong gt Ultrasonic” has been used.

Chromatography conditions: thermostat temperature 30°C,

Mobile phase DON (gradient); acetonitrile/water in a ratio of 50:50,

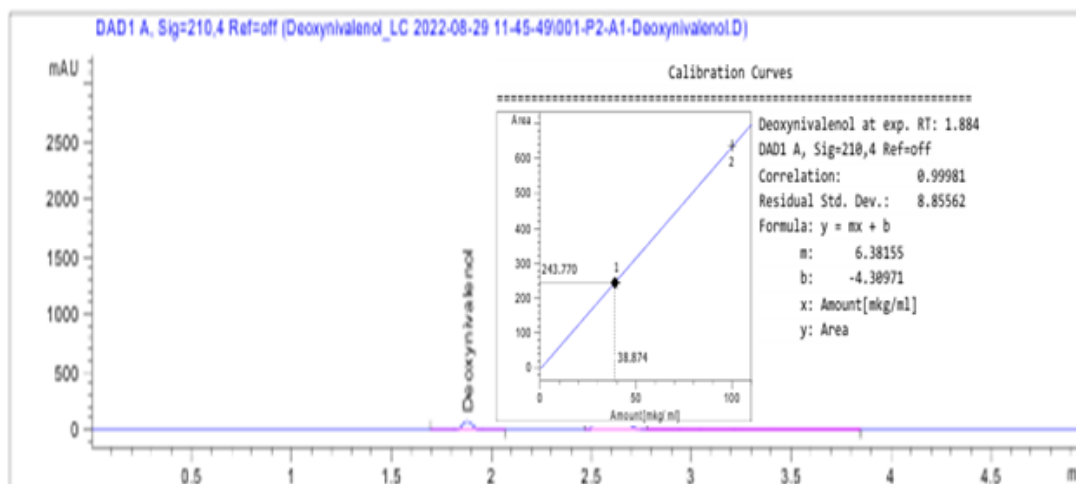
Mobile phase ZON (gradient) at 0.8 ml/min in a ratio of 70:30,

Injection volume; 5 µl,

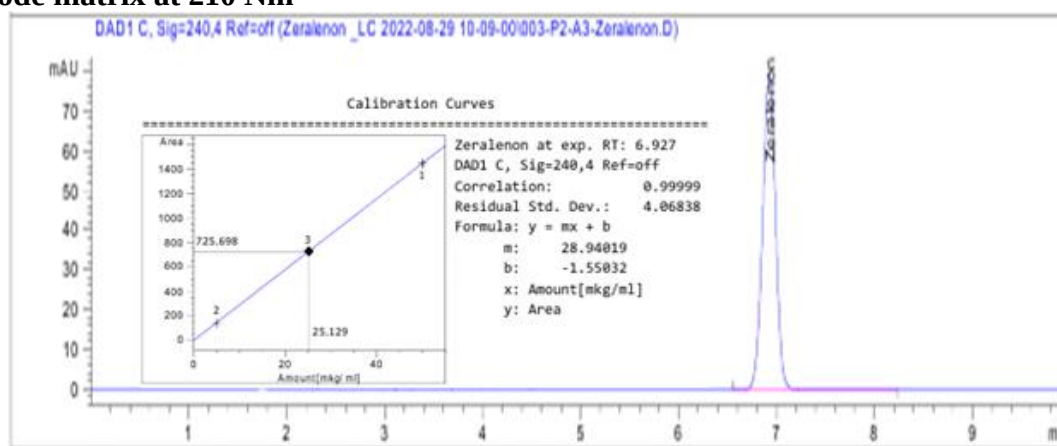
Detector with a diode matrix; DON at 210 Nm, and ZEN at 240 Nm on the Dad detector,

Column; Infinity Lab Poroshel 20 EC-C18 (150 mm x 4.6 mm, 4 microns (Agilent Technologies USA), made in the "Chemstation" software.

chromatograph-Agilent Technologies 1260 Infinity



1-chromatogram. Chromatogram of a standard sample of deoxyvalenol obtained on a detector with a diode matrix at 210 Nm



2-chromatogram. Chromatogram of a standard sample of zeralenone obtained in a detector with a diode matrix at a wavelength of 240 nm

Standard name	Linear range ($\mu\text{g/ml}$)	Regression equation	R^2
DON	40–100	Formula: $y = mx + b$ m: 6.38155 x: Amount [mkg/ml] b: -4.30971 y: Area	0,99981
ZEN	5-50	Formula: $y = mx + b$ m: 28.94019 x: Amount [mkg/ml] b: -1.55032 y: Area	0,99999

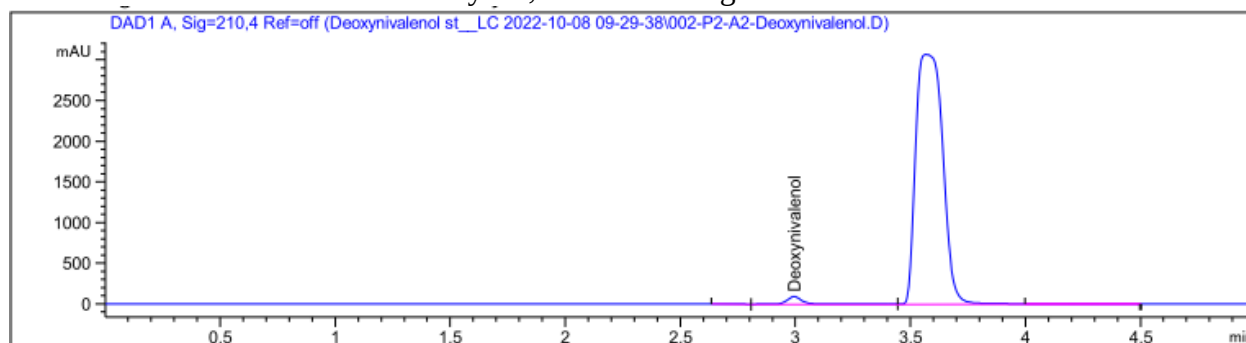
Table 2.1. Calibration results of standard samples.
Mycotoxin extraction

The extraction process is carried out in accordance with the studies carried out [12]. 5 g were taken from the samples, thoroughly crushed and transferred to a test tube. 1% acetonitrile/water/acetic acid solution in methanol (40:30:30, V:V:V) soak and shake well. To ensure complete mycotoxin extraction, 2 g of MgSO₄ (Sigma-Aldrich) and 0.5 g of NaCl are thoroughly mixed with 0.75 g of PSA. Then, mycotoxins were extracted in an ultrasonic water bath (Guangdong gt Ultrasonic) at room temperature for 20 minutes. The resulting solution was centrifuged at 6000 Ail / ml for 10 minutes, and at a temperature of 35⁰C its solvent was evaporated and dissolved in the excitation phase.

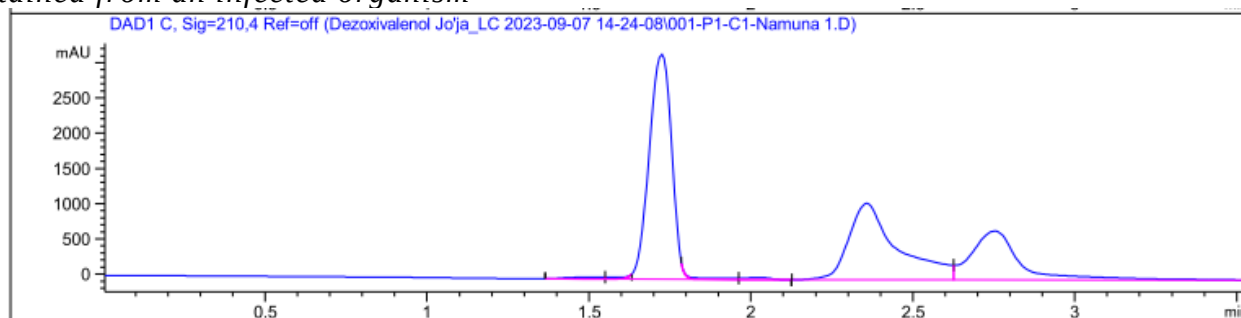
ANALYSIS OF THE RESULTS OBTAINED

Standard samples were drawn using calibration, the values of standard linearity and correlation coefficient were obtained, accepted for ZEN and DON, 0.99999 for DON and 0.99981 for DON. In standard samples of the method linearity curve for ZEN, three degrees of the calibration curve with a quantitative limit of 20, 40 and 100 µg/ml for ZEN were obtained at different three levels of 5.10 and 25 micrograms/ml. The amount of mycotoxins in the samples was determined based on comparison with these standards.

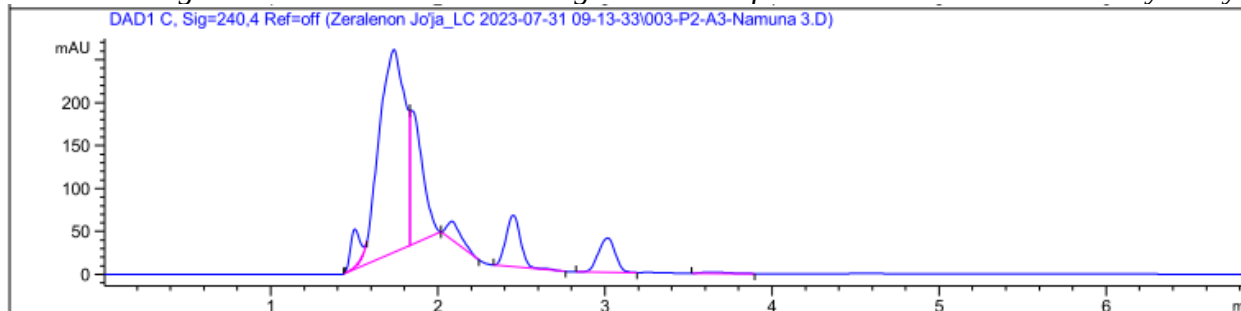
Based on the conducted analyses, the following results were obtained.



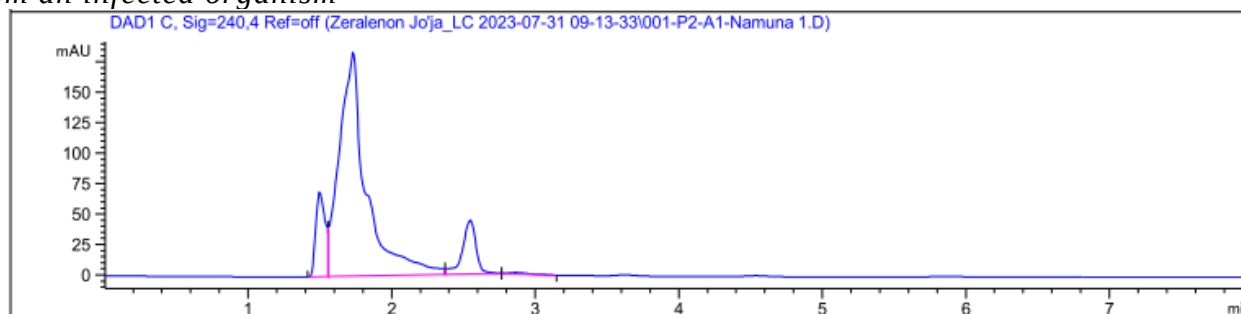
3-chromatogram. The chromatogram of zearalenone is checked from the composition of meat obtained from an infected organism



4-chromatogram. Zearalenone chromatogram tested for meat content in a healthy body



5-chromatogram. Chromatogram of deoxyvalenol, tested for the content of meat obtained from an infected organism



6-chromatogram. Chromatogram of deoxyvalenol, tested for the content of meat in a healthy body

In the analyses, the contents of the samples were analyzed in two meat samples in the analysis DON and ZEN. Based on the results obtained, the content of deoxynivalenol in chicken meat supplied from the market was determined in the amount of 42.81 micrograms/kg. Studies have not revealed deoxyvalenol and zeralenone in the meat of chickens brought from the farm. As a result, it turned out that two chicks taken for analysis were usable.

CONCLUSION

Since contamination with meat products ZEN and DON is a common occurrence and is considered two of the five most important mycotoxins naturally occurring in animal products and foodstuffs, reliable and accurate analytical methods are needed to ensure the quality and safety of food products. Therefore, the amounts of DON and ZEN in meat products were analyzed by the method of high-performance liquid chromatography, simple and reliable. This will be cost-effective in safety and quality assurance programs.

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Rezyume: Mamlakatimiz hududidagi go'sht mahsulotlari tarkibidagi zamburug'lar tomonidan ishlab chiqariladigan mikotoksinlar tahlili o'tkazilgan. Olib borilgan tatqiqotlarga asosan, turli go'sht namunalaridan mikotoksinlar halili bo'yicha zarur tavsiyalar berilgan.

Резюме: Проведен анализ микотоксинов, продуцируемых грибами, в мясных продуктах нашей страны. На основании проведенных исследований даны необходимые рекомендации по растворению микотоксинов из различных образцов мяса.

Kalit so'zlar: mikotoksinlar; go'sht mahsulotlari; deoksinivalenol, zeralenon, konserogen, xromatografiya.

Ключевые слова: микотоксины; мясные продукты; дезоксиниваленол, зераленон, консероген, хроматография.

UDC: 1.740

METHODS FOR THE FORMATION OF SPIRITUAL AND MORAL QUALITIES THROUGH THE MEANS OF TOURISM

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Summary: *This article describes the development of spiritual and moral qualities by means of Tourism. Excursions and tours were also considered for the organization and conduct of Tourism, and the importance of organizing tourism was widely covered.*

Key words: *excursion, travel, tourism, tourism tasks, recreation, travel requirements.*

President of The Republic of Uzbekistan Sh.M. Mirziyoyev noted: “one of the promising sectors that currently bring high income to the national economy is tourism”.

Tourism has long served to strengthen friendship, fraternal ties between peoples, to promote trade, to explore spiritual and educational spheres. Tourism in youth, the study of patriotism, respect for our national history, the avaricious preservation of our Mother-Nature, hospitality, tolerance, immunity to the land, the agitations of Dear Saints form human qualities in them. In a word, it serves to form a physically healthy, spiritually mature, independent-minded individual.

Tourism as a trip consists of rnzmun and forms of activities such as recreation, hordiq release, sightseeing of natural landscapes, sightseeing of historical and cultural sites, study. First of all, the most complex and grandiose goals are implemented in this, such as expanding spiritual and educational knowledge and raising physical perfection. [1.5].

Tourism attracts a person from childhood. Each parent leads his children on a walk in nature from childhood to breathe fresh, pure air, teach them to certain climatic conditions, gradually go through low-altitude places, introduce them to natural beauties. The organization of excursions and trips with students of general secondary education schools is widely adapted from the plan of classroom and extracurricular activities. Trips to nature, historical monuments, holy steps are organized for students to travel on weekends and holidays, for the purpose of cultural recreation. Also, through circles organized in schools of general secondary education, respect for the material and spiritual resources of our republic is formed in the minds of students and young people, forming such human qualities as avaricious preservation, proper use, loyalty to the motherland in students, a sense of belonging to our country.

Tourism means travel. [2.4]. The sources list the types of sports tourism as follows:

- walking-travel on the tourist route is mainly carried out on foot.
- ski tourism-movement in the direction of tourism is carried out mainly on skis.
- Mountain Tourism-hiking in the high mountains.
- water tourism-rafting along rivers, usually on rafting vehicles (ships) in mountainous areas.
- speleo tourism-a journey through underground spaces (caves, cave systems, including partially flooded).
- sailing tourism-travel on ships sailing at sea or in the water zones of large lakes.
- in vehicles-a section that includes cycling tourism, equestrian tourism and car tourism.

- combined tourism-trips that combine elements of different types of Tourism.
- Motorcycle tourism is one of the types of tourism that serves as a motorcycle vehicle.

According to age and social characteristics, sports tourism is divided into:

- children's tourism;
- youth tourism;
- adult tourism;
- family tourism;
- tourism for people with disabilities .

In recent years, the following areas of sports tourism have actively developed:

- travel (including solo travel);
- extreme tourism;
- discipline distance;
- indoor discipline distance on artificial land;
- short routes in the class of sports trips.

While hiking-hiking in physical education classes in elementary grades is not carried out at the level of an independent field (special classes), but it is envisaged to give insights about hiking-hiking in Games, relay races, running processes. It has become a tradition for autumn, winter, spring, and summer vacation times and holidays during the school year to be organized for one day (weekend) and after-class holidays in dedication to the grand dates. At the same time, hiking trips are carried out to places with a distance of 4-5 km 1-2 times in the academic year, based on the criteria (normative) requirements of the special tests" Alpomish "and" Barchinoy".

Travel and tourism are interconnected concepts that represent a certain way of functioning of human life. [3.52].

Theory and methodology of physical education and in sports tourism (hiking, mountain, cave, finding a sporty bag, various technical mounts, etc.k.) divides tourism into two directions: a planned guide - through putevka and amateur. They are sluggish (passive-low - movement-excursion) and active (active) trips in the language of travelers. In both cases, tourism is recognized as the most important means of physical education.[4.112].

The more a person walks in the health of his life, the more he participates in the processes taking place in the outside world, the healthier his world, both spiritual and spiritual. Therefore, in the development of even safe tourism, the organization of pedestrian travel directly serves for the physical health, spiritual freshness and spiritual maturity of citizens of all ages.

The main purpose of sports tourism is to give tourists the opportunity to play the sport of their choice. Sports tourism requires the presence of a necessary base: various inventory, special tracks, roads, sports grounds, equipment. One of the main requirements for sports trips is to ensure the safety of vacationers. [5.36].

Safety in travel, contributions to society are important in the development of domestic tourism. Because walking tourists can become more familiar with the history of Tourism and the names of places, serve to arouse the interest of young people in travel. In this, it will serve as a new milestone for every citizen to be attentive, for tourism in all regions of our country to become an active person in development.

In the formation of spiritual and moral qualities through the means of tourism, the following should be given importance:

Knowing ways to organize hiking trips in elementary grades:

1. Preparation for walks and their transfer:

- Concepts, assignments about participation in walks;
- To residential areas and attractions (Museum, Theater, holiday, sports competitions, etc.) to plan a hike in advance and to reassure the leader;
- To climb cars, to instill in the minds of children the rules of sitting in them, the rules of descent and procedures for them;
- Access to hiking resorts, maintaining discipline in those places, carefully hearing exhibitions and performances, viewing;
- A conversation about the impressions of a walk, questions and answers about walks in conversations with family and schoolmates, neighbors. Teaching his impressions to tell stories clearly, concisely and fluently.

2. About travel:

- After class, having conversations about trips on weekends and holidays;
- Information about the name, history and ways to go of travel destinations;
- Teaching children the educational processes associated with such practical activities as rules of conduct, observation of the environment (landscapes of nature), eloquence of impressions;
- Going to the address-short rest in the processes of return (at least 3-5 km), conducting game exercises (developed from the beginning and based on the desire of readers);
- Spiritual assessment of students who actively participate in trips. Reprimand warning to readers with negative characteristics, achieving confession to one's own defects and guilt;
- Ensure the participation of school leaders, class leaders, science teachers, parents and neighborhood activists in a class meeting about the end of one-day trips;
- Giving information about trips at general meetings of primary classes;
- Coverage, demonstration of school mural newspapers, videotape shows and pictorial tours in computer rooms.

At the same time, in the processes of educational practices also the primary class the image of a teacher and a class leader with students (as) should try in practice the organization of short-distance hiking trips after class and on weekends. To do this, it is necessary to work in agreement with the class leaders, physical education teachers. Especially young children are required to have a good knowledge of their personal characteristics, mental states, physical fitness, to be always ready for a clear, correct answer to their multifaceted questions.

Today's young boy will become a reader tomorrow, then a student and a mature specialist in bora-bora. In this range, Education is faced with smooth paths and multifaceted obstacles. To pass them boldly, it will be necessary to be physically fit and talented, knowledgeable in the sciences. It is advisable to form these processes in elementary synths, to find out the specific qualities, features of hiking trips in the upbringing of feelings for the feeling of all activities.

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Rezyume: Ushbu maqolada turizm orqali ma'naviy-axloqiy fazilatlarni rivojlantirish yoritilgan. Turizmni tashkil etish va o'tkazish uchun ekskursiya va ekskursiyalar ham ko'rib chiqilib, turizmni tashkil etishning ahamiyati keng yoritildi.

Резюме: В данной статье описывается развитие духовно-нравственных качеств средствами туризма. Также рассматривались экскурсии и туры для организации и проведения туризма, широко освещалась важность организации туризма.

Kalit so'zlar: ekskursiya, sayohat, turizm, turizm vazifalari, rekreatsiya, sayohat talablari.

Ключевые слова: экскурсия, путешествие, туризм, туристические задачи, отдых, туристические потребности.

IMPROVEMENT OF AUDIT MECHANISMS IN BUDGETARY ORGANIZATIONS: AN EXAMINATION OF FOREIGN EXPERIENCES

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Summary: *This paper examines the audit mechanisms in budgetary organizations by analyzing the foreign experiences of selected countries. The research focuses on the technological and methodological advancements that have facilitated improvements in audit processes, offering insights into the practices that enhance transparency, accountability, and efficiency in budgetary organizations globally.*

Key words: *Audit Mechanisms, Budgetary Organizations, Public Sector, Transparency, Accountability, Foreign Experiences*

Introduction. In contemporary society, budgetary organizations play a crucial role in the distribution and management of public funds, ensuring that resources are allocated efficiently and effectively to promote societal development and welfare. The necessity of effective and transparent audit mechanisms within these entities cannot be overstated, as these mechanisms serve as the foundation for public trust, financial accountability, operational efficacy, and organizational integrity.

Ensuring Accountability and Transparency

One of the paramount advantages of proficient audit mechanisms is the reinforcement of accountability and transparency within budgetary organizations. By conducting regular and thorough audits, organizations can transparently showcase their financial dealings, ensuring all stakeholders, including the public, are informed about the allocation and utilization of funds. This transparency is pivotal in building and maintaining public trust, as it demonstrates the organization's commitment to financial responsibility and accountability.

Prevention of Fraud and Mismanagement

Efficient audit mechanisms significantly contribute to the prevention of fraud, embezzlement, and financial mismanagement within budgetary organizations. A robust audit system diligently monitors financial transactions, scrutinizes accounting records, and assesses internal controls, thereby unveiling any discrepancies, unauthorized transactions, or instances of misappropriation. By deterring and detecting fraudulent activities, audit mechanisms safeguard the organization's resources, ensuring they are utilized for their intended purposes.

Enhancing Operational Efficiency

Effective auditing goes beyond financial scrutiny, encompassing an evaluation of the organization's operational processes and controls. Auditors examine various organizational aspects, including project management, procurement, and human resources, ensuring all operations align with the established objectives, standards, and regulations. This comprehensive assessment aids in identifying operational bottlenecks, inefficiencies, and areas for improvement, facilitating the enhancement of overall organizational efficiency and effectiveness.

Compliance with Regulations

Compliance with pertinent laws, standards, and regulations is imperative for the legitimate and ethical operation of budgetary organizations. Efficient audit mechanisms ensure that organizations adhere to all relevant legal and regulatory frameworks, mitigating the risk of legal repercussions, fines, and reputational damage resulting from non-compliance. Audits verify the conformity of financial statements and operations with established standards, ensuring the organization's alignment with legal requirements and industry norms.

Informed Decision Making

Audit mechanisms provide valuable insights and data that contribute to informed and strategic decision-making within budgetary organizations. Through detailed financial and operational analysis, audits furnish crucial information regarding the organization's financial health, operational effectiveness, and potential risks. This information is instrumental for management and stakeholders in making well-informed decisions, formulating strategic plans, and setting organizational goals and objectives. Below is a structured approach in table and text format to compare audit practices in Sweden, New Zealand, Japan, and the Netherlands.

Table1: Comparative Analysis of Audit Practices

Criteria	Sweden	New Zealand	Japan	Netherlands
Audit Standards	Follows INTOSAI standards	Adheres to New Zealand Auditing Standards	Aligns with Japanese GAAS	Follows Dutch Auditing Standards
Technology Integration	High: Uses advanced audit software and blockchain technology	Moderate: Uses audit software	High: Employs AI and blockchain technology	High: Utilizes AI and data analytics
Regulatory Body	Swedish National Audit Office	Office of the Auditor-General	Board of Audit of Japan	Netherlands Court of Audit
Frequency of Audit	Annually with interim audits	Annually with interim audits	Annually	Annually with interim audits
Risk-Based Approach	Implemented	Implemented	Implemented	Implemented
Public Sector Focus	Extensive public sector audit focus	Extensive public sector audit focus	Limited public sector focus	Extensive public sector audit focus

1. Audit Standards:

- **Sweden, New Zealand, and the Netherlands** follow international and their own national audit standards.

- **Japan** aligns with the generally accepted auditing standards (GAAS) of the country.

2. Technology Integration:

- **Sweden and Japan** stand out with high integration of advanced technologies such as AI and blockchain in the audit process.

- **New Zealand** has a moderate level of technology integration, primarily utilizing standard audit software.

- **The Netherlands** leverages AI and data analytics extensively.

3. Regulatory Bodies:

Each country has a specific regulatory body overseeing the audit processes, ensuring compliance with national and international standards.

4. Frequency of Audits:

- **Sweden, New Zealand, and the Netherlands** conduct annual audits with additional interim audits.

- **Japan** typically conducts audits on an annual basis.

5. Risk-Based Approach:

All the analyzed countries have implemented a risk-based approach in their audit processes, enhancing the focus on areas with higher potential risks and vulnerabilities.

6. Public Sector Focus:

- **Sweden, New Zealand, and the Netherlands** have an extensive focus on public sector auditing.

- **Japan** has a comparatively limited focus on public sector auditing.

The comparative analysis reveals a trend towards the adoption of technology and a risk-based approach in the audit processes across the countries. Sweden and Japan are leading in technology integration, enhancing audit efficiency and effectiveness. The frequency of audits and focus on the public sector is another area of commonality, especially in Sweden, New Zealand, and the Netherlands. The identified differences, mainly in technology utilization and public sector focus, highlight the diverse strategies employed by each country in enhancing audit mechanisms, offering valuable insights for global audit improvement initiatives. Summarizing the key findings of the research, concluding the potential benefits of improving audit mechanisms based on foreign experiences and offering recommendations for future implementation and study.

Conclusion

Key Findings:

1. Diverse Audit Standards:

- Each country adheres to specific audit standards, both international and national. Uniformity in audit standards could be beneficial for global compatibility and comparison.

2. Varied Technology Integration:

- Countries like Sweden and Japan have higher integration of advanced technologies in the auditing process. This use of technology, such as AI and blockchain, is proving to be a game-changer in enhancing audit efficiency and reliability.

3. Diverse Regulatory Bodies:

- Each nation has established distinct regulatory bodies for audit oversight, reflecting a shared global understanding of the importance of audit regulation for ensuring financial accountability and transparency.

4. Frequency and Focus of Audits:

- Most countries conduct annual audits with interim audits, with a significant focus on public sector auditing, underlining the global emphasis on public sector accountability and transparency.

5. Universal Adoption of Risk-Based Approach:

- All countries have adopted a risk-based approach to auditing, signifying a global trend towards focusing on high-risk areas for enhanced financial scrutiny and management.

Potential Benefits:

1. Enhanced Accountability and Transparency:

- Adopting efficient audit mechanisms can significantly boost accountability and transparency in budgetary organizations, ensuring responsible financial management and public trust.

2. Prevention of Fraud and Mismanagement:

- Improved audit systems can effectively deter and detect fraud and financial mismanagement, safeguarding organizational resources and promoting financial integrity.

3. Operational Efficiency:

- Efficient auditing can contribute to enhanced operational efficiency by identifying and addressing operational bottlenecks and inefficiencies.

4. Regulatory Compliance:

- Robust audit mechanisms ensure adherence to relevant regulations, mitigating legal risks and reinforcing organizational legitimacy.

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Rezyume: Ushbu maqolada tanlangan mamlakatlarning xorijiy tajribasini tahlil qilish orqali byudjet tashkilotlarida audit mexanizmlari ko'rib chiqiladi. Tadqiqot global miqyosda byudjet tashkilotlarida shaffoflik, hisobdorlik va samaradorlikni oshiruvchi amaliyotlar haqida tushunchalar berib, audit jarayonlarini takomillashtirishga yordam bergan texnologik va uslubiy yutuqlarga qaratilgan.

Резюме: В данной статье рассматриваются механизмы аудита в бюджетных организациях путем анализа зарубежного опыта отдельных стран. Исследование сосредоточено на технологических и методологических достижениях, которые способствовали улучшению процессов аудита, предлагая понимание практик, которые повышают прозрачность, подотчетность и эффективность в бюджетных организациях во всем мире.

Kalit so'zlar: Audit mexanizmlari, Byudjet tashkilotlari, Davlat sektori, Shaffoflik, Hisobdorlik, Chet el tajribasi

Ключевые слова: механизмы аудита, бюджетные организации, государственный сектор, прозрачность, подотчетность, зарубежный опыт.

**STRENGTHENING THE LEGAL FRAMEWORK FOR FINANCIAL MECHANISMS TO
STIMULATE THE INFORMAL ECONOMY**

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Summary: *This article concludes the legal foundations of financial mechanisms aimed at influencing the informal economy and increasing its contribution. The findings of this research are summarized in the following conclusions.*

Key words: *taxation, informal economy, state finance, financial mechanisms*

Introduction. The Resolution PF-6098 of the President of the Republic of Uzbekistan dated December 30, 2020, "On Organizing Systematic Measures to Reduce the Informal Economy and Increase the Effectiveness of Tax Authorities" was implemented, which aims to further reduce the informal economy in the economy. According to it, a number of tasks were identified in order to reduce the shadow economy:

- Implement structural changes aimed at reducing the informal economy in the economy.
- Develop and introduce digital technologies in economic sectors and networks for wider application and labeling.
- Increase the volume of non-cash transactions in the economy.
- Enhance the accessibility of banking services.
- Improve the mechanisms for identifying "informal economy" subjects.
- Establish an effective system for reducing the informal economy in foreign trade.
- Organize extensive advertising and promotion campaigns to reduce the informal economy.

In accordance with the Resolution of the President of the Republic of Uzbekistan PF-6098 dated October 30, 2020, the following tasks were identified:

- From January 1, 2022, small business entities in the field of general catering, not included in the total income, are required to submit information on the income received from individuals using bank cards and non-cash payments.
- Enterprises engaged in trade without issuing standard invoices or online cash registers are allowed to purchase goods (services) based on corporate bank cards, but with mandatory receipt of electronic invoices or checks from electronic cash registers.
- The sale of counterfeit or pirated goods, as well as goods transported within the country without accompanying documents, is prohibited.
- The production, sale, and storage conditions for excisable goods are determined in detail to prevent the use of illegal schemes.
- First of all, in construction sites and the provision of services, the employment of labor under "envelopes" and non-payment of labor remuneration is identified and suppressed.

In the field of reducing the informal economy in Uzbekistan in 2021, a number of changes were made, including adjustments to tax legislation. The tax calculation and payment procedure, as well as the tax rate of 15%, remain unchanged. Please pay special attention to the fact that taxpayers under the STS have been expanded:

- alcohol products, including beer sales at points of sale of alcoholic beverages;
- markets and shopping complexes.

For taxpayers who do not exceed one billion soums in turnover for the month, a simplified tax regime has been introduced for the sale of goods (services).

For the purchase and sale of goods (services) for foreign currency or on credit from international financial institutions and foreign government financial organizations, an exemption is provided if it is provided for by international agreements and agreements.

In addition, a schedule has been developed for business entities using the Online-NKM or virtual cash registers (1).

№	Business Entities Category	Deadline
1.	Entrepreneurial entities engaged in the trade of alcohol and tobacco products, textiles and medicines, as well as those involved in the sale of gasoline, diesel fuel, and compressed natural gas for automobiles	2020 January 1
2.	Business entities whose annual turnover (total) exceeded five billion Uzbekistani soms at the end of the previous year	2020 August 1
3.	Business entities whose annual turnover (total) exceeded one hundred million Uzbekistani soms during the previous year or reached this threshold within the current year	2021 January 1
4.	All business entities	2022 January 1

Picture 1. Business entities with cash income

Chart of transition to use of online-NKM or virtual cash register

One of the influential factors affecting the level of the informal economy is the practice of using cash registers for cash transactions by business entities. In accordance with the Presidential Decree of the Republic of Uzbekistan dated September 29, 2017, No. PQ-3300 "On Further Improvement of the Procedure for Using Fiscal Cash Register Machines" it is stipulated that information on accounting documents related to cash transactions, which are carried out in cash, is provided to the state tax service authorities in online mode. The fiscal cash register machines equipped with functions to transmit information online to the State Tax Service have been determined. In order to facilitate the implementation of online cash registers, the State Tax Committee, in cooperation with the Center for "New Technologies" of the Research Institute, is working to introduce interactive games that use lottery chips as a form of encouragement. To supplement the recording of cash payments through online or virtual cash registers, certain additional details need to be entered. It should be noted that these changes may have an impact on the volume of tax collections, but reducing the level of the informal economy requires even deeper reforms. Initially, the State Tax Committee developed a single mechanism in conjunction with the soliq.uz mobile application, which has a function to extend the life of fiscal cash register machines with the ability to provide information to the state tax service authorities in online mode. According to the statistics of the State Tax Committee, to date, more than 120 thousand checks have been registered in the system. It should be noted that the introduction of vending machines in the field of trade is one of the innovative solutions in the development of entrepreneurship. Vending machines, due to their convenience, increase customer reach, create additional benefits, and of course, contribute to higher income. One of the innovative solutions today is vending machines. Nowadays, vending machines have become very popular in many countries around the world. For example, in

Japan, there is one vending machine for every 23 people (with a total of over 5.6 million machines). As a result, the volume of trade conducted through vending machines in Japan amounts to 60 billion US dollars.

2-table

Calculating the Taxation for Items Dispensed from Vending Machines

Fixed Tax for VAT (per month)	Tax paid without deduction 4%	Payment from 3 vending machines (in cash/non-cash)	Annual turnover of VAT	Total payable tax (per annum)	Non-deductible tax (per annum)	Difference
750 000		29 500 000	10*29500000 =295000000	12*750000 =9000000	11 800 000	31%

In Uzbekistan, the sale of goods using vending machines without the involvement of a seller is becoming increasingly common due to the widespread availability of automated systems. However, this type of business activity lacks sufficient regulation in current legislation. Some legal documents specifically address the operation of vending machines, and certain entrepreneurial entities engaging in this activity may face legal consequences. Particularly, Article 430 of the Civil Code recognizes the sale of goods through vending machines as a separate form of retail activity. Nevertheless, detailed regulations governing this vending activity, including the fundamental document in this field, the Resolution No. 75 of the Cabinet of Ministers of February 13, 2003, which approved the "Regulations on Vending in the Republic of Uzbekistan," do not fully outline the unique characteristics of sales through vending machines.

Specifically, the Regulations provide a clear list of types of trading objects, which include markets, hypermarkets, supermarkets, trading centers, trade complexes, universal stores, department stores, minimarkets, food stores, specialized stores, stalls, booths, car shops, pavilions, kiosks, and stands. Vending machines are not included in this list.

For instance, the Regulations established by the Resolution No. 306 of the Cabinet of Ministers on November 17, 2011, concerning the use of fiscal devices, including cash registers, in transactions with residents for goods and services, outline the proper use of control-cash machines equipped with fiscal memory for cash payments. Consequently, when cash payments are made using mechanical devices (vending machines), it is necessary to also employ a control-cash machine with fiscal memory (fiscal recorder) in cases where direct financial settlement occurs between the buyer and the seller, which is subject to fiscal reporting.

It is essential to include vending machines (vending machines) in the list of trading objects covered by this regulation, as this legal provision grants the opportunity to utilize vending machines within the legal framework for the purpose of regulating this form of trade.

Conclusion. According to research conducted by the World Bank Group in Uzbekistan in 2020, there are activities and situations related to agriculture and international trade that contribute to the hidden economy, potentially boosting the country's economic level. These include:

1. Declaring a lower price on the import invoice to reduce the amount paid for tariffs or taxes.
2. Exploiting export incentives by increasing the price declared on the invoice for greater benefits from tax privileges.

Starting from the current year, it is crucial to prioritize formalizing the employment of workers in branches where the number of employees exceeds 25, to ensure that their income tax contributions are directed towards the local budget. For instance, the "Ekspocolor prin-teks" LLC, which is registered in Margilan city, employs a total of 472 staff members, with 407 of them working at the branch in Toshloq district.

In conclusion, it is important to note that the accurate identification of executing and beneficiary organizations has a direct impact on curbing hidden economic activities and ensuring the proper functioning of mechanisms designed to enhance economic growth.

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Rezyme: *Ushbu maqolada yashirin iqtisodiyotga ta'sir ko'rsatish va uning hissasini oshirishga qaratilgan moliyaviy mexanizmlarning huquqiy asoslari ko'rib chiqiladi. Ushbu tadqiqot natijalari quyidagi xulosalarda jamlangan.*

Резюме: *В данной статье рассмотрены правовые основы финансовых механизмов, направленных на воздействие на теневую экономику и увеличение ее вклада. Результаты этого исследования подытожены в следующих выводах.*

Kalit so'zlar: *soliqqa tortish, yashirin iqtisodiyot, davlat moliyasi, moliyaviy mexanizmlar*

Ключевые слова: *налогообложение, теневая экономика, государственные финансы, финансовые механизмы*

TERRITORIAL COMPOSITION OF AGRICULTURE IN THE ARAL SEA REGION OF UZBEKISTAN (ON THE EXAMPLE OF THE REPUBLIC OF KARAKALPAKSTAN)

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Summary: *In this article, the territorial composition of the agriculture of the Aral Sea region of Uzbekistan, that is, the Republic of Karakalpakstan is analyzed. Scientific works of scientists from the CIS, Uzbekistan and Karakalpakstan on agricultural specialization were studied. The territorial structure of agriculture was first divided into three zones and analyzed. It is also studied within administrative-territorial units. The main goal of this research work is to analyze the territorial composition of agriculture in the Republic of Karakalpakstan.*

Key words: *agriculture, zones, regions, farming, animal husbandry, products, production, productivity, intensive development, salinity.*

Introduction. One of the main tasks facing the countries of the world is to continuously provide the population with ecologically clean, light and food industry with agricultural products. The aggravation of the complex environmental situation in the Aral Sea region in recent years requires a radical improvement of the territorial distribution and structural system of agricultural industries based on the development of measures for the effective use of existing natural and socio-economic resources.

Activities for sustainable development of agriculture in the region are much lower than the internal potential of the region. In addition, it does not fully meet the population's demand for agricultural products. As a result, of shortage of water resources, deterioration of land reclamation, increase in salinity of irrigated lands, the productivity of cotton, grain and livestock, which are the basis of agriculture, has been reduced and has a negative impact on economic efficiency. Therefore, proper territorial organization of this industry and specialization of production requires a comprehensive socio-economic geographical study.

The agriculture of the Republic of Karakalpakstan was formed on the basis of artificial irrigated farming and extensive desert pasture animal husbandry according to the nature of the natural conditions. The history of artificial irrigation of lands in Karakalpakstan dates back to ancient times [5]. The well-known historian-archaeologist S.P.Tolstov notes that two and a half thousand years ago, there were large irrigation systems that were highly organized for their time in the Khorezm Oasis, which includes Karakalpakstan [8]. Currently, the region has several large irrigation systems that provide water to an area of more than 250,000 hectares.

Competitive production in agriculture and the specialization of regions in certain or several branches of agriculture depend on the characteristics of natural conditions. In this regard, it should be noted that the fact that the surface structure of the research region consists of a plain is convenient from the point of view of agriculture, but the lack of humidity creates some inconveniences. Raw cotton, rice, cocoons, wheat, licorice root, sugarcane, vegetable products, fruit, potatoes, grapes, caracul, milk, meat and eggs are grown in the republic's agriculture. It should be noted that among the agricultural crops listed above, raw cotton, rice, licorice root, and caracul are of commodity importance. Also, one of the regional features of agriculture is that Karakalpakstan, due to its geographical location, is located at the northernmost border of cotton growing not only in Uzbekistan, but also in the whole world.

There is great domestic potential to strengthen export potential and diversify agriculture in the region. In particular, there is irrigated land area, labor resources, their historically formed farming and cattle breeding, international transport, production and social infrastructure networks.

In Karakalpakstan, almost all branches of agriculture and animal husbandry have developed, especially cotton, rice, cattle and dairy farming. In recent years, special attention has been paid to the development of horticulture, vegetable growing and beekeeping. Potatoes and vegetable crops have been cultivated in agricultural farms for a long time. Today, rice and vegetable crops occupy a part of the land area of every agricultural farm. The development of these sectors is based on the use of the most valuable part of the land fund - irrigated arable land. The total area of land suitable for irrigation is more than 1.6 million [4]. More than 260,000 hectares of available arable land is occupied by agricultural crops and perennial trees.

Method and methodology. In economic-geographic research of agriculture, the analysis of its territorial structure and the scientific justification of directions for its improvement are of great importance. A unique territorial structure of the region's agriculture has emerged. In this regard, it is appropriate to divide the region into two administrative and natural regions that reflect the territorial characteristics of agriculture. It should be noted that the issues of natural and economic zoning of Karakalpakstan were covered in the works of T. Tajimov (1963), J. Medetullaev (1976), Q. Dauletova, E. Umarov (1989) and Q. Bektemirov (2006).

T. Tajimov (1963) in his research work divided the nature and economy of Karakalpakstan into three: Southern, Northern and Aral Sea economic-geographic regions [7], and J. Medetullaev (1976) divided Karakalpakstan into four: Amudarya, Kyzyl-Kum, Aral Sea and Ustyurt natural-agricultural regions [4]. In this regard, E. Umarov divided the region from the point of view of natural and economic conditions into the North region - grain farming, suburbs, police farming, dairy and cotton farming; South region - for cotton growing, cocoon growing, fruit growing and grape growing; Seaside region - for fishing and its processing and meat breeding; Ustyurt region - specializes in pasture livestock, as well as gas-oil-chemical industry in the future; Kyzyl-Kum region was divided into regions specializing in caracul sheep breeding and Karatau mining industry [3,10]. K. Bektemirov (2006) studied regional agriculture by dividing it into three: Southern, Central and Northern zones [2]. K. Ubaydullaev, K. Daniyarov (2004) conducted research on problems in the agrarian sector in the Republic of Karakalpakstan under market conditions [9].

The method of dividing the above-mentioned scientists into regions and zones was used as a basis for this research work. Only we used the concept of zone instead of the concept of region. The reason is that the concept of region is mainly used as an administrative-territorial unit (for example, Amudarya region, Bozatau region, etc.). Below we will discuss these natural economic zones in detail from an agricultural point of view.

Administratively, the southern zone of the Republic of Karakalpakstan includes Amudarya, Beruniy, Turtkul, Ellikkala regions, the central zone includes Nukus, Khodjeyli, Takhiatash regions and the city of Nukus, and the northern zone includes Bozatau, Kegeyli, Moynaq, Kanlikul, Karauzek, Kungrad, Shumanay, Chimbay and Takhtakupir regions. Depending on their capabilities (natural, economic and social factors), they provide a certain part of the agricultural products grown in the region.

Agriculture is an important branch of the region's economy, providing light and food industries with agricultural raw materials, and is a source of income for rural residents. Its share is 29.3% of the GNP and 27.4% of the population employed in the economy (2020)⁵. In the structure of agriculture, livestock industry has a relative advantage. The share of animal husbandry in the gross product volume

is 53.8 percent; agriculture is 46.2 percent (2020). Animal husbandry is especially developed in peasant farms.

In 2020, this region accounted for 3.8% of the total agricultural products in Uzbekistan, 6.6% of cotton, 3.6% of grain crops, 2.8% of wheat, 2.7% of potatoes, vegetables and sugar products, 2.1% of fruits, 4.4% of meat, produced 3.6 percent of milk and 3.3 percent of cocoons. This is far below the available opportunities. Karakalpakstan is a region of Uzbekistan with great potential for agricultural development.

In particular, 11.9% of irrigated land, 10.4% of arable land, 23.0% of hayfields and pastures in the territory of Uzbekistan correspond to the share of the research area. But many other conditions (climate, growing season, lack of water resources, decrease in soil fertility, derailment of crop rotation system, reduction of humus content in the soil, salinity, etc.) complicate agricultural production. Especially the high level of salinity of arable land has a serious negative impact on the economic indicators of the agricultural sector. In particular, as a result, of the rapid drying and salinization of the Aral Sea, nearly 50,000 hectares of arable land have become unsuitable for agricultural use in recent years. Considering that the area of agricultural crops in the Republic of Karakalpakstan was 259.9 thousand in 2020, this is almost 20 percent. As a result, the amount of agricultural products is also decreasing, that is, it was determined that in 2020, an average income of 37.2 million sums was obtained from one hectare of land in the region. This means that as a result, of land being unusable, it causes damage worth 1859.2 billion sums [6].

The Republic of Karakalpakstan administratively consists of 16 regions and 1 city subordinate to the republic. These administrative regions can be divided into three southern, central and northern zones, which differ from each other in terms of natural conditions, location and specialization of agricultural sectors (Table 1). These zones are not considered administrative regions. Conditionally allocated for the purpose of studying the territorial structure of agriculture.

Table 1

Distribution of arable land in the natural-economic zones of the Republic of Karakalpakstan by types of products

Indicators	Natural economic zones					
	Southern		Central		Northern	
	Key indicators	Percentage of total	Key indicators	Percentage of total	Key indicators	Percentage of total
Total cultivated areas: thousand ha	109,7	41,6	37,1	14,1	116,9	44,3
Of which: wheat	20,7	33,4	8,3	13,4	33,0	53,2
Rice	6,0	23,7	4,1	16,2	15,2	60,1
Cotton	46,2	52,8	10,1	11,5	31,2	35,7
Oils	3,0	29,4	1,1	10,8	6,1	59,8
Potatoes	3,6	52,9	0,8	11,8	2,4	35,3
Vegetables	7,5	46,0	2,6	16,0	6,2	38,0
Gourds	4,6	39,0	1,9	16,1	5,3	44,9
Food crops	12,6	53,4	2,9	12,3	8,1	34,3
Vineyards, ha	805	48,6	481	29,1	370	22,3
Fruits and vegetables	4,1	66,1	0,7	11,3	1,4	22,6

The table is compiled based on the data of the Statistics Department of the Republic of Karakalpakstan

Discussion and results. 10.7 percent of the total land area of the region corresponds to the Southern zone, which produces the main part (54.6 percent) of the gross agricultural products (at actual prices) in the study area. According to this indicator, the zone ranks after the northern zone. Also, according to 2020 data, 41.6 percent of agricultural arable land is located in this zone, 45.0 percent of the total wheat grown in the region, a little less than 60 percent of rice and potatoes, more than 50 percent of cotton, vegetables, meat, milk and eggs, a little produces less than 50 percent, 91 percent of cocoons. This zone specializes in the cultivation of raw cotton. Agriculture is relatively intensively developed in the zone. In particular, the yield of cotton is 1.4 ha/t, wheat 10.0 ha/t, rice 29.8 ha/t, potato 15.7 ha/t, vegetables 36.4 ha/t and vegetables 41.3 ha/c is high (Table 2). It is also higher than the average indicator of the republic in terms of productivity of livestock.

Table 2

Productivity indicators by crop types in the southern zone

Crop types	Productivity, ha/c.		ha/c. (+,-) in relation to the Republic
	Republic of Karakalpakstan	Southern zone	
Wheat	28,3	38,3	+10,0
Cotton	23,0	24,4	+1,4
Rice	16,9	46,7	+29,8
Potato	126,0	141,7	+15,7
Vegetables	129,0	165,4	+36,4
Vegetables	175,8	217,1	+41,3

The table is compiled based on the data of the Statistics Department of the Republic of Karakalpakstan

It is known from the analysis of the data of Figure 1 that agriculture is relatively intensively developed in the region. This process is primarily explained by the fact that the zone is well supplied with water resources, the duration of the vegetation period is long, and the salinity level of cultivated land is relatively low.

Agriculture is developing at different levels in the administrative regions of the southern zone. Differences in crop production in adjacent regions with almost identical natural and economic conditions are explained by differences in the share of arable land in the administrative regions located in the southern zone.

14.1 percent of agricultural arable land is located in the central zone. The agro-industrial complex of the zone is multi-sectorial and mainly consists of cotton raw material and grain cultivation. Intensive suburban agriculture was formed in this zone due to the location of the industrialized cities of Takhiatash, Khodjeyli and Nukus. Also, industrial sectors of processing agricultural products are well developed. Among the large enterprises in the region, oil and cotton refining enterprises are located in Khodjeyli region; grain factory in Takhiatash district, textile enterprises and grain factory are located in Nukus. Khodjeyli district has a slightly higher position in the production of agricultural products in the zone.

Agriculture is relatively poorly developed in the northern zone. The irrigated lands of this zone are mainly cotton and grain crops. Also, dairy and meat breeding and cattle breeding are developed. Here, 44.3 percent of the region's total arable land is concentrated. These indicators indicate the extensive development of agriculture. The main reason for this is manifested in the following:

- relative shortage of water resources;
- low soil fertility due to high soil salinity;

- lack of agricultural machinery;
- underdevelopment of production, social and market infrastructure networks;
- location in a difficult ecological situation, etc.

In this zone, almost all branches of agriculture typical for the region are developing. In particular, more than 40 percent of wheat grown in the region, about 30 percent of rice, potatoes, and vegetables, and more than 30 percent of cotton, rice products, meat, milk, and eggs.

There are differences in the cultivation of agricultural products in the regions administratively included in this zone. For example, Chimbay and Kungrad districts produce more than 35 percent of the gross agricultural products grown in the northern zone. Bozatau and Takhtakupir districts, which have great opportunities, have low agricultural potential.

Summary. Based on these analyses, the following conclusions were drawn:

- the natural climate and soil conditions of the Republic of Karakalpakstan create the necessary opportunities for the development of agricultural industries. However, the limited water resources and the high level of soil salinity are creating a number of problems in agriculture in the region. This leads to an increase in additional costs and a decrease in efficiency compared to other regions of Uzbekistan. This process is one of the unique features of regional agriculture. Taking into account these features, it is necessary to pay attention to its following aspects in the future: support by the state through economic mechanisms, taking into account the danger of the natural conditions of the region in the development of agriculture; improvement of the structure of agriculture, introduction of scientific achievements to the network, etc.;

- artificial irrigation farming and desert pasture animal husbandry, depending on the characteristics of the natural conditions of the region. Cotton farming, grain growing, dairy cattle breeding and cattle breeding are the major branches of the agrarian sector. In addition, policing, vegetable growing, and cocoon growing have developed. Horticulture and viticulture, beekeeping sectors are relatively underdeveloped. The livestock complex is the leader in the network. Opportunities for the development of agriculture are great;

- administrative regions were divided into three: northern, central and southern zones depending on the geographical location, natural climate and economic characteristics. Depending on the development of the agricultural complex, a specific territorial structure has been formed in these zones. The current state of the territorial composition of agriculture does not correspond to natural conditions. In particular, the available opportunities for harmonious development of agriculture and animal husbandry in the northern zone are not being fully used, for example, this zone accounts for 44.3% of the total cultivated area of the region. Its share in the production of agricultural products was 33.9 percent. So it is known from the analysis that agriculture is extensively developed in the zone;

- the southern zone consisting of Amudarya, Beruniy, Turtkul and Ellikkala districts leads in the production of agricultural products. Also, agriculture is intensively developed in the districts of this zone;

- irrational agriculture was formed in the central zone. Most of the potatoes, potatoes, vegetables, meat and dairy products are brought to the big cities in this zone from the southern zone and neighboring Khorezm region. From this point of view, the improvement of intensive suburban agriculture is an urgent issue.

- one of the important factors in the sustainable development of agriculture of the Republic of Karakalpakstan is related to the improvement of its territorial composition, taking into account the natural climate and soil characteristics of the region. As a result, of the study of the agro-climatic conditions of the region, the following regional specialized branches of agriculture will be formed in the

future: in the Southern zone, cotton, grain (winter wheat, corn) and leguminous crops, potatoes, sugarcane and vegetables, grapes and horticulture will be specialized from the agricultural branches. The sector in the direction of milk and meat is being developed in livestock breeding. In the central zone, suburban agriculture is specialized in potato, potato and vegetable growing, dairy and milk-meat cattle breeding, poultry, grape and fruit growing. In the northern zone, grain breeding, dairy-meat and meat-milk cattle breeding, sheep breeding, meat-fat-wool sheep and goat breeding are developed.

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Rezyume: *Ushbu maqolada O'zbekistonning Orolbo'yi mintaqasining ya'ni Qoraqalpog'iston Respublikasi qishloq xo'jaligining hududiy tarkibi tahlil qilingan. Qishloq xo'jaligining hududiy tarkibi dastavval uchta zonaga ajratib tahlil qilingan. Shuningdek, ma'muriy-hududiy birliklar doirasida tadqiq qilingan. Mazkur tadqiqot ishining asosiy maqsadi Qoraqalpog'iston Respublikasida qishloq xo'jaligini hududiy tarkibini tahlil qilish hisoblanadi.*

Резюме: *В данной статье анализируется территориальная структура сельского хозяйства Приаралья Узбекистана, то есть Республика Каракалпакстан. Территориальная структура сельского хозяйства впервые была разделена на три зоны и сделан анализ, а также был изучен в пределах административно-территориальных единиц. Основной целью данной исследовательской работы является анализ территориальной структура сельского хозяйства Республики Каракалпакстан.*

Kalit so'zlar: *qishloq xo'jaligi, zonalar, rayonlar, dehqonchilik, chorvachilik, mahsulot, ishlab chiqarish, hosildorlik, intensiv rivojlanish, sho'rlanish.*

Ключевые слова: *сельское хозяйство, зоны, регионы, земледелие, животноводство, продукция, производство, продуктивность, интенсивное развитие, засоление.*

UDC: 330.338.467.5

SOME THEORETICAL ISSUES OF CLASSIFICATION OF FAST FOOD SERVICES ENTERPRISES

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Summary: *This article discusses some of the features and classification aspects of fast food establishments in the modern public catering system.*

Key words: *public catering, fast food establishments, restaurant, bar, canteen, snack bar, coffee shop, tea house, buffet, assortment*

It is known that regardless of the socio-economic system of any area, region or country, as the standard of living of the population increases, the culture of people going to the cinema, theater, circus, park, sports, and fitness institutions also increases, and the status of public catering establishments also increases as they gain public importance. . This is mainly due to the fact that the enterprises operating in the field have achieved financial independence, changed their target strategies, and strive to survive in the harsh market conditions and struggle with competitors. Of course, it should be noted that the most important goal in the catering industry, like any business, is to make a profit.

Catering enterprises operate in the public and private sector from the point of view of ownership. However, in the market economy, state catering enterprises give way more to the private sector. Even today, more than 95 percent of catering enterprises in most countries operate in the private sector, at least under public-private partnerships.

Catering enterprises fulfill a number of social tasks while meeting state standards. Among them, the biological function (filling the stomach, satisfying the needs for food), the communication function (people communicate around the table), the functions of rest and relaxation are listed.

The term "catering" itself is interpreted differently in different countries and simply refers to the preparation of large quantities of meals outside the home [1].

One soum invested in catering enterprises turns 4-5 times faster than in other sectors of the economy and brings more profit to its owner, and this sector is a very promising sector with a growing trend.

The most popular catering establishments in developed countries are FFE (fast food establishments), which are automated or semi-automated kitchens, cafes, "snack", "fast-food", "grill-bar", "shop-cafe", coffee shops. , are restaurants with buffets in the form of "buffet tables", which mainly sell ready meals or semi-finished products [2].

In foreign countries, there are mainly 3 types of FFEs operating in the technological chain as follows:

- *"preparation of ingredients - cooking - transfer";*
- *"storage - heating - preparation, storage - transfer";*
- *"storage - heating - transfer".*

In the conditions of Uzbekistan, it can be added as the 4th type "bringing ready-made (gomma, pies, pancakes, somsa, various pastries), heating and selling as necessary".

Although such catering establishments seem like a very easy and simple structure at first glance, they have a complex structure of their own. Because semi-finished products must be cooked, boiled or heated in order to bring them to the state of ready food, consumption in enterprises operating in the 1st

type. Of course, such enterprises should have a hall with a place for lunch and special food for self-service. It should also be equipped with special kitchen equipment, with a ventilated chamber that stores a daily stock of semi-products, refrigerated, staff and waste rooms. In Adam, utility rooms make up 30% of the total area of the enterprise [3].

However, only food distribution companies have refrigerators for product storage and ovens for heating food to the required temperature. In such enterprises, there will be no such thing as a kitchen, a garbage room, a room for employees, and mainly there will be a room with a refrigerator for ready-frozen products, a room for employees and waste, and auxiliary rooms occupy 20% of the total enterprise [4].

Automated enterprises (they are not very popular in our country, they are currently found in airports, train stations, large hypermarkets, movie theaters) prepare meals in portions and are mostly equipped with vending machines. Ready-made meals are stored in the necessary assortment in single-use containers in vending machines equipped with refrigeration equipment. The customer dials the number of the required food in the machine and after 15-20 seconds receives the ready-to-eat food.

In some cases, large machines can work around the clock without the help of staff. In this case, the machines will be equipped with special ovens.

Enterprises operating in the "Storage-heating-transmission" system work in a very simple manner. Such enterprises include 3 main rooms: a common hall with a vending machine, a room for employees, a special room for disposing of disposable dishes, sometimes the staff room can be in the common hall. Auxiliary buildings occupy 10 percent of the total enterprise space.

In foreign enterprises, special technological equipment for preparation, heating and quick weighing of food is produced for FFEs, consisting of the following sections:

- pots divided into small sections to keep the temperature of food at the same level, plates for frying, marmites, deep fryers for deep frying in vegetable oil;
- special heat equipment: heating devices in various combinations, microwave ovens from devices working with ultra-high frequency light, devices for preparing dough products;
- linear, carousel rotating dispensing equipment, vending machines.

Often, theme restaurants of national cuisines, small-scale restaurants are widely developed abroad, and Chinese and Japanese cuisines are in high demand and very popular in the United States. Foreign restaurateurs mainly draw up wine cards and pay particular attention to pouring wines produced in different years and priced for people with different incomes in the restaurant itself.

FFE's typically use branches and business lunches, which are fast-paced service types. The English word branch ("brunch") is a word combination of British students, which appeared as a result of combining the words "breakfast" and "lunch". Literally translated, it means "a late breakfast and an early lunch." Usually the British are interested in branch on Saturday and Sunday.

The term "business lunch" is a complex lunch where business people gather to eat delicious food at reasonable prices in the middle of the working day. Business lunch usually consists of salad, soup, side dish, hot food, soft drinks, and gives energy to the participants for the whole day.

Many hotel branches in foreign countries actively use this type of service, although in most cases it is not profitable. Brunch prices usually start at \$45 for adults. Also, family branches are widespread, where while parents are eating and drinking, children are engaged in supervised activities in specially equipped rooms with various toys, TV channels connected to the Internet, and computers.

The practice of opening restaurants in supermarkets is also widely used abroad. Sometimes the entrance can be from the exit or from the other side of the hypermarket, or restaurants can be located on a separate floor of the building. As an example, hypermarkets such as "MegaPlanet", "Next", "Tomaris

NUR" in Uzbekistan can be mentioned. They have canteens, kitchens preparing food from different countries, cafes and restaurants on separate floors. In such restaurants, depending on the availability of seats, the turnstiles can be opened and closed with the help of levers, or entry and exit are free. Sometimes bartenders serve or, depending on the type of establishment, it can be self-service.

Even today, the system is rapidly developing in Uzbekistan, as well as in other countries, with the opening of FFE in various forms. In our republic, the industry of quick-frozen ready-made meals and semi-finished products is rapidly spreading to more and more regions.

In Khorezm region, during the years of independence, the public catering system developed in the form of a kitchen, a tea house, a bar, a coffee shop, a restaurant, a wedding hall, a hamburger shop, a soup kitchen, and a fish shop. Today, in the FFE system, which has reached the level of a brand and is widely popular among the population in the Khorezm region, "Maftuna", "Mash'al", "Khiva Keramika" are the famous local wedding soups, "Kamish", "Mirza", "Chashma" hamburger restaurants, "Chakka", "Khorazmbaliq" ", "Okean", "Kopalturkman" fish farms, "Mir", "Darital", "Sharshara", "Khonka Yoli" somsa, "Sharof", "Khorazm bakhmali" tandoor ovens in Khiva, entities that prepare hotdogs on a special order can be included .

Catering entities are divided into mobile (sheltered pavilion, tent, furniture, tables and chairs, etc.) serving visitors depending on time, and stationary types that work continuously or seasonally throughout the year. Of course, all this is directly related to the improvement of products and materials, ways of preparation, storage, and delivery of food, technological processes, and communications, and affects the standard of living of the population and society.

There are basically five types of catering establishments: restaurants, bars, coffee shops, kitchens, cafeterias (close-up meals). In addition, when determining the type of catering entity, attention is mainly paid to the following:

- *assortment of sold products, variety and complexity of their production;*
- *technical equipment, kitchen technological equipment and equipment;*
- *provision of material base, engineering and technical equipment and equipment, building system, architecture-planning, etc.;*
- *service methods;*
- *qualifications of employees;*
- *quality of service, interior decoration of the building, manners, behavior, aesthetics, etc.*

The classes and categories of catering establishments are usually deluxe, superior and first class, and this is mainly given to restaurants and bars. Cafe, kitchen, restaurants are not divided into categories.

In turn, restaurants differ according to different criteria. Including:

- according to the range of prepared dishes (national fish dishes, national dishes, Khorezm fish dishes, wedding dishes, dishes of foreign countries);
- according to the object of the place of operation (city, station, ship, wagon, compartment, bus, etc.),

A bar is a small type of restaurant, which was also called a tavern in ancient times. Bars sell a wide variety of drinks. Bars may also have food, snacks, and confectionery. The task of the bars is to provide good service to the visitors, to create a relaxing atmosphere in a comfortably furnished, beautiful place, to organize music, performances by artists, and video broadcasts.

Depending on their assortment, bars are divided into the following types: beer bars, wine bars, milk-yogurt bars, cocktail halls, cocktail bars.

Bars are usually opened in administrative-cultural and shopping centers, micro-districts, near restaurants, coffee shops, hotels.

According to the structure of the buildings, the bars are located as follows:

- *in vestibules - here people meet and talk;*
- *restaurant bars - located inside the building, in the hall;*
- *auxiliary bars - located on the hotel floors.*
- *banquet bars - located in banquet halls.*
- *mini-bars - located in the hotel rooms.*

In addition, dairy bars (milk and butter cocktails, various sandwiches, cheese, sausages, several types of dairy dishes, puddings, cream, curd somsa, pastry, sweet food and drinks), disco bars (coffee shop during the day operates as, and in the evening provides music services, dance floor, TV, big screen, equipment with various lighting effects, bar offering food and drinks, ice creams), express bars (instant service, in shopping malls, hotels and operating at stations, where food is served while standing), beer bars (bars where beer is poured and sold in special places, from special bottles or directly from the tank of the factory produced by automatic machines, as an addition, sandwiches, cheeses suitable for beer, various pickled things, dried fish, fried potatoes, dried black bread, hole-in-the-wall cake, pickles, salted almonds, etc.), wine bars (light meals operating under hotels, restaurants, coffee shops, time limited, very convenient for people who are in a hurry to have a quick meal and wait, chatting, drinking a cup of tea or coffee), grill-bars (shopping centers, urban areas, recreation areas, crowded highways, restaurants, and the most common dishes in these bars are fried fish, chicken, kebab, steak prepared in front of the eyes) are different.

While coffee shops also provide a place for consumers to eat and relax, they tend to have less variety than a restaurant. The cafe offers hot tea, coffee, cocoa, iced juices, mineral water, yogurt, milk, pastries and sweets. Easy-to-prepare second dishes - fried eggs, sausages, anchovies, dumplings, and soup can be served to the first.

There are also alcoholic and non-alcoholic coffee shops, ice cream, coffee shop, pastry shop, dairy coffee shop, youth coffee shop, children's coffee shop, etc., according to the assortment.

In addition, a coffee shop is a special catering entity that offers consumers a wide range of coffee drinks, which mainly include the following drinks, which are popular around the world: [5]:

- natural coffee (filter coffee), cappuccino coffee (coffee cappuccino): strong black coffee with foam similar to boiled milk foam, sometimes cinnamon and crushed chocolate are added;
- lutz coffee (coffee luz): with strong fruit liqueur;
- coffee corretto (coffee corretto): with grape vodka;
- Warsaw coffee (coffee Warsaw style): boiled milk and milk foam with;
- Turkish coffee: boiled with sugar;
- espresso coffee (espresso): strong black coffee, in a special machine it is prepared by grinding it and passing boiling water through its layers.
- green tea, rose-hip tea and mint tea (bait tea, or peppermint tea); green grass tea (herb tea) and chamomile tea (comomile tea);
- tea with ice (iced tea);
- black tea, etc.

A kitchen is a public dining place where food is consumed to meet the needs of relevant customers, and its main activity is to prepare food for residents from their own products, to meet their nutritional requirements, to prepare breakfast, lunch, dinner or a part of them. From the kitchens, food

is delivered to the house, pre-orders are accepted, as well as food products and semi-finished products are sold.

According to the classification of the kitchens, they are divided into general and dietary food kitchens according to the range of products, school children, students, etc., according to the customers they serve, accessible to everyone according to the address, and which operate only for the employees of a specific educational institution and organization.

A restaurant is a public dining place with a limited range of food, which is mainly part of the FFE system. Assortment of consumer food - cold and hot food, hot and fast food: sausage, sardines, dumplings, fried eggs. The sale of alcoholic beverages is prohibited. In restaurants, you can choose any food, often standing up. Once the meal is selected, the bill will be processed immediately. This can also be done through ATMs. In restaurants, everything is done very quickly. People who are in a hurry and are short on time can eat in an instant and be on their way. Restaurants are built in places where there is a lot of traffic. Restaurants are divided into general and special types according to the range of products sold. Dumplings, baked meat, kebabs, somsa, cutlets, sausages, sandwiches, etc. are prepared in special restaurants.

Buffets are intended for the sale of food products. They can be located inside and outside. It trades in semi-finished products, various other products, and hot drinks, which are most in demand. All canteens, except school canteens, sell tobacco products. Buffets are mainly self-service, and payment is made by a bartender or a vending machine. Buffets operate in hotels, theaters, around sports fields, railway stations, river and sea ships, production and transport organizations, construction and other institutions.

Buffets in public entertainment areas must have high-quality pastries, candies, fruit and mineral waters, wet fruits, and alcohol cannot be sold.

Although it is not found in our conditions or is being introduced now, in many countries the buffets at the houses of happiness (ZAGS) have fruits, chocolates, candies, as well as flowers and gift items. Depending on the wishes of the couple, the table can be set in advance and served by waiters [6].

Grocery stores are large and small stores that are very popular, the most numerous both abroad and in our country, and they are found at every step. are entities that sell additional items.

Teahouses sell tea and pastries, pastries, meat dishes, fish, eggs, beef, fried eggs, sausages, etc. Some teahouses are staffed by waiters, while others are self-service.

In the next 30 years, Uzbekistan was given wide opportunities from catering establishments to teahouses, restaurant-style fish shops, kitchens. In this way, catering system entities were organized, which became not only a place to drink tea or eat food, but also a great place to relax, have fun, and chat with friends.

Currently, Urganch, the administrative center of Khorezm region, also serves various national dishes such as gomme, egg barak, tansyk Baltic dishes, chicken, Khorezm wedding dish, ijjan, shivit dish, chalov, kalla pochcha, belly hoof, salty kebab, flour dish, etc. , there are hundreds of large restaurants that prepare local dishes, home-made small kitchens and teahouses, as mentioned above, there are special hamburger, lavash, spicy, sweet meat, pumpkin, potato, blue somsa, hot dog selling points [7].

So, the public catering network, the FFE system, in Uzbekistan as well as abroad, satisfies the material and cultural needs of the population, which are the main issues in the society, and remains one of the main factors in raising the standard of living.

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Rezyume: Ushbu maqolada zamonaviy umumiy ovqatlanish tizimidagi tez ovqatlanish korxonalarining ayrim xususiyatlari va tasniflash jihatlari ko'rib chiqiladi.

Резюме: В данной статье рассматриваются некоторые особенности и аспекты классификации заведений быстрого питания в современной системе общественного питания.

Kalit so'zlar: umumiy ovqatlanish, tez ovqatlanish korxonalari, restoran, bar, oshxona, snack bar, qahvaxona, choyxona, bufet, assortiment

Ключевые слова: общественное питание, заведения быстрого питания, ресторан, бар, столовая, закусочная, кофейня, чайхана, шведский стол, ассортимент.

BIONICS IN OUR LIFE

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Summary: *The article presents the main functions, features, role and importance of bionics in our lives. The types of bionics and their descriptions in architecture, furniture, jewelry, graphic design and clothing design are written, and the definition of bionics is also illustrated.*

Key words: *Influence, form, living systems, prototype, spiral, branching, golden combination, ornament, decoration, living nature, element.*

The main focus of bionics is the creation of information technology. These are problems related to navigation, orientation, sensing and bioelectric control systems. Thus, the study of the complex navigation systems of fish and birds, covering thousands of kilometers during migrations and unerringly returning to their places for spawning, wintering, and hatching chicks, contributes to the development of highly sensitive tracking, guidance systems and objects. Or the ability of fish, birds, insects to react sensitively to weather changes.

Nature is extremely attentive to the ways it creates its forms. The main quality of living objects is the expediency of their organization; all the features of the structure and functioning of organisms serve as a means for carrying out life activities. A designer needs a holistic vision of the design object in the harmonious unity of its internal content, external form and function, therefore bionic education will be useful for a future specialist in the field of design.

Knowledge of natural laws and their application will allow students to push the boundaries of form creation and expand their tools in the field of transformations, combinations and transformations of form.

The study of the influence of images of bionic prototypes on the design of jewelry of the 20th century made it possible to identify three degrees of transformation of the shape of the prototype in the product; copying the prototype; stylization of the bionic prototype to varying degrees; obtaining and using the general geometric scheme of the bionic prototype.

This is not just the curvature of the outlines of forms, the external resemblance to mollusk shells, bird shells, honeycombs, branches of a forest thicket, etc. First of all, these are more comfortable, more harmonious, more reliable spaces for human activity. Modern bionics is based on new methods using mathematical modeling and a wide range of software for calculations and 3D visualization. Its main task is to study the laws of formation of tissues of living organisms, their structure, physical properties, design features with the aim of translating this knowledge into architecture.

Living systems are examples of structures that operate based on the principles of ensuring optimal reliability, forming optimal shape while saving energy and materials. It is these principles that form the basis of bionics. Nowadays there are three directions in bionics:

Biological, which examines processes within biological systems. Here computer mathematical models of biological processes are created. Responsible for bringing the created bionic models to life through the construction of engineering structures or machines.

Judging by the trends that have been observed recently, the architecture of the future will be closely connected with nature and the environment around us. The greatest genius in the history of mankind, who is rightly called the «father of bionics», was the first to try to use the experience of

nature in building man-made machines. The masterpieces of another great master, Antonio Gaudi, gave impetus to the development of architecture in the bionic style. Gaudi managed to predict what will be relevant now and always: architecture is an integral part of nature.

Bionics in architecture is the search for form according to the laws of formation of living tissues; it is the imitation of natural forms with the help of architecture.

In a modern technocratic society, the comfort and coziness of your own home is very important. The house becomes the only place where a person can fully rest, relax and isolate himself from the bustle of the big city. Bionic architecture involves the creation of houses that are a natural continuation of nature and do not come into conflict with it (Fig. 1).



Fig. 1. Type of bionics in architecture

Bionics in furniture – furniture sets in the bionic style differ in their design and appearance. They can be supplemented with natural elements (for example, the legs of sofas, armchairs or chairs imitating tree bark). The achievements of bionics in the field of interior organization have reached unprecedented heights, which is observed in unusual furniture sets that repeat the shapes of stone, plants and even animals. Often, upholstery is used that is similar to elements of natural origin in color and texture (Fig. 2).



Fig. 2. Type of bionics in furniture

Bionics jewelry product. An analysis of the development of the ideas of bionics and bionic jewelry design led to the conclusion that the most commonly used morphological configurations of bionic prototypes are spirals and branches, and the laws of symmetry and the principle of the «golden ratio» can be considered the laws of the process of their organization. Exposing living structures in design is a kind of bioconstructivism.

The jewelry design is based on natural patterns of leaves, algae and microorganisms. Here, not only the shape is important, but also the counterform, the pattern is not drawn, but, like lace, is formed using voids. An example of the use of bionic elements in jewelry is radiolaria, tiny single-celled organisms that live in the oceans. These primitive creatures can have the most bizarre skeletal shapes – most of them are hexagonal.

Thus, the application of the laws of bionics in jewelry opens up new opportunities for creating fundamentally new models and designs of products in the process of their computer design (Fig. 3).

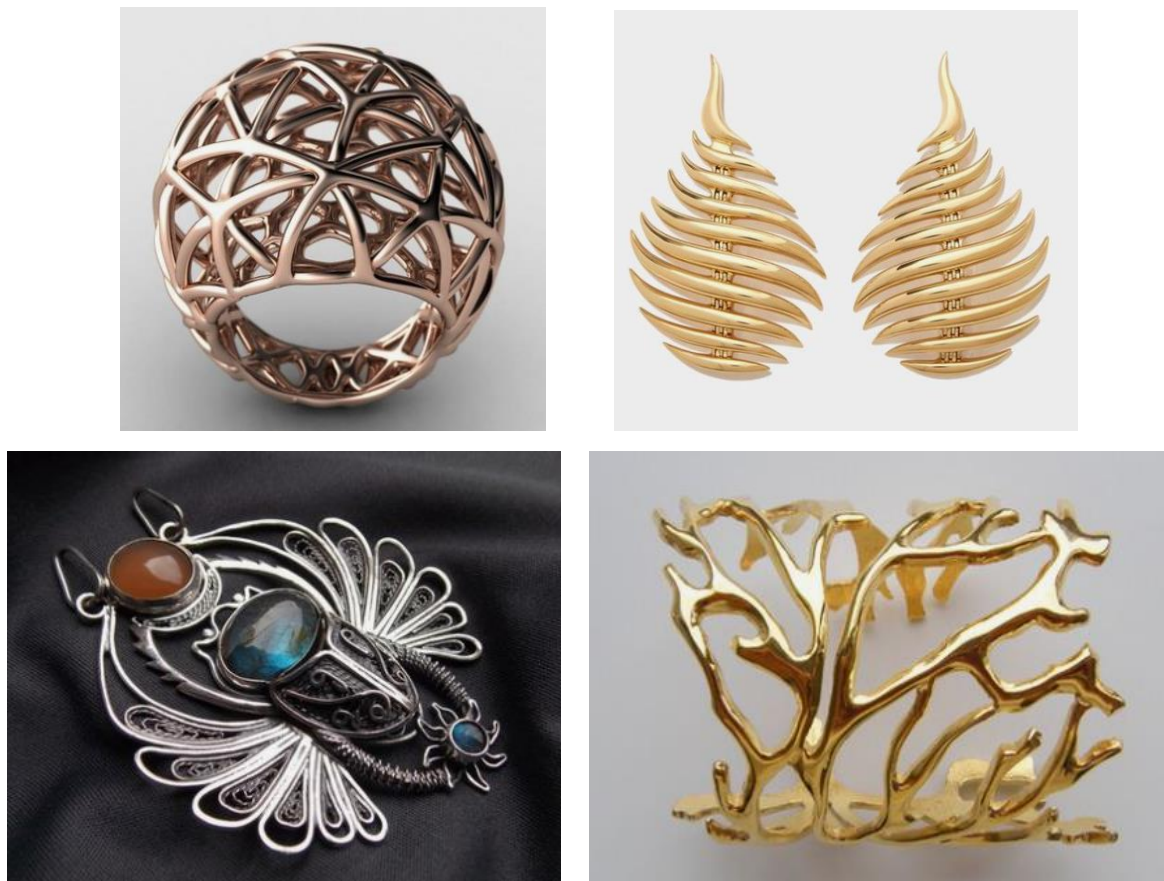


Fig. 3. Type of bionics in jewelry

Bionics in graphic design is both science and art, it is analysis and synthesis, the search for an original and new solution. The study of the forms of living nature feeds the imagination of designers, provides material and helps solve the problem of harmony of functional and aesthetic principles, enriching the formal means of harmonization with the search for the most expressive proportions, rhythm, symmetry, asymmetry, etc. The designer makes detailed sketches of a natural sample, then analyzes the natural form using form-building lines, axial lines and division lines, and only then develops a graphic sample. Thus, the study of natural forms is a prerequisite for the improvement of trademarks.

In general, the aesthetics of the forms of trademarks is closely related to utilitarian principles, and in nature the close connection between function and form is perceived as a special aesthetic property of living nature. Borrowing images from living nature, the designer at the same time takes natural forms that evoke certain aesthetic emotions in most people. Natural forms give the sign a specific character. The specificity of the living forms that have found their application in the brand name sets these signs apart from others.

Bionics in clothing design. An industrial object can be a sketch of a suit, the design of which used the principles of bionics. For example, the basis for the formation of a silhouette, ornament or

decoration can be traced to elements of a biological object. This is how clothing repeats the perfection of nature.

Today, bionic elements are used both in designer clothing: tulip skirt, bell skirt and rose skirt, and in repeating the forms of nature in clothing design elements, accessories, jewelry and even in room decor.

It is especially important to decorate rooms with bionic elements in the northern regions, where it is not always possible to admire the blooming summer nature. Bionics allows us, regardless of the time of year, to contemplate the beauty and tenderness created by nature and brought into our lives by skillful designers (Fig. 4).



Fig. 4. Type of bionics in clothing design

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Rezyume: Ushbu maqolada bionikaning asosiy funksiyasi, xususiyatlari, jamiyatimizdagi o'rni va ahamiyati keltirib o'tilgan. Arxitekturada, mebelda, zargarlik buyumlarida, grafik dizaynda hamda libos dizaynda bionikaning ko'rinishi shuningdek ta'rifi yozilgan va rasmlar orqali ko'rsatilgan.

Резюме: В статье представлены основные функции, особенности, роль и значение бионики в наша жизнь. Написаны виды бионики и их описания в архитектуре, мебели, ювелирных изделиях, графическом дизайне и дизайне одежды, также проиллюстрировано определение бионики.

Kalit so'zlar: Ta'sir, shakl, tirik tizim, prototip, spiral, shoxlanish, oltin kesim, naqsh, bezak, tirik tabiat, element.

Ключевые слова: Влияние, форма, живые системы, прототип, спираль, ветвление, золотой сочетание, орнамент, украшение, живой природы, элемент.

LINGUODIDACTIC BASICS OF TEACHING THE KARAKALPAK LANGUAGE

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Summary: *This article deals with the issues of teaching the Karakalpak language in educational institutions where education is conducted in other languages, as well as the development of students' language competencies is described.*

Key words: *speaking in Karakalpak, scientific experience, foreign language classes, attitude, listening, speaking, reading.*

In the Republic of Karakalpakstan, in the “National Development Program” of the Karakalpak language, major national competencies are defined, which are developed in the fields of language and literature. Among them, speech (scientific practice of speaking, reading, understanding, listening) and linguistic competences (linguistic scientific practice: phonetics, orthography, lexicology, morphology, syntax) are considered. The purpose of the courses is to teach the appreciation of different cultures along with the knowledge of the mother tongue, and to improve the linguistic knowledge and metalinguistic skills of the students through multilingualism. The 4 types of speech activism: reading, listening comprehension, and speaking are realized through the reading speech, and the practical knowledge of the students is used for the purpose of practical speech. According to the statement of the psychologist I.A.Zimnyaya [4.142], it is noted that as a result of the exercises performed in the lesson, the automaticity of the movements is the result of the automation of related processes. If there is no such thing as a special class, the language of education in schools is determined according to the rules of education, and it is up to the parents' decisions that the students will be educated. However, if necessary, lessons on literature in the mother tongue can be combined according to the government's decision. In such a case, the training should be conducted in the language specified in the mother tongue of at least half of all subjects. In this process, even in the middle of the school, there are some conditions.

Competency level requirements are set for SES (State Educational Standards) requirements of students' competence in secondary education schools:

- In the 2nd, 3rd, and 4th grades of the schools where education is given in other languages, it is necessary to have A1 level of knowledge, practical and scientific experience (650-700 words should be used in the language);

- to be able to understand the meaning of all the necessary words related to everyday communication;

- to explain one's point of view, it is necessary to use certain grammatical tools;
- to correct use of mixed-level speech elements in a specific text;
- to learn and memorize the words and phrases taken from children's literature;
- understanding of the content of the text consisting of 30-40 words;
- understand the messages in the field of special topics;
- read the text on the topics to be studied in 30-40 words in 1 minute;
- take at least 3-4 chapters depending on the topics to be learned;
- recite the text of 40-50 words while the content is based on the text;
- be able to briefly tell the content of the text of 40-50 words;
- 30-40 words of dictation should be taken by the teacher.

It is important to have A2 level of knowledge in the field of education in the state language in the 5-9 grades of the schools of education in other languages, as well as practical and scientific experiments:

- knowledge of morphology and grammatical terms related to both syntax and related concepts;
- knowledge of orthographic rules related to spelling of words, addition of grammatical tools to words, and implementation of these rules;
- connecting sentences and syntactic units in a correct manner;
- to be able to give examples of the knowledge of Karakalpak literature, the methods used by representatives of Karakalpak literature in the 20th century;
- some texts can be repeated with a few words of the content (while the other content is included);
- understand a text (a novel, a novel, a scientific article, a message) and read it fluently at a speed of 130 words per minute;
- be able to read the work (or an extract from novels, articles), the song correctly;
- to be able to tell from Karakalpak folk proverbs (proverbs, proverbs, tales);
- actions and symbols should be given a unique and attractive characteristic;
- on the topic of the lesson, look at the text and express their own opinions in the form of a monologue with 15-20 sentences;
- writing dictation on a text of 80-90 words;
- to know to write a sentence in a text of 120-130 words;
- writing official documents (application, biography, letter, advertisement, article, letter of explanation, letter of consent).

Therefore, among the contents of Karakalpak language education, it is necessary for 9th grade students to have knowledge of the state language and scientific experience:

- students' understanding of Karakalpak language, speaking fluently, free expression of their thoughts on various topics, free communication and scientific practice;
- the readings are defined in the state educational standards at the level of requirements, it is possible to maintain a good level of thinking in a special grammatical form in the structure of the constructions of these words;
- the lessons are related to the literature, in order to instill in the students the ideas of national independence, to become loyal and perfect people, to be a good sign of the national abilities of our people, to look at them with respect, to appreciate the heritage of our ancestors, it is necessary to educate mature and educated people who have independent thoughts.

In order to achieve these goals, the following tasks were considered:

- in the teaching of the Karakalpak language in schools where education is conducted in other languages, first of all, it is necessary to observe continuity in the educational stages, that is, the course of study planned for the 5th grade does not follow the course of study of the 4th grade, to continue gradually and at the same time achieve the foundation for the 6th grade;
- complying with the principle of sequence and coherence of subjects fully, i.e. achieving the delivery of related subjects, grammatical subjects and reading materials related to fine literature in a certain sequence and interdependence;
- to ensure that the sentences, texts and reading materials related to beautiful literature are suitable for the young characteristics of students, to pay attention to their gradual development from easy to difficult, from simple to complex;

- to organize knowledge of the Karakalpak language in an interesting way, to create a training system aimed at the effective use of advanced pedagogical technologies and modern information and technical tools, and to illuminate the ways of their passage in lesson development;

- development of texts and exercise tasks from simple to complex, from known to unknown, giving various creative and problematic tasks, teaching students to think independently, to approach each topic creatively.

- the level of knowledge of the differences between the Karakalpak and Uzbek languages, as well as the thorough mastering of the subject of reading Karakalpak language in schools where education is conducted in other languages;

- students' ability to read Karakalpak texts quickly, accurately, and expressively;

- ability to understand other people's thoughts and text content;

- the ability to express thoughts orally and in writing, the level of translating texts taught in other languages into Karakalpak language, Uzbek texts into Karakalpak language, determined by standards such as students' speaking skills.

Thus, learning the Karakalpak language includes the following types of speaking skills: listening comprehension, speaking, reading and writing in the classroom, ability to think independently, analyzing the text having listened, reading written sources. The dynamic of acquiring the talent of receiving information and expressing one's reaction to events is implied. It is significant to pay great attention to the creation of Karakalpak language (State language) textbooks for general education schools in accordance with requirements.

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Rezyume: *Ushbu maqolada ta'lim boshqa tillarda olib boriladigan ta'lim muassasalarida qoraqalpoq tilini o'qitish masalalari ko'rib chiqiladi, shuningdek, o'quvchilarning lingvistik kompetensiyalarini rivojlantirish yo'lga qo'yiladi.*

Резюме: В данной статье рассматриваются вопросы преподавания каракалпакского языка в образовательных учреждениях, где обучение ведется на других языках, а также описывается развитие языковых компетенций учащихся.

Kalit so'zlar: qoraqalpoq tilida so'zlash, ilmiy tajriba, chet tili darslari, munosabat, tinglash, gapirish, o'qish.

Ключевые слова: говорение на каракалпакском языке, научный опыт, занятия иностранным языком, отношение, аудирование, говорение, чтение.

DEVELOPMENT OF AN ADVERTISING PROJECT DESIGN CONCEPT

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Summary: *This article discusses the importance of the design concept of an advertising project, the meaning of the word «concept», the connection between advertising and society, and discusses ways to create an effective advertising project that can arouse consumer interest.*

Key words: *Concept, design concept, development, project, brand, advertising company.*

Advertising, at its core, aims to influence consumer opinion regarding a particular product or idea. Accordingly, any advertising needs systematization of the work in its creation. The development of the concept for the design of an advertising project is carried out after all the preparatory work on collecting and analyzing information. Essentially, the main purpose of a creative agency is to develop a design concept.

Advertising design is the intersection of marketing and design. It refers to the visual artwork created specifically for advertisements (or, simply, «ads»). Ad design, which is usually used synonymously with graphic design advertising, differs in the fact that its sole purpose is to sell products and services.

Concept (Latin *conceptio* – understanding, cognition) – the main idea, plan, leading thought, plan of any scientific work, work of art, etc. If we put together the keywords that define the concept of a concept, we get that a concept is:

- interpretation of any phenomena;
- priority point of view;
- a central idea to present a creative understanding of the situation;
- a system of views on phenomena in the world, in nature, in society;
- the leading principle in scientific, technical, artistic, economic, political and other types of activities.

Marketing and advertising concepts can be approached in very different ways. Subjects dealing with negative aspects of life have to be approached more sensitively than a funny subject.

In the following, the advertising concept as a framework and strategies to catch attention/interest are listed. Also, examples of formal techniques of visualization are revealed. The strategies and formal techniques of visualisation can be applied to marketing (direct marketing, online marketing) or advertising for the mediums print, Web, TV and radio.

This is due to the fact that without results before the design analysis, the development of a design concept will not meet the realities of the market and will not receive a response from the target group consumer.

All advertising messages created as part of an advertising campaign must convey one message to the audience. Therefore, it is first necessary to develop a general framework on which they will be based.

This basis is the creative concept. A concept (Latin *thought, idea*) is a system of views, a single defining plan, the main idea. The term «advertising idea» is also used in the theory and practice of advertising. An idea (Greek *concept, idea*) is a plan, a main thought, a defining concept. From ancient Greek to Latin the word «idea» was translated as «conception».

However, the concept of “concept” contains words such as a «system» of views and a «single» plan, that is, the presence of several constituent structural elements is implied, some kind of branched, rather complex structure is implied, the individual elements of which are combined into a concept.

Developing a design concept is a purely creative process. Modern concepts in design involve a constant search for a new unique approach to design, the generation and implementation of creative solutions. Simple copying when developing a design concept will lead to the consumer’s unconscious inclusion of the promoted product among the mass of faceless brands. Without the originality and associative appeal of the brand, an advertising campaign can be reduced to empty information to the consumer without creating motivation and providing incentives to purchase the product.

The advertising project is based on a concept. The formative concept is the idea that characterizes the advertised product, service, or company. This idea becomes the core of the image, which the advertising campaign project team is called upon to develop. The main question on which the concept of an advertising campaign is based is how to make the most positive impression on the consumer? The success of an advertising campaign depends on the novelty and originality of the advertising concept.

There are three components of the original sign - plot (the meaning inherent in the image and the symbolic elements used), form (structure, geometry, design principle, connections) and its modeling (arrangement, i.e. inclusion in the original context and adaptation to this context).

The development of a design concept should strive to embody everything attractive that comes to the mind of the consumer regarding the group affiliation of a product when he hears its name or sees the company logo. In particular, this occurs when packaging is designed. Find out more details from the material: Design of product packaging and labels: development of packaging design, price. Pre-project research is carried out, among other things, in order to identify and successfully use suitable associative images.

The concept of design concept defines the unity of the visual and semantic beginning of any project, and in different fields of activity. In relation to artistic design, we can say that a design concept is both a spatial and an emotional idea. It is expressed through artistic means of presenting information, such as illustrations, sketches and graphic materials. The design concept concentrates the proposed solutions for the project.

The design concept of the project is a figurative – functional model of the project. It reflects, at a certain level of generalization, the key principles and techniques for the further implementation of the project. In addition, it takes into account a complex of initial factors influencing the formation of both the image and the functional scenario. And finally, the design concept determines the entire algorithm of work and, in essence, should answer the key question «what to do?» and by what means to achieve the result.

The design concept must reflect the creative novelty and individuality of the solution. Here the author of the concept must clearly imagine what new he personally brings to the design solution with his proposal. This may be figurative and (or) functional and (or) constructive components. Moreover, the creative novelty of the concept does not mean that all the work must be completely new. Concept formation is impossible without the use and creative exploitation of existing ideas.

Creating a design concept is an independent, absolutely author’s section of design work. An idea, unlike a design concept, can be presented in text form, in the form of comic books, in the form of an analog color or illustrative series.

At the very beginning of the development of a future advertising campaign, a document is developed – an advertising design concept. It reflects goals and objectives, as well as ways of

interacting with the target audience, including the desired reaction. It is on the basis of the advertising concept that the advertising slogan, style of advertising materials and method of presentation are drawn up. This is the only way to count on an emotional response among potential clients.

Advertising design and design concept are the main means by which you can:

- develop stable associations among consumers;
- develop a response to the advertising campaign;
- build an emotional series;
- convey the necessary information.

A design concept is a visual graphic representation of the idea of an advertising campaign, which is displayed in advertising modules of newspapers and magazines, on exhibition stands, outdoor advertising, POS materials and other advertising surfaces.

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Rezyume: *Ushbu maqolada reklama loyihasining dizayn konsepsiyasining ahamiyati, «kontseptsiya» soʻzining maʼnosi, reklama va jamiyat oʻrtasidagi bogʻliqlik, shuningdek, isteʼmolchilarda qiziqish uygʻotadigan samarali reklama loyihasini yaratish yoʻllari muhokama qilinadi.*

Резюме: *В данной статье рассматривается важность концепции дизайна рекламного проекта, смысл слова «концепция», связь рекламы с обществом, также рассматриваются пути создания эффективного рекламного проекта, способного вызвать интерес у потребителя.*

Kalit soʻzlar: *Kontseptsiya, dizayn konsepsiyasi, ishlab chiqish, loyiha, brend, reklama kompaniyasi.*

Ключевые слова: *Концепция, дизайн-концепция, разработка, проект, бренд, рекламная компания.*

**THE PLACE AND SIGNIFICANCE OF THE CREATION OF COMPLEX COMPOSITIONS
IN THE LANDSCAPE GENRE OF THE HANDICRAFT ARTIST**

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Summary: *This article talks about the uniqueness of complex compositional solutions, the role of color and rhythm in the works created in the landscape genre of easel painting of Uzbekistan. Artistic analyzes of works of well-known artists who created in the landscape genre are covered*

Key words: *Landscape, Rhythm, Creativity, Color, Composition, Symmetry, Sketch, Fine art, Color image, Nature scene, Harmony.*

The creation of a work of fine art includes a complex period, that is, the content and form are unified. At the end of the creative period, meaning and content are brought into form. Analysis of a series of periods of the creative process is an important task of art theory. Through the composition, the artist's attitude towards nature, his understanding of it and his aesthetic assessment of it are embodied.[1] Composition in a painting is an arrangement on the plane of the picture that allows to express the parts of the image as fully and impressively as possible. There cannot be ready-made templates for composite structures. This thing is constant for every situation: the compositional structure of the work is based on the combination of vital and natural sources and the characteristic of the artist's sense of sight.

Composition cannot be consistently viewed based on the "triangular" or "lengthwise" rule, which is now deprecated. According to the tasks set before the work to be created, the compositional structure changes and is determined by the artistic idea and the content of the work. The size of the image on the surface of the canvas is of particular importance in order to highlight the center of the plot for the composition of the work. It goes beyond the space of the large landscape image, the imaginal expanse behind the surface of the canvas.

An extremely small landscape recedes behind the surface of the work and looks like a secondary part of the canvas or paper surface. The composition is considered successful only when the viewer wants to expand or narrow the edges of the canvas, change its surface area. As mentioned earlier, everything in the work should be subordinated to the expression of the main idea. The composition of a genre painting is determined by the idea. The most literate born picture will never become a work of art if it does not have a deep thought. The process of working on a composition is an enriching process of comprehensive processing and realization of an idea. You can work on a sketch only when an idea is born in your imagination. One cannot engage in composition until one finds an interesting subject. The artist's composition contains the theme, idea, feeling and thought of the work. Of course, the topic is born from life scenes and experiences. It cannot be artificially selected. If the artist does not have the desire to tell people new, important things from the heart and chooses a topic, he cannot create an artistic work.[2]

In this way, the artist reflects his passion and emotional aspects through the composition. Therefore, the composition can be considered as the beginning of the creative process. Work on the theme of the work is continuous and consists of several stages, i.e. stages of creative work. The first stage of the creative work process is the initial information gathering stage, which can begin before choosing a topic. The construction of the composition will be analyzed based on the examples of the world classical fine art, studying the structure of the composition of the easel painting in depth. The use

of composition tools is studied in depth. For the easel painting sketch, based on the subject, information gathering, painting, drawing, foresight, cardboard, working sketch are done if necessary. The creation of the psyche of life reality in a healthy emotional artistic system in compositional works ensures the perfection of the work. It is extremely important to know the significant expressiveness of the spatial system in the compositional works and to find the ideological-artistic expressiveness of the compositional system in the artistic work, to determine the relationship between the harmony of colors in the compositional system and the emotional-psychological effectiveness.

When performing compositional tasks, one should have an idea about the specific features of the painting. Along with the naturalness of the composition in the works of the landscape genre, creative approaches are useful in creating complex compositions. [3] Knowing how to form the artistic-aesthetic aspects and artistic expressive aspects of the painting in the depicted landscape and being able to use them will help the artist achieve the goal he set for himself. It is of particular importance to create a philosophical mindset that determines the worldview of reality in complex compositions, and to reflect the ideological content and essence of the work within the framework of a healthy mindset.

Each of the landscape artists is a world of its own. They always create their own world. In this regard, Murtaza Ergashev's views also attract attention. In fact, humanity has been looking for harmony in its society for many centuries and strives to create it. In fact, we often do not notice that all beauty and its harmony are embodied in nature itself. "Sunny day" in the artist's work. Khiva." It is no exaggeration to say that his work (1983) is one of the works of the king that has a special place. "Sunny day" in the series of historical monuments. "Hiva" was specially recognized by the artist. Artist Murtazo Ergashev noted that despite the fact that this painting is much smaller in size than other works depicting the landscapes of Khiva, it was one of the works that attracted the attention and interest of the guests of our foreign country. "I have not copied any of my paintings as many copies as this small etude, namely "Sunny day. "I had to copy my work "Hiva" twelve times," says the artist. The work depicts the old village of Khiva with ruins and mud plaster houses, three children playing in the sun. The clear and clear sky of Khiva gives the viewer a pleasant mood. Campanofka's precision and possession of the campazitsonny solution increase the emotionality of his work. Among such famous works of the artist is the painting "One Day of Khiva" (2000). This work is distinguished by its clear colors. The artist's painting depicts the clear sky and hospitable Khiva in harmony with the entrance to the Kaltaminor architectural monument, the buildings on the side of the road and the old historical walls. Murtaza Ergashev's landscapes attract attention with the brightness of their colors, originality of composition, gentle lyricism, and elegance of pictorial means. The artist lovingly depicts the mountains, rivers, and lakes of his native land. He often goes to the mountains. Fascinated by the scenery of this place, he draws sketches and sketches. He definitely uses them in his creations. The artist strives to show a wide range of reality in his works. This is evidenced by the fact that he tried to reflect the scenery of the space in his works. An artist is a person who reflects the beauty and aesthetic demands of the public and brings artistic culture to it.

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Rezyume: Ushbu maqolada O'zbekiston dastgohli rangtasvirining manzara janrida yaratilayotgan asarlarda murakkab kompozitsion yechimlarning o'ziga xosligi, kolorid va ritmning

o'rnini haqida so'z yuritilgan. Manzara janrida ijod qilgan taniqli rassomlar ijodi badiiy tahlillari yoritilgan.

Резюме: В данной статье говорится об уникальности сложных композиционных решений, месте цвета и ритма в произведениях, созданных в пейзажном жанре станковой живописи Узбекистана. Освещен художественный анализ произведений известных художников, творивших в пейзажном жанре.

Калит so'zlar: Manzara, Ritm, Ijod, Kolorid, Kompozitsiya, Simmetriya, Eskiz, Tasviriy san'at, Rang tasvir, Tabiat manzarasi, Garmoniya.

Ключевые слова: Пейзаж, Ритм, Творчество, Цвет, Композиция, Симметрия, Эскиз, Изобразительное искусство, Цветное изображение, Природа, Гармония.

**ISSUES OF TAKING INTO ACCOUNT THE LEVEL OF KNOWLEDGE OF ADOLESCENTS
IN THE CULTIVATION OF THE KARAKALPAK LANGUAGE**

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Summary: *This article deals with the issues of teaching the Karakalpak language in educational institutions where education is conducted in other languages, as well as the development of students' language competencies is described.*

Key words: *speaking in Karakalpak, scientific experience, foreign language classes, attitude, listening, speaking, reading*

Decree No. PD-6108 of the President of the Republic of Uzbekistan dated November 6, 2020 “On measures for the development of education and science in the period of new development of Uzbekistan” [1], Decree No. PD-5712 “On approval of the concept of comprehensive development of the public education system of the Republic of Uzbekistan to 2030”, the Presidium of the Supreme Council of the Republic of Karakalpakstan, dated November 3, 2020, “On measures to further increase the prestige of the Karakalpak language as a state language” on July 16, 2021, the Presidium of the Supreme Council of the Republic of Karakalpakstan “On the development of the Karakalpak language and the development of the language policy”, it is based on the decisions of the language policy development [2] and aims to improve the knowledge of students in accordance with modern requirements. In the following years, great importance will be attached to the appreciation of our mother tongue, the preservation of the national language, the promotion of education in the world arena, and the promotion of nationalism.

Improving the quality of education, teaching the Karakalpak language in educational institutions in our country, and improving its effectiveness are becoming the current issues of the day.

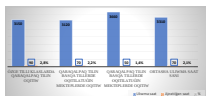
According to the 2022-2023 school year, the Karakalpak language is the national language of our country, so the number of hours of teaching is 68.

Instead of regular courses, students who are studying in other languages, such as, 2nd year students, “Teaching Karakalpak language in foreign language classes” for 90 hours, 2.8% of the study hours, 3rd year students, 70 hours of “Teaching Karakalpak language in schools taught in other languages” and 2.2%, the 4th year students spent 1.4% of the 50 hours allocated to “teaching the Karakalpak language in schools taught in other languages”. (See Table 1.)

Module theme for 2nd, 3rd, 4th years	Total number of hours	Total number of hours in the program	%
Karakalpak language teaching in foreign language classes	3150	90	2,8%
Karakalpak language is taught in schools where other languages are taught	3120	70	2,2 %
Karakalpak language is taught in schools where other languages are taught	3660	50	1,4 %
Total	9930	210	2,1%
Average number of hours	3310	70	2,1%

Table 1

From the 1st to the 4th year, the number of hours in the module of the curriculum is 9630 hours, 2.1% of the total. This study shows that the development of the knowledge levels of Karakalpak language in foreign language classes is not satisfactory. Here, the time allocated for learning Karakalpak language to the groups of learning in another language is explained by the diagram below.



Students of Karakalpak State University named after Berdakh and Nukus State Pedagogical Institute named after Ajiniyaz learn to receive education in other languages. The “Usage of the Karakalpak language in the specialty” module was 1.9% of the total of 60 hours. If we analyze these comparisons in a comparative way, the share of the state language in developing countries is 13.4% in Germany, 17.8% in North Korea, 19.1% in Japan, 17.5% in Russia, and 13.4% in Belarus.

1st, and 2nd year students of Nukus State Pedagogical Institute named after Ajiniyaz have a course plan for this (60111600 - Uzbek language in foreign language groups (for 2nd courses in the academic year 2022-2023), 60111700 -Russian language (for Russian language in foreign language groups),

For the 3rd year, 5112400 - Uzbek language in foreign language groups, 5112500 - Russian language in foreign language groups, 4th year 5112400 - Uzbek language in foreign language groups, 5111300 - Russian language and literature (Russian language in foreign-language groups) courses.

We can see that there is a need for additional education in other languages, such as Uzbek, Russian, and literature, as well as Karakalpak language courses in other languages.

In our country, the National Curriculum Program, which is in the process of reforming higher secondary education “Language is the mother tongue of literature, Karakalpak language (that’s why schools teach in other languages), education in other languages (Uzbek, Kazakh, Turkmen, Russian languages) schools provide the communication between the subjects, so that they can be used in the subjects. Currently, in the Republic of Karakalpakstan, education is provided in five languages in higher secondary schools. By the way, in 721 schools, education was conducted in Uzbek, Russian, Karakalpak, Kazakh, Turkmen languages, and necessary conditions were created for the principle of international tolerance for the representatives of each nation. The teaching process is conducted in the native language of the students, and in each of these schools, there are teaching and teaching methodical literatures from all genres. The basic principle of Karakalpak language teaching in schools is teaching to use the language in different situations. In the teaching of the Karakalpak language (State language) in the schools of education in other languages, it is clear that it is necessary to apply the following principles, which come from the nature of the left wing, in line with the didactic principles that have been passed:

a) the principle of modeling Karakalpak speech and scientific experiments taught in Karakalpak language teaching;

b) the principle of taking into account the influence of the state of linguism in Karakalpak language teaching;

v) the principle of taking into account the intermediate integration of the elements in teaching the Karakalpak language, and strictly applying the intermediate connection of the sections;

g) the principle of comparative teaching of language events in Karakalpak language teaching.

Taking into account the individual abilities of the students in teaching the Karakalpak language in schools, the development of the abilities of date, communication, listening, counting, listening, speaking, reading and writing is emphasized. In the classes, the main goal of the class was to acquire a strong corset, to have a good impression, and to improve the ability to read and write. In addition, the range of text genres is expanded in this edition. Students are taught how to read, analyze, and edit a wide variety of texts. In the process of reading popular books and other multimedia texts, children learn the rich literary heritage of the Karakalpak language, customs and traditions, thereby broadening their view of the world. The Karakalpak language was used more than the possibility of teaching literature in a new way through material and multimedia methods outside the school.

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Rezyume: *Ushbu maqolada ta'lim boshqa tillarda olib boriladigan ta'lim muassasalarida qoraqalpoq tilini o'qitish masalalari ko'rib chiqiladi, shuningdek, o'quvchilarning lingvistik kompetensiyalarini rivojlantirish yo'lga qo'yiladi.*

Резюме: *В данной статье рассматриваются вопросы преподавания каракалпакского языка в образовательных учреждениях, где обучение ведется на других языках, а также описывается развитие языковых компетенций учащихся.*

Kalit so'zlar: *qoraqalpoq tilida so'zlash, ilmiy tajriba, chet tili darslari, munosabat, tinglash, gapirish, o'qish.*

Ключевые слова: *говорение на каракалпакском языке, научный опыт, занятия иностранным языком, отношение, аудирование, говорение, чтение.*

**SCIENTIFIC AND PEDAGOGICAL PROBLEMS OF TEACHING PROSE WORKS IN
LITERARY EDUCATION**

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Summary: *This article focuses on the development of literacy in education, the fact that it is the main goal of the teaching of native language and literature today, especially important aspects that should be paid attention to when understanding the works of prose and forming the views of creative thinking of the reader.*

Keywords: *creative thinking, PISA study, epilogue, riddle, proverbs, integration, epic, short story, hero, pedagogy, literary education.*

In the world education system, the improvement of the individual, the organization of the content of the education provided to her in terms of the levels of its application in life is chosen as an urgent task. The future of a country still depends on the quality of education provided to its youth, the skills and skills acquired by its students. Today, international requirements for the assessment of the quality of education are actively applied all over the world. An important aspect of international research is also that it requires students to understand what they read regardless of the form of expression, develop reading literacy and creative thinking skills. In particular, the international assessment study examines the levels of formation of life skills and skills of the XXI century in various aspects. At the same time, the students' reading literacy is mainly taken into account. The question of understanding prose by reading is an urgent issue facing literary education.

Education reforms in the world are analyzed by international evaluation organizations. In particular, the international research program on the spiritual enhancement of the reader's personality, intellectual development through literary education provides analytical and comparative information concerning the education system, as well as important information when making decisions concerning the educational policy of countries. The PISA study evaluates the reading, understanding literacy of students. In the education system of developed countries, much attention is paid to the formation of such skills and abilities as understanding, analysis, search for differences, comparison of literature lessons in all directions. Special attention is paid to reading and understanding prose works.

The knowledge, skills and abilities acquired in Uzbekistan through literary education are being prepared for participation in the international assessment program. It also checks the reading literacy of students. In this regard, the issue of developing reading literacy among students has become the main goal of education in their native language and literature today. A specialist who cannot express his opinion completely independently, freely, beautifully and concisely in his native language is difficult to understand or justify today. Educational tasks that develop reading comprehension skills, reading literacy, both in textbooks "literature" of secondary schools and in textbooks "literature" of higher education, are not studied separately. This situation leads to the fact that the interaction becomes ineffective. Systematic work is also underway in our country to introduce methods of teaching literature. A new education has been formed in the country, the education of which also has the necessary requirements. In particular, when teaching prose works, an urgent task is set to improve the scientific and methodological foundations for the development of educational tasks.

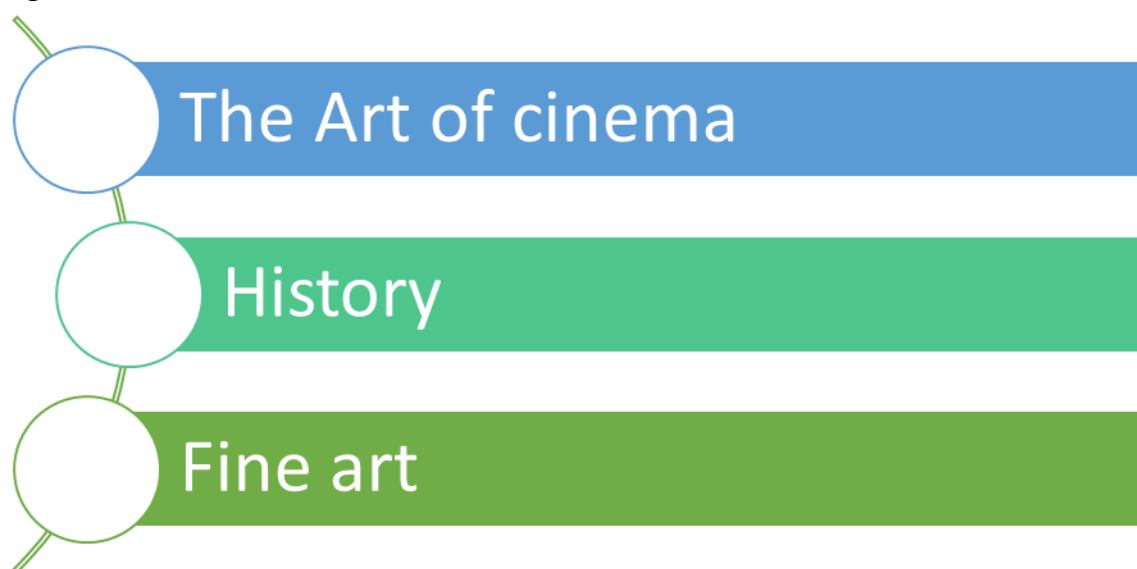
Literature occupies a special place in the education system as an important academic discipline that cleanses the human psyche, develops his thinking, imagination. Methodologist V.Yuldashev emphasized that the purpose of literary education is not only intellectual development, but also emotional mastery of the humanistic potential of art and science, the development of aesthetic and psychological mechanisms necessary for a person to communicate with art, science.

The famous methodologist M.A.Rybnikova: "methodological techniques are dictated by the nature of the work... a ballad can be analyzed according to plan, but it is not advisable to plan a lyrical poem. A short story is read and analyzed in full. Separately from the Novel, we highlight the leading chapters, one of them in the classroom, another at home, the third is carefully analyzed and retold close to the text, the fourth, fifth, sixth are briefly retold with a quick analysis, excerpts of the seventh and eighth chapters are given in the form of artistic readings by individual students, the teacher himself tells the class the epilogue. Answers to riddles are guessed and remembered., proverbs are interpreted and reasoned with examples from real life, while the parable is analyzed taking into account the inference implied in it"[1].

Q.Yuldashev writes that "when working with various literary works, the methods of analysis do not completely change, but the reader's approach to the work, his attitude changes " [2].

When it comes to epic works, there is a need to pay attention to the fact that in them "every emotion is hidden in the depths of events". Because "the property of depicting heroes in deviation from life events allows us to place human experiences in the process of images in epic works, and the reader is required to promote these feelings. An important task is for a literature teacher to develop the same competence in his students – the ability to promote the artistic meaning underlying an epic work and come to a logical conclusion" [2].

When teaching on the basis of an integrative approach, prose texts can be integrated into the following areas:



Work on the text of a literary work, including works of epic type, is one of the main issues of literary education. It creates "an opportunity to introduce readers to the world of fiction, to notice the author's attitude and intentions to the events described " [3].

Even when analyzing epic works, the main place is occupied by the age characteristics of students, their literary training. In grades 5-6 of secondary schools, they are mainly studied under the genres of the epic: fairy tale, novella, short stories, some epics. On the other hand, the study of major epic works is planned to be studied in high school. When studying each of them, you will have to use your own methods and forms[3].

According to methodologist Safo Matjon, "Some teachers send an analysis of epic works and put the writer next to the student. At the same time, it is necessary to begin training in the artistic and creative world of the writer. To do this, in front of readers when conducting independent work on the analysis of the work, instead of questions that are not aimed at creative thinking: "What is the hero's business?", "What are you doing in his place?", "In this situation, the hero can behave differently?", "Why does the writer portray him in this particular case?" allows you to get acquainted in more detail with the creative laboratory of the writer "[4].

Russian methodists testify that readers who read "Belkin's stories" and "the draughty crow" cannot imagine Pushkin's prose in its richness. Basically, the plot of the stories is understood, which is also not too deeply assimilated because of its brevity. Tenth graders, after independent reading, lack an understanding of both the author's point of view and the artistic qualities of Pushkin's prose"[5].

Assessing literature as one of the main spheres of culture, methodologist S. Dolimov notes that the main aspect in this case is the historical development, its specificity is manifested in artistic images: "Literature primarily describes people and their lives, and this image is associated with historical reality and historical events."[6]. Thus, through the process of forming literary knowledge, pupils have a wide path to a deeper study of a person, his complex inner world and spirit, knowledge of the surrounding world.

It is also no coincidence that there is a problem of self-awareness in the teaching of literature, which is the basis of education. Methodist S. Matchonov, considering spiritual maturity, which our ancestors have been striving for for centuries, side by side with the process of self-realization, strengthens the place of literary education in this regard. He notes that self-awareness opens the way to understanding others, thereby understanding the world and its secrets [7]. Professor K. There is also a parallel with the above in Yuldashev's views. The scientist draws attention to the fact that only literature is a means of self-knowledge for any person, and self-knowledge begins with capturing the other, the exercise of comprehending the other originates from the feeling of heroes in works of art[8].

"If a person knows that he is different from his youth," says Professor A. Choriev, "he first of all does his job and prepares for the preservation of external negative influences. However, today this interaction between the humanities and the arts, including literature, is not enough. Literary criticism in the humanities also prevails in fiction and literary criticism. [9] Indeed, fiction has a great potential to influence feelings, since the object of the image mainly contains complex inner evenings characteristic of a person. In this sense, it is not by chance that the question of human maturity arises, mainly about fiction and subjects related to its teaching.

Methods of teaching literature as a subject familiarization of the teacher with the rich methodological heritage of the past, modern programs, educational and methodological literature today; literary education requires knowledge and use of scientific research, as well as best practices. The specifics of the organization of the literary educational process in the conditions of modern and specialized schools also presupposes the effective solution of educational and developmental tasks, the

formation of students' skills of independent work with educational literature, creative attitude to reading.

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Rezyume: Ushbu maqolada o'quvchilarning o'qish savodxonligini rivojlantirish masalasi bugungi kun ona tili va adabiyot ta'limining asosiy maqsadi ekanligi, ayniqsa nasriy asarlarni o'qib tushunish va o'quvchilarning kreativ fikrlash ko'nikmalarini shakllantirishda e'tibor berilishi kerak bo'lgan muhim jihatlariga e'tibor qaratilgan.

Резюме: В данной статье вопрос развития читательской грамотности учащихся является основной целью современного обучения родному языку и литературе, и важно уделить внимание формированию у учащихся навыков творческого мышления, особенно понимания прочитанного прозаических произведений. аспектам уделяется особое внимание.

Kalit so'zlar: kreativ fikrlash, PISA tadqiqoti, epilog, topishmoq, maqollar, integratsiya, epos, qissa, qahramon, pedagogika, adabiy ta'lim.

Ключевые слова: творческое мышление, исследование PISA, эпилог, загадка, пословицы, интеграция, эпос, рассказ, герой, педагогика, литературное образование.

CONDITIONS OF PSYCHOLOGICAL PREPARATION OF PRIMARY CLASS STUDENTS IN USING LABOR TRADITIONS AND PRODUCTS

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Summary: The article describes the conditions of psychological preparation of elementary school students for work traditions and activities, the goals and objectives of work traditions and activities for elementary school students, and the preparation for work activities at school throughout the school year. Information is given that the establishment of their work plays an important role.

Key words: Pupils, work tradition, achievements, career orientation, work

In the psychological preparation of primary school students for work traditions and customs, it is intended to affect not their mind and will, but their emotions. Fiction and art play a positive role in this.

In order to psychologically prepare elementary school students for work, in places where it is possible to show pictures depicting people's labor heroics, organize and conduct meetings and discussion nights with them, instill in students the desire to show themselves in work. Shooting gives good results. For this purpose, it is necessary to use artistic and documentary films, TV shows dedicated to science and technology news, newspaper-magazine articles, and hold debates and question-and-answer evenings in order to strengthen their influence.

It is known that the behavior of elementary school students is influenced not only by what is perceived, but also by what is thought and felt. The essence and means of psychological preparation of elementary school students for work traditions and methods, in order to achieve the effectiveness of work, it is necessary to achieve a clear and clear embodiment of the image of what is created due to work in their minds.

Regardless of whether labor activity is complex or simple, the goals and tasks of labor traditions and tasks should be clearly explained to elementary school students. In order for elementary school students to understand the results of work traditions and achievements, the first condition for psychological preparation for work is to teach them from a young age to understand the goals and tasks of their work in the future.

When considering career guidance as a component of the educational process, the use of observational manuals and technical means of education to familiarize elementary school students with agricultural and industrial work, the scientific basis of production it is necessary to emphasize its importance. At the same time, future teachers are recommended to acquire the skills, skills and competencies of preparing instruction manuals, slides, photos, etc., which will allow them to demonstrate their use in the production process.

The science of technology plays an important role in the practical introduction of elementary school students to various professions and work tools. During the training, it is emphasized that extracurricular activities have the potential to improve primary school students, prepare them for practical activities in a specific field of social production, make a conscious choice of profession, and also further improve career guidance. The working experiences of primary school students are getting wider and deeper. They understand the role of work in their personal and social life, and realize its necessity and importance. Adolescence, especially in youth, is about understanding the role and importance of work.

The first buds of work activity of primary school students are manifested in their interest in the work of high school students and their desire to participate in it. Achievements in the performance of work tasks will gradually change the passionate attitude to work, help to better understand its place in the life of the whole society and every person, and the demands placed on work by each person.

Psychological preparation of elementary school students for work traditions and customs is based on raising them in the spirit of respect for any work necessary for society, regardless of whether it is physical or mental, complex or simple. The idea that working is never a shame, and at the same time, a person is always happy with his work, should be inculcated in the minds of the young generation. In order to prepare elementary school students for their future work activities, it is important to organize their work at school throughout the school year.

The earlier the formation of working skills, skills and competences in primary school students begins, the faster they are formed. A necessary condition for the introduction of technology lessons in elementary grades is that when working in the workshop and in the fields, students will be satisfied with their work only when they realize that the things they have made with their own hands are useful to themselves and others.

One of the important means of achieving success in labor education is the suitability of labor tools, equipment and labor standards to the age and specific characteristics of students. It does not take long observation to prove this. Working with heavy hammers, long saws and hacksaws, large shears, shovels, and hoes can tire out elementary school students quickly. Those students who did not achieve the desired result begin to lose their desire to work. In such working conditions, when new assignments are given, students tend to refuse to complete them. There is probably no need to prove that work tasks can be completed only if the tools are suitable for the age and gender of the elementary school student.

Some materials (hard types of wood, thick cardboard, etc.) are processed with great difficulty and the work does not work. Due to this, primary school students lose their enthusiasm for work. Exaggeration of labor standards leads to a cold attitude towards labor. Unfortunately, it is no secret that not enough research has been carried out on the problems of psychology and physiology of work of elementary school students. Teachers are forced to work on the basis of their pedagogical experience and observation of the work of primary school students in educating primary school students based on labor traditions and achievements. Success in career guidance depends on how rich the material for learning, forming and developing the reasons for choosing a profession of primary school students in psychology is. The types of reasons are analyzed on the basis of specific research, special attention is paid to the study of the description of the dominant factors in choosing a profession and the formation of socially valuable opinions. Determining the ratio between a person and his activity is considered an important problem of career orientation, and accordingly, it is necessary to solve an important psychological issue of determining the description of the assessment of the ability and suitability of primary school students of different ages for the chosen activity.

The right way to achieve success in labor education is its ideological approach. He should form the right attitude to work in primary school students. Therefore, primary school students should not only understand the tasks set before them, but should actively participate in the performance of this task with their own work in accordance with age characteristics.

People's writer of Uzbekistan A. Qakhor compares the power of words to an atomic bomb. In fact, if a serious conversation is held with a person about his shortcomings, he will gradually or quickly lose his shortcomings. In particular, oral explanation and persuasion play the following three roles in the student's life:

a) if persuasion and explanation can be proved, it arouses in the student the need to change his behavior and shows the ways of self-education;

b) oral explanation and persuasion shows the student's achievements and shortcomings in his work by correcting, punishing and admonishing;

c) finally, they strengthen the good results caused by the change of the student's behavior, determine the ways to develop the necessary qualities.

However, no matter how good the verbal influence is, it alone will not give the desired result. Perhaps any quality of the student's personality is formed only as a result of repeatedly performed actions, is formed in the activity. Human behavior consists of a set of personal qualities that express specific behaviors, and it consists of character, that is, dynamic stereotypes, which are manifested in the qualities, activities and actions of a person. If the student is not taught to be truthful and honest, then honesty and honesty cannot be cultivated. If the student does not show himself in work, then it will be difficult to educate hard work. It is known from the conducted research that most of the elementary school students rely only on the fact that they have interests in assessing their aptitude for the professions they have chosen. At the same time, the description of interest is not the same, it does not mean that there is an interest that serves as an indicator of competence in the chosen activity. For example, most elementary school students cannot truly assess their professional competence without the help of a teacher. Therefore, the task of the teacher who teaches this course is to explain to primary school students the psychological characteristics, abilities, and the need for the personnel of the national economy to manage the process of formation of their interest and intentions in the profession.

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Rezyume: Maqolada boshlang'ich sinf o'quvchilarini mehnat an'analari va faoliyatiga psixologik tayyorlash shartlari, boshlang'ich sinf o'quvchilarining mehnat an'analari va faoliyatining maqsad va vazifalari, Boshlang'ich sinf o'quvchilarini kelgusidagi mehnat faoliyatiga tayyorlash uchun maktabda butun o'quv yili davomida ularning mehnatini yo'lga qo'yish muhim rol o'ynashi haqida ma'lumotlar berilgan.

Резюме: В статье описаны условия психологической подготовки младших школьников к трудовым традициям и деятельности, цели и задачи трудовых традиций и деятельности младших школьников, подготовка к трудовой деятельности в течение учебного года. Они будут проинформированы о важности организации своей работы.

Kalit so'zlar: O'quvchilar, mehnat an'analari, udumlarlar, kasbga yo'naltirish, mehnat topshiriqlari/

Ключевые слова: Студенты, трудовые традиции, достижения, профориентация, рабочие задачи.

INDUSTRY AND TRADE IN THE AMUDARYA DEPARTMENT

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Summary: *This article, based on archival sources and reports, highlights the state of industry, crafts and trade in the Amudarya department at the end of the 19th - beginning of the 20th century.*

Key words: *Handicrafts, copper and wooden products, cotton, Chimbay, Shurahan, Khojeyli, Grotenhelm, Dryagin, trade certificates, guild, karakalpaks.*

During the colonial period, handicraft production in Karakalpakia received further development. On the eve of the first world war, about 25 thousand people were engaged in crafts and household crafts to one degree or another[1,233].

Karakalpak women, like women of other ethnic groups of the department, were also engaged in handicrafts. In a primitive way they made felts, carpets, rugs, various fabrics and other things. Some of the indicated number of artisans, while engaged in craft work, were also connected with the land, growing various agricultural crops. Typically, such peasant artisans made clothes, shoes, leather, and fabrics. Sources indicate that in many auls and villages there were blacksmiths, carpenters, joiners and some other craftsmen who made individual tools for agricultural production - plow (gúnde), harrow (mala), sickles, shovels.

Carpenters, for example, made doors, frames, boats and much more. Among the above number of artisans, a certain layer consisted of jewelers, minters and coppersmiths. Jewelers of the Amudarya administration made various jewelry from silver and gold, but mainly for women. Jewelry craft was specialized: when making, for example, women's jewelry, some made only rings, others - earrings, and still others - silver bracelets. Copper processing was widespread in the department: coppersmiths made bowls, trays, washbasins, snuff boxes, and jugs of various sizes.

During the colonial period, silk-weaving and paper-weaving crafts were also at the proper level in the Amudarya department. Weaving was practiced both in cities and villages. Both men and women practiced it; farmers practiced this craft in the winter, when they were free from agricultural work. The artisans of the Amudarya department skillfully made mats, pottery, shoes, made axes, shovels, omachs, carts and other production tools, as well as household utensils that the population needed[2, 28]. There were over 1,600 professional artisans in the Amudarya department. Fishing was of significant importance in the economic life of the department. A significant number of people were employed in the fisheries. As early as May 21, 1885, “the head of the department, Major General Grotenhelm, reported to the Turkestan Governor General von Rosenbax that “... fishing is carried out only in the Chimbay section, and in the Shuraxan section no one is interested in this matter...” [3, 83]. He further noted that 83 people are engaged in river fishing, having 225 boats and the same amount of gear; in the Aral Sea, 32 people were engaged in this craft, having 32 boats and 400 gear. The Ural Cossacks were also involved in fishing. “Their main occupation is fishing along the Amu Darya and on the seashore,” the department’s auditor, Major General Dryagin, wrote about them in 1908. He further pointed out: they have “...up to 1000 budars (light boats) ...”[4, 2]. By the end of the 19th century. there were large Russian fishing producers who employed ural cossacks and karakalpaks.

If at the end of the 19th century. The main fish traders were merchants Makeev, Gorshkov, Dzheldybekov, then at the beginning of the 20th century. the Khiva joint-stock company, the Chernyak company, as well as merchants Markov, Goncharov, Shaposhnikov and others began to engage in this trade. Muynak becomes the center of fish trading in the department. Karakalpaks, kazakhs, ural

cossacks, ukrainians and others were engaged in fishing. Before the Great October Socialist Revolution, about 10 thousand people were engaged in fishing in the Amudarya department, and the fish catch in 1916 reached 760 thousand poods. Of this amount, part of the fish was consumed by the population, and most of it was sent by steamship to Aralsk, and from there to Russia. Moving on to the issue of industrial enterprises, let us first of all turn to the words of A.L. Kun, which he said in relation to the Khiva Khanate, but which fully apply to the Amu Darya department. He wrote; in the Khiva Khanate "... there is no manufacturing industry, the items of which would be consumed by the local population or served for export; he gives a lot of raw material to other countries and everything that is consumed in processed form (semi-finished products, manufactured goods, products) he receives from the same countries"[5].

Industrial facilities in the Amudarya department, as in other regions of Central Asia, were built mainly for primary processing and industrial raw materials, and all of them were very small both in the number of workers and other service personnel, and in the volume of output. In 1875, in Chimbay, for example, where about 500 families then lived, there were "...up to 89 industrial establishments, such as: oil mills and flour mills 51, dyeing 36, tanning 1 and pottery 1". In Petro-Aleksandrovsk in the 70s of the 19th century there were tanneries and a brewery. In 1880, the first cotton ginning plant was built in the Amudarya department, and by the end of the 19th century there were 23 small factories and plants employing only 144 workers. In 1906, the department had 12 cotton gin plants, of which there were 4 in Petro-Aleksandrovsk, which processed up to 304 thousand poods of raw cotton per year[6,7].

On the eve of the first world war, the number of cotton gin plants reached 24, with an average of 14 people working at each plant. Major General Dryagin, listing the industrial establishments available in the department, noted: "The native population has a significant number of primitive enterprises, including oil mills that produce oil from sesame and cotton seeds". In 1907, the department "...operated 135 oil mills, 84 flour mills, 2 felt shops, 12 dye shops, 7 cap shops, 38 carpentry shops, 14 carpentry establishments, as well as 32 iron foundries and other workshops"[7, 44]. All of the above enterprises, however, were colonial in nature and very small.

The Amudarya department, like the whole of Central Asia, at the end of the 19th and beginning of the 20th centuries continued to remain an agricultural country with extremely primitive technology for agricultural work, that is, it was an agrarian appendage of the metropolis. Isn't this evidence, in addition to what was said above, the fact that on the eve of the Great October the number of workers and artisans numbered only about 2100 people. As for the mining industry, back in 1885 the head of the Amudarya department reported to Tashkent that mining did not exist, with the exception of the extraction of lake salt and the burning of alabaster; the first was mined in Sok-Kul up to 20 thousand pounds and in Tuya-Muyun up to 10,000 pounds and burned alabaster 50,000 pounds[8, 85]. The given data exhausts the entire mining industry of the department, although in its depths there were significant reserves of various mineral resources.

The tsarist authorities were not interested in the development of fossil wealth not only in the department, but also in Central Asia as a whole. The fact is that tsarism and the Russian bourgeoisie at the end of the 19th - beginning of the 20th centuries. The countless riches of even Russia itself, and not just the outskirts of the empire, were far from sufficiently developed. Moving on to consideration of the issue of trade, it should be said that during the colonial period, internal trade between two areas, as well as between individual volosts and aul societies, began to develop. Internal trade was carried out both in the form of exchange of goods in kind and in cash. Fish was brought from the Chimbay site to Shurahansky in significant quantities and sold at the markets. Both the Karakalpaks and the Ural

Cossacks brought fish.

In the internal trade of the department, the cities of Shurahan, Chimbay (became a city in 1880), and Petro-Alexandrovsk were of significant importance. Nukus (founded in 1884). In the internal trade of the department, the bazaars of Sheikh Abbas-Vali, Biybazar, Naupyr and Taldyk also had a certain significance. As commodity-money relations developed in the department, internal trade took on a more lively character. Particular progress in trade and trade exchange occurred between the two sections of the department. Many residents of the left bank of Khiva also took an active part in the internal trade of the right bank of the Amu Darya, selling their agricultural and handicraft products here and at the same time purchasing the things they needed for themselves. Until January 1, 1879, Khivans conducted trade in the department without trade documents and their such activities were not regulated by any rules from the tsarist authorities of St. Petersburg and Turkestan. However, in the fall of 1878, the tsarist authorities decided to regulate the trade operations of the Khivans on the right bank of the Amu Darya River. On September 21, 1878, the head of the Amudarya department, Colonel Grotenhelm, on behalf of Tsar Alexander II and the Governor-General of Turkestan von Kaufman, addressed the Khiva Khan Seyid-Muhammad-Rakhim with a letter No. 2879. In it, he told the khan the following: "By the highest order of the Emperor, the Turkestan Governor-General proposed that, from January 1 of next year, in the Amudarya department, a provision on duties for the right of trade and crafts should be introduced in order to subject all traders and crafts to these rules. of your khanate, who will trade with us on the right bank". It was further said: «...the trade charter is that every merchant, both ours and your subject, according to the kind of goods that trade and will trade, must have established trade documents just as your and our merchants trade in Russia...»[9, 207]. Colonel Grotenhelm at the same time informed the Khan that among the goods there are also items that are allowed to be traded "... without any trade documents, without distinction to all residents of the Turkestan region, and including your subjects, as follows items: food supplies and delicacies of all kinds; old clothes, vegetables, nuts and all kinds of fruits, meat, fish, raw, boiled, salted and smoked sausages, butter, eggs, ready-made knitted and felted shoes and other household products (threads, ropes, nets and others".

On behalf of the tsarist government, the head of the Amu Darya department, however, strictly warned the ruler of Khiva that his subjects must acquire guild certificates, that is, trade documents for trading on the right bank of the Amu Darya River in the following goods: Russian and foreign weaving manufactured goods (chintz, muslin and others), cotton and linen fabrics, cloth, factory-made silk products, fur items, imported carpets and rugs[10, 213]. According to the instructions of the tsarist government, Khiva subjects were allowed to engage in industrial activities in the department, that is, they could build industrial facilities, but with the condition of acquiring a fishing certificate from the office of the head of the Amudarya department. Such certificates cost 2 rubles. 50 kopecks in year[11, 215]. The annual cost of trade documents for Khivans was established: a) certificate of the first guild for trade in the Russian Empire, including in the Amudarya department, for 265 rubles.; b) certificate of the second guild for trade only in the Amudarya department for 25 rubles. Khivan clerks who wanted to engage in this craft in the department had to purchase: a ticket for the first guild for 10 rubles, a ticket for the second guild for 5 rubles[12, 217].

Trade certificates and tickets could be purchased from the heads of the sections: in Chimbay from the head of this section and in Petro-Aleksandrovsk from the head of the Shurahansky section[13, 218]. The above-mentioned order of the tsarist government on the trade and fishing activities of the Khivans in the department retained the force of law until the Great October Revolution. It was on this basis that the Khivans acted on the right bank of the Amu Darya River, conducting trade and partly

fishing here. Since the 90s of the 19th century, the participation of Khiva citizens in the internal trade of the Amudarya department has become more intense. Moving on to the coverage of foreign trade of the Amudarya department, it should be said that during the years of domination of Tsarist Russia it received significant development. The population of the Amudarya department traded with the Central Asian khanates, with Russia and, through Russia, with some countries in Europe and America.

It exported mainly agricultural raw materials and fish, imported similar products from neighboring khanates, and industrial goods from Russia. The Amudarya department conducted intensive trade exchanges with the Khiva Khanate. In the early 80s of the 19th century, for example, various goods worth 42-43 thousand rubles were exported to the Khiva Khanate from just one Shurahan site. In those same years, 17 times more goods were imported from the Khiva Khanate to the department, including green tea, than from the Shurahansky area to the Khanate. According to information from the head of the Amu Darya department, Major General Grotenhelm, in 1884, goods consisting of agricultural and handicraft products worth 320 thousand rubles were imported from the Shurahansky area to the khanate, and from Russia and neighboring khanates to this area - 710 thousand rubles, that is, 2.2.1 times more. In Khojeyli, the Karakalpaks of the right bank of the Amu Darya brought livestock for sale, and also brought there "...cow butter and other livestock products...", which were purchased by the Armenians who lived "here...". In the 70-90s of the XIX century. From the Amudarya department, grain was exported not only to "...many markets on the left bank of the river (that is, to the Khiva Khanate), but it was exported, and in sufficient quantities," it was written in the newspaper "Birzhevye Vedomosti" for 1885, "to the Turkestan region and to the city of Kazalinsk"[14]. According to Major General Grotenhelm, in 1884, up to 85 thousand pounds of cotton was exported to Russia from the Shurakha region, and the rest of this type of raw material was "...used for the manufacture of mats, alachi and other fabrics exclusively for the needs of local residents". Cotton was not exported from the Chimbay site in 1884, since its harvest amounted to only 2 thousand poods and was used for local needs.

After the 80s of the 19th century, cotton sowing in the department, as in the Khiva Khanate, expanded, and consequently, noticeably more of this valuable crop began to be produced. As a result of this, the export of cotton to Russia began to progress. In 1899, for example, 120 thousand pounds of cotton was exported from the department to Russia. At the beginning of the 20th century. The department's trade with the metropolis became more intense, and various industrial products were imported from Russia to this outskirts of the empire in much larger quantities than at the end of the 19th century. In 1907, for example, the following goods were imported into the department from Russia and other places; manufacturing for 400 thousand rubles, haberdashery for 46 thousand rubles, grocery for 22 thousand rubles, pharmaceuticals for 7550 rubles, iron, steel and products made from them for 36 thousand rubles, boilers and cast iron products for 20 thousand rubles, copper and wooden products by 7 thousand. rub., chests worth 10 thousand 600 rubles, tanned leather worth 32 thousand rubles, shoes worth 5 thousand 600 rubles, cloth worth 5 thousand 700 rubles, silk products worth 8 thousand rubles, chintz worth 61 thousand rubles, kerosene for 51 thousand 900 rubles, candles for 4 thousand 900 rubles, tea for 625 thousand rubles, sugar for 142 thousand rubles, tobacco for 21 thousand rubles, vodka, wine and other drinks for 53 thousand rubles, matches for 45 thousand rubles and then others[15, 7.]. In addition, wheat worth 36 thousand rubles was imported from Bukhara, carpets, felts and local shoes worth 20 thousand 900 rubles were imported from Bukhara and Khiva. Thus, exclusively factory products were imported from the metropolis to the Amudarya department, and manufactured goods were imported most of all. Sugar was imported from Ukraine, kerosene, and candles from Baku. Tea was imported into Central Asia from India, and into the Amu Darya

department from the Turkestan region. At the beginning of the 20th century, as the department specialized in the production of alfalfa and cotton, grain crops were reduced, which, among other things, is evidenced by the fact that grain was imported here from Bukhara. From the department, only agricultural products, that is, industrial raw materials and fish, were exported to Russia. In 1907, for example, about 500 thousand poods of cotton worth 1 million 185 thousand rubles were exported from a department in Russia. Of this amount of cotton, 125 thousand poods were exported to Moscow alone. On the eve of the First World War, the export of cotton from the department to Russia amounted to about 680 thousand poods. The following were also exported from the department to the metropolis in 1907: karakul skins worth 24 thousand rubles; leather for 54 thousand 650 rubles, wool for 30 thousand 800 rubles, carpets for 16 thousand 500 rubles, fish for 8 thousand 600 rubles. Large quantities of alfalfa were exported from the Amudarya department and the Khiva Khanate to Russia, which was sent from there to Germany and the USA[16. 57].

So, in a dialectical assessment of the economic situation of the Amudarya department at the beginning of the 20th century, it should be noted that a progressive consequence was the beginning of the process of development of capitalist relations in it, both in the city and partly in the village and village. Their development was accompanied by the gradual formation of two classes - the local bourgeoisie and the proletariat. The emerging proletariat of the Amudarya department consisted not only of workers of colonial-type industrial enterprises, but also of handicraftsmen.

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Rezyume: Ushbu maqolada XIX asr oxiri va XX asr boshlaridagi Amudaryo bo'limidagi sanoat, hunarmandchilik va savdoning holati arxiv manbalar va hisobotlar asosida yoritilgan..

Резюме: В данной статье описывается состояние промышленности, ремесла и торговли в Амударьинском отделе в конце XIX и начале XX века на основе архивных источников и отчетов.

Kalit sózlar: Hunarmandchilik, mis va yog'och buyumlar, paxta, Chimboy, Sho'raxon, Xo'jeyli, Grotengelm, Dryagin, savdo guvohnomalari, gildiya, qoraqalpoqlar.

Ключевые слова: Кустарные ремесло, медные и деревянные изделия, хлопок, Чимбай, Шурахан, Ходжейли, Гротенгельм, Дрягин, торговые свидетельства, гилдия, каракалпаки.

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**ISSUE OF IMPROVEMENT OF REGULATORY LEGAL ACTS OF INTERNAL AFFAIRS
BODIES OF THE REPUBLIC OF KARAKALPAKSTAN AT MODERN RESORTS**

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Summary: *This article examined the main problems of adoption of regulatory legal acts by the executive authorities of the Republic of Karakalpakstan and substantiated proposals for the introduction of «smart regulation» mechanisms in accordance with the Administrative Reform Strategy implemented in the Republic of Uzbekistan as a way to solve these problems.*

Key words: *regulatory act, departmental legal acts, legislative acts, legal instruments, the model of «smart regulation», administrative reforms, the principle of «For human dignity», openness, transparency, the Council of Ministers of the Republic of Karakalpakstan.*

The state policy being pursued in the Republic of Uzbekistan today is aimed at modernizing the state and society by improving the construction of the state and society, strengthening guarantees to ensure the rule of law and the protection of the rights and freedoms of citizens, the development and liberalization of sectors of the economy and social sphere, ensuring security, interethnic harmony and religious tolerance, conducting a deep thoughtful, mutually beneficial and practical foreign policy [1].

The adoption of the Constitution of the Republic of Uzbekistan in a new version by popular vote in a referendum on April 30, 2023 determined the constitutional basis for the creation of a new Uzbekistan [2].

In addition, the Development Strategy of the new Uzbekistan for 2022-2026 was approved with a deep analysis of the complex world processes and development results in order to determine priority areas for reforms aimed at further improving the welfare of the people on the basis of the principle «For human dignity» in recent years, transforming sectors of the economy and accelerating the development of entrepreneurship, unconditional protection of human rights and interests and the formation of an active civil society, which defines priority measures for the implementation of goals [3].

In particular, in the Goal 6 of the Strategy it is envisaged to accelerate the work on the neutralization of public administration and ensure the openness of the activities of state bodies, and in order to Goal 8 it is planned to revise the requirements for modern technologies and digital activities as part of the improving the practice of consultations with civil society institutions in the process of lawmaking, increasing the competitiveness of the legal system, activation of new drivers of the economy, reduce the range of state bodies with the authority to adopt departmental regulatory legal acts, as well as continue to work on optimizing the number of these documents.

It is known from the theory of law that the political structure of society consists not only of the state apparatus, but also of political parties, trade unions, scientific activities, lawyers, public associations and other civil society institutions. These civil society institutions participate in public administration in one sense or another and through them ensure the participation of citizens in the exercise of public power and public administration. At the same time, ensuring the openness and transparency of information about the activities, plans and reports of the public bodies is an important condition for increasing the efficiency of the people's participation in public administration.

It should be noted that the openness of information is the organizational and legal regime for providing a sufficient and necessary amount of socially significant information within the framework

of the activities of bodies, and ensuring the constitutional right of citizens to free use of information can be carried out through the coordination of society and government [4]. In particular, information openness concerns documents of a national regulatory nature developed, considered and adopted by state authorities and management bodies.

In modern conditions, in which information technologies are developing, the development of legal regulations by state bodies and the launch of institutional tools that ensure the involvement of civil society institutions in the process of adopting departmental legal acts are a single type of public services in a broad sense. Since public services, including electronic public services, are a multifaceted concept and have a number of features, such as the activities of authorized bodies and specialized organizations; focus on improving the efficiency of state bodies; guarantee access to information on the activities of state bodies [5].

However, there are also certain problems in the widespread popularization of electronic public services, for example, the problem of the level of digital literacy of the population. It should be noted that according to practice the successful implementation of state digitalization programs depends on the digital literacy of employees of state bodies and the people [6]. High-level digital culture in the field of digitalization of public administration can become the driving force for digital transformation in the country [7]. Of course, this is not the only factor in increasing the competitiveness of the legal system and activating new drivers of the economy.

In the Address of the President of the Republic of Uzbekistan Sh. Mirziyoyev to the Oliy Majlis on December 22, 2017, it is noted the need to attract the masses to discuss laws, introduce modern information and communication technologies for this, including the creation of special «platforms» on the Internet [8].

Today, in our country, as legal means that ensure the involvement of civil society institutions in the process of adopting legislative acts, departmental regulatory legal acts, the Internet system uses the «Unified Platform of Public Initiatives» [9], the «Portal for Discussing Draft Regulatory Legal Acts» [10] and similar electronic information platforms.

The above legal practice makes it possible to properly assess the impact of regulatory acts, as well as eliminate the practice of adopting departmental regulatory acts, leading to cases of conflict of laws, double interpretation, excessive government regulation, serves as an important condition for the phased implementation of smart regulation models and a standardized methodology for analyzing the regulatory impact of decision.

At the same time, the situation in the legislative system of the Republic of Karakalpakstan indicates the absence of such approaches in the implementation of smart regulation models or the presence of serious problems in the practical implementation of the work carried out in this direction.

In accordance with the Constitution of the Republic of Uzbekistan, as amended, the sovereign Republic of Karakalpakstan is part of the Republic of Uzbekistan and the Republic of Karakalpakstan has its own Constitution [11].

In accordance with the Constitution of the Republic of Karakalpakstan, the Council of Ministers of the Republic of Karakalpakstan is the highest executive-governing body of state power of the Republic of Karakalpakstan - the Government of the Republic of Karakalpakstan [12].

The Council of Ministers, based on and in pursuance of the decisions of the laws of the Republic of Uzbekistan and other decisions of the Oliy Majlis of the Republic of Uzbekistan, decrees, resolutions and orders of the President of the Republic of Uzbekistan, resolutions and orders of the Cabinet of Ministers of the Republic of Uzbekistan, laws of the Republic of Karakalpakstan and other decisions of the Zhokarghy Kenes of the Republic of Karakalpakstan, decisions of the Presidium of the

Zhokarghy Kenes of the Republic of Karakalpakstan, makes decisions and orders binding throughout the Republic of Karakalpakstan [13].

According to these constitutional grounds, decisions and orders of the Council of Ministers as the highest executive body of state power of the Republic of Karakalpakstan are a regulatory legal document.

In the process of making decisions and orders of the Council of Ministers, «Smart regulation» or other similar mechanisms (for example, «Less regulation,» «Better regulation,» etc.) have not been introduced, which make it possible the openness, transparency and proper assessment of the impact of regulatory legal acts.

In particular, taking into account the legal instruments available in the Republic of Uzbekistan, for example, in the capabilities of the «Portal for Discussing Draft Regulatory Legal Acts» there is no possibility of finding solutions and orders of the Council of Ministers, and in the search capabilities of the portal there is also no possibility of searching for such projects in terms of «project type».

On another platform - the «National Database of Legislative Data of the Republic of Uzbekistan» - for the entire period, only six documents of the Council of Ministers with a normative nature are posted [14].

In addition, the official website of the Supreme Executive Authority of the Republic of Karakalpakstan also does not provide interactive or other opportunities for extensive discussion of draft regulations. Access to the text of regulatory legal acts is also limited [15].

Sociological surveys conducted in subgroups show that in general, many do not have a clear idea about the sources of search for normative acts of the highest executive-governing body of state power of the Republic of Karakalpakstan - the Council of Ministers. In this matter, it is advisable to conduct additional research work to conduct in-depth social surveys.

The situation visible from the above circumstances, in general, indicates that they are the main factor that can cause serious problems in ensuring the clear and complete implementation of legislative acts to be implemented by the Council of Ministers of the Republic of Karakalpakstan and application by judicial and law enforcement agencies of regulations of the Council of Ministers, and a number of measures are required to eliminate them. Therefore, it is necessary to revise the procedure for the adoption by the executive authorities of the regulatory and regulatory nature of documents in the Republic of Karakalpakstan, from the point of view of considering the mechanisms of «smart regulation», including taking into account the mechanism for an adequate assessment of the impact of the adopted regulatory legal acts in accordance with the strategy of administrative reforms implemented in the Republic of Uzbekistan. This requires the relevance of scientific prohibitions in this direction. After all, along with the methods of «smart regulation», the methods such as legal experiment, assessment of the regulatory impact of regulatory legal acts, assessment of their actual impact, openness of the regulatory framework, expansion of access to existing regulatory legal acts and their projects ensures the quality, expediency, expediency, possibility of executing documents of the Council of Ministers and other executive bodies in the conditions of unilateral hierarchical ties in the legal system.

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Rezyume: *Ushbu maqolada Qoraqalpog‘iston Respublikasi ijro hokimiyati organlarining normativ-huquqiy hujjatlarini qabul qilishidagi asosiy muammolar tadqiq qilingan va ushbu muammolarni hal qilish yo‘li sifatida O‘zbekiston Respublikasida amalga oshirilayotgan ma‘muriy islohotlar strategiyasiga muvofiq «aqilli tartibga solish» mexanizmlarini joriy etish takliflari asoslab berilgan.*

Резюме: *В данной статье исследованы основные проблемы принятия нормативно-правовых актов органами исполнительной власти Республики Каракалпакстан и обоснованы предложения по внедрению механизмов «умного регулирования» в соответствии со Стратегией административных реформ, реализуемой в Республике Узбекистан, как способ решения этих проблем.*

Kalit so'zlar: *normativ-huquqiy hujjat, idoraviy normativ-huquqiy hujjatlar, qonunchilik hujjatlari, huquqiy vositalar, «aqli tartibga solish» modeli, ma'muriy islohotlar, «Inson qadri uchun» tamoyili, ochiqlik, shaffoflik, Qoraqalpog‘iston Respublikasi Vazirlar Kengashi.*

Ключевые слова: *нормативно-правовой акт, ведомственные нормативно-правовые акты, законодательные акты, правовые инструменты, модель «умного регулирования», административные реформы, принцип «За человеческое достоинство», открытость, прозрачность, Совет Министров Республики Каракалпакстан.*

THE ROLE OF COLOR-PICTURE CREATION IN THE EDUCATION OF YOUTH

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Summary: The article discusses the issues of working with colors in visual arts, about watercolor paint, the existence of three unique characteristics of colors, and the light-shadow ratio of objects and objects, color ratios in the training session. information is given that it is important to specify clearly.

Keywords: Art, color, watercolor, painting, achromatic, chromatic

Art appeared in ancient times as a result of the development of the labor process. In the process of work, human thinking has matured, the sense of beauty has increased, concepts of beauty, comfort and usefulness in reality have expanded. With the emergence of a class society, great changes took place in social development; mental work began to separate from physical work. This was important in the development of science and art.

Professional art and artists appeared during this period. And art has become a powerful ideological weapon that promotes the ideology of the ruling class, showing its own characteristics and classism. But despite this, talented artists who emerged from the masses created works that express the dreams of the working masses, their concepts of beauty and selfishness, nobility and humanity.

People's life, behavior and habits, achievements and defeats were expressed in their works. This kind of art, which existed in a different era, depicted the beauties of life, developed high qualities and virtues in people, encouraged them to strive for equality, freedom, brotherhood, and a bright future. The reforms carried out in the educational process in our country are a factor that ensures the development and well-being of the society, and the purpose of the changes in it is to educate the young generation well.

The development of our country is measured by the education of today's youth, their ability to acquire modern knowledge and skills. Educating creative young people largely depends on the creative design and organization of the educational process. It is impossible to educate creative young people without creative organization of education, so providing schoolchildren with more information about colors is the demand of the day. In fine art, the issues of working with colors are very important. When looking at the history of colors, it is necessary to pay special attention to watercolor paint. Watercolor paint was familiar to the ancient Egyptian artists, and it reached us through papyrus patterns. The origin of the binding agent of these paints was water-soluble vegetable glues. Because this type of watercolor contained white paint, it was close to modern gouache.

The development of watercolor painting is related to the decoration of book painting in the 12th century. We can see this in the example of Persian miniatures. This method later spread to Eastern countries. By the 15th century, pure glue water paint was used (without additives). These paints are distinguished by their purity and transparency. By the middle of the century, painters used gluey, water-soluble paints not only for the decoration of book covers, but also for paintings and artistic decorations. Albert Durer (1471-1528) was the first to reveal the technical possibilities of watercolor paints in the West. We can see this in the painter's scenic pictures. At the beginning of the 17th century, watercolor became an independent type of painting, and in the 18th century and precisely in the 19th century, it developed and rose to a high level thanks to the English painters.

Watercolor is divided into two different methods: English method (technique) - parts of the colored line are painted on moistened paper with a general dark shade, and the lights are washed with a brush. The Italian method (technique) is achieved by applying an overlapping layer of paint to dry paper. Watercolor paints belong to the group of adhesive, transparent paints. The word watercolor comes from the Latin "aqua" meaning "water" and is its solvent. Watercolor is the only type of paint, distinguished by its unique clean, clear and bright color. This was achieved not only by using pure materials, but also by special rubbing of pigments and turning them into a very fine powder.

When observing works of fine art, it is important to be able to correctly show how the psychological experiences of each image in it are resolved, and their relationship to the environment. Therefore, it depends on the gloss of the colors used by the artist, the composition of the scene, the artist's work skills, the character of each selected form, the general color gamut - the color, the character of the surface (for example, the smoothness or roughness of the surface the artist worked on) It is necessary to pay attention, to try to find the answer to why they were taken that way.

Only then it is possible to understand the true nature of works of visual art and learn to analyze them correctly. Colors have three characteristics: hue, lightness, and brightness. The colors we are familiar with are formed by the color of objects. Most of the names of colors are directly derived from the specific colors of those things: gray, gold, purple, etc.

It is important to learn the rules, methods and technology of colors in fine arts classes. It is natural that knowledge about achromatic and chromatic colors is also included among such prerequisites. All colors in nature can be conditionally divided into two: achromatic and chromatic colors. Colors from white to deep black are achromatic colors (white, gray, dark, black, dark black) and the rest are chromatic colors (red, yellow, blue, etc.).

Chromatic colors, in turn, are conditionally divided into two, warm and cold colors. Warm colors include fire, sulfur, red, yellow, and turquoise colors that remind us of the color of things that have been burned. Blue, blue, violet colors, reminiscent of the color of ice, air, and water, belong to cold colors. Green and purple colors can sometimes be warm and sometimes cool. Because green color is a mixture of yellow and blue colors.

Purple color is formed from a mixture of red and blue colors. As you can see, these colors are formed from a mixture of warm and cold colors. When mixing, if the amount of warm color is more than the amount of cold color, the resulting color can go to the range of warm colors, and if the amount of warm color is more, it can go to the range of cold colors. In the same way, if there is more red in the violet color, it is warm, and if there is more blue, it belongs to the group of cold colors.

Therefore, it is important to clearly show the light-shadow ratio of objects and objects, as well as the color ratio, when working on a painting in an educational session. The third characteristic of colors is color brightness. Color brightness is also one of the main properties of chromatic colors, which is more or less reflection of incident light. If the light rays are reflected a lot, we perceive bpz color in light shades of red - pink, blue-green, green-green.

This property of colors is common to all hues - chromatic colors and achromatic colors. Therefore, it is easy to choose a chromatic color that matches the brightness of the colors (chromatic color contrast). Achromatic colors, i.e. white, gray and black colors are described only by color brightness. Differences in color brightness are that some colors are lighter and some are darker. Any chromatic color can be compared to an achromatic color in terms of yorinism.

If we look at the color spectrum, we can compare red and gray, pink and black. Achromatic and chromatic colors are taken as equivalent luminances. In fine arts classes, students acquire a general

understanding of achromatic colors and chromatic colors, and at the same time achieve the formation of their views on the environment, nature, and life.

Educating the maturing youth through education and knowledge inculcates humanity, nationalism and patriotism in their minds. The scientific basis of the education and upbringing process forms the social character of young people and forms the first buds of creativity. The role of colors in the education of young people is extremely large, and it serves to develop their aesthetic outlook, love for nature, and the ability to distinguish colors.

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Rezyume: Maqolada tasviriy san'atda ranglar bilan ishlash masalalari, akvarel bo'yoqlari haqida, ranglarning uchta o'ziga xos xususiyati mavjudligi va predmet va predmetlarning yorug'lik-soya nisbati, o'quv mashg'ulotida rang nisbatlari haqida ma'lumot berilgan.

Резюме: В статье рассматриваются вопросы работы с цветом в изобразительном искусстве, об акварельной краске, о существовании трех уникальных характеристик цвета, а также о светотеневом соотношении предметов и предметов, соотношениях цветов в учебном занятии. Дана информация, которую важно указать четко.

Kalit so'zlar: San'at, rang, akvarel, rangtasvir, axromatik, xromatik.

Ключевые слова: Искусство, цвет, акварель, живопись, ахроматика, хроматика.

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ANALYSIS OF SUFI VIEWS IN THE HERITAGE OF MEDIEVAL SUFI SCIENTISTS AND THEIR APPEARANCE IN CENTRAL ASIAN SECTS

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Summary: *The analysis of Sufi views in the legacy of medieval mystics and their manifestations in Central Asian sects is described.*

Key words: *mystic, views, sect, mystical-philosophical.*

Shihabuddin Umar Sukhrovardi, the founder of the Suhrovardiya sect, analyzes the ideas of calamity and Qalandari in his views. He pointed out that there were those who pointed out that the nafs is a secret. One people placed it after the soul and before the soul. Another people put it after the spirit and said that it is superior and gentler than the spirit. The place of observation, the soul is the place of love, the place of enlightenment. Although the word of God does not say about the secret that this people refers to, it is mentioned about the soul, about the soul and its qualities, as well as about the soul, heart and mind Usman Hiri and his student Muaz Razi had a significant influence on the supporters of Khurasanism. Most of the representatives of the movement were middle-class artisans and merchants. didn't stand either. If money fell into their hands, they would not enter their homes unless they gave it to someone and got rid of it. They would not take anything from the world. Their livelihood was mainly with dates and barley. He used to give the excess of that to the people, and did not ask God for more than what God had given him. They shined their own shoes, washed their clothes, did the housework themselves, and helped their wives. He was the most imaginative and humble of people. Therefore, the reasons for the manifestation of blameworthiness in the ideas of Qalandarism were that their aspects close to the teachings of Islam served to gain their place among the people in a unique way.

Blamefulness with its rules of law has penetrated into the core of calandarism [1].

Mutahar ibn Tahir, who significantly influenced his principles, commented on the categories of Sufis in his book "al-bad' wa ta-tarikh" before Sulami, and mentions Husniyya, Malomatiya, Shawqiya and Mazuriya sects. He stated that over time, blame has been preserved in the form of Qalandari. Also, Mir Obidin "in the sources related to Sufism, Qalandarianism is mentioned as a branch of Malamatism. Malomats are a group that tries to keep themselves away from the public, avoid customs and customs, and their desires and obedience are not visible to the public. They do not outwardly perform the actions characteristic of Sufis, but secretly strive for spiritual purity. The people are unaware of their obedience. The Qalandaris do not deviate from the obligatory acts, and they perform their prayers, whether in public or in secret. But by this time, the Qalandaris moved away from Islam, and they can be equated with the "Khashawis"[2].

Therefore, it is appropriate to emphasize that malomatia and Qalandarianism are interrelated and influenced. They can be seen in the principles of malomatia. They were analyzed in the research process as follows:

1. Principle. Malomathians greet those who don't want to and ignore the greetings of those who greet willingly. If they pay attention, they follow the rule that "the first to greet is the best of you" according to their manners, and they want to gain credit for themselves by ignoring someone else's greeting.

2. Principle. They do not talk to people and do not agree with those who insult them. That is, they do not do anything against those who blame them. In this way, they hope to be in the sight of God.

3. Principle. They reach out to those who don't give them what they want and give them what they want.

4. Principle. They do not go where they are called. They show interest in those who turn away from them and turn away from the giver. They are the guests of those who do not want them and seek to be with those who hate them, not the guests of those who love them.

5. Principle. blamers do not care about those they love. eat what they don't like, give up what they want. These come out when they want to sit down.

6. Principle. they don't move when they want to go on the road. In short, they are always so against their will, seeking comfort and peace for themselves.

7. Principle. They leave everything they have to give. They refuse to have a position in the world. They do everything they can to avoid being respected in their eyes. For example, they make friends with people who are far behind them in status;

8. Principle. They sit in places that cause gossip about them. They wish that they would not understand this and that their position would not be challenged. For this reason, they despise their appearance, despise their souls, protect their condition and their secrets from the eyes of others. Because their elders bequeathed it to them.

Therefore, the customs that follow the principles in this sense are in harmony with their morals. The main principles of Qalandari are also fed from this criticism. Its directions are different from the point of view of the regions of distribution. According to scientists, the Javalqis, Jalolis, Haidaris, Jamis, Tarlak Shamsians, Rum Abdols, Rifa'is, and Yunusis are the directions of the Qalandaris. Jalaliddin Savi is the founder of Javlaqis. [3]. They got this name because they wear special clothes made of different pieces. Javalik is the plural of "Julah" meaning "patch", "torn". Muhammed Balkhi, the disciple of Sawi, who promoted the wearing of this dress and made it a tradition. The Javlaqis mentioned in the sources of the 12th century refer to the Qalandaris. Also, Jalalism is a Qalandari sect of Shia, and its founder, Sayyid Jalaluddin Bukhari, is counted as murid. Bukhari originally belonged to the "Sukhrovardiya" sect of Shihabuddin Umar Sukhrovadi. became the propagator and founder of Jalalism. Said Jalaluddin Bukhari held debates with representatives of many sects in India. There is another view that they called their murids "little saints", "majzubs". They did not see marriage with women as worthy of them. They claimed Muhammad (s.a.v), Ali ibn Abi Talib, Hasan Mujtabi, Sheikh Hasan Basri as their Pirs.

One of the streams of Qalandaris is Haydaria, and its founder is Qutbiddin Haidar Zavai. He is one of the followers of Ahmad Yassavi. In Sufism sources, it is mentioned that Haydaria was founded by Sultan Mir Haydar Tuni, a follower of Imam Musa al-Kazim. They used to wear red crowns. During Haydari holidays, they wear special clothes, throw sheep's skin on their shoulders, and weave five layers of turbans on their heads. They were seen as representatives of the Qalandaris because they had a cane and a shepherd's drill in their hands.

According to Turkish scientist Ahmet Karamustafa, this group was active in the 13th-15th centuries. Otman Baba was considered their leader. His real name was Sharif Husam Shah.

Information about the Jamia-jama was found in the Ottoman and European literature of the 16th century. It was given this name by a sheikh named Ahmad Jami in Iran. Ubaidullah Ahror's description of Qalandaris who are close to Malomatites makes it clear that they are close. It is defined as keeping things that belong to the right forever. He explains that it means losing oneself and not being able to find it no matter how hard one tries.

Torlaks - In addition to Iranian scientists Vahidi and Fakhiri, Western travelers Kontaksin and Menavino describe Torlaks in a unique way. They shave their hair, beards, and eyebrows.

In general, although most of the mentioned communities of Kalandari have not survived, their historical names have been preserved. The variety of information about them in the sources related to Qalandari shows that currents existing in the society also had a certain place between the sects. As a conclusion, it can be said that not being satisfied with the preaching of self-reproach is one of the characteristics of self-reproach. But buolat belongs to the murids, and the sheikhs are the exception, because they believed that when they reach a certain stage, they will become one with God without paying attention to the self. In this case, a person is considered to have lost his ego. Also, the members of malomatism considered it an honor to spend in the way of the Creator, not paying much attention to their health. Abdurrahman Sulami, who developed the principles of this doctrine, says that this movement is widespread among middle-class craftsmen and merchants in the lands of Central Asia and Persia. That's why the pursuit of spiritual elevation characteristic of futuvvat serves as the main idea in criticism. Sulami divides the people of science and knowledge into three categories:

1. Apparent scientists
2. Sufis or people of enlightenment
3. Recriminations

Devoting one's life to the service of one's friends, thinking only of good and never tiring to do good. People who embody a number of qualities such as protecting the honor and honor of their friends, teachers, and others united as a team and realized their specialties. They were debated by Javonmards, Akhiyas or Fatiyas. Sulami classifies the three stages as follows: a person fully aware of Sharia can attain Sufism by passing on the path of Sufism, and after that he can reach the level of blame, i.e., the rank of impartiality. This stage is the highest level for the scientist, in which he completely forgets the Sufi people and their relationship in the calamity and sees only the Creator in front of him. Abdurrahman Jami evaluates them as true Sufis. They are people who have reached the level of fandom due to sincerity.

The real goal of a Sufi is to strive for the purification of the heart and not to take this extraneous attitude into account. Umar Suhrawardy positively evaluates the reprobates and describes them as people who seek the pleasure of God in their every action.

Khoja Muhammad Porso tries to explain his thoughts with the following narration. Shaykh Abu Tahir rode a donkey to the market one day and his murid was holding the donkey's rope. A man called out and this zindiq (disbeliever) came. The murid heard this and wanted to hit him out of enthusiasm. If you do, I will teach you something. When they returned to the house, the Shaykh told his murid to bring the chest, and the murid brought it. The sheikh took out the letters from him. Everyone wrote. Addressing one sheikh as Sheikhl Imam, another wrote as Sheikh Zahid, and another as Sheikhl Haramain. Everyone gave me nicknames according to their beliefs. If that poor man also spoke words according to his beliefs, he said, "What is the need for all this hatred?". But if a person's sect is "intentional", then it is blameworthy to "abandon" the reputation, to withdraw from the people's occupation, to avoid the government, so it happens that Sheikh Abu Yazid was coming from Hijaz, and it was heard in the city that Bayazid had come. were engaged in compliance. Their hearts were filled with Haq subhana. This incident happened in Ramadan. Everyone turned away from that person. They left themselves alone. They had a murid with that person, and they told him, you see, I related a matter from Sharia, and all the people rejected me. But if his sect is "left", he will take up something contrary to Sharia. If his goal in rejecting the people is their acceptance, then this is misguidance. [4].

Also, there are many anecdotes of Shaykh Abu Salih Hamdun Qassar about the reality of blame. He was asked about blame. He said: this path is difficult for the people. The more a nation separates itself from tribalism, the more connected it is to the Supreme Truth. If the whole nation looks at him, the people of the world will turn their backs on him. They are opposed to efforts, their efforts are behind efforts. Husayn ibn Mansur was asked about the Sufi. The man answered "the unity of the race". There are two dangers for Talib. One is the danger of the people's hijab, and the other is that the people will stick out their tongues to blame her. A blameworthy person should cut off worldly and otherworldly enmity from the people. No matter what they say to him, let him do the salvation of his heart, even if it is neither a big nor a small sin in Shariat. Indeed, nothing in friendship is better than a friend's rebuke. Because a friend has a work of kindness from the heart. There is no danger of a bad person in a friend's language. Among the Insu and jinn, this type of blame was specially chosen. Because it has the health of the heart. None of the people have this level. The tax collectors have their tongues cut off. When this heart is cut off from the people, no word of the people will pass through their tongues. The tongue is free from both meaning rejection and acceptance. The Sahabah Muhajir and the Ansar are the ones who broke away from the previous ones and those who followed them with goodness, may God be pleased with them, they are the imams of the saints. Those who walk in front are examples of their leaders in their behavior and behavior. Shaykh Imam Arif Abu Abdurrahman Muhammad ibn Husain ibn Muhammad ibn Musa al-Sullami an Naisaburi says in his treatises. Allah is jealous that they become known among the people. He shows them to the people that they will stay away from him and keep their condition safe with Allah. In this "uns" situation, the inside has no influence on the outside. This is similar to the situation of the Prophet. He ascended to the highest place and reached closeness, or even closer. His appearance is similar to the situation of Musa, peace be upon him. After he returned from speaking with Allah, no one could bear to look at his face. Abdullah ibn Manozil, may Allah have mercy on him, said: "They are a people whose exteriors do not have a mirror for the people, and in their interiors there is no claim that I am with God. Their secrets are between themselves and God. Their loved ones and their hearts." They can't find information. The way of blame that some have said is to inform the people that they are not from them and to make it true that Haq subhonahu is with them. Their methods are to fulfill their rights and not to demand their rights. One of their methods is negligence, people see negligence compared to their actions. One of their methods is not to help the self and to take revenge on it by sacrificing one's life to those who despised it. Abu Salih al-Qassar asked Abdullah al-Hajjam about leaving the profession and keeping the asb. It is better if they call. When Abu Hafs enters the house, he wears a woolen janda, while at other times he walks in the clothes of the people, and when he goes out in front of people, he goes out in the decorated clothes of the people of the market. One of their methods is that if they see an answer to their prayers, they are upset and afraid, and they say that this is "scheming" or "stunning". One of their methods is foresight. It is obligatory for a person to avoid the foresight of a believer. He should not claim that he has foresight. Because the Prophet who said: Fear the discernment of a believer. He who fears the discernment of another, how can he claim that he has discernment in himself. They said: show your wealth and needs while you are alive, and show your poverty in your home after you die. Another method is to go against the ego in all cases. Abu Yazid Bistami says: people suspect that the way to Allah is clearer than the sun and the moon, and my question is that He will open a way for me, even if it is the eye of a needle. Also, if the status of the mashoyikhs is true and high to Allah, they are more humble and hate their own status and desires more and more.

Blasphemers do not differ from believers in anything more. They walk with them in the bazaars and talk to people. No one has seen them stand out from the masses, the people. In other words, they

have not stood out by some obligatory act or common sunnah in the public. They stand out in their strong state with Allah. and for those who humble themselves under him, Allah knows him in all countries and knows which of his actions and situations are worthy of him. They treat each country as it deserves. They are the highest people who have passed and seen all the places. Allah is veiled from the people in the world. They belong to him. They are veiled from the people with the veil of their Sayyid. They are behind the curtain, no one from the people sees them except their Sayyid. Sufis are distinguished from the general public by their habits of making prayers, and their disturbing words and answers to their prayers. The blamers are not separate from a person, and all Shariat is the state of the blamers. The blamers are the people of right knowledge. They are the highest class. In conclusion, it can be said that self-blame and self-satisfaction are characteristic of the blamers. However, this is only characteristic of murids and not characteristic of sheikhs. They believed that after reaching certain stages, the Truth would merge with the Almighty.

In the studies and articles of a number of mystics in Uzbekistan, thoughts about Qalandars and the Qalandarian sect are found. Their research partially reflects the history of the sect, the lifestyle of Qalandars. Among the contemporary foreign scholars on Qalandari, such as Ahmad Yashar Ojak, Muhammad Kara Mustafa, Muhammad Shafi'i Kadkani, Abul Hossein Zarrinkob studied Qalandars in the countries where they lived, their way of life, the fatwas of the people of Sharia, and their relations with Qalandars. According to Muhammad Kara Mustafa, Qalandars and Qalandarianism were in free movement in the regions of Central Asia where Hanafism was spread. The foundations of Qalandariy can be studied through the travelogues of Ibn Batuta (1304-1377), Armini Vamberi (1832-1913), and V. Vereshagin (1842-1914). [5]. It is particularly important that Ibn Battuta treats the Qalandars in an impartial and moderate manner. Armini Vamberi,

V. Vereshagins have a biased approach to the Central Asian Qalandars and interpret them as the most backward representatives of the society. In the spiritual legacy left by Baba Tohur Uryan, Sanai, Saadi Shirozi, Hafiz, Fakhriddin Iraqi, who considered themselves Sufis, Qalandars and Qalandarianism were in a certain sense recognized as an honorable rank, a praised rank. Also, the great medieval scholars Abdullah Ansari, Abdurrahman Sulami, Suhrawardi, Jami, Alisher Navoi, Husayn Vaiz Koshifiy left objective information in their works.

In addition, the ideas and principles of this sect played an important role in the spiritual life of the peoples of Central Asia. This is the meaning of the transfer of the image of Qalandar to literary works. The Qalandari practice reflected the essence of its content, and the philosophical and philosophical principles had an impact on Central Asian sects.

Conclusion: A comprehensive study of the basics of malomatism and kalandary allows for a deep scientific study of the ideas and principles of these sects leading to the spiritual life of the rural population, stability of society, and strength of faith in the cultural processes of Central Asia. Sulami's "Risolai malomatiyya", Abdullah Ansari's "Qalandarnama", Ibn Batuta's "Sayohatnama" series are of great methodological importance in the study of these tariqats.

Malomatism and Qalandariism are considered not only as a practical movement, but also as a sect in their own right, with the ideas of Abdurrahman Jami and Alisher Navoi, which have a place in the heritage of the people of Central Asia.

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Rezyume: *Ushbu maqolada O'rta asr mutasavvif olimlar merosida so'fiyona qarashlar tahlili va ularning markaziy osiyo tariqatlarida namoyon bo'lish xususiyatlari bayon etilgan.*

Резюме: *В данной статье представлен анализ суфийских взглядов в наследии средневековых мистиков и их проявления в сектах Средней Азии.*

Kalit so'zlar: *mutasavvif, so'fiyona, qarashlar, tariqat, irfoniy-falsafiy.*

Ключевые слова: *мистик, суфий, взгляды, секта, мистико-философский.*

CORRUPTION OFFENSE

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Summary: *Information about persons reporting corruption offenses and the fact that the problem of corruption is one of the most pressing problems, it is reported that preventing and combating corruption is one of the important steps for the development of the state and society.*

Key words: *corruption, crime, development, social phenomena, trends.*

In the world, assessing the effectiveness of measures aimed at combating corruption is becoming increasingly relevant. According to Transparency International, the situation with corruption has not changed at all over the past decade, as 2/3 of 180 countries scored less than 50 points on a 100-point scale, 131 countries have not made significant progress in the fight against corruption, 27 countries have achieved the lowest score in in this area throughout its history, and 154 countries showed negative dynamics or no positive shift [1]

At the same time, the scope of scientific research on the prevention, detection and timely elimination of corruption offenses, the development of measures to eliminate their consequences, causes and conditions that allow their occurrence is growing throughout the world. Based on them, in order to increase the effectiveness of the fight against corruption, especially crimes related to bribery, there is a need to introduce into practice special technical devices and devices, including the installation of electronic beacons for bribes, photos, videos and audio recordings from different angles through the use drones, a UFED device designed for forensic examination of cell phones, as well as new tactical methods for identifying electronic devices using non-linear locator.

In our republic, in order to achieve the 84th goal of the Development Strategy of New Uzbekistan, special attention is paid to assessing the impact of legislation on corruption in the fight against corruption, which served to identify such priority areas as the introduction of modern information technologies, including artificial intelligence technologies, in combating corruption aimed to limit the human factor in regulatory legal acts, ensure the development of regulatory legal acts on the principle of “legislation without corruption”, which requires a revision of regulatory legal acts and their projects from the point of view of the effectiveness of anti-corruption expertise [2]. In particular, the Development Strategy of the New Uzbekistan defines the priority task of “identifying areas and industries prone to corruption, increasing the efficiency of the system for preventing corruption factors, and creating an irreconcilable attitude in society towards corruption”[3].

Today it is a terrible illusion that society can be managed in different ways - this is corruption. Today it is a terrible illusion that society can be managed in different ways - this is corruption. This disease undermines democracy and the rule of law, violates human rights, disrupts markets, degrades quality of life, and creates conditions for organized crime, terrorism, and other threats to human security to take root and flourish.

On the official website of the Ministry of Justice of the Republic of Uzbekistan it is written that “Corruption is a social phenomenon that is expressed by employees of government bodies in the use of their services for material or property purposes, for the purpose of illegal personal gain.” Essentially, corruption is the act of an official, contrary to law and morality, in order to benefit from his managerial powers and rights for personal gain. This term is most often used to refer to members of the political apparatus.

Corruption (Latin. The term corrupt (from the Latin Corruptere - to violate) usually means the use by officials of the official powers and rights granted to them, contrary to the law and ethics, for their own selfish interests.

The Law of the Republic of Uzbekistan “On Combating Corruption” states that corruption is the illegal use of a person’s personal interests in his career or official position or for the purpose of obtaining material or non-material benefits in the interests of other persons, as well as the illegal presentation of such benefits [4]. In Article 28 of this law “Protection of persons reporting information about corruption offenses and their close relatives”: “Information about persons reporting corruption offenses is a secret service and is disclosed only in cases provided for by law and on the basis of the written permission of the person himself. , as well as the head of the body carrying out anti-corruption activities [5].

If there are sufficient grounds confirming a real threat to the life and health of persons reporting corruption offenses and their close relatives, the use of violence against them, destruction or damage to their property, anti-corruption authorities are obliged to take the necessary measures to protect them in accordance with Law of the Republic of Uzbekistan “On the protection of victims, witnesses and other participants in criminal proceedings.”

The history of the phenomenon of “Corruption” goes back several thousand years. Historical sources indicate that corruption existed during the Sumerian kingdom BC. Humanity is created in such a way that this concept lives next to it and regularly fights against it. Depending on each period, the methods of combating corruption are different. The history of mankind shows that it is impossible to completely get rid of this vice. There is only an opportunity to reduce it, and even the death penalty, introduced in some states, for example, in the People's Republic of China, against persons who have committed corruption crimes, that is, for receiving bribes on an especially large scale, has still not saved people from such cases. Because as long as humanity exists, the tendency towards corruption will thus continue to pursue its personal interests in a faster and more convenient way.

Currently, there are five main methods used in the world to measure the level of corruption. In view of the fact that most persons involved in corruption want their identity and activities to remain secret, obtaining accurate and detailed information about corruption is very difficult and difficult. Among the world's mammals, the most common measurement method is to assess corruption perceptions, and examples include Transparency International's Corruption Perceptions Index and the World Bank's Corruption Governance Index [6].

According to the corruption perception index of the international organization Transparency International, the Republic of Uzbekistan in 2010 took 172nd place with 16 points, and in 2019 it ranked 153rd among 180 countries. This indicates that the state of Uzbekistan has achieved positive dynamics. According to Transparency International's 2016 Anti-Corruption Barometer, only 18% of respondents in Uzbekistan reported bribery, and only 23% of them listed corruption as one of the top three problems in the country. According to a sociological survey conducted among the population in areas in which there is the most corruption, traffic police officers were recognized as representatives of the most corrupt areas due to the fact that 17% of respondents admitted that they gave them bribes, and education and health workers - from - because 16% of respondents admitted that they had given bribes. “What prevents you from reporting corruption? 39% of respondents said they could not answer this question, and 17% said it was “due to fear of negative consequences.”

The results of a public opinion study by the “Public Opinion” center show that in the Republic of Uzbekistan, according to 43.7% of the population, in 2018 the most susceptible to corruption and bribery were the healthcare and medicine sectors, followed by education with 39.4% of the

population's votes and tax sphere with 12.2% of the population's votes. According to the results of the survey "Anti-corruption in the mirror of public opinion" conducted by the same center, in 2018 the healthcare system, the hiring process, the higher and public education system, as well as the courts, prosecutors, tax authorities and sanitary-epidemiological supervision were included in the number of the most corruption-prone areas in Uzbekistan.

As we all know, in accordance with the decree of the President of the Republic of Uzbekistan dated June 29, 2020, the Anti-Corruption Agency of the Republic of Uzbekistan was created. This is evidenced by the fact that the head of state is one of the most acute mummies of the problem of corruption even among the countries of the world, deeply feeling that preventing and combating corruption are important steps for the development of the state and society. As a result, the Director of the Anti-Corruption Agency of the Republic of Uzbekistan A According to information provided by Burkhanov, since the beginning of the process of creating the agency, this agency has received applications from 13,000 citizens who expressed a desire to get a job. Of these, only 146 people were tested. Tests were conducted, including 50 questions in 4 areas: anti-corruption literacy (25 questions), politics in the world and Uzbekistan (10 questions), logical thinking (10 questions), history and philosophy (5 questions). Initially, the commission decided to transfer candidates who scored more than 65 points to the next level, but the test results showed that only 7 people scored more than 65 points. Therefore, the commission decided to reduce the passing score to 56 points. As a result, 23 people who scored more than 55 points moved to the next level. As a result, instead of 30 workplaces, 23 were tested. They went through two more stages, namely psychophysiological testing and an interview. 123 people who were not tested were included in the personnel reserve [7].

In conclusion, it is worth saying that a number of reforms carried out in the fight against corruption in the Republic of Uzbekistan indicate the struggle of state society, government bodies and the economy to free themselves from this evil. In our opinion, in the fight against corruption, it would be advisable to increase the legal awareness and legal culture of the population, attract the public, and bring to the attention of the public the negative consequences of corruption through the media. We hope that the Republic of Uzbekistan will achieve positive results in the fight against corruption, using anti-corruption methods and methods tested by developed countries of the world.

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Rezyume: *Korrupsiyaga oid huquqbuzarliklar to'g'risida xabar bergan shaxslar to'g'risidagi ma'lumotlar hamda korrupsiya muammosi eng dolzarb muammolardan biri ekani, korrupsiyaning*

oldini olish va unga qarshi kurashish davlat va jamiyat taraqqiyoti yo'lidagi muhim qadamlardan biri ekanligi maqolada bayon qilindi.

Резюме: Информация о лицах, сообщающих о коррупционных правонарушениях, и тот факт, что проблема коррупции является одной из наиболее актуальных проблем, сообщается, что предупреждение коррупции и борьба с ней являются одним из важных шагов для развития государства и общества.

Kalit so'zlar: korrupsiya, jinoyat, rivojlanish, ijtimoiy hodisa, tendensiya.

Ключевые слова: коррупция, правонарушения, развития, социальное явление, тенденция.

THEORETICAL BASIS OF THE DEVELOPMENT OF THE LEXICAL COMPETENCE OF MEDICAL STUDENTS IN THE ENGLISH LANGUAGE

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Summary: *The article highlights mechanisms for solving problems of foreign language proficiency by students of medical higher educational institutions, mechanisms for increasing the need for knowledge for students to successfully master the profession in the process of learning a foreign language.*

Key words: *competence, oral speech, technogenic factors, vocabulary, social competence, integrative and creative thinking, "Valeology", "Public health", "Hygiene", "Therapy", "Rehabilitation".*

Further improvement of educational services in medical education, expansion of quality education opportunities, training of highly qualified personnel in accordance with the needs of medical organizations, introduction of an educational model based on the integration of practice and education, in this regard, medical institutions of higher education priority tasks have been defined in terms of increasing academic and innovative potential. In this case, the effectiveness of teaching foreign languages to students in higher medical educational institutions is compared with the standard of knowledge, skills and competences, lingual and communicative competence development of students, improvement of educational activities, necessary foreign language learning among students. Scientific research is being carried out on the consistent improvement of control tools, forms and methods, using their own capabilities, which ensure the development of the level of motivation.

In recent years, the success of solving the problems faced by medical institutions of higher education in Uzbekistan is largely due to the development of mechanisms to increase the need for knowledge in order to successfully master the profession of students in the process of teaching a foreign language. Also, it is to improve the normative bases of formation of motivations for students to understand their need for foreign language in various situations of their professional activities. The current openness policy of our country, the growth of the flow of foreign investments, the number of new enterprises accelerate the desire of young people to acquire modern knowledge and master foreign languages [1].

On issues of using modern educational technologies in teaching foreign languages in our country, as well as improving the methodology of teaching foreign languages was studied by L.T.Akhmedova, N.M.Akhmedova, M.Kh.Gulyamova J.J.Jalolov, F.I.Ikromkhonova, G.T.Mahkamova, H.Mamatkulov V.I.Normuratova, F.M.Rashidova, D.A.Ruzmetova, D.T.Pardaeva, T.Q.Sattarov, Z.M.Khazratova and F.Shirinoва.

One of the main goals of a future medical specialist is to develop the ability of clinical thinking, to be able to use effective treatment methods in professional activities by ensuring the mutual harmony of personal competencies with basic abilities in future medical workers, and their professional activity. The importance of a foreign language to increase efficiency on their professional quality is invaluable.

One of the necessary requirements for a future medical worker is to have a deep understanding of the content of the subject, to master the methods of promoting a healthy lifestyle, and to have the skills to use modern information technologies, to know the subject to be mastered and its theoretical foundations, to be able to solve unusual problems that may arise during the educational process, and at the same time to be able to connect it with a similar topic in another subject while mastering the same

subject increases students' interest in science. This process helps to develop and master new skills and achieve high results when using a foreign language in practice.

Based on the development of the language learning process in the system of higher medical education, a wide range of studies have been conducted on the evaluation of the quality of education. According to the researcher B. Belyayev, "taking into account the modern methodological principles, it should be said that some of these principles are really progressive. These include the rules that students should be taught speech in the target language, not the language; first of all, the need to teach students to speak foreign languages; the need to develop thinking in a foreign language; one must have practical knowledge of a foreign language, the decisive factor in language acquisition is the foreign language and speech practice [2]. It is desirable for students to be aware of the latest achievements and news related to the field of modern medical higher education goals and their achievement. That is, the globalization of the labor market in the socio-cultural sphere, the use of international knowledge experiences, the use of information technologies, man-made factors, increasing the responsibility of professional activity for its results, an integrated approach and etc. Teaching students to write in a foreign language is one of the most important aspects of modern language teaching methods. In this regard, M.K.Telekhurai says that "Writing skills develop with speech, the lexical reserve and grammatical structure of the language, as well as their practical application, the ability to use the received material, that is, the ability to consistently and clearly convey the content of a read text or an independently composed text to others" [3] states that it includes. In this process, if higher medical education takes the lead in training medical workers with a high intellectual level, creativity, modern knowledge and competence, customers and medical organizations take an active part in the process based on their own interests.

Based on the study and analysis of scientific literature, we describe the relevance of the research with the following cases:

- that the principles of continuity and coherence are not given priority in teaching English to students;
- the content of foreign language teaching is not optimized with preschool and primary education;
- lack of attention to formation of communicative and social competence through language teaching;
- not using the cluster approach in teaching a foreign language;
- the correct selection of effective technologies aimed at teaching a foreign language. Therefore, teaching a foreign language requires a high level of professional skills, love for their professional activities, as well as diligence, and the ability to increase interest in the English language from future doctors. Undoubtedly, this can be achieved by making certain efforts, and practice shows that success depends not on experience, but on the knowledge, skills, competence and interest of the student.

According to P.I.Obratsov and O.Yu.Ivanova, the modern career-oriented foreign language teaching process is a process that creates the ability of students to communicate freely in a foreign language in specific professional, business, scientific fields, and situations created based on professional characteristics [4].

The analysis of pedagogical and scientific-methodical literature showed that even though many directions, technologies and methods of teaching foreign language to other professions have been created, it is not possible to prepare medical students for their future profession. There are very few works on teaching taking into account their characteristics. Scientific research on this issue began in Europe and Russia in the 50s of the 20th century, and in our republic, this attention began in the 90s.

During this period, Coyle, Cummings, Lambert and Tucker, Grabe and Stoller, Marsh, I.G.Venikova, Z.M.Tsvetkova, L.I.Chaurskaya, L.Yu.Kulish and others selected specialized texts and determined their linguistic features, created special training manuals raised issues. E.B.Povarisova noted that reading specialized texts affects the development of students' reading and speaking skills, and specialized texts increase students' interest in learning a foreign language [5].

In the article "Content-Based Instruction: A Relevant Approach of Language Teaching" published by Olmedo Bola Villabos in his journal "Innovaciones Educativas" #20 of 2013, he shows: "In vocational education classes, students are interested in the foreign language learns materials, which develops their knowledge of the world along with their linguistic knowledge" [6].

M.V.Lyakhovitsky, who made a great contribution to the theory of teaching a foreign language to the profession, said that "learning a foreign language should not only be a goal, but should serve to increase the student's general level of knowledge and increase his erudition in the field of specialization" [7]. To achieve this, he suggested the following activities, including working with special specialty texts, communicating within specialty topics, learning specialty words and phrases, and studying a set of grammatical and lexical materials necessary for the specialty.

"Professional foreign language teaching is used in the following (purposes) directions," Nikula says [8]:

1) to increase the interest of pupils and students in a foreign language, that is, improve the free use of a foreign language by increasing the opportunities to learn foreign languages better than usual in regular schools;

2) to increase students' self-confidence by allowing them to understand and feel that they can use the language for real life, and thereby encouraging them to use the language and to arouse their interest in learning more about it;

3) to offer a new (more complicated) way to teachers who want to teach in a foreign language for important reasons;

4) pays attention to the reception of foreign students in educational institutions, the development of exchange of teachers and students, and it would be response to the growing internationalization issue in education.

In fact, to practice in a foreign language are speaking, listening, reading and writing, and their product - students get new information and use it in their life. In recent years, the cluster approach has been effectively used in the education system of our country. In it, mutual activity between the types of education combined into a whole is carried out. Attention is paid to the important features of the cluster approach in teaching English to students:

1. Based on components aimed at developing integrative-creative thinking among students of medical higher education institutions;

2. Students of medical institutions of higher education are engaged in research in the process of education;

3. Organization of special educational tasks related to the development of integrative and creative thinking in students.

First, students look for various authorities and sources related to the topic they are studying (Valeology, Public Health, Hygiene, Therapy, Rehabilitation). They strive to find a solution to the problem, implement elements of research activity. However, students should be interested in the subject and want to know it.

Secondly, students prepare didactic handouts, multimedia and games for teaching English in activities. It is important for them to choose educational materials that match their characteristics in the

fields of "Valeology", "Public Health", "Hygiene", "Therapy", "Rehabilitation". Through creative activity, they will strengthen their theoretical knowledge and skills. It is possible that additional English language clubs are organized in higher medical institutions, and students will have the opportunity to apply their theoretical knowledge directly in this process. Students strengthen practical skills and qualifications in the order organized in the higher education institution.

Thirdly, activities aimed at meeting the needs of students, that is, additional study groups, training exercises and quizzes on learning English will be held. In addition, booklets will be prepared or webinars will be organized on the topics of "Mapping", "Longitude and Latitude", "The round earth on flat paper", notes on learning English. In this type of activity, knowledge and skills are implemented based on the principle of "I saw", "I understood" and "I can do".

Students are planned to learn only two specialized words (aerial, satellite), another word is non-specialized words (tool; to depend on; advantage/disadvantage; to illustrate; entirely; relatively; purpose; convenience; dimension; distortion). It is planned to work with the text "The round Earth on flat paper" in the lesson. The lesson instructions indicated that this text was challenging for the students. Students struggled to understand words and phrases (for example: representations, choropleth, elevation, a customary measurement), made mistakes in pronunciation when reading the text (for example: contour, projection, choropleth, mercator).

The analysis of this working program showed that teachers only teach the words in the given text in the process of teaching words. There is no logical connection between these new words; it is not taken into account that they are active and passive words. Learned words will not be used in future lessons. This causes the students to not learn these words well, to quickly forget them without keeping them in their memory. The second shortcoming is that when choosing reading texts, their relevance, interest, and information given to students was not taken into account. These texts do not cause students to think, search, and express positive or negative opinions, because they are often limited to giving facts. We believe that these materials are not sufficient to achieve the goals stated in the above state educational standards and science programs.

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Rezyume: Maqolada tibbiyot oliy ta'lim muassalari talabalarining chet tilini bilishiga doir muammolarni hal etish, chet tilni o'rgatish jarayonida talabalarda kasbni muvaffaqiyatli o'zlashtirish uchun bilimga bo'lgan ehtiyojni oshirish mexanizmlari ta'kidlangan.

Резюме: В статье выделены механизмы решения проблем владения иностранным языком студентами медицинских высших учебных заведений, механизмы повышения потребности в знаниях для успешного освоения студентами профессии в процессе обучения иностранному языку.

Kalit so'zlar: layoqat, og'zaki nutq, texnogen omillar, leksik zaxira, ijtimoiy kompetensiya, integrativ-kreativ fikrlash, "Valeologiya", "Jamoat salomatligi", "Gigiyena", "Terapiya", "Reabilitologiya".

Ключевые слова: компетентность, устная речь, техногенные факторы, лексический запас, социальная компетентность, интегративно-творческое мышление, "Валеология", "Общественное здоровье", "Гигиена", "Терапия", "Реабилитология".

**THE PROCESS OF DEVELOPMENT OF THE PRIMARY SCHOOL LANGUAGE IN THE
CONDITIONS OF INTEGRATION APPROACH**

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Summary: *This article is dedicated to the process of development of the primary school language in the conditions of integration approach. It is necessary to teach children to write letters without interruption. Attention in the article is paid learning to read and write letters, that is, in a reading lesson, learners identify a letter, read the text, and in a writing lesson they write a word with the same letter. Also, in order to write primarily graphic skills are developed. In the given work there are given four stages of graphic experience.*

Key words: *integration approach, writing, graphic skills, spelling lesson.*

In primary schools, especially in 1st grade spelling lessons, learning the spelling of letters is required. It is necessary not to interrupt syllables consisting of 5-6 letters. It is necessary to take word combinations to write letters without interruption and work on them. During this period, due to the increase in writing speed, it becomes increasingly difficult to write letters incorrectly. It is especially difficult to distinguish similar letters. Therefore, the teacher should insist on writing without distorting the shape of letters, not only in writing lessons, but also in other classes.

From childhood, we remember well the moments of writing in the era of literacy in the primary grades. Writing is considered a means of expressing one's thoughts using conventional signs created specifically for a person. The main task of writing is to bring the letter to the interval and strengthen it over time.

In the process of developing reading skills, learners simultaneously learn basic writing. Learners who are proficient in writing should have the following skills:

1. Sit correctly at the table, position your notebook correctly, draw a line, use a pen correctly when writing.
2. Write uppercase and lowercase letters of the Latin alphabet using a workbook or alphabet, and also be able to connect letters with words: convert printed text into written text.
3. With the help of the teacher, write the analyzed word and sentences with two or three words.
4. Copying and dictation of words that have no meaning in pronunciation and spelling: check what you read on the topic of what was written.
5. Write a sentence from oral speech.

According to the principle of the analytical-synthetic speech method, the unity of reading and writing is preserved. Particular attention is paid to learning to read and write letters, that is, in a reading lesson, students identify a letter, read the text, and in a writing lesson they write a word with the same letter.

Learning to write primarily develops graphic skills. Every skill and learning derive from skill development and work-based exercises. A graphic skill is primarily a hand action skill, this action primarily relates to muscle strength. Secondly, in the process of writing, sound, which is an individual unit of speech, is translated into graphic symbols, that is, a letter. The aim of the letter is to use writing skills to describe opinions. The faster they understand this goal, the more effectively and correctly they develop the habit of writing and speaking. In the literacy process, children write by rote; it takes half a month to describe their opinion in one word.

At school, they use a ballpoint pen and a wooden board for writing.

In primary school, active physical training will help restore performance and prevent fatigue, so it is necessary to train the hands of schoolchildren. Because they are underdeveloped, they tire quickly, especially in writing lessons. At such times we should not force them to write; if we force them to write, their nerves may become fatigued and they may give up writing exercises. To prevent this from happening, you can perform some physical movements during classes. Of course, training is carried out taking into account the age characteristics of children. Writing lessons should last 10-15 minutes, because after that students begin to get confused and even get up from their seats, looking around. Some teachers do not take this into account, as a result, students become weak, their writing is impaired, and many mistakes are made. At such times, of course, physical exercises should be used. First of all, it improves blood circulation in children and improves the functioning of the respiratory system. Physical exercises can be carried out several times during the lesson. It all depends on the teacher. First the teacher himself must show the lesson, and then the students must work on it. For example, in lesson 1, children get up from their seats, stretch their arms forward, unclench their fingers - one, bend fingers two, etc.

Physical training in pure writing teaches students to be attentive and write gracefully, to exercise self-discipline, to work patiently and diligently, and to maintain order at work. One of the main responsibilities is to teach correct and competent writing. Children cannot learn to write correctly until they master spelling skills. If children can consciously accept each spelling and use it correctly without thinking, this is called spelling skill training. Only if children complete writing tasks with enthusiasm and awareness will they learn to write correctly. One of the cases where the rule is different is that children accept the text given for writing, let them be able to perceive each spelling well and store it in memory. That is why, when teaching children to write correctly, the teacher must first of all orient them to work that needs to be done independently (without prompting from the teacher), for example, taking dictation and carefully listening to the text being listened to. read in order to understand well the spelling analyzed by the text, copy and write, or understand it even if it is written, you need to get used to it. Children can master literacy quickly if they know and understand the meaning of words.

Spelling lessons awaken children's attention and increase their activity. Therefore, while working on this, you should not allow yourself to do the exercises without understanding their meaning.

Spelling skills should be practiced correctly. To do this, the work of teaching correct writing requires the study of linguistic phenomena and the study of grammar. If grammar is taught well in school, students' literacy will improve. If the work of teaching correct spelling is related to grammar, then first of all the grammatical phenomena associated with known spelling rules should be consciously taught, and then taught properly. The rule must not be learned, but known, memorizing a rule without understanding its meaning will not help. If so, then the teacher must explain clearly and clearly, and the students must consciously learn these rules. As a rule, to master spelling skills, children should, under the guidance of a teacher, observe and analyze linguistic phenomena, spelling rules, compare them with each other, reflect on them, and describe them in their own written work. Only in this case will they get used to writing correctly. The task of completing spelling exercises is simple and should not be overlooked - in addition to checking whether the children completed the assigned work, it is also necessary to determine how they learned about the assigned work. To do this, the teacher takes the children to the board to check their independent work, gives examples on the same topic from what they did at school or at home, finds new examples, and gives clear questions and exercises. Such

methods teach children responsibility for their work, allow them to understand and consciously carry out a task instead of doing it the way it should be.

According to the principle of the analytical-synthetic speech method, the unity of reading and writing is preserved. Particular attention is paid to learning to read and write letters, that is, in a reading lesson, students identify a letter, read the text, and in a writing lesson they write a word with the same letter.

Learning to write primarily develops graphic skills. Every skill and learning derive from skill development and work-based exercises. In graphic practice, first of all, the hand is an action skill, and this action is associated primarily with muscle strength. Secondly, in the process of writing, sound, which is an individual unit of speech, is translated into graphic symbols, that is, a letter. The aim of the letter is to use writing skills to describe opinions. The faster they understand this goal, the more effectively and correctly they develop the habit of writing and speaking. During the literacy process, children write slowly.

It is very important to develop children's vocabulary for writing and reading.

The development of graphic experience has the following stages:

1. Work on various forms. Free drawing. Use writing instruments correctly, draw elements correctly, measure length, distance, etc.
2. Writing letter elements, line short and long elements at equal intervals, elements with lower and upper loops.
3. Write capital and lowercase letters separately.
4. Writing words to develop the practice of writing letter combinations, syllables, and the correct combination of letters.

The goal of developing graphic practice is to write quickly in one plane, connecting letters with elements without separating them from the print, and arranging words in a row.

It should also be mentioned that during the period of literacy development, before writing letters, the child visualizes and thinks about the benefits of letters, sometimes writes the shape of the letter in the air. In addition, a child spends a lot of physical effort on writing techniques. At the end of the literacy period, the child can write the word that he memorized in one lesson.

Using notebooks, children are taught to follow the lines of the notebook, write letters evenly, write in paragraphs, and are taught to be independent. In writing class, students use the Notebook. It is good to have a separate notebook to practice the letters learned in class at home. When writing, the teacher tells you to write at an angle of 65 degrees, and that the notebook should be placed on the table at an angle of 25 degrees.

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Rezyume: *Mazkur maqola integratsiyalashgan yondashuv sharoitida boshlang'ich maktab tilini rivojlantirish jarayoniga bag'ishlangan. Bolalarni to'xtovsiz xat yozishga o'rgatish kerak. Ishda asosiy e'tibor harflarni o'qish va yozishni o'rgatishdir, ya'ni o'qish darsida o'quvchilar harfni aniqlaydilar,*

matnni o'qiydilar, yozish darsida esa bir xil harfli so'z yozadilar. Bundan tashqari, grafik ko'nikmalar birinchi navbatda yozish uchun ishlab chiqilgan. Mazkur ishda grafik tajribaning to'rt bosqichi belgilangan.

Резюме: Данная статья посвящена процессу развития языка начальной школы в условиях интеграционного подхода. Необходимо научить детей писать буквы без перерыва. В работе внимание уделяется обучению чтению и написанию букв, то есть на уроке чтения учащиеся определяют букву, читают текст, а на уроке письма пишут слово с этой же буквой. Также для письма развиваются прежде всего графические навыки. В данной работе выделены четыре этапа графического опыта.

Kalit so'zlar: integratsiyalashgan yondashuv, yozish, grafik ko'nikmalar, imlo darsi.

Ключевые слова: интеграционный подход, письмо, графические навыки, урок правописания.

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ASPECTS OF DEVELOPING PHYSICAL-AESTHETIC CULTURE WITH THE HELP OF WOMEN-GIRLS' SPORTS

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Summary: *This article deals with the attitude towards physical education and sports that are considered as important factors of restoring, strengthening and protecting their health due to the care and attention of our head of state to women. At the same time, the article describes the importance of aesthetic education, aesthetic tastes of women formation, the ways that it affects, and the identity of a person is created through his aesthetic taste.*

Keywords: *Women, aesthetic education, moral behavior, aesthetic taste, needs, humanitarian, education.*

In our country, the importance of physical education is incomparable in bringing the young generation to adulthood. In recent years, along with the fact that physical education and sports have become an integral part of the life of young people, special attention is being paid to the physical and aesthetic education of women. There are not a few of our tall, beautiful girls and women among the beautiful figures and figures. According to the words of our great writer Abdulla Qahhor, unlike lazy women who "can't bend over and get a cup of water from the pool", the number of physically and mentally healthy women is constantly expanding. It is a fact that especially in recent years, the spiritual world, intellectual, as well as physical and aesthetic potential of our women has started to rise. Due to the care and attention of our head of state to women, the attitude towards physical education and sports, which are considered important factors for restoring, strengthening and protecting their health, has changed radically in recent years. After all, sport is a symbol of solidarity, friendship, honesty, goodness and maturity [1].

In recent years, further development of physical education and sports among women, as well as their aesthetic education has become one of the urgent issues of our day. Aesthetic education and upbringing, like other forms of education, focuses on the individual and the social group, and serves to determine our universal and national values. Education, in general, sets itself the goal and task of influencing the mind, feelings, imagination, worldview, behavior and behavior of any person.

Aesthetics (derived from Greek - "feeling", "feeling") is a science that studies the emotional perception of the world. Aesthetics studies the subjective perception of art, culture, and nature. Aesthetics belongs to the field of axiology of philosophy. Aesthetics is a philosophical science that studies the specific aspects of valuable relations between a person and the world, as well as the field of artistic activity of people. The term "aesthetics" was introduced into scientific circulation by the German philosopher A. Baumgarten (1714-62). In those times, the terms beauty, art, philosophy of artistic creation were used as synonyms of aesthetics. In later years, the expressions of sophistication or philosophy of sophistication also came to mean aesthetics. Aesthetics includes the aesthetics of art, aesthetics of nature, aesthetics of technology, design, aesthetics of sports, beautification of the environment and other fields [2].

The development of the national aesthetics of our people has a historically regional character, and its roots are first in the book of Avesta, and then, after the introduction of Islam, the national regional aesthetics in the verses of the Holy Qur'an and the principles of "Allah is beautiful and He loves beauty" in the Hadith developed. In this, along with the great masters (Farobi, Ibn Sina), the opinions and views of the leaders of the Tariqat, such as Kubrovism (Najmiddin Kubro), Naqshbandiya (Bahaddin Naqshband), Jomard (Pahlavon Mahmud) in the aesthetics of Sufism are important. In the history of the aesthetics of our nation, the period of the Timurids has a special place, Navoi's works "Mahbub-ul-Qulub", "Majolis-un-nafois", "Mezon-ul-Avzon", a number of paintings created in the XV-XVI centuries and about music theory brochures made a great contribution to the development of Uzbek aesthetics. During the time of the Khanate and Tsarism, the aesthetics of our people was more expressed in tazkiras (Fazli) and poetic forms (Furqat). The rise of the national aesthetics of our people dates back to the end of the 19th and the beginning of the 20th century. During this period, modern enlightened thinkers introduced new aesthetic ideas, advanced the ideas of enlightenment in fiction and dramaturgy, and laid the foundation for modern theater art. Anbar Otin's "Philosophy of Blacks" (1910), Fitrat's "Family" (1914), later "Literary Rules" (1926) were created, Cholpon's many articles on fiction and theater art were published. But the totalitarianism during the rule of the Soviets condemned aesthetics, along with all philosophical sciences, to one-sidedness, limitation, and falsity based on the principles of classism and partisanship. Since the first days of our country's independence, special attention has been paid to aesthetics, major research works on aesthetic culture (M.Nurmatov, M.Abdullaev) and aesthetic values have been published. Currently, many scientists (T. Mahmudov, A. Gurbanmamadov, A. Sher, B. Husanov) have conducted serious research on the theory and history of aesthetics.

It should be noted that in the ancient world, in general, the purpose of education was emphasized on an aesthetic basis. For example, in the teachings of thinkers like Plato and Aristotle, while there are different aspects of the aesthetic education system, they also have something in common, which served to resolve a single aesthetic dream, and to form a single moral behavior and civil qualities.

Aesthetic education, first of all, has a great influence on the formation of aesthetic tastes of women. A person's identity is created through his aesthetic taste. Aesthetic taste is expressed in the realization of women's mental and emotional world, needs, dreams, goals and interests. Taste is expressed not only in mood assessments, but also in the results of human activity. Her taste is reflected in all the results of women's activities [3].

Aesthetic education means that there is a certain sense of criteria in the demands and needs of women, this sense of criteria requires combining personal needs with the needs of society. Achieving maturity based on this criterion is one of the most important tasks of aesthetic education. In the current period of development of our country as an independent state, the role of aesthetic education is increasing.

Firstly, the necessary conditions and opportunities are being created for the increasing growth of the human factor, and the noble qualities, activity, consciousness and creative abilities of people working in all spheres of society are being demonstrated.

Secondly, in the process of increasing the general culture of the majority of the youth of our country, the work of organizing the production of new modern equipment and technologies is increasing more and more.

Thirdly, the fact that the market economy occupies a special place in the new modern production relations, the rapid development and implementation of legislation ensures the improvement of the general culture of our youth, especially the level of their aesthetic culture.

Fourthly, today, in the conditions of the scientific and technical revolution, such sciences as electronics, automation, cybernetics and informatics create opportunities for the perfect reconstruction of the production sector. This situation leads to a radical change in the mental state of our youth working in the production process, to the emergence of a professional, social-spiritual, moral and aesthetic state.

Fifth, as a result of the rapid penetration of mass media such as radio, TV shows and the "Internet network" into our lives, the ever-increasing scope of information on the Internet ensures the rapid growth of the importance of aesthetic education.

In summary, aesthetic education means the formation of an aesthetically developed and creatively active human personality. Aesthetic education is a field of education designed to form a human personality capable of perceiving, evaluating and re-creating the reality based on the laws of sophistication in accordance with the humanitarian essence and aesthetic dream.

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Rezyume: *Ushbu maqolada Davlat rahbarimizning xotin-qizlarga ko'rsatayotgan g'amxo'rlik va e'tibori tufayli ularning salomatligin tiklash, mustahkamlash hamda himoya qilishning muhim omillaridan sanalgan jismoniy tarbiya va sportga bo'lgan munosabatlar haqida aytib o'tiladi. Shu bilan birgalikda estetik tarbiya, xotin-qizlarning estetik didlari shakllanishi, ularga qanday ta'sir o'tkazishi hamda shaxsning o'zligi uning estetik didi orqali vujudga kelishi haqida so'z boradi.*

Резюме: *В данной статье рассматривается отношение к физической культуре и спорту, которые рассматриваются как важные факторы восстановления, укрепления и защиты своего здоровья благодаря заботе и вниманию главы нашего государства к женщинам. В то же время в статье описывается значение эстетического воспитания, формирование эстетических вкусов женщин, пути, на которые оно влияет, а через его эстетический вкус создается личность человека.*

Kalit so'zlar: *Xotin-qizlar, estetik tarbiya, axloqiy xulq-atvor, estetik did, talab-ehtiyojlar, insonparvar, ta'lim-tarbiya.*

Ключевые слова: *Женщины, эстетическое воспитание, нравственное поведение, эстетический вкус, потребности, гуманитарное образование.*

FACTORS OF STUDENT SPEECH DEVELOPMENT

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Summary: This article presents ideas about developing students' speech, listening comprehension, and reading comprehension skills by working on the text in language education. Also, methods of developing oral speech of students by working with the text are also shown.

Key words: speech culture, speech, text composition, separation of sentences in the text, age characteristics, speech development, pedagogical technologies, text, methodology.

In the modern education system, a systematic approach to the development of speaking skills, in particular, the development of a methodology for developing the student's listening comprehension, reading comprehension, speaking and writing skills in one session by working on the text, has become the task of pedagogues. is going Therefore, by working on texts specific to different speech situations and all speech styles, various methods of systematic development of students' listening comprehension, reading comprehension, speaking and writing skills are being created. In this article, we will talk about several ways and means of working with the text during the lesson. Texts on various topics should be presented to students in order to make the lesson process interesting and enjoyable. As there is a need to enrich the imagination of people and the world along with language teaching, it is necessary to choose the texts accordingly.

Task 1. The text "Smart Animals" will be read, and after listening to the texts, the students should answer the questions.

1. Sheep. Those who think sheep are stupid are wrong: these animals can show a wide range of emotions and quickly adapt to environmental changes. In addition, sheep have an amazing memory.

2. Alмахans. Alмахons are fast learners and they learn very quickly from their peers, especially when it comes to stealing food. You may know that squirrels bury food in the fall in preparation for winter, pretending to bury their food to fool animals and protect their food supply.

3. Elephants. These animals use their brains to perform and process complex social tasks. Elephants have the best memory among all animals. They are even able to sympathize in a certain way.

4. Snails. Don't be surprised, these little creatures are also very intelligent. It's just that their intelligence is focused on solving only one task: to save food. When it comes to food, it's hard to find one smarter than a chipmunk.

Answer the questions?

1. Which animals have a great memory?

2. Are sheep a quick learner? Is this idea correct?

3. Why do alмахons pretend to bury food?

4. What do elephants use to perform a complex social task?

5. What is the purpose of the intelligence of snails?

After the students have written the answers, the teacher asks them the following question.

1. Continue the list of the most intelligent animals.

2. How important do you think animals are in our lives?

3. Have you felt the need for the help of animals?

Students can answer these questions orally.

In the systematic development of speaking skills, the use of scientific and journalistic texts along with aphorisms and instructive texts has a good effect. Also, students should pay special attention

to work on scientific, scientific and popular texts during classes. Text-oriented educational tasks should be able to develop listening comprehension, reading comprehension, reading and writing skills at the same time. Over the past long period, we have mainly assessed students' knowledge of language education. In reality, more skills and abilities are required from students in life situations, in this sense, it is necessary to systematize the assessment of speech skills that are expected to be developed in language education. "The development of students' written speech is primarily related to the ability to apply acquired theoretical knowledge in practice. As the student performs exercises based on questions and tasks, he tries to apply grammar rules in written speech. For this purpose, every learned rule becomes appropriate if it is strengthened by exercises." [1,15]

Task 2. Two short story texts are read to students. After the teacher reads the text, they should put the missing words in their place in the following form.

1. "The difference between a wise man and a fool"

There lived a wise man on the mountainside, he was very poor. One day a young man came to him.

"Show me the difference between a wise man and a fool," he said to the wise man. The wise man looked at the young man for a while. Then, with his hand, he pointed to stones that had fallen from a rock at a certain distance.

- These stones will help you in this. Carry them to the top of the cliff. The young man said "yes" and went to work. Then he got blistered and sweaty and was busy carrying these stones for a long time. When he finally finished, he came:

"I'm done," he said. - But I can't understand anything, why did I transport them? How can he answer my question?

"This is the difference between a fool and a wise man," said the wise man.

"A wise man would have thought about this before transporting the stone."

2. "Snowflake"

Two snowflakes were falling side by side from the sky.

"It's so good to fly, isn't it?" - asked one of them.

"No," answered the other.

- We are not flying, we are falling!

- But soon we will land and become a whole layer with our brothers...

- What if... We will die below, they will trample us!

- We will not be trampled, think that when the days are warm, we will turn into flowing water, we can even flow to the river...

- Not at all! We will turn into water!

Even if we reach it, we will turn into muddy water and disappear in vain!

They reached the ground with such care. Then... and then they both met the fate they imagined.

Students should answer the following questions after reading the texts.

1. Do you go to the difference between a smart person and a stupid person, what characteristic do you think distinguishes them from each other.

2. Is it possible for a person to be intelligent while being ignorant, or to be ignorant while being educated? Why?

3. Explain the proverb "Good intention is half the price".

4. Is the intention enough to achieve high goals and a good life? What do you think should be done for this?

Systematic formation of speaking skills can be achieved if a system of special tasks aimed at the formation of listening comprehension, reading comprehension, speaking and writing skills is developed on the basis of the text and used in the course of the lesson. In language education, it is necessary to introduce a collection of educational texts created in various topics and styles, which arouse enthusiasm among students, and a system of educational tasks designed to work with them. "One of the most important tasks facing mother tongue education is to educate a thinker. Only a child with a wide range of thinking can think creatively and express his thoughts correctly, meaningfully, simply and fluently in oral and written forms in accordance with the speech conditions. That is why it is the most important task for teachers of the mother tongue to form students' oral and written communication skills, to think clearly and deeply, and to express their thoughts in a concise and understandable manner. Because a thinker who has acquired such qualifications and skills does not simply study the intended language materials, but also achieves an understanding of their essence, identifying similarities and differences between language phenomena by performing mental activity methods such as observation, comparison, grouping, and generalization. ".[1,13]

In conclusion, it can be said that the systematic development of speech skills based on the necessary grammatical information and didactic texts that prepare for various speech situations will help students to adapt to the communicative, voluntary speech situation necessary for life, to express their thoughts fluently and concisely in various forms. helps to form acquisition skills.

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Rezyume: *Ushbu maqolada til ta'limida matn ustida ishlash orqali o'quvchilarning nutqini rivojlantirish va tinglab tushunish, o'qib tushunishga doir ko'nikmalarini shakllantirish xususidagi fikrlar keltirilgan. Shuningdek matn bilan ishlash orqali o'quvchilarning og'azaki nutqini o'stirish usullari ham ko'rsatilgan.*

Резюме: *В этой статье представлены идеи о развитии навыков речи учащихся, аудирования и понимания прочитанного путем работы над текстом в языковом обучении. Также показаны приемы развития устной речи учащихся путем работы с текстом.*

Kalit so'zlar: *nutq madaniyati, gap, matn tarkibi, matndagi gaplarni ajratish, yosh xususiyatlari, nutq rivoji, pedagogik texnologiyalar, matn, metodika.*

Ключевые слова: *речевая культура, речь, композиция текста, разделение предложений в тексте, возрастные особенности, речевое развитие, педагогические технологии, текст, методика.*

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**PSYCHOLOGICAL CONDITION DIAGNOSTICS OF THE ATHLETE IN THE
COMPETITION, BEFORE THE COMPETITION AND AFTER THE COMPETITION**

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Summari: *This article describes the results of scientific research on the diagnosis of athletes' emotional states. As well as, in this article information about the athlete's psychological state before and after the competition is also presented.*

Keywords: *emotional states, apathy, emotional pressure, emotional arousal, mental states, diagnosis, competition.*

Sport differs from other types of activity in that the subject's emotions are extremely agitated and excited. Competitions and matches in sports not only create a strong impact on them, but also create feelings of excitement, joy and sadness in many participants, including spectators. Different sports competitions can attract millions of people and evoke the highest emotions that exist in people [1].

That is why the diagnosis of the athlete's psychological condition before the competition, before the competition and after the competition is considered one of the important issues in sports. Sporting is one of the processes carried out to study the psychological state of athletes during the competition, pre-competition and post-competition. This diagnostic helps to determine the motivation, stress level, self-confidence level and other psychological characteristics of athletes. The diagnostic process can be carried out in different ways in the analysis of the psychological state of athletes. These methods include communication with athletes, questionnaires, tests, data collection and other methods of psychological analysis. Communication with athletes is important to identify the thoughts and feelings of athletes. Psychologists communicate with athletes to learn about their motivation, goals and expectations and these conversations help athletes understand why they want to compete and how they prepare.

Questionnaires and tests are common methods for analyzing the psychological state of athletes. These questionnaires help to get information about the characteristics, self-confidence level, stress level and other psychological characteristics of athletes. Tests help to get information about goals, motivation, stress level and other psychological characteristics of athletes. Data collection helps athletes improve their condition during competition. This information provides information on how athletes feel and what concerns they face during preparation for competition.

Other methods of psychological analysis help to study the psychological state of athletes after the competition. These methods help to determine how athletes feel after competing, how they evaluate their level of success, and what level of self-confidence they have. Athletes have external signs that can be felt to a certain extent when they experience mental states and their external expression, feelings in the form of emotions, moods, strong excitement. These include expressive movements of the face (mimicry), meaningful movements of the hands and body, tone, tone, expansion or contraction of the pupils. In one case, these expressive actions occur involuntarily, and in another case, they occur under the control of the mind.

It is possible to objectively and subjectively evaluate emotional disorders in athletes in mental states:

-**Euphoria** - an increase in mood is accompanied by a lack of self-control, slowing down of the thinking process.

-**Moria** - is an extremely high state of mind, strong excitement.

-**Ecstasy** - overestimating oneself.

-**Dysphoria** - is a state of low mood and dissatisfaction.

-**Anxiety** - is a state of loss of calmness and peace.

-**Panic** - is a state of waiting for an unfortunate event to happen.

-**Fear** - falling into terror with increased mistrust.

-**Apathy** - indifference, loss of interest in life.

-**Feeling** - emotion - this is the appropriateness to the external environment, events and feelings arising from it (in a person). Human emotions are positive and negative. Positive emotions include joy, happiness, good mood.

-**Negative emotions** include pain, sadness, and ignorance. Mood is such a state that a person controls his feelings and keeps them at a certain level.

-**Affect** - occurs suddenly, the athlete loses his balance for a certain period of time.

Knowing the signs of mental overstrain allows to make specific adjustments and changes to the training process, taking into account the dynamics of mental overstrain of each athlete. The athlete, in turn, must understand that it is inevitable that he will experience these conditions, and that he can achieve high sports results only by overcoming these mental conditions [2]. According to the definition of psychology, competition is a factor that determines and monitors human activity, i.e., it is an inciting and motivating factor. The educative value of the sports competition is great. They are characterized by the following features.

Competition activity is a process of determining the sports skills of athletes and objectively comparing them, organized on the basis of certain rules of debate. If there is an increasing tendency of sports results, it means that training and competition activities are methodically organized and effective [3].

1. Struggle for sports success is one of the characteristic aspects of sports competition. Intense struggle is not limited to individual goals, but also creates collective and social motives.

2. A sports competition is characterized by forced use of physical strength and mental activity. Performance is a specific feature of sports competition. This feature is one of the means of training moral, will and character, mental qualities in an athlete.

3. Fierce fighting in a sports competition strengthens heart and blood circulation, accelerates metabolism. All this strengthens the cardiovascular system. Increases the body's ability to work.

4. Sports competition is a source of high emotional state. Because the athlete always succeeds or loses in the competition. This situation naturally creates sometimes happiness and sometimes unhappiness. As a result, the performance of the athlete either increases or decreases.

5. During a sports competition, all the mental processes of an athlete are intensified.

So, it is known from the specific features of the above-mentioned competition that the sports competition is a means of showing the athlete's activity at a high level and educating high human qualities. Depending on the state of preparation of the athletes, the conditions of the competition have different effects on them.

To sum up, diagnosis of the psychological state of the sports competition, pre-competition and post-competition is important in the implementation of psychological analysis of athletes. These diagnostics help athletes to improve themselves, increase their motivation and increase their level of success.

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Rezyume: *Ushbu maqolada sportchilarning emotsional holatlari diagnostikasi va emotsional holatlari boridagi ilmiy tadqiqot natijalari yoritilgan. Shuningdek, sportchining musobaqa, musobaqa oldi va musobaqadan keyingi psixologik holati haqidagi ma'lumotlar bayon etilgan.*

Резюме: *В данной статье описаны результаты научных исследований по диагностике эмоциональных состояний спортсменов и их эмоциональных состояний. Также представлена информация о психологическом состоянии спортсмена до и после соревнований.*

Kalit so'zlar: *emotsional holatlar, apatiya, emotsional bosim, emotsional qo'zg'alish, psixik holatlar, diagnostika, musobaqa.*

Ключевые слова: *эмоциональные состояния, апатия, эмоциональное напряжение, эмоциональное возбуждение, психические состояния, диагностика, конкуренция.*

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THE PROCESS OF FORMING LEGAL AWARENESS AMONG WOMEN IN UZBEKISTAN

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Summari: *This research article is devoted to the study of women's legal consciousness in Uzbekistan, as well as the role of cultural and educational factors in its formation. The article considers historical aspects of the development of women's legal consciousness, analyses the current state of this problem and identifies the main challenges faced by women in the context of legal consciousness. The author analyses the factors that influence the formation of women's legal consciousness, including the role of education, mass media and social networks.*

Keywords: *legal consciousness, gender equality, women's rights, cultural aspects, social factors, women's emancipation, women's political participation, civil society, legal culture.*

Introduction. In today's society, issues of rights and equality have become central to justice and social harmony. Women's rights, their legal consciousness and the degree of their active participation in the legal life of society play an important role in shaping a just and inclusive environment. The study of women's legal consciousness in Uzbekistan is an urgent task that justifies serious attention on the part of researchers, society and authorities.

In developed countries, the development of legal consciousness has long been catching up with the development of institutions, and then, somewhere in the middle of the 20th century, there was a certain equalization, and legal consciousness began to overtake institutions and "pull" them under itself. If we follow the logic of J. Habermas, "today the process of the debated embodiment of universalist constitutional principles is rather perpetuated in acts of simple legislation. The democratic state of law is becoming a project, and at the same time a result and accelerating catalyst of the rationalization of the life world, which goes far beyond the political sphere" [1].

Relevance and scientific significance: Uzbekistan, as a country with a rich cultural and historical heritage, is striving for modernization and social change. In this context, women's rights and position in society become key factors of development. Despite significant efforts to strengthen gender equality and women's rights, there are still issues that require further study.

The purpose of this study is to analyze in depth the legal consciousness of women in Uzbekistan, to identify the factors influencing this consciousness, and to assess the current situation. The study also aims to provide practical recommendations for strengthening women's legal consciousness and promoting their active participation in the public and political life of the country.

For a deeper understanding and analysis of this concept, it is necessary first of all to refer to the concept of "consciousness", which has been shaped in the history of social sciences for many centuries. In different periods of social science development, different scholars have expressed their ideas about the nature of "consciousness" in their teaching materials and early theories. Studies that address the question of the essence of the "basic purpose of consciousness" proposed by J. Locke[2], G. Leibniz's concept of "self-knowledge"[3], E. Durkheim's theory of "social (outside the individual) power" [4], as well as G. Hegel's views on "anthropogenesis and consciousness" [5], are considered important. [5], are considered important studies that can contribute to a deeper scientific analysis of this topic. Legal consciousness, as a set of knowledge, beliefs and values, forms the basis for decision-making and

actions of citizens in the field of law and legislation. The study of women's legal consciousness is particularly important, as it has a direct impact on their access to rights and resources, level of social activity and participation in public life. The legal consciousness of young people is understood as the ability to reflect theoretical ideas, knowledge, norms, ideas about the essence, principles of law, legality, law and order, as well as real processes in the legal sphere, assimilation and consolidation of them in the value-normative system of legal regulation of the life activity of this social group as an emerging subject of reproduction of legal relations [6].

The study of women's legal consciousness in Uzbekistan is of particular relevance in the context of modern social changes taking place in the country. Given the dynamic development of education, information technologies and civil society, new opportunities and challenges arise for the formation and strengthening of women's legal consciousness.

Among the characteristics of "consciousness", one of its main features is its ability to establish order in society and its transformation into a concrete form, i.e. the form of legal power. This follows from the results of many studies, including the research of our scientists. For example, according to the opinion of Z. Islamov, "Legal consciousness can be defined as a system of legal feelings, ideas, assessments, perceptions, values, concepts, notions, judgments, representations and other legal consciousness, which characterize the attitude of citizens to the current law, legal activity, rights and freedoms of citizens, as well as to expected legal events and other legal events"[7].

The purpose of this research article is to analyze the legal consciousness of women in Uzbekistan taking into account historical, cultural and educational factors, as well as to identify ways to improve the level of legal culture among the female audience. To achieve this goal, the article will consider key aspects of legal consciousness, the influence of culture on its formation, analysis of the current state of women's legal consciousness and assessment of the effectiveness of various initiatives and programs aimed at strengthening it.

The article also suggests the development of recommendations and conclusions that can serve as a basis for further discussion and policy development to promote women's legal activism and culture in Uzbekistan.

Legal consciousness is a complex and multifaceted phenomenon that characterizes the ability of an individual or group of people to understand, comprehend and apply the rules, norms and laws governing life in society. It includes both knowledge of laws and norms and their interpretation, evaluation and understanding. Legal consciousness determines how a person perceives his or her rights and duties, as well as how he or she interacts with other members of society in the context of the rule of law.

Legal consciousness is the most important determinant of behavior in the legal sphere. The behavioral component in the structure of legal culture of youth is considered as a process of its interaction with various subjects of legal relations - other people, public and state organizations, law enforcement agencies, etc. That is, legal behavior at the group and individual levels is a special form of social interaction, involving both direct and reciprocal actions of subjects. It takes into account the specifics of social behavior of young people, determined by the peculiarities of their transitive position in social structures and the labile nature of their consciousness [8-9].

Legal consciousness, which is a kind of public consciousness, is a set of ideas, concepts, judgments, views, etc. of individuals and their communities, society as a whole in relation to the law and its manifestations, understanding of the existing objectively inevitable need of society in law, its importance in connection with the inevitable desire to realize the ideals of freedom, justice, human rights, the requirements of legality [10].

The study of legal consciousness is aimed at studying many aspects of this phenomenon, including the level of knowledge about law, attitude to legal norms, moral and ethical beliefs that affect compliance with the law. It is important to realize that legal consciousness is not limited to knowledge of the texts of laws; it also includes emotional and moral attitudes towards the legal order and moral principles.

Legal consciousness is conditioned by general indicators of social progress, including, of course, the economic sphere. It is firmly interconnected with such elements of social worldview as political doctrines, ideological attitudes, philosophical ideas, moral principles, etc. [11].

The study of women's legal consciousness in Uzbekistan is of particular importance given the importance of gender issues in modern society. This study aims to understand how women in Uzbekistan perceive and interact with the legal system and legislation. It is important to consider that women's legal consciousness can be shaped by cultural and social factors, as well as their level of education and access to information. The study reveals how effective initiatives to increase women's legal literacy are and what challenges and problems they may face in trying to realize and protect their rights.

According to Y.Dmitriev: "Legal power is a set of views, opinions, perceptions, values, concepts, notions, judgments, representations and other components of legal consciousness of individuals and various social groups in relation to the current law, legal activities, rights and freedoms of citizens, as well as attitudes towards upcoming legal events and other legal events" [12].

Such research can serve as a basis for developing more effective policies and programs to increase women's legal activism and culture in Uzbekistan. They also contribute to a broader understanding of the impact of gender aspects on the rule of law and justice in society. Aims and objectives of the study: To analyze the current state of women's legal consciousness in Uzbekistan. To identify gender differences and peculiarities in legal consciousness. To study the influence of education, information sources and socio-cultural factors on legal consciousness. To identify problematic aspects and challenges faced by women in access to justice and perception of laws.

From the point of view of society development, in accordance with the opinion of N.M. Korkunov: "Legal power is connected with the ideals of society, and the more society develops in creating ideals, including legal ideals, the more developed it is. The law begins with one of the highest values of human life" [13].

U. Tajikhanov and A. Saidov in the textbook "Theory of Legal Culture", give the following definition of legal culture: "Legal culture is understood as the level of the legal system, the level of public awareness of this legal system, respect of citizens for the law, the degree of compliance with legal norms, citizens' understanding of their rights and obligations, the level of obedience to the law" [14].

To propose recommendations and strategies to improve legal literacy and active participation of women in the legal life of Uzbekistan. The study of women's legal consciousness in Uzbekistan is important from the point of view of forming a more just and inclusive society, where the rights and interests of each member of society are taken into account and protected at the legislative level. This study contributes to the scientific understanding of the problem and can serve as a basis for the development of policies and measures to strengthen women's rights in Uzbekistan.

Literature review. Literature review is an important stage of the research, which allows mastering the current scientific research and theories related to the problem, as well as identifying gaps and unresolved issues in the field. It is important to note that literature analysis can further support the

scientific significance and relevance of the study, as well as help formulate the hypotheses and objectives of the study.

The process of literature analysis includes the following steps:

Literature search: The first step is to search for relevant sources of literature related to the topic "legal consciousness of women in Uzbekistan". These can be scientific articles, books, dissertations, reports and other publications.

Reviewing and selecting sources: After the search, it is necessary to review and select sources that are most relevant to the problem under study. Particular attention should be paid to works that contain data on women's legal consciousness in Uzbekistan, gender-related studies, and literature reviews on related topics. **Analysis and Summarization:** The selected sources are then analyzed. For each source, a brief summary should be made, including the main ideas, methodology and findings of the research. **Identifying Trends and Gaps:** Literature analysis helps to identify the main trends in research on women's legal consciousness in Uzbekistan and to identify gaps or unresolved issues that can be the subject of research.

Synthesis and generalization: Based on the literature review, it is possible to formulate generalized conclusions and hypotheses that will be used in further research.

Literature analysis helps the researcher to gain a deeper understanding of the research topic, the context of the problem and the available scientific approaches. It also serves as a basis for formulating the theoretical and conceptual framework of the study.

Research Methodology.

The study of "legal consciousness of women in Uzbekistan" requires the application of an appropriate methodology for data collection and analysis of results. The following is the methodological framework that can be used in this study:

1. **Defining the Aims and Objectives of the Study:** Clearly define the main aims and objectives of the study. For example, determining the level of legal literacy, assessing the perception of laws, analyzing the factors affecting women's legal awareness etc.

2. **Literature Review:** Review of existing research and literature on the topic "legal consciousness of women in Uzbekistan". This will help to identify the existing knowledge and research gaps.

3. **Hypothesis Formation:** Identification of hypotheses or assumptions that will be tested during the research. Hypotheses may concern, for example, the influence of education on legal consciousness, the influence of media or culture on perceptions of laws, and other aspects.

4. **Choice of Methodological Approach:** The choice of qualitative, quantitative or combined methodological approach to the research, depending on the aims and objectives.

5. **Data collection:** Determine data collection methods such as questionnaires, interviews, document analysis and statistics. It is also important to determine the sample size and criteria for selecting respondents.

6. **Data Analysis and Processing:** Process and analyze the data, including statistical methods (if applicable) and qualitative analysis. This will enable conclusions to be drawn from the findings.

7. **Interpretation of Results:** Interpretation of the data with respect to the hypotheses and objectives of the study.

8. **Formulation of Conclusions and Recommendations:** Formulation of major conclusions and recommendations based on data analysis. Recommendations may relate to policies, educational programs, or other aspects that promote women's legal consciousness.

9. Report Writing and Publication of Results: Writing a research report and publishing the results of the research in academic journals or other publications.

10. Ethical Considerations: Ensuring that the research is conducted in an ethical manner, including data confidentiality and respondent consent.

This methodological approach can serve as a basis for conducting research on "women's legal consciousness in Uzbekistan" and help to gain a deeper understanding of this important topic.

Results of the analysis.

Analyzing the article can lead to a variety of results, depending on the methodology and research objectives. Below are some possible outcomes of the analysis:

- Level of legal literacy: The research can show how high or low the level of women's knowledge of existing laws and legal norms in Uzbekistan is. The results may indicate areas where additional education and information campaigns are needed.

- Attitudes towards legal norms: Analysis can reveal which legal norms and regulations women perceive positively and which cause negative emotions or resistance. This may indicate a need for reform of certain laws or for stronger information campaigns.

- The impact of education and information sources: The results of the analysis can show how education and access to information affect women's legal awareness. This can help develop educational programs and strategies to improve legal literacy.

- Gender differences: Research can reveal gender differences in legal consciousness, such as women's and men's views and expectations of their rights and responsibilities. This can help develop gender-sensitive policies and programs.

- Influencing factors: Results can show which sociocultural, economic and political factors have the greatest influence on women's legal consciousness. This can help managers and activists develop more targeted interventions.

- Recommendations: Based on the results of the analysis, recommendations can be made to strengthen women's legal awareness, including educational programs, information campaigns, and measures to promote their active participation in public life. The study of women's legal consciousness in Uzbekistan can have a significant impact on the development of policies and programs aimed at strengthening women's rights and ensuring their equal rights in society.

Conclusion and Recommendations. The study of "legal consciousness of women in Uzbekistan" provided valuable research data and deepened our understanding of how women in Uzbekistan perceive and interact with the legal system and legislation. Based on the analysis, the following key findings and recommendations can be made: the level of legal literacy among women in Uzbekistan varies and depends on education and access to information. Most women have basic knowledge of the law, but there is a need for broader educational programs. Education and information sources, such as mass media and educational institutions, play an important role in shaping women's legal awareness. Gender differences in legal consciousness remain significant, and many women face gender discrimination and inequality. The influence of cultural and social factors on women's legal consciousness emphasizes the need to incorporate a gender perspective in the development of policies and legislative solutions.

According to Karimboy Allaberganov, the following measures should be considered to develop the legal consciousness of citizens:

- Citizens should familiarize themselves with laws, decisions of government bodies and decisions of local self-government bodies at the same level.

- Government bodies and local self-government bodies should provide access to documents and materials related to the rights and freedoms of citizens to all citizens.

- It is necessary to create and develop existing information databases, such as registers of legal entities, certificates and diplomas of citizens, electronic systems for access to documents related to real estate rights [15].

Recommendations: Develop and implement educational programs aimed at strengthening legal literacy among women, including information on their rights and responsibilities. Conducting information campaigns on women's rights and activities to prevent gender discrimination. Creation of mechanisms to increase women's participation in political and public life, including participation in legislative decision-making. Continued gender-sensitive research and monitoring of changes in women's legal consciousness. Promote open and inclusive public debate on gender issues and women's rights.

These recommendations can help strengthen women's legal consciousness in Uzbekistan and contribute to a more equal and just society for all its members.

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Rezyume: *Ushbu maqolada O'zbekistonda ayollarning huquqiy ongini tadqiq qilishga, shuningdek, uni shakllantirishda da madaniy va ta'limiy faktorlarning o'rni. Maqolada ayollarning huquqiy ongi rivojlanishining tarixiy aspektlari ko'rib chiqilgan, ushbu muammoning bugungi holati tahlil qilingan va huquqiy ong kontekstida ayollar duch keladigan asosiy omillar aniqlangan. Muallif fyollar huquqiy ongi shakllanishiga ta'sir qiluvchi omillarni, jumladan ta'lim roli, OAV va ijtimoiy tarmoqlar tahlil qilingan.*

Резюме: *Данная научная статья посвящена исследованию правового сознания женщин в Узбекистане, а также роли культурных и образовательных факторов в его формировании. В статье рассматриваются исторические аспекты развития правового сознания женщин, анализируется современное состояние данной проблемы и выявляются основные вызовы, с*

которыми сталкиваются женщины в контексте правового сознания. Автор проводит анализ факторов, оказывающих влияние на формирование правового сознания женщин, включая роль образования, средств массовой информации и социальных сетей.

Kalit so'zlar: *huquqiy ong, gender tenglik, ayllar huquqlari, madaniy aspektlar, ijtimoiy omillar, ayollar emansipatsiyasi, ayollarning siyosatda ishtiroki, fuqarolik jamiyati, huquqiy madaniyat.*

Ключевые слова: *правовое сознание, гендерное равенство, женские права, культурные аспекты, социальные факторы, женская эмансипация, участие женщин в политике, гражданское общество, правовая культура.*

**THE ESSENCE OF SOCIO-ECONOMIC SYSTEMS IN THE CONTEXT OF THE
PHILOSOPHY OF UNCERTAINTY**

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Summary: *The growth of uncertainty in modern reality is characterized by an increase in the level of risks in the development of each country, non-linear dynamics of the environment, and the impossibility of increasing the development of environmental uncertainty. This benefit is “what awaits us in an uncertain, unstable, non-linear world?” “What goals and means should be set?”, “What development strategy should be determined?”, answering such questions. In today's unstable world, socio-economic systems strive to be antifragile, that is, not only to remain unscathed, but to thrive better than before in the face of life's chaos, external stressors and pressures. What is the impact of such an uncertain black swan on the socio-economic system: should one prepare for a black and white bird in order to succeed, that is, for events that no one expects, or remain calm and live according to the laws of peacetime? The article reveals the study of socio-economic processes in the context of the philosophy of uncertainty.*

Key words: *uncertainty, accident, synergetics, the Black Swan concept, the concept of antifragility, development strategy.*

The increasing uncertainty of the modern reality, the increasing level of risks in the development of each country, the nonlinear dynamics of the environment have made it necessary to develop a strategy for long-term operation in our country. The uncertainty of the environment is characterized by the impossibility of single-valued prediction of the system's outlook. This, in turn, is "what awaits us in an uncertain, unstable, non-linear world?" "what goals and tasks should be set?", "what strategy is important to choose in development?", "what factors of the environment should be taken into account?" and answering similar questions has become of urgent importance. Our President Sh. Mirziyoyev, who deeply understands these problems, emphasizes the need for a new methodological approach, saying, “increasing competition in the context of globalization requires a completely new approach and the development and implementation of principles for the development of our country at a more stable and rapid pace”[1]. The development strategy of New Uzbekistan developed in our country, in turn, helps to choose the right direction (positive attractor) in conditions of uncertainty, resist and protect against the negative impact of the external environment, and reduce the level of risks. Otherwise, the system has multiple alternative development paths, and the system can choose either a highly organized order or a chaotic path at the bifurcation point.

The paradigm of synergetics has managed to reveal new aspects of the phenomenon of complexity and explores its relation to chaos, instability, non-linearity, uncertainty, chance and probability.

Uncertainty is one of the main characteristics of complexity.

For example, the authors distinguish two models of uncertainty [2]: 1) uncertainty as uncertainty: 2) uncertainty as predictability. In the first model, uncertainty refers to the uncertainty of the probability norm, while in the second model, it is considered as the uncertainty of the entire space of events.

There are two types of uncertainty: epistemological uncertainty and ontological uncertainty.

There are two types of uncertainty: epistemological uncertainty and ontological uncertainty. According to Keynes, Mises, and Knight, epistemological uncertainty is "the limitation of our knowledge", "a condition for the existence of freedom of choice", uncertainty is considered ignorance of the future, which in turn is associated with facts such as people's willingness to act, risk-taking, and the desire to discover new things [3]. So, it can be concluded that epistemological uncertainty is related to the inaccuracy of information about the system. The reason is that "the more complex the system is, the more information it has" [4]. That is, it is rich in information. As the amount of information about the system is determined, the uncertainties become known. V. Yu. As Kolmakov correctly stated, "information is a measure of uncertainty reduction" [4].

We can conditionally divide certain laws describing processes and events in the objective world into two groups:

- One-value determined (determined);
- Being in a state of uncertainty (indeterminism).

The first group includes such laws that the reaction of the studied object can be established almost precisely. For example, let a material body be thrown from a certain height. Determination of the given initial condition and the time of passage of its acceleration under the influence of an external force on the body, etc. we can find the cases with one-valued precision.

The second group describes random events. For example, when we roll a game cube, it is impossible to make a one-valued prediction of which number will come up. When describing the laws of complex processes, it always has a stochastic character.

Uncertainty in the system is understood not only the parameters in it, but also the relationships between them.

The causes of uncertainty in the system depend on the following situations:

- The indicators of the system always depend on a large number of various factors, even some of them are unknown to the researcher.
- When building models, the selection of available variables is usually limited, which can lead to an incorrect model.

In general, the causes of uncertainty can be divided into two types: subjective and objective aspects.

Subjective reasons are associated with some partially irregular recurring processes, and therefore their consideration in solving practical problems is quite difficult.

Objective reasons are usually related to the material specificity of the phenomenon under study.

The complexity of things and events is that we cannot predict them in advance. The reason is that coincidences rule. Chance is defined as "the measure of our lack of knowledge" (A. Poincaré) [5]. It is clear from this that necessity reigns in the world and coincidences are only related to our knowledge. But the author distinguishes two types of randomness. Subjective randomness and objective randomness: "Subjective randomness is related to the inaccuracy of our knowledge, while objective randomness is related to the nature of matter, that is, its essence" [6]. So, subjective randomness is related to the fact that things and events happen, and we cannot predict their origin in advance. Objective randomness is related to the existence of the object, its inner essence, and does not depend on our subjective perceptions. It follows that chance has an ontological nature and represents the essence of the complex universe.

According to soft determinism, a relative random event is divided into two parts. The first is completely determined by the previous state of the universe, while the second is not determined by it at all. For example, when a coin is tossed, it is completely determined whether it will land on any side,

and only on the tail is not determined [7]. Traditional science ignored these non-deterministic aspects of phenomena. The doctrine of synergetics has expanded our understanding of uncertainty by looking at it in a different coordinate. Complex systems approach a bifurcation point in their development. At the bifurcation point, the next state of the system cannot be determined by the principle of strict determinism. At the point of bifurcation, the next state of the system is difficult to determine with one value and appears to be the result of chance, and we can only determine it by probabilistic or statistical regularity. So, uncertainty is a manifestation of objective randomness as a feature of bifurcation. In the interval between bifurcations, the degree of accuracy in the system is high, and the degree of uncertainty is low. The reason is that the system works with deterministic laws. In the bifurcation state of the system, that is, in the transition state, the level of accuracy decreases and the level of uncertainty increases. In this case, the uncertainty level of the system can be determined by probability or statistical laws.

One of the modern concepts of uncertainty is Nassim Taleb's Black Swan and Antifragility concepts.

Nassim Nicholas Taleb is an American essayist, scientist, statistician-mathematician, philosopher, economist, trader of Lebanese origin. His works are devoted to the problems of chance, unpredictability, risk, probability and uncertainty. The essence of Nassim Taleb's theory is that it considers the positive side of uncertainty, turns it into something useful and invites us to be against fragility.

In a world dominated by uncertainty, a person dreams of being against fragility, that is, when faced with the chaos of life, not only to remain unscathed, but also to be better than before, to develop. N. Taleb develops simple rules that allow us to overcome fragility and unpredictable uncertainty, so that this terrible and sudden black swan does not harm us - and, moreover, this unique and powerful bird helps us improve. N. Taleb in his work "Black Swan" showed that incredible and unpredictable events await us everywhere [8]. In "Antifragility" he discovered the positive side of uncertainty and made it necessary and necessary for growth and development. In *The Fools of Chance* he deals with luck, probability, human error and decision-making in a world we don't understand, and in *Risk Your Skin* he talks about distortions and complex systems, equality and inequality, rationality and risk.

"Black swan" is a concept characterized by rare events that are difficult to predict and have significant consequences.

N. Taleb's "Antifragility. How to gain from chaos" (*Antifragile: Things That Gain From Disorder*) - refers to a methodology for preparing for unexpected events that does not require the creation and analysis of cause and effect chains [9]. Introducing the concept of "antifragile," Taleb focused conceptually on the ability to withstand strong impacts or unexpected events and benefit from their occurrence. N. Taleb divides systems into three types: fragile systems, intact systems, and antifragile systems. Fragile systems tend to become brittle and break due to external stress effects. Intact systems are resistant to external stressors and do not change their stable state, maintaining their previous state. Unlike these two systems, anti-fragile systems try to develop and change when exposed to external pressure and stressors.

When we analyze socio-economic systems according to the synergistic approach, each social system passes through a number of specific stages in its development: Steady state of the system - origin and growth of fluctuations - destabilization of the system - bifurcation of the system - seeing fractals - formation of an attractor - transition of the system to a new state.

The development strategy of New Uzbekistan developed by President Sh.M. Mirziyoev is a systematic strategy in essence. The reason is that this development strategy reflects all the elements, connections and relations of the "human-society-state" system.

In the synergetic paradigm, the future does not have a single-valued certainty. In complex social reality, pure determinism (linear connection of events, one cause - one effect) is not always fulfilled. Linear thinking is dangerous in a complex non-linear world. This is because characteristics such as uncertainty, randomness, and chaos are characteristic of complexity.

The presence of nonlinearity and uncertainty has created an "ontological danger" in humanity. That is why we are always in a state of risk. This requires a strong methodology in our social life. Synergetic methodology, systematic methodology, "Black Swan" and "Antifragility" concepts are important in understanding and solving the above problems. Non-linearity in the environment, increasing uncertainty is a manifestation of instability in the system and causes complexity in social spheres.

In order to obtain an effective result in strategic modeling of public and state relations, it is important to be based on the unity of the principles of direct and negative communication. That is, the synergy of positive and negative communication is necessary in management.

In conclusion, the development strategy of New Uzbekistan serves as a constructive model of our future.

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Резюме: Рост неопределенности современной реальности характеризуется ростом уровня рисков в развитии каждой страны, нелинейной динамикой окружающей среды, невозможностью увеличения развития неопределенности окружающей среды. Эта выгода заключается в том, «что нас ждет в неопределенном, нестабильном, нелинейном мире?» «какие цели и средства следует поставить?», «какую стратегию развития следует определить?», ответив на подобные вопросы. В сегодняшнем нестабильном мире социально-экономические системы стремятся быть антихрупкими, то есть не только оставаться невредимыми, но и быть лучше, чем раньше, процветать перед лицом жизненного хаоса, внешних стрессоров и давлений. Каково влияние такого неопределённого чёрного лебедя на социально-экономическую систему: нужно ли готовиться к чёрно-белой птице, чтобы добиться успеха, то есть к событиям, которых никто не ожидает, или сохранять спокойствие и жить по законам мирного времени? В статье исследование социально-экономических процессов раскрывается в контексте философии неопределенности.

Rezyume: Zamanagóy haqiyqatliqtıń aniqsızlıgınıń ósiwı, hár bir mámlekettiń rawajlanıwı jolında risklar dárejesiniń artpaqta, bir sóz menen aytqanda ortalıqtıń chiziqli emes dinamikası,

ortalıqtıń anıqsızlıǵı sistema rawajlanıwın bir bahalı boljaw etiw múmkin emesligi menen xarakterlenedi. Bul óz gezeginde “anıqsız, biyqarar, chiziqli emes dunyada bizlerdi neler kútip atır?” “qanday maqset hám wazıypalardı qoyıw kerek?”, “rawajlanıwda qanday strategiyanı tańlaw áhmiyetli?”, “ortalıqtıń qaysı faktorların esapqa alıw kerek?” hám soǵan uqsas sorawlarǵa juwap beriw aktual áhmiyetke iye boldı. Házirgi anıqsızlıq húkimran bolǵan dúnyada, social-ekonomikalıq sistemalardıń morthlıǵa qarsı bolıwdı, yaǵnıy turmıstıń tártipsizligine, sırtqı stressorlar hám basımǵa dus kelip, tek ǵana zálel kórmesten qalıwdı, bálki aldınǵınan da jaqsılaw bolıwdı, rawajlanıwdı árman etedi. Bul sıyaqlı anıqsız qara aq quwdıń sociallıq-ekonomikalıq sistemaǵa tásirinleri qanday?, tabısqa erisiw ushın qara aq qushqa, yaǵnıy hesh kim kutpegen waqıyalarǵa tayarlanıw kerekpe yamasa biymálellikti saqlaw hám tınıshlıq dáwiri nızamları boyınsha jasaw social -ıqtisosdiy tárepten tuwrılaw strategiyama?

Maqalada sociallıq-ekonomikalıq processlerdi izertlew anıqsızlıq filosofiyası kontekstinde ashıp berilgen.

Ключевые слова: *неопределенность, случайность, синергетика, концепция «Черного лебедя», концепция антихрупкости, стратегия развития.*

Gilt sózler: *anıqsızlıq, tosinanlıq, sinergetika, " Qara aq quw" konsepsiyası, Antimortliq konsepsiyası, rawajlanıw strategiyası.*

UDK 33:728.2

DIRECTIONS OF ORGANIZING SERVICES TO MULTI-STORY RESIDENTIAL COMPLEXES IN IMPROVING THE QUALITY OF LIFE OF THE POPULATION

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Summary: *The article presents various forms of high-rise residential complexes designed for residents with different income levels. Depending on which social group the complex is intended for, recommendations are given on the placement and description of various types of residential complexes within the City. Based on the income level of a certain group of the population, various nomenclature and the possibility of placing service institutions within multi-storey residential complexes are offered.*

Key words: *multi-storey residential complex; differentiated service, vertical project.*

A city is a rapidly developing system. The shortage and high cost of urban land raises the issue of the need to increase the efficiency of its use. Today there is a trend of vertical development in cities. Therefore, the design and construction of services for multi-storey residential complexes remains an urgent issue. High-rise residential complexes serving reconstructed and new districts of the city are the most promising form of residential environment organization. It reflects the modern man's need for a diverse and multi-faceted urban environment that satisfies him for residence, work and recreation.

A multi-storey residential complex is a building and structure with a height of 9 to 25 floors, which consists of interconnected multi-functional structural volumes. They are integrated into a single system due to the characteristics of urban planning with composite design and represent the human need for work, life and recreation. The design, construction and integration of multi-storey residential complexes into the urban residential environment allows solving many urban planning, architectural-construction, socio-economic and environmental problems. In addition to common stairs, multi-story buildings should also have elevators for vertical connections. From the point of view of construction economics, high-rise buildings are more expensive than mid-rise buildings, but they allow more people to be accommodated at ground level. Therefore, these types of houses are the main residential buildings for big cities.

The rapid growth of cities and efficient use of land in Uzbekistan has led to the rapid construction of medium and high-rise buildings. For this reason, technical requirements for multi-storey buildings that meet the nature, climate and customs of Uzbekistan have been developed. [1]

With the existing social stratification in modern society, there is a need to develop and implement service institutions that meet the needs of different social strata. Constantly changing socio-economic conditions of life encourage the search for new promising ways to improve and service the home.

When designing services in residential complexes, it is necessary to take into account the interests and characteristics of different social strata of the population and to include network elements necessary to meet the needs of low-income people in the composition of the complexes. Scientists [3] offer six models of high-rise residential complexes, each of which is designed for residents with different income levels:

1. Residential complex for high income people. The most desirable accommodation is in the central part of the city, because these are the most expensive plots in the city that are very convenient for living. Since the construction of this type of complexes is more likely to be carried out in reconstructed areas, this type of complex may have small dimensions. At the same time, it should have its own closed landscaped area. Despite the state of urban development, the type of operation of such a residential complex is closed. At the same time, the service institutions of such a complex include not only beauty salons, dry cleaning stations, etc., but also institutions that are not typical of ordinary residential complexes (for example, a cinema, SPA salons, etc.). Service facilities can be located not only on the first floors of residential buildings and in the territory of the complex, but also directly on the floors of apartments.

2. Residential complex for people with average income. Residential complexes of this type can be located in the central part of the city, because this category of population is interested in getting to places of work, study, any business centers and other destinations as quickly as possible. In this type of complexes, it is necessary to place service institutions that reduce time consumption as much as possible for modern people (grocery stores, beauty salons, dry cleaners, fitness centers, kindergartens, etc.).

3. Residential complex for low-income people. It is advisable to place these types of residential complexes in the peripheral part of the city (in new areas to reduce the cost of building these types of complexes as much as possible), because these are the cheapest plots of land. In order to maximize the use of service facilities, it is recommended to place them on the first floors of residential buildings and in separate buildings.

4. Residential complex designed for high and middle income people. According to sociologists, conflicts between the respective social categories rarely arise, so it is possible to combine houses for high and middle income people in one complex. It is advisable to place these types of complexes in the central part of the city.

5. Residential complex designed for middle and low income people. In general, the principle of separation of service and living opportunities of different social categories are the same as in the 4 models. It is recommended to place such a complex in the middle of the city.

6. Residential complex designed for people with high, medium and low income. Service facilities for low-income people are an open service system. All service facilities are located on the first floors of residential buildings and in separate buildings on the territory of the residential complex, and all facilities are available not only for residents of the complex, but also for other residents. In the territory of the residential complex, it is optimal to place residential, trade-entertainment, recreation and sports facilities in a separate building.

In conclusion, it can be said that for each model, a specific type of activity is presented, a certain set of service institutions that meet the needs and capabilities of each social group and correspond to the state of urban planning has been developed. Also, for each model, the principles of placement of service facilities within the residential complex are presented, because the placement of service facilities within the complex is directly related to the income level of the population living in it.

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Rezyume: *Maqolada turli xil daromad darajalariga ega bo'lgan aholi uchun mo'ljallangan ko'p qavatli turar-joy majmualarining turli shakllari keltirilgan. Majmua qaysi ijtimoiy guruh uchun mo'ljallanganligiga qarab, Shahar tarkibida har xil turdagi turar-joy majmualarini joylashtirish, tavsiflash bo'yicha tavsiyalar berilgan. Aholining ma'lum bir guruhining daromad darajasi asosida turli xil nomenklatura va ko'p qavatli turar-joy majmualari tarkibida xizmat ko'rsatish muassasalarini joylashtirish imkoniyati taklif etilgan.*

Резюме: *В статье представлены различные формы высотных жилых комплексов, рассчитанных на жителей с разным уровнем достатка. В зависимости от того, на какую социальную группу рассчитан комплекс, даются рекомендации по размещению и описанию различных типов жилых комплексов в черте города. Исходя из уровня доходов определенной группы населения, предлагаются различная номенклатура и возможность размещения учреждений обслуживания в пределах многоэтажных жилых комплексов.*

Kalit so'zlar: *ko'p qavatli turar-joy majmuasi; tabaqalashtirilgan xizmat, vertikal loyiha.*

Ключевые слова: *многоэтажный жилой комплекс; дифференцированный сервис, вертикальный проект.*

ORGANIZATIONAL AND PEDAGOGICAL ASPECTS OF DESIGNING THE INDIVIDUAL EDUCATIONAL TRAJECTORY OF STUDENTS

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Summary: *In this article, the organizational and pedagogical aspects of the construction of the individual educational trajectory of students, which are considered to be the most basic principles of the credit-module system, are studied.*

The individual educational trajectory creates an opportunity to choose educational programs that is suitable for the student's level of preparation, and also defines a step-by-step way of its implementation.

Key words: *Credit-module system, educational trajectory, individual educational trajectory, organizational and pedagogical aspects*

In recent years, great attention has been paid to the education system in our country, especially in order to further improve the system of higher education, a number of important works are being carried out. As proof of this, we can cite decrees and decisions adopted by our state.

Decree of the President of the Republic of Uzbekistan dated April 20, 2017 No. PQ-2909 "On measures to further development of the higher education system", Decree of the President of the Republic of Uzbekistan dated June 5, 2018 "Increasing the quality of education in higher education institutions", Resolution of the President of the Republic of Uzbekistan "On the Development Strategy of the New Uzbekistan for 2022 - 2026" and Resolution No. 824 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 31, 2020 on higher educational institutions in order to ensure the implementation of the decisions on "Measures to improve the system related to the organization of the educational process", a number of higher educational institutions in our country are conducting regular inspections of the credit-module system of training.

One of the main advantages of the credit-module system for students is the opportunity for students to choose their own educational trajectories and study based on their interest and knowledge level.

By individualizing the educational process in higher education institutions, it gives the student who is considered a future teacher the opportunity to create his own individual educational trajectory and future professional activity. In this case, the main aspects of the success of the selection depend on the creation of a well-structured, balanced individual education program and its implementation within the framework of the personal education trajectory. Furthermore, through such a choice, the student creates his own "educational model" in order to acquire the knowledge, skills and qualifications that he considers necessary for his future professional activity.

There is a need for appropriate methodological bases for designing an individual educational program and a student's educational trajectory, and we tried to find solutions to these observed problems in our scientific work. The organizational and logical structure of the educational process within the framework of general goals and personal educational programs, as well as factors indicating its characteristics, are considered as the basis for designing the student's educational trajectory. [1]

The individual educational trajectory creates an opportunity to choose educational programs that is suitable for the student's level of preparation, and also defines a step-by-step way of its implementation. The trajectory of individual education in foreign languages is built taking into account

the student's personal activity and the main principles of reflexive approaches. The approach of personal activity means that each student learning a foreign language is distinguished by one or another method of language acquisition, and it is necessary to plan and develop educational strategies taking into account the individual characteristics of each student. This is reflected in the choice of educational materials for students. New generation foreign language textbooks are created based on an integrative approach, taking into account different types and methods of information perception by students. Different forms and types of exercises allow each participant of the flow process to discover his creative and scientific potential. A reflexive approach in which students self-examine, evaluate, and analyze during each lesson and during the entire semester during the completion of tasks organized by the teacher. One of the ways to implement a reflexive approach in teaching foreign languages is to keep a student's language portfolio, and a teacher's pedagogical portfolio.

Taking into account the individual characteristics of students, it is necessary to develop an individual educational trajectory of mastering science materials in order to form universal, general cultural and professional competencies from basic competencies. This method of organizing process aimed at improving the quality of teaching students in foreign languages may not show an effective result in all cases. One of the main difficulties in the implementation of the individual education trajectory is the lack of independent work skills of students. In order to prevent these problematic situations, the teacher should work within the framework of the individual educational trajectory. This allows the student to make independent decisions in the educational process, to reveal his creative and academic potential, and at the same time to be in constant contact with the teacher. At this stage, the organization of continuous pedagogical support for the student is of particular importance as a condition for the effective implementation of the individual education trajectory and the transition to the individual education direction.

The individual educational trajectory is designed to help master the subject, taking into account not only pedagogical, but also psychological characteristics of the student. There is a need to develop tasks not only for auditory, visual and kinesthetic students, but also for virtual students who cannot imagine their existence without modern technical devices. Taking this feature into account, interactive programs and Internet resources in a foreign language are used in the educational process.

Within the implementation of the individual educational trajectory, the student must not only choose it himself, but also build an individual strategy for his activities in learning a foreign language. At the initial stage, he determines the level of language proficiency with the help of diagnostic tests. Later, the student gets acquainted with the qualification requirements of the science program and defines his goals and needs in learning a foreign language. Then he is offered to choose several individual learning trajectories that determine the sequence of study of the study modules of the subject, all the necessary basic and additional materials are provided and methodological support is provided. Admission is divided into groups based on exam results or language proficiency. For each level, it is necessary to develop a variable part of the discipline program. Each teacher determines the sequence and speed of mastering the material individually with the student, attention is paid to the main difficulties that may arise in the process of learning a foreign language.

Undoubtedly, several difficulties are encountered in the implementation of an individual educational trajectory in preparing students for a foreign language. Among them: The inability of students to choose the right educational trajectory based on their potential. Teachers play a big role in choosing a student's own educational path. The reason is that every subject teacher knows well what skills and knowledge to acquire by studying each subject.

The problem of individualization of educational processes in higher education is becoming more urgent every year in the attention of the scientific community. The main aspects of this situation can be explained by modern pedagogical trends and existing conditions in higher education institutions. Today, the stage of formation of new educational models is taking place in the higher education system, which meets the requirements of the time, takes into account the growing dynamics of the current labor market, and therefore prepares qualified personnel of the future [2, 192]. From this point of view, it is necessary to pay great attention to the training of specialists who are in high demand in the world labor market, who have unique logical and critical thinking, and who are adaptable to the changing environment. Therefore, each higher education institution will have to develop a new curriculum, educational programs and educational technologies for each specialty based on local and global requirements. This creates a basis for the training of qualified personnel who are competitive and in demand in the world.

Today, the individualization of education is not only a guarantee of understanding the educational product, but also "has become one of the priority mechanisms that help to effectively solve the problems of forming the subjective position of a young person who is able to be the creator of his life." [3, 17]

One of the main ideas of individualization in the higher education system is the introduction of individual educational trajectories, which focus on the variability of the educational process and offer a creative approach to education in higher education institutions.[4] In these quoted opinions, it is assumed that special attention should be paid to the variability of educational processes in educational institutions and the need to introduce the individual educational trajectory of the student by introducing a creative approach to education. We look at these points from our point of view, since the organization of the educational process is very complex and requires precision, so we apply that the educational processes remain unchanged. Also, in higher education institutions, applying the idea of a creative approach to the introduction of an individual educational trajectory, emphasizing that new science programs and syllabi, which are necessary in the current era, should be developed every year with a new, creative approach.

From the opinions of the world scientists, it can be understood that the study of the meaning and principles of the individual education trajectory is considered one of the urgent problems in the education process today. According to Meshkova, the individual educational trajectory of a higher education institution is an individual direction of education, and it is independently developed by the subject of the educational process based on his educational requirements, his personal and professional is created for the purpose of self-determination, self-awareness and self-development. [5, 151]

The organizational part of organizing the process of individual educational trajectory requires a special approach and attention from students and organizing persons. Individualization of educational processes will be possible if "appropriate technologies that are required by all participants of the educational process and satisfy their needs" are used in the performance of such tasks. [3, 16]

To sum up, it is possible to improve the quality of education and increase the results of students' mastery of subjects by implementing an individual education trajectory in the higher education system.

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Rezyume: Ushbu maqolada kredit-modul tizimidagi eng asosiy tamoyillardan hisoblangan talabalarining individual ta'lim traektoriyasini qurishning tashkiliy va pedagogik jihatlari tadqiq etilgan.

Shaxsiy ta'lim traektoriyasi talabaning tayyorgarlik darajasiga mos keladigan ta'lim dasturlarini tanlash imkoniyatini yaratadi, shuningdek uni amalga oshirishning bosqichma-bosqich yo'lini belgilaydi.

Резюме: В данной статье изучаются организационно-педагогические аспекты построения индивидуальной образовательной траектории обучающихся, которые считаются наиболее основными принципами кредитно-модульной системы.

Индивидуальная образовательная траектория создает возможность выбора образовательных программ, соответствующих уровню подготовки обучающегося, а также определяет поэтапный путь ее реализации.

Kalit so'zlar: Kredit-modul tizimi, ta'lim traektoriyasi, individual ta'lim traektoriyasi, tashkiliy-pedagogik jihatlar

Ключевые слова: Кредитно-модульная система, образовательная траектория, индивидуальная образовательная траектория, организационно-педагогические аспекты.

THE POLITICAL LIFE OF KARAKALPAK RESIDENTS IN THE SECOND HALF OF THE 16TH CENTURY AND UP TO THE 30S OF THE 18TH CENTURY

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Summary: *The article highlights the social and economic life of Karakalpaks from the second half of the 16th century to the 30s of the 18th century.*

Key words: *Nogai Horde, Sheikh Mamai, Karakalpaks, Jayik and Jem*

By the middle of the 16th century, the state union called the Nogai Horde, which was a powerful political force, began to falter from the inside. After the death of Nogai emir Sheikh Mamai in 1550, a brutal struggle began among Nogai rulers for control of the central power in the Horde. In one period of a difficult political situation, the occupation of the Khanate of Kazan in 1552 and the Khanate of Astrakhan in 1556 by the Russian state deprived the Nogai Horde, which was in a state of internal political crisis, of military-political associations and economic partners. This situation led to a further decline in the Horde's difficult situation and the exacerbation of unrest. As a result of the bloody wars of Yusup and Ismail for the throne, it ended with Yusup's death in 1555. In addition, for two years (1557-1558), a great famine occurred in the country due to the fact that the crops did not ripen, which made the conditions of the Nogai Horde even more difficult [1, 20]. During the years of Amir Ismail's rule, there was unrest in the Horde, and brutal disputes for power, thus the Nogai Horde was practically divided into 3 independent sections that almost did not recognize the central authority: the Big Horde, the Small Horde, and Altiul ulisi hordes were formed. After Amir Ismail's rule (1555-1564), the political situation did not change during the reign of Tinakhmed and Oraz. In 1577, with the capture of Saraychik by the Russian prince Serebyan, the Nogai Horde ceased to exist as a unified state union. The Great Nogai Horde moved from the lower reaches of the Ural to the right bank of the Volga, while the Small Nogai Horde or Qazi ulis under the leadership of Qazi moved to the Crimea and the lands up to the upper reaches of the Sea of Azov. The Nogai Horde, led by the six sons of Sheikh Mamai and historically named Altiul Ulisi, settled in the lands along the Jayik (Ural) and Jem (Emba) rivers in the east to the Syr Darya [4, 51]. The subsequent history of the people of Karakalpak is related to this Altiul ulis, and the people of Karakalpak lived in Altiul ulis.

After the death of Sheikh Mamai, who ruled the Nogai tribe in the 1550s, Altiul ulis separated from the Nogai tribe after the quarrel between his relatives, Yusup and Ismail. The six sons of Sheikh Mamai - Khasim, Khan, Bek, Biybek, and Akmyrza, together with their ulis, separated from the main power of the Nogai and settled in the far east of the Nogai Horde along the banks of the Jayik (Ural) and Jem (Emba) rivers in the east, they settled in the lands up to the Syr Darya. They became a somewhat weak, but significantly independent political union from the central power of the Horde [5, 37]. The first use of the term «Altiul» («Шесть Сыновей», «у шти Шти Сынов») was determined by the Russian historian V.V. Trepavlov from the letter written by the son of Sheikh Mamai, Bek, to the Russian Tsar Ivan IV (Grozniy) in August 1581. After the death of Khan Mirza and Sheikh Mamai in 1549, five brothers remained, after the death of Khasim in 1555, four brothers, and after the death of Akmyrza in 1580, three brothers remained. However, the residents of the ulis continued their activities with the former term, that is, the name of the ulis «Altiul» [6, 21]. According to the well-known scientist Kamal Mambetov, the foundation of Altiul ulis was formed by the Karakalpaks, which consisted mainly of six tribes, Muyten, Kongrat, Kitay, Kypchak, Keneges, and Mangit. After the

weakness of the Nogai Horde, they began to call themselves Karakalpaks by their former ethnic names and expressed their opinion, that's why it is not for nothing that the lines in the Karakalpak folklore begin with «Noğaylı elinde» ("In the land of Nogayli") [3, 12-13].

In the second half of the 16th century, the political situation in the Big Nogai Horde was quite stable. However, at the end of that century, the struggle for the principality intensified, and it ended with the assassination of Orazmuhammed the principal. The former small hordes begin to divide within themselves again. In the first thirty years of the 17th century, a section of the Oirats - the Torgavits - took advantage of this situation and occupied the place of the former Nogai Horde. One part of the Nogai moved to the west - to the Crimean Khanate, while another part joined the Kazakh population.

The rest of the section had to pay taxes to the rulers of the Edil Kalmyks. In general, as a country, the Nogai Horde disappeared from history in the 30s of the 17th century. In 1623, the Karakalpaks, who were on their way to Turkestan and Khorezm, their historical homeland, from the Edil and Jayik valleys, were attacked by the tribes led by Ho-Urluk on the banks of the Jem (Emba) river, and a small part of the people died there. Therefore, this event has remained in history with the name «Massacre Along the Jam» [5, 41]. Although a part of Uli was absorbed into the Kalmyks and Kazakhs, the main part of the people managed to join the Karakalpaks living along the banks of the Syr Darya.

The historical documents called «Materials on the history of the Karakalpaks» preserved in the St. Petersburg branch of the Institute of Oriental Studies of the Russian Academy of Sciences date back to 1609 and describe our ancestors who lived in the Ural-Volga region with the term Karakalpaks. If we pay attention to those documents, the number of Karakalpaks who lived there was not small and they actively participated in the socio-political, economic, and cultural life of Russia. Among the Karakalpaks in the Ural-Volga region, famous people, elders, emirs, and heroes came out and they are visible in the historical documents of that time [8, 35-36].

At the beginning of the 18th century, the peoples along the Volga, including Tatars, Bashkirs, etc. rebelled against Russian tyranny. In October 1707, 120 km from Ufa near Yurantaya, the rebels won the victory in a 10-day riot between the soldiers of Aldartarkhan and Kusyum and the punitive military. Encouraged by this victory, the rebels tried to restore the Khanate of Kazan. To raise the spirits of the people, the leaders of the uprising wanted to solve the problem of finding a future ruler. They contacted Sultan Murat of Karakalpak and promised to give him the Khan's throne if he would restore the Khanate of Kazan. Murat came to the rebels to receive military support. He went on a long and arduous journey in a group of 30 people to gain the support of Crimean Khan Davlet-Girey and Sultan Ahmet II of Turkey. Sultan Murat visited Crimea and Turkey. But Davlet Girey and Akhmet Sultan, who were on good terms with Russia, did not help the representatives of the Tatars and Bashkirs. No one recognizes Murat as a future Khan. As for the future fate of Murat, he was indeed a brave and brave soldier. On the way back, he managed to get 1600 Kuban Tatars to rise. With their help, he occupied the city of Terek in February 1708 and besieged the fortress for 10 days. The government troops led by Astrakhan commander Petr Apraksin crushed the rebels. Murat, who was wounded, was taken prisoner. He was first tortured in Astrakhan and then sent to Kazan, where after severe torture he was hanged [8, 22-23].

In 1710, the rebels started their struggle again. In 1711, the Karakalpaks came to the aid of the rebels, and the struggle for freedom continued. This time the rebels marched to Ufa, but it failed. In the fall of 1717, the uprising on the banks of the Volga flared up again. This time, the rebels were thrown into the Kazan province. Cavalrymen of Kazakhs, Karakalpaks, Tatars, and Bashkirs joined the ranks

of the rebels. The rebels were led by Seyt Batir. This riot lasted until the spring of 1718. Seyt's name was mentioned in historical documents until April 1722, after which he was not mentioned.

The participation of Karakalpaks in the above-mentioned rebellions and political events indicates that their number was quite large in the Urals and Volga.

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Rezyume: Maqolada qoraqalpoq xalqining XVI asrning ikkinchi yarimi va XVIII asrning 30-yillariga qadar turmushi, ijtimoiy-iqtisodiy hayoti haqida bayon etiladi.

Резюме: В статье освещается социально-экономическая жизнь каракалпаков со второй половины XVI по 30-е годы XVIII века.

***Kalit so`zlar:*** Nog`ay Ordasi, Shayx Mamay, Qoraqalpoqlar, Jayiq va Jem

Ключевые слова: Ногайская Орда, Шейх Мамай, Каракалпаки, Джайик и Джем.

COMPARATIVE ANALYSIS OF THE CASES OF GERMAN AND KARAKALPAK LANGUAGES

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Summary: *In this article the cases were comparatively studied and their similarities and differences were defined, as they have not yet been studied in comparative typology. The cases in the German language are compared with the cases in Karakalpak, and their semantic meanings and syntactic functions are comparatively analyzed. The expression properties with the suffixes of these cases are compared in the example of two languages.*

Key words: *comparative typology, cases, similarities, specific features of cases, German and Karakalpak language, comparative study.*

Introduction. The issue of the comparative typology was specially learned in the world languages. But the comparative study of the relative and non-relative languages is now developing. In this regard, the comparative study of the German and Karakalpak languages is considered as one of the important issues. The place and importance of foreign languages in countries on all continents of the globe is incomparable. In terms of learning and teaching foreign languages, it is important to study the native language and the languages that being studied in a comparative typological way. Because the results of the comparative typological research are the basis for the development of a scientific theory.

Main part. Commenting on the importance of the comparative study of languages belonging to different groups, Academician L.V. Shcherba said: “The comparison of one language based on comparisons with another, the different representation of the same idea in different languages attracts and fascinates a person who thinks in another language.”[6]

Academician V.V. Vinogradov emphasized the importance of the comparative study of languages: “In addition to the comparative-historical study of related languages, it is possible to study the languages of different systems in a comparative or collative manner, and it is necessary to study them in this way” [7].

Nouns in the German and Karakalpak languages have commonalities in the case system and specific features of each language. We will consider the ways of translating the meanings of German cases into the Karakalpak language, as well as the ways of giving Karakalpak place cases in German. So, there are four cases in modern German, and six in Karakalpak. They are as follows:

In German language

1. Nominativ - Nominative.

2. Genitiv - Genitive.

3. Dativ - Dative.

4. Akkusativ –Accusative.

In Karakalpak language

I. Grammatical cases.

1. Ataw - (General) case

2. Iyelik - (Possessive) case.

3. Tabis - (Dative) case.

II. Place cases

1. Baris - (accusative) case.

2. Shıgıs - (instrumental) case.

3. Orın - (prepositional) case.

In German and Karakalpak languages, although they belong to different language families, the presence of case in nouns is a similarity between the typologically compared languages, while their difference in terms of number is considered to be a disproportion arising from the unique

characteristics of each of them. Based on the essence of our work, we decided not to change the names of the cases in the German and Karakalpak languages, but to call each of them as they are in their own language, although the names of the cases are considered grammatical terms in each language, as well as in both languages the color is preserved. It should also be mentioned that in the Karakalpak language, nouns take the case suffixes after receiving the possessive affixes. This is also reflected in the questions put on the cases. We see this clearly in some sources. This is not the case in German.

It is clear that in the German language, the leading place in the expression of noun case forms is occupied by words that act as articles and attributive. They are mainly: possessive, demonstrative and interrogative pronouns, adjectives in attributive functions, ordinal numbers, participle in attributive functions, etc. They agree with the nouns after them not only in gender and number, but also in cases. Examples: **nominative**-der (dieser, junger, schöner, gebildeter) Lehrer; die (meine, diese, junge, schöne, gebildete) Lehrerin; das (dieses, schönes, junges, gebildetes) Mädchen; **dative**-dem (diesem, schönem, jungem, gebildetem) Lehrer; der (meiner, dieser, schöner, junger, gebildeter) Lehrerin; dem (diesem, schönem, jungem, gebildetem) Mädchen; **accusative**-den (diesen, jungen, schönen, gebildeten) Lehrer; die (meine, diese, junge, gebildete) Lehrerin; das (dieses, schönes, junges, gebildetes) Mädchen.

As it can be seen from the examples, the case suffixes are almost not used in nouns. Their functions are performed by articles and other words as mentioned above [2:65].

In Karakalpak language, in general, in all Turkic languages, there is no article. The function of articles in German is performed by case affixes. All cases except Ataw have their own affixes. They can be added to nouns both in the singular and in the plural. So, the combination of article+noun in German corresponds to the synthetic form –noun+affix in Karakalpak language. Words that come before nouns in the Karakalpak language and act as attributive (adjectives, participle, demonstrative pronouns, ordinal number, etc.) cannot show the meaning of case, do not affect the declension of nouns, as in German, they are incompatible with attribute nouns that come after them. By this feature, they differ from the language being compared. In both of the languages under comparison, the cases that are spoken about are considered the nominative case, and the rest of the cases are formed from these cases. They are defined as a form with a zero indicator, contrary to other cases. In Turkic languages, this form is represented by the symbol 0 in the analysis [3: 19]. The nominative is distinguished from the other three cases in German by the following characteristics:

1. Outside of the sentence, it can be the terms of objects, also the events: der Mensch, das Haus, das Vieh, die Liebe, der Stak, die Tür, das Buch, die Kuh, etc.

The linguists explain the appearance of nominative case in such a function as Benennungsnominativ, that is, a nominative that calls (things-subjects) [4: 67].

We are not far from the opinion that if we apply this opinion of the linguist to the Turkic languages, to be more precise, to the Karakalpak language, we will not make a mistake. Because the German nominative performs the same function as the Karakalpak language ataw can perform, that is, it also has the feature of naming objects and various events. Its naming feature is its singular appearance in the sentence, as well as outside the sentence: úy, baqsha, arba, awıl, qala [3:9].

2. Another feature of the nominative is that it is syntactically independent as a subject case, unlike other cases that are governed by verbs, nouns, adjectives or prepositions. The main function of the nominative is to become subject in the sentence, because none of the cases can fulfill this task. The nominative is not governed by other words: Die Frau hatte das alles in ihrer Wirtschaft gelernt. (A.Seghers. Die Toten bleiben jung). This feature of the nominative is partially close to the ataw case in the Karakalpak language. Because it is an independent word in the Karakalpak language, it is not

subordinate to any word, and its main function is to fulfill the function of subject in the sentence: Dáslepki konsert usılayınsha jurttı tań qaldırıp, ırza etti. (Ó.Ayjanov «Aral qushaǵında»). (The first concert was amazing, the people enjoyed.)

3. One of the features of the nominative is that it can be used alone as a separate sentence: Ein schwerer Schritt. (B. Uhse. Die Patrioten). Stille. Winter des 1945. Jahres. Dunkelheit.

This feature of the nominative in German is characteristic of Karakalpak, as well as ataw (nominative) case in all Turkic languages. 2) A nominative sentence is also expressed by a compound in the form of ataw, sometimes by a single word. This type of sentences is called ataw gap (simple sentence) in the Karakalpak language [5: 47]: *Qanlı maydan. Qáhárli qıs. Qalıń qar.* (J.Aymurzaev). (A bloody field. Cold winter. Thick snow). The second and third characteristics of the nominative appear on the basis of its first. Benennungsnominativ- The difference of the indicative nominative from the words in other cases is that it is given in bilingual or trilingual dictionaries.

The main peculiarity of the nominative is that it is considered independent from the point of view of the syntax, but other cases are subordinated by the syntax. Nominative ataw is the main (direct) case and stands in opposition to other cases. In his work, V. Admoni writes about nominative's use in expressing the feelings of emotional-talking, calls it "emotional nominative" and emphasizes that it is close to exclamations: [1: 64] Donnerwetter! Teufel! Zum Teufel mit der Padischahwürde! (K.R.Alp)

In the Karakalpak language, as well as in the related Turkic languages, there is no information about the use of the ataw case in such a function. But such examples can be found in literary works and folklore sources. Oy, músápir-ay! (K. Sultanov). (Oow, poor!). One of the peculiarities of the accusative in German is that it expresses the meaning of place. It also belongs to the free accusative type and is mainly used with intransitive verbs denoting action (forward): steigen, gehen, laufen, springen, fahren. Only the nouns that are close to the meaning of the place are used with such verbs: Straße, Weg, Strecke, Schritt and others. Er ging die Straße entlang. *Ol kóshe boylap júrip ketti.* He walked along the street.

As can be seen from the Karakalpak translation of the examples, the place meaning of the German accusative in the second language finds its meaning in the same case (tabis). The preposition entlang controls the noun in the accusative in German, while the auxiliary *boylap* controls the same case the accusative case. We talked about whether the noun controlled by it was definite or indefinite. The word *qádem* in the second sentence is in the case of tabis semantically, because the verb taslaw (take) requires that the noun before it be in the case of tabis: taslaw - what? Who? But these words have become a constant link. If the possessive affix is added to the word *qádem*, it is used with the affix of the tabis (accusative) case: *Qádemıńdi oylap bas* (tasla). Take your step carefully. Accusative by means of the noun of time (das Jahr, die Nacht, der Tag, die Woche, der Monat, etc.) indicate the time and duration of the action or situation, and serves as the adverbial modifier of place in the sentence:

Das Mädchen wohnte einen Monat bei dem Onkel. *Qız dayısınınikińde bir ay jasadı.* Gestern habe ich den ganzen Tag an den Artikel gearbeitet. *Keshe men kúni menen (kún boyı) maqala ústinde (tuwralı) jumıs isledim.* The girl lived a month at her uncle's. Yesterday I worked on the article all day.

In German, an accusative means to ask for something. This meaning of the accusative is expressed in the Karakalpak language by the instrumental case. This is the reason why students make mistakes in the reading process: Der Lehrer fragt den Schüler. *Muǵallım oqıwshudan soraydı.* The teacher asks the student. In German, indirect accusative is also used after the verbs that mean general case in a row in the sentences. Such verbs include *nennen, heißen, lehren*. The first noun in the accusative is translated into Karakalpak, by the tabis (accusative) case, in some cases by the baris

(dative), and the second by the general case: Er nannte den ersten Mann einen Lügner (B. Kellerman. Reisen in Asien). *Ol birinshi adamdı ótirikshi deytug'ın edi*. He called the first man a liar.

When the accusative is used with the adjectives lang, hoch, breit, weit, schwer, wert u.a. (sein), they are used as predicative or attributive to express the meaning of a measurement. There is no such thing in Karakalpak language. Therefore, this meaning of the accusative can be expressed in various cases: Das Kind ist 6 Monate alt. *Bala altı aylıq*. The baby is six months old.

Conclusion. In conclusion, the results of comparative typological research are the basis for the development of advanced methodological ideas in teaching. It ensures the acquisition of the language materials required for the comparative study of languages. The process of learning a language starts with the mother tongue. The student mentally connects the concepts formed in his native language with the words of the foreign language he is learning. Therefore, it is necessary to actively acquire both languages. It should be said that there are similarities and differences in terms of the position of the cases in the languages being compared. In the Karakalpak language, nouns are freely placed in sentences, but in German, this is not the case. A visible difference in the case system is felt in their number. There are six cases in the Karakalpak language, but only four in German. Just as nouns take plural suffixes, interrogative words also differ in number. Such a typological difference is definitely explained by the characteristics of each language. In the same way, real accusative objects have become stable compounds, but it can be distinguished from idioms and phraseological compounds that, resembling an indirect object by the form. Their Karakalpak equivalents are interpreted according to their meanings.

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Rezyume: Ushbu maqolada kelishiklar qiyosiy o'rganilib, qiyosiy tipologiyada hali o'rganilmaganligi sababli ularning o'xshash va farqli tomonlari aniqlandi. Nemis tilidagi kelishiklar qoraqalpoq tilidagi kelishiklar bilan solishtirilib, ularning semantik ma'nolari, sintaktik vazifalari qiyosiy tahlil qilinadi.

Резюме: В данной статье были сравнительно изучены падежи и определены их сходства и различия, так как они еще не изучены в сравнительной типологии. Падежи в немецком языке сравниваются с падежами в каракалпакском языке, проводится сравнительный анализ их смысловых значений и синтаксических функций.

Kalit so'zlar: qiyosiy tipologiya, kelishiklar, o'xshashliklar, holatlarning o'ziga xos xususiyatlari, nemis va qoraqalpoq tili, qiyosiy o'rganish.

Ключевые слова: сравнительная типология, падежи, сходство, особенности падежей, немецкий и каракалпакский язык, сопоставительное исследование.

INTERPRETATION OF LUST IN ABDULLA ORIPOV'S LYRICS

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Summary: *Lust is a means of acquainting a person with evil. There are many epics and ghazals in the classical literature that are interpreted as lust. There is also a legend in folklore that Satan mingled with human blood when he cooked the children he left to Eve out of anger. The main task of literature aimed at moral education is to turn man away from this path. Seventy devils cannot do the work of one nafs, Rabguzi said in his work.*

Keywords: *lust, devil, Eve, Adam, "heartlessness", composition, attribute, "consequence".*

It is known from literature textbooks that the concept of a perfect person is equated with the concept of a spiritually purified person. And spiritual purification is overcoming NAFS.

In addition to laziness, non-drinking and dressing, nafs means ignorance, ignorance, conceit, arrogance, worldliness, oppression, theft, laziness, taste, lack of vision, avarice, careerism, despondency, anger, in general, which pollutes the spirit of faith and the heart. It is understood as the totality of all the evils that lead away from God. In a number of verses of the Holy Qur'an, there are rulings on the necessity of curbing and overcoming the ego. Also, there are many instructions in this regard in the hadiths of our prophet Muhammad. As an example, this is what Hazrat Ali said advice (hadith) can be cited: "O Ali, those who have reached the status of sainthood (sainthood) did not achieve such great status because they prayed a lot, but because they conquered their egos." Lust is the very essence of man powerful, dangerous enemy. Subject to it, a person is condemned to spiritual and physical destruction, destruction [1; 85].

In classical literature, Yassavi's work "Devoni Hikmat" portrays the ego perfectly. The main criterion of mystical literature is that a person fights against his ego and reaches the level of perfection. Even in the differentiation of characters such as the ascetic, ascetic, and obid, they rise to different ranks according to the extent to which they overcome their ego. Yassavi says:

*Let your lust destroy you at the last moment,
Loot the house of religion
At the time of death, part with your faith,
If you are smart, you will be busy with your ego [2].*

Along with the image of the self, faith, honesty, conscience, virtues such as wisdom and generosity are opposed side by side. Your lust is bad Consequences: Pharaoh, Qarun, because of his lust it is assumed that it has fallen. Also in the work of Najmuddin Kubro spiritual depravity and the evils that destroy a person are caused by lust is fired.

*There is a giant inside me, it can't be hidden,
It will not be easy for him to bow his head [3].*

A person who kills the demon of lust becomes the possessor of the property of contentment and can acquire the treasure of purity. In modern Uzbek poetry, like other creative writers and poets, in the work of Abdulla Oripov, we witness the condemnation of lust and all the evils it causes.

Abdulla Oripov reflects these issues in humorous and philosophical tones. In the poet's poem "Life problems" it is not easy to work in order to live in this world, and the image of mean people who ask for money to do this work even though ready hard work is yours. The composition of the work begins with the father and son wandering in search of work. As a problem, the employer is empty-

handed is said to be impossible. The fact that it is not the power of knowledge, but the ability to be promoted to a position, is sarcastic in the sarcophagus:

*Forget the power of science
Akcha will lift you up from below.*

The poet says that the uniqueness of unscrupulous people in this world is that people who are slaves to their lust "ask for justice even from an ant". In the last stanza of the poem, the poet describes a person who is subject to lust:

*A man without thought,
It's like being a slave to lust.
Honesty and Conscience on one side
The cry slowly smokes.*

Such works with a didactic content are covered in classical literature in the form of advice or in the context of "what happened". If we look at Yassavi's advice in his work, we can observe the interpretation of "consequence of lust" in Abdulla Oripov's work. The poet does not directly use the image of lust, but gives an example through the events that happened as a result of lust. For example, in his poem "Eastern Destiny":

*I dug up wealth from under the earth,
Never thought it would end.*

When we read the above verses, we remember the image of Qorun. The poet describes the interpretation of lust associated with wealth and money as "heartlessness", wealth tickles the human soul:

*Alas, man has become despondent,
Aqchadir is also a coach who leans on him.*

In the poem "Mangu panoh" interest is shown as the reason for separation of dear people from each other. Describing the image of lust with its associated attributes is common in the work of the poet. For example, "Market" There is also an allusion to this in the titular quatrain:

*The market has turned all the way,
The traces of the owners have also dried up.
O Lord, if there is one who understands,
I was crying, hitting my head on the leg [4].*

After all, a person who understands himself and God cannot be led astray by interest, market, or wealth! Nafs is made to man from birth. It is only necessary to manage it. God shows mercy to the poor and gives them wealth. On the one hand, he puts the ego: it will be the bridge of the test.

In the poem "Allah Marhamati" he writes the answer to why the soul was created:

*God gave someone wealth, gold,
Maybe he will take pity on his poor soul.
And it's worse that he can't get enough,
He added lust.*

In the poem "Faith" the poet contrasts lust and the market with faith:

*Lust hit everyone from the way,
Aylan is from the right and left of the saint.
You can't do anything without money,
He destroyed the mosque and made it a big bazar.*

At the beginning of the plot of the poem "Earthquake in the Sky", we encounter the repentance of an old woman, an old man, a scientist, a critic, who entered the path of lust. If we read the poem, we

will only hear the consolation of a child saying to his mother: "Don't be afraid" from the shaking of the plane. But those listed above do not admit their sins when they are in danger. The reason why the critic acquitted the poet was the ambition of the poets, and the student himself blamed the scientist for taking bribes. that the bazar haji babo traded in the hajj, they argue that commerce is not prohibited in the hadiths. This is a sign of loss of faith. There are different interpretations of nafs in modern poetry. Because the more development there is, the more the paths leading to lust are opened. It is up to the creative people to turn people away from this path!

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Rezyume: *Нафс инсонни ёмон иллатларга ошно қилувчи воситадир. Мумтоз адабиётда нафс талқин қилинган кўплаб достон-у ғазаллар мавжуд. Халқ оғзаки ижодида ҳам Шайтон Момо Ҳавога қолдириб кетган болачаларини Одам Ато ғазабдан қиймалаб пишириб еганда инсон қонига аралашгани ҳақида ривоят бор. Ахлоқий тарбияни мақсад қилувчи адабиётнинг бош вазифаси инсонни бу йўлдан қайтармоқдир. Бир нафснинг ишини етмиш шайтон қилолмайди, деган эди Рабғузий ўзининг асарида.*

Резюме: *Нафс – это инструмент, подвергающий человека плохим порокам. В классической литературе существует множество эпосов и газелей, в которых трактуется эго. В фольклоре также существует легенда о том, что Адам смешал человеческую кровь, когда съел детей, которых сатана оставил Еве. Главная задача литературы, направленной на нравственное воспитание, — свернуть людей с этого пути. Рабғузи сказал в своем произведении, что семьдесят чертей не могут выполнить работу одной души.*

Kalit so'zlar: *нафс, шайтон, Момо Ҳаво, Одам Ато, “қалбсизлик”, асар композицияси, атрибут, “содир бўлган оқибат”.*

Ключевые слова: *похоть, Сатана, Ева, Адам, «бессердечие», состав произведения, атрибут, «последствие».*

UDC: 343.1

US AND GERMAN EXPERIENCE IN MEDIA COVERAGE OF CRIME INCIDENTS

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Summary: *This article analyzes the issues of coverage of information and information about crime in the media in the United States and Germany. Also, the issues of the procedural status of the media in the criminal process and the issues of their security guarantees were studied. The main media that print information and information about crimes are indicated.*

Key words: *crime, mass media, criminal process, guarantee, press, publication, investigation.*

Publishing issues of crime and justice on the air or on their pages is a practice typical of most foreign mass media. Some countries give wide freedom to the media in criminal proceedings, while others have restricted access to media. These cases are related to socio-political and economic situations in the countries. Analyzing the experience of some foreign countries in the use of mass media information and information in the criminal process gives an opportunity to compare the achievements and shortcomings of this practice with the role, participation and status of mass media in our national criminal procedural legislation.

Let's start the study of the experience of foreign countries by programmatically analyzing the status of the mass media in the Anglo-Saxon, more precisely, the US criminal process. Because the USA is currently the country with the most leading position in the field of information. Although the American media is extremely diverse, there are some common characteristics - freedom of speech, business and commerce. In the USA, mostly private mass media operate, and there are very few state-owned ones ("Voice of America" and "Radio Martini").

US freedom of speech is reflected in the first amendment to the Constitution: "The Congress of the United States shall make no law abridging the freedom of speech and the activities of the mass media." Media monitors all branches of government, including the judiciary. Media activities are not regulated by special law, they operate on the basis of the aforementioned first amendment.

4.762 AM, 5.542 FM, 575 million radio transmitter in the USA, 1.5 thousand TV stations, 5 huge media corporations (NBC, ABC, CBS, FOX, PBS), 1.468 newspapers, 55.6 million per day. There is a publication, the famous Associated Press, CNN channel[1, 1013]. This system provides a wide range of technical opportunities for the mass media to provide any information, including information about crimes. The status of the US mass media in the criminal process increased somewhat with the airing of the famous "Watergate scandal" that led to the resignation of President R. Nixon in 1974. From this period, media reports and information began to be taken seriously in conducting criminal cases.

The media have more responsibilities in US criminal proceedings. In this regard, as V. N. Rudenkin pointed out, "the Department of Justice of the United States obtained the acceptance of the decision of the Supreme Court, which allows government agencies to subpoena media workers in court and demand from them to present sources connected to the criminal case in the presence of Grand Jury investigators. This decision turned the mass media from a public control service into an investigative service" [2, 87]. However, from M. Parenti's research, it can be seen that it is not often that government representatives require media workers to disclose sources of information about crimes[3, 237].

So, in the US, if the media broadcasts information about the crime and reports it to the competent authority, it has more obligations. In these messages, special attention is paid to maintaining

the presumption of innocence. The presumption of innocence applies more to cases involving individuals.

Public opinion about crime and justice in the United States is formed based on media coverage. In the researches of K. Dowler and L. Kurt-Butler, the coverage of crime in the media and the attitude of the police towards them were studied. And, as a result of the study, he came to the following conclusion: "The more crime is covered in the media, the more the public is afraid of crime"[4, 109].

Of course, in these studies, it can be seen that the heavy coverage of crime events by the US media has a negative effect on public sentiment. In this regard, we can observe that in our country, internet media have recently covered a lot of news about crime. In these cases, the national mass media sector, especially the Internet media, will influence the public mood after reporting on the crime and by becoming an "assistant" participant in the criminal process. Therefore, the basis of the above study is that the increase in information about crime in the national internet media has a negative effect on public sentiment. It is appropriate to draw our own conclusions from this case regarding the participation of mass media in the US criminal proceedings.

In the USA, there is a procedure for initiating a criminal case based on media reports and information. In these cases, the criminal case will be initiated by the court as soon as possible. Criminal proceedings are directed not against the person, but against the committed crime, and the main issue to be resolved is whether there are grounds for holding the person criminally liable. The court summons the person and chooses the precautionary measure of warning or imprisonment. During the prosecution of a criminal case, judicial control is carried out regularly [5, 92].

On the one hand, this gives reason to conclude that if the court has the authority to control the criminal case, then the workload of the courts is extremely high. However, the criminal case with these issues is handled by a special court known as a magistrate, and not by the court that hears it at the first instance. Control over a criminal case is within the jurisdiction of the court.

Interestingly, reports of a crime by an individual, the police, or the media are treated as referrals or information.

Media participation in court cases has its own characteristics, they are assigned more tasks. The media does not have the right to cover the trial, only an artist takes part in it and draws a picture reminding the defendant, and this picture is published in the media. Of course, this is justified from the point of view of the presumption of innocence. The media has the right to photograph or video the defendant after he leaves the door of the courthouse, not in the courtroom.

Thus, the following procedural rules apply to investigations and trials involving the media under US criminal procedural law:

- in criminal proceedings, media have more obligations, they can be persuaded to disclose their sources as well;
- the mass media is not allowed to take pictures in the courtroom, only a special artist draws a picture of the defendant. The mass media has the right to photograph the accused or the defendant as soon as he leaves the door of the courthouse;
- the courts try to keep public opinion and the law together as much as possible, but in the courts, the principles of law prevail over public opinion;
- the media is extremely active in the criminal process.

Unlike the Anglo-Saxon legal system, the continental system has codified laws. According to §.158, Part II, Section II of the German Code of Criminal Procedure, the media may provide information and information about a crime committed to the public prosecutor's office, the police, an official of the police service, or the regional courts. It can also be posted on the air or on the Internet.

Mass media has the status of "auxiliary tool" in German criminal proceedings. In accordance with Instruction No. 40 to the Criminal Procedure Code, the competent authorities of investigation and criminal investigation activities may involve the mass media in the analysis of Internet data or in the search for the person who committed the crime.

In this context, let's turn to the national criminal-procedural legislation. In criminal investigations, the media are involved de facto, but not de jure. From this point of view, we believe that it is appropriate to include in our national legislation the norm regarding the involvement of mass media in collecting information about the person who committed the crime or the evidence of the crime, and to strengthen the procedure.

In Germany, each territorial unit - the Land - has its own media laws. The number of lands is 16.

Thus, the publication of crime news and information in the media has been effectively implemented in the United States and Germany. This situation is important in the fight against crime.

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Rezyume: *Maqolada jinoyat haqida xabar va ma'lumotlarning AQSh va Germaniya davlatlari OAV larida e'lon qilinishi masalalari tahlil qilinadi. Shunigdek, OAV larning jinoyat processidagi huquqiy maqomi va ularning xavfsizligining kafolatlari masalasi o'rganiladi. Jinoyat haqida xabar va ma'lumotlarni e'lon qilivchi asosiy OAV lar ko'rsatib o'tiladi.*

Резюме: *В данной статье анализируются вопросы освещения сведений и информации о преступлениях в СМИ в США и Германии. Также, изучены вопросы процессуального статуса СМИ в уголовном процессе и вопросы их гарантии безопасности. Указаны основные СМИ, которые печатают сведения и информации о преступлениях.*

Kalit so'zlar: *jinoyat, OAV, jinoyat protsessi, kafolat, chop etish, nashr, tergov.*

Ключевые слова: *преступление, СМИ, уголовный процесс, гарантия, печать, издание, расследование.*

REFLECTION OF FEMALE BEAUTY IN POETRY SUFI POETS

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Summary: *Genuine philanthropy elevates a working man, his dignity, it is incompatible with malice, hatred, envy, self-interest, and other vicious traits inherent in individuals. On the contrary, humanism, homocentrism are the expression of the deepest essence of the moral qualities of the people, they most deeply and fully express national and universal moral ideals and values.*

Key words: *science, art, spirituality, humanism, gender analysis, human, Ajiniyaz.*

Introduction. Both science and art operate with concepts and images, categories of empirical and abstract-theoretical knowledge, but the goals here are different: science comes to their comprehension on the basis of theoretical reflections, and art comes through artistically figurative reflection, which includes attitude. The literature of each people was enriched by the system of scientific knowledge of each era, but its universality and semi-functionality, characteristic of culture and art in general, gave it the opportunity to reproduce and artistically "double" the main thing - the spiritual world of man in its entirety.

Man is the main object of knowledge of the world. Yes, science is a powerful tool for cognition, it has brought human knowledge to their logical-theoretical expression. But the power of scientific theory, the power of logical thinking cannot embrace the entire integrity, universality of the forms of living and contradictory human cognition in its sensually emotional, figurative, synthetic expression in literature. The whole point lies in the fact that science is characterized by conceptual thinking, while art and literature are visual-figurative thinking.

The process of cognition and knowledge, experience and thinking, concrete and abstract, sensual and rational - these moments are inherent in science and art. But in science, knowledge itself is valuable, while art is not conceived outside of relationships and their evaluation, which is the very essence of artistic knowledge. Artistic truth focuses in itself the most complex process of cognition, attitude, evaluation, and artistic fantasy is able to break away from the object. The scientist does not allow fantasy, he is "attached" to the object, since he must dispassionately reveal the objective properties of the object. The artist discovers only a humanized world, an object inspired by feeling. That is why science itself is impassive, and art is a living human passion. And here, if the personality of the scientist is not of decisive importance for the scientific truth itself, then in artistic truth the personality of the artist determines the very essence of artistic images.

Both science and art operate with concepts and images, categories of empirical and abstract-theoretical knowledge, but the goals here are different: science comes to their comprehension on the basis of theoretical reflections, and art comes through artistically imaginative reflection, which includes attitude. Science is focused on the object of knowledge, art - on the subject of knowledge, for which the object is a means of achieving artistic truth. But the truth of life is the same for both science and art.

Works of art are a product of a person's moral spiritual ability, a product of his moral experience. The artist, acting as a social person, objectifies this side of his spiritual essence that is socially useful for all people. By objectifying himself, he simultaneously objectifies the whole world of man, and in his work other people see their humane essence as in a mirror, discovering it for themselves and seeing their potential ability in it.

Moral relations are experienced by the artist in all their richest range. From the moral perception of life and its moral assessment to the moral feelings that inspire the creative process, in all this the artist appears as homo moralis. This precious social quality has been won and consolidated in the practice of moral relations in the course of the development of history. Therefore, art, being a huge force of moral influence on people, thanks to the comprehension of moral relations, is actively included in the historical process, influencing it spiritually and practically, transforming life according to the laws of high human morality and spirituality in the name of the ideals of humanism and freedom.

All of the above is directly related primarily to poetic creativity. Because the poetic language is closer than others to the spiritual, moral and aesthetic world of man. It has more means both for expressing the depth of thought and for expressing the emotional state of the individual.

It was not by chance that GWF Hegel called poetry "music for the inner ear and painting for the inner eye", placing it above all the arts [1-S.66], because poetry has its roots in the midst of folk art.

In one of his speeches, the First President of the Republic of Uzbekistan Islam Karimov emphasized: "The state that we are building should be based on the mentality of our people, which is characterized by high spirituality, the desire for enlightenment, education, justice. In many ways, these features were formed under the influence of philosophy East, the philosophy of enlightened Islam..."[2-p.60].

The philosophy of the East absorbed the wisdom of such our great ancestors as Farabi, Beruni, Ibn Sino, Khoja Ahmad Yassawi, Bukhariy, Naqshband, Amir Temur, Ulugbek, A. Navoi, Babur.

It is noteworthy that most of their philosophical thoughts were expressed in poetic language, in their immortal poems, legends and verses. It was in poetry (through poetry) that they created all their richest spiritual heritage.

Comprehending the spiritual heritage of the ancestors, we emphasize that they compared philosophy with a mighty tree trunk, and science with its numerous branches - its branches. Just as a tree cannot exist without a trunk and branches, so science and philosophy are inconceivable without each other.

Cicero spoke of philosophy "as a culture of the mind"[3.-p.45]. And if we want to worthily participate in the affairs of the republic, then we must fully comprehend the philosophical heritage of the thinkers of the East, because it is philosophy that provides generalizing knowledge about the world, nature, human society, and teaches us to think in a new way. It spiritually and morally enriches, contributes to the growth of national self-consciousness, educates a person in the spirit of patriotism, love for the motherland.

The revival of spiritual values is a natural process of growth of national self-consciousness, the most important component of which is the revival of the spiritual and religious foundations of society, the spiritual culture of Islam, accumulating a thousand-year experience in the development of our people. At the same time, its future largely depends on the spiritual heritage of the people.

As I. A. Karimov pointed out: "The future of our people primarily depends on itself, on the spiritual energy and creative power of its national consciousness" [4.-p.144]. Based on the highest spiritual values, the national consciousness should become a source of wisdom and strength in the noble cause of educating the younger generation. National self-consciousness is the people's awareness of their history, culture, traditions in close connection with the solution of the tasks of building a state of law and a democratic society. The highest manifestation of national self-consciousness is the national ideology, which is the unifying flag of the nation, which is the spiritual basis of its unity,

patriotism and national pride. It acts as a bridge between national and universal values, the unity of which is also a factor of social progress.

None of the humanities can be compared with philosophy in the formation of the human personality, since philosophy is the core of the worldview, plays an important role in the level of the general culture of peoples, it helps to understand the natural dialectical connection of the poet's work with specific historical conditions, to better understand the social significance of the idea and the relevance of the work of the poet, who worked in the XIX century.

Nowadays, it is important to comprehend the philosophical views of Ajiniyaz from the position of today, to fill his work with those thoughts and those feelings that make his poetic lines imperishable. After all, no matter how skillful and experienced the translator is, if the original does not contain a bright thought, purity of thoughts and greatness of spirit, such poetry will not go beyond the boundaries of one nation. Moreover, none of the existing translations of Ajiniyaz's works fully expresses the depth of thought, breadth of views, originality of national color and artistic wealth that they contain. The work of Ajiniyaz will certainly be urgently needed by people in the next century, because in many respects it anticipated not only his own, but also our time.

The philosophical views of Ajiniyaz are rooted in the culture of the Middle Ages, which became a kind of era of the Eastern Renaissance, the Renaissance of Islamic culture, Eastern philosophy, the theoretical understanding of the philosophical heritage of many nations during this period acquired a high degree of universality.

It should be noted that in this and subsequent eras in the Muslim East, culture, as well as science and art, developed within the framework of a religious worldview. The influence of Islam on the culture, customs, and behavior of people was great. Religion retained this influence even in the 19th century, in which Ajiniyaz lived and worked.

As a world religion, Islam has a great integration and humanistic potential, openness to universal values. This contributed to the fact that various ideological currents formed within the framework of Islam played an important role in the development of the philosophical thought of the East.

The ability to perceive other ideas, tolerance for other beliefs, allowed the great philosophers of Islam to infuse the most advanced thoughts into the learning process in the madrasas of Khiva, Bukhara, Samarkand, while maintaining the original wisdom of great ideas. The creative community between the West and the East opened the way for the development of Sufism, which became the basis of the philosophical, aesthetic, ethical views of many thinkers, including Ajiniyaz, especially when characterizing the concept of man. Bayazit Vistami (d. 875), one of the founders of the Sufi creed, admits: "The world became my enemy, and God became my friend. Somewhat later, love for the truth of the Almighty became my enemy, and attachment became an all-powerful lord." The same properties are recommended to be developed by those who strive for the knowledge of the truth ...

Sufism's wide tolerance has made it attractive to many. The scientist found in him the philosophy of Plato and the mystical mathematics of Pythagoras, the poet found in him refined ideas about the wanderings of the soul, and the common people found miracles and rituals so beloved by him, dating back to ancient magic.

The influence of Islamic mysticism on the development of the spiritual culture of the Muslim East is as great as it is varied. Sufism was a product of an elitist consciousness and at the same time a "folk" religion; it "served to pacify believers and at the same time acted as one of the varieties of religious freethinking" [5.-p.56], which often merges with philosophizing. It contained a call to the

"entered the path" of renunciation of earthly passions and at the same time inspired the life-loving poets of the Middle Ages - Nizami, Hafiz, Jami, Omar Khayyam, Rumi and many others.

Even the name of Islamic mysticism causes conflicting interpretations. Most researchers derive the word "Sufism" from the Arabic "suf" (wool). Believing that this name could be associated with the clothes of ascetics - a kind of woolen bedspreads. The basis for such an explanation is found in the earliest surviving Arabic treatise on Sufism, the author of which Abu Nasr al Sarraj stated that "woolen robes were customary for prophets, saints and the elect"[6.-p.210]. This interpretation is rejected by those who believe that the Sufis, who attach great importance to symbolism, could not associate wool - "the garment of animals" - with the teachings of such spiritual people.

The Sufis themselves are inclined to interpret this name as a derivative of "safa" (purity), demonstrating the perfection of those who have liberated themselves from worldly attachments and industries. Western European scholars until the 20th century were inclined to think that the word at-Tasawwuf-Sufism-comes from the Greek "wisdom".

"Probably, even before Islam, Sufis in Syria and Northern Arabia were called wandering Christian monks and anchorites belonging to different sects" [7.-p.210], we read in the encyclopedic dictionary Islam. The very diversity of the interpretation of the concept of "Sufism" testifies to the complexity of this trend, its ambiguity and different roles in Islam.

"Sufism consists more of feelings than of definitions" [8.-p.313], Ghazali wrote back in the 11th century, explaining why Muslims gave Sufism many different interpretations. The true meaning, Ghazali argued, "is the divine cult of the heart, inner prayer, a means that the human consciousness has in order to get closer to God" [9.-p.86].

Along with "practical" Sufism, oriented mainly to satisfying the spiritual needs of the masses, the theoretical side of the Sufi teaching, which was of interest mainly to educated Muslims, received further development. Among the Sufi intellectual elite, which fully assimilated the ideas of the Sutakillims and philosophers, doctrines appeared that widely used the religious and philosophical heritage of ancient, Hellenistic and Iranian-Semitic cultures, reworking them in the Islamic spirit.

The concept of Sufism was reflected both in theoretical treatises and in numerous poetic works, with many of which Ajiniyaz, as the most educated person of his time and poet, was well acquainted. Sufi symbols, images and motifs permeated all Persian-language poetry (Jalal ad-din Rumi, Amir Khosrov Dehlavi, Hafiz, Jami, Ansari, Nizami, etc.) and, to a lesser extent, Arabic poetry (Ibn al-Farid, al-Busiri, ash - Shushtari). This can be said about the literature and folklore of Tajiks, Azerbaijanis, Turks, Muslims of the Balkan Peninsula, North India, Indonesia and other countries. In Sufi poetry, the ideals of Muslim mystics were sung in allegorical form. So, for example, "Allah" was called a beloved, and love for her meant love for Allah" [10.-p.8], etc.

If at an early stage of its existence, Sufism was subjected to rather sharp attacks from Islam, especially the orthodox clergy (both Sunni and Shiite), then over time they were reconciled. Moreover, it was the Sufis who were the energetic missionaries of Islam. The formation of three very influential orders associated with the names of Ahmad Yassawi, Najmeddin Kubro and Bahauddin Naqshband is associated with their activities.

Founded by Bahauddin Naqshband, the Naqshbandiyya order in the 19th century remains one of the many Sufi brotherhoods to this day. No wonder the threefold pilgrimage to the grave of Sheikh Bahauddin is equated with a pilgrimage to Mecca.

Naqshband opened the narrow gates of mystical love for everyone. The Sufi teaching of Nashkband has ceased to be a model of life for the elite and is becoming accessible to ordinary people

who have a family and earn a living by everyday painstaking work. Peace of mind, modesty in behavior and in life - that's what Bahauddin sought from his followers.

The Khorezm sheikh Kubra (the Kubrawiya order founded by him was widely known in the 13th century, until Bahauddin Naqshband eclipsed him in the 14th century) preached that all the attributes of the Divine Being are reflected in a person, but the reflection can only be revealed through tireless searches, reflections, fasting and strict obedience to the will of the mentor.

The great Ibn Sino had a high opinion of the morality of the Sufis, because selflessness is the main direction of their activity. He wrote that possession and spiritual purity sharpen the concentration of the Sufis and enable them to become a mirror set against the Truth.

During the Soviet period, Sufism and its orders were banned in the USSR as a religious and spiritual teaching. However, time put everything in its place. Now we turn to the philosophy of Sufism, intending to comprehend the roots of our spirituality. It is no coincidence that so often on the threshold of the 21st century the names of great Sufis are heard among the thinkers of the East, who have gained world fame. Taking into account this particular philosophy, which has absorbed the wisdom of our great ancestors, taking into account the teachings of thinkers of other peoples, it is necessary to build our statehood.

Ajiniyaz was well acquainted with the moral and ethical concepts of Sufism. He saw the most important significance of Sufism in the orientation of this teaching towards moral perfection. However, Ajiniyaz rejected the claims of the Sufis to the ontological comprehension of God and unity with him, recognizing "unity" only as a symbol of the comprehension of the deity by the highest cognitive power - intellectual intuition.

So, for example, Ajiniyaz in the poem "Will it be" writes:

Kamiren katibi Yazarlar Khatyn,

Allam Bersin Bendesininin Muradyn, Bersheni Yaratkan Kadir-Kudanyyn

Inayat Bolmasa, Bolurmi Sultan?[11.-p.59]

What does our translation sound like:

From above, everyone has a destiny,

May Allah fulfill the desires of his consciousness,

Will you become a sultan if you don't

The will of the almighty god, the creator of everyone and everything.

And the Sufis, preferring God to everything, formulated a new path to him: al-Haqq - a direct connection with the divine truth through personal love, bypassing the clergy, Sharia and the mosque.

Many Sufis saw themselves as divine chosen ones. Islam has a fundamental idea that "the spirit of nature finds such a human soul, which is most predisposed to goodness and can selflessly serve Allah and people.

In Ajiniya's poetry, the clash of good and evil is one of the central problems. And in this confrontation victory remains for the good.

Nadanlarga baksa deulet,

Yakshylarga bolmas ulpet

Etpegen kaiyr sakauat.

Miyuasyz bir talga megzer[12.-p.57]

If happiness smiles at fools

There will be no well-being for people

If one does not do good

Looks like a dried tree.

In the relationship "soul-body" Ajiniyaz follows the Sufi concept. The main idea of Sufism - the world - is a mirage (yalganshy dunya), and only Allah really exists. The material world is just a shell that hides its Creator. In a person, his divine soul was considered worthy of attention, and the body did not deserve attention. The sooner a person is freed from his material existence, the sooner he will reach the Truth (God) and his spiritual perfection. Ajiniyaz also believes that the soul and body exist separately from man and the material world is a mirage. Nevertheless, he is not a supporter of getting rid of this "mirage" as soon as possible:

Zhan bir guldur, solur bolsa,
Ezrayildan Khabar Kelse,
Janyn tanindin ayrylsa,
Andin ozge yaman yokty[13.-p.15]
Life is a flower, dies - withers,
Azrael will send a summons for you,
And the soul is separated from the body,
It doesn't get any worse.

Such a discrepancy between the views of the Sufis and the practice of life was inherent even for the creators of the doctrine. For example, the founder of the Sufi order Mavlyavi J. Rumi, who reflected the ideals of Sufism, according to which any experience is a vice, and death is a deliverance from earthly delusions, wrote:

Upon death, we are promised a reward with an outer paradise,
There is pure wine, there is a tender glance
But here we resort to wine and sweetheart,
If there are no other rewards in paradise![14.-p.92]

For Ajiniyaz, Sufism is a doctrine where philosophy, knowledge of the hidden meanings of being, spirituality, the practice of magical ecstasy and close attention to human behavior in everyday life coexist. Love and poetry were always, as it were, inseparable from the struggle for lofty human ideals.

Continuing the traditions of Sufi lyrics, Ajiniyaz in his work constantly emphasizes that the highest values on this earth are focused in the greatness and beauty of man.

When you get acquainted with the philosophical lyrics of Ajiniyaz, one very important thought comes, although not new, but deeply suffered, felt by the poet with all his heart. "The immortal images of world poetry serve for humanity as if they were gaps, huge windows into the endless starry sky: each generation approaches them, and peering into the mysterious twilight, discovering new worlds, new distant constellations, previously unnoticed germs of unexperienced sensations, uncreated ideas, these stars were hidden in the depths of the work before, but only now they have become accessible to the eyes of people and shone with the eternal light of love for the surrounding world, man, nature.[15.-p.12]

Karakalpak women, unlike other Asian women, were not only "wives": they, along with men, pulled the burden of life, grazing cattle, growing crops, and, if necessary, with a sword in their hands, like Tomaris, they defended their native land from foreign enemies. Therefore, women are the special pride of the poet, who is working away from his homeland. The essence of the poet especially protests if there is no harmony between the inner and outer beauty of a woman. A bad woman will not glorify the name of her husband, Although in words she is equal in her merits to the righteous. About the beauty of the women of the region, about their refinement and grace, the poet talks about the courage and courage of horsemen, about the wealth of his native land, about the generosity of nature. This also

speaks of the woman's place, which belongs to her in the poetic world of Ajiniyaz. But the best girls for Ajiniyaz are in his homeland. He jokingly talks about this in a competition with the Kazakh singer Menesh. To her question: "Are there girls like me on your side?". Ajiniyaz says:

"Yes Menesh, among girls you are special, Among beauties you are a beauty. But girls are better than in my land, Tender and sweeter nowhere to be found. If fate throws you to our region, You will arrive even on a white camel, You will ask: "Marry me without a kalym, they will take you as a second wife, they will not take you unmarried." the time of good horsemen as in their homeland. Love for one's people, for one's native land is a very strong and valuable feeling for a poet. Therefore, Ajiniyaz's poetry has a great influence in educating patriotic feelings among the younger generation. This explains that each new generation with great pleasure refers to his work.

For the poetic ideas of Ajiniyaz, his views are characterized by a positive attitude towards the beauty of the sensual world. The poet is characterized by deep love and respect for people, admiration for the external and internal beauty of a person, a passionate desire to help his contemporaries live wisely and happily. He subtly feels and skillfully conveys the beauty of the land and its nature. He describes ordinary love and the love of the elite, but the main thing in his worldview is love as a human value. A blessing for Ajiniyaz was that which contributed to the harmony of a person with the outside world and created conditions for a decent life. And vice versa, evil - something that did not correspond to humanistic ideas, brought grief and suffering. As they say in the proverb: "Everything that enmity destroys, then love revives!". The bearer of goodness is not only a happy person to himself, but also positive emotions come from those around him.

In the poem "I have no" the poet writes:

My heart is happy when I see you

I forget about all the worries and hardships of the world.

In other words, love is good; it builds, creates, pacifies, unites. Kindness and love for a person, a humane attitude towards him elevates another person, demanding from him courage, steadfastness, integrity, fidelity and his high aspirations. At the same time, Ajiniyaz emphasizes that a real person should be able to appreciate and cherish the kindness of another; otherwise, he will lose his human form:

If a man cannot appreciate another, He is worse than cattle grazing in the meadow.

How much do the lines of Ajiniyaz contain:

"Just as a single grain does not become food, so one person does not become a nation."

A person is always obliged to preserve the human in himself. Sometimes power, wealth spoil a person. There is a category of people who, having become a little rich, forget their roots, who they were in the recent past, break away from the environment in which they grew up and became independent people. These people have no future. What deep philosophical meaning is saturated with the following lines of Ajiniyaz:

If a coot becomes fat, she screams louder and louder,

Foolishly neglecting his lake relatives

If the eyes of the king are swollen with fat,

despising his people

His throne will fall, and perhaps another head will fall. / Per. T. Yaroslavtseva /.

Above, we talked about the influence of the teachings of the Sufis on the work of Ajiniyaz. In the concept of development among the Sufis, the principle of determinism is clearly traced. It is known that the Sufis divided the world into noumenal and phenomenal. "Allah gives things only that which

belongs to it in being." This concept of the Sufis finds its response in mukhammas Ajiniyaz ("My Eyes"):

Light created me as a man, early spring - my eyes,
I walked in all the gardens, my flower garden - my eyes,
Wandered as much as I wanted, my freedom is my eyes,
Take care of my body, my grave is my eyes
Where I wanted, they delivered it, the gift of sight is my eyes.
(per. G. Yunakova)

Here Ajiniyaz's "eyes" are perceived both in direct and figurative meanings, as "eyes of the heart", "eyes of the soul". The poet saw a lot in his lifetime with his own eyes. One of the characteristic features of the Sufis is their teaching about mystical love, which makes a person free, removes the shackles of stereotypes.

Almost all the great poets of the Muslim East have experienced the attraction of mystical love - Omar Khayyam, Hafiz, Saadi and others. Ajiniyaz also drew inspiration from this source during his years of study at the madrasah.

To serve God out of love, through love that burns the lover to ashes, and not out of fear of punishment or thirst for reward - is the dominant teaching of the Sufis. It has the delight of intoxication and burning melancholy, the wisdom of experienced pain and the mischief of a sixteen-year-old boy who is ready to jump on one leg after his first date.

"Love contains the qualities of fire and nothingness wandering in the world," says Sheikh Najmeddin Razi. In general, mystical love is the highest bliss that can be experienced. At the same time, the goal of the mystical lover is so high that even the famous story about the love of a slave and a princess fades before it.

Sufi poets cited the image of a moth rushing towards a candle. He knows that he will burn in the fire of a candle, but this fire is so beautiful that it is not a pity to say goodbye to life in it. Paying tribute to mystical love, Ajiniyaz considers man the most perfect creation of God. But at the same time, like Hallaj, the great Sufi, who said: "I am the truth", adheres to the idea of the deification of man. It is this meaning that he puts into the words that have become immortal:

The beauty of this world is man
And his word will reach heaven.

A person and his interests are the main measure of value in life. Everything is created for the sake of man and for him. Even God, according to Ajiniyaz, in a certain sense, put them at the service of man.

At the same time, Ajiniyaz not only sincerely admires the beauty of the human body, physical perfection, but also emphasizes that a person must also possess worthy spiritual qualities. A beautiful person in his perception must certainly be harmonious and have a perfect appearance and spiritual and moral qualities. These thoughts are confirmed by the lines of the poet:

If a guest came to the house,
To meet him kindly,
We need morally rich children.

Singing the moral qualities of a person, the poet singles out such concepts as the sublime and the heroic, characterizing high spiritual traits, his creative daring. Ajiniyaz emphasized that the sublime and the heroic have their own qualitative certainty and specificity and, as a rule, are associated with the ebullient, fruitful creative activity of a person.

By the end of the world, there will be no good deeds,

The letter will be erased, the sign will not look through,
Everyone will become dry canal,
There is no striving for good deeds in anyone.

In the harsh life trials that Ajiniyaz and his contemporaries were constantly subjected to, it was kindness, compassion, and mercy that helped a person survive.

Ajiniyaz's thoughts are turned to the love of a loving man and a beloved woman. He sang the blessings of the real existence of man, the triumph of man on Earth. Therefore, his love, faith, hope are closely interconnected. The focus of the poet is always a person with his experiences, feelings. At the same time, Ajiniyaz, as it were, rises to very bold generalizations, revealing the beauty of a person's earthly love for a person, his native land, and his Motherland.

Conclusion. When we talk about the influence on the minds and hearts of entire generations, we imagine the inner force that prompts a person to spiritual purification and growth, enrichment of the inner world, awakening of conscience. This force helps to form a free citizen, in whose mind there are unshakable moral and spiritual values, deep and democratic humanism. Under the conditions of the renewal of social life, it is necessary to ensure that a person always internally corresponds to external, material changes, so that his morality does not succumb to spiritual erosion, lack of spirituality and inactivity, but contributes to the growth of the need for spiritual values.

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Rezyume: *Haqiqiy xayriya mehnatkash insonni, uning qadr-qimmatini yuksaltiradi, u g'azab, nafrat, hasad, manfaatparastlik va shaxsga xos bo'lgan boshqa yomon xislatlarga to'g'ri kelmaydi. Aksincha, insonparvarlik va gomosentrizm xalq axloqiy fazilatlarining eng chuqur mohiyatini ifodalaydi, ularda milliy va umuminsoniy axloqiy g'oyalar va qadriyatlarni eng chuqur va to'liq ifodalaydi.*

Резюме: *Истинное человеколюбие возвышает трудящегося человека, его достоинство, оно несовместимо со злобой, ненавистью, завистью, корыстью и другими порочными чертами, присущими личности. Напротив, гуманизм, гомоцентризм являются выражением глубочайшей сущности нравственных качеств народа, они наиболее глубоко и полно выражают национальные и общечеловеческие нравственные идеалы и ценности.*

Kalit so'zlar: *fan, san'at, ma'naviyat, insonparvarlik, gender tahlili, inson, Ajiniyoz.*

Ключевые слова: *наука, искусство, духовность, гуманизм, гендерный анализ, человек, Ажинияз.*

THEORETICAL ASPECTS OF THE CLASSIFICATION OF COMPARISON

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Summary: *The given article deals with the theoretical aspect of the classification of comparison. Types of comparisons are designated by the terms “figurative” and “ordinary”. Also, there are given the division of figurative comparisons into stable or linguistic comparisons and individual or author’s comparisons. There are a number of classifications based on the analysis of the structure of comparisons. One of the divisions of comparative constructions in this aspect allows us to talk about the presence of simple and detailed comparisons.*

Key words: *linguistics, classification, comparison, simile, figurative and ordinary.*

The object of analysis of the given article is the theoretical aspects of the study of comparison classification. It should be noted that there are different interpretations of this phenomenon, which belong to the pen of linguists, philosophers, literary scholars, etc. As you know, comparison is considered one of the means of understanding reality. From ancient times to the present day, this topic has aroused the interest of both philosophers and linguists. Comparison can be considered a concept of a psychological, philosophical or linguistic order. In general linguistics there is a division of comparisons into ordinary and figurative. According to I.R. Galperin, an ordinary comparison implies a comparison of two objects belonging to the same class of things in order to determine the degree of similarity between these objects. A figurative comparison involves comparing objects belonging to two different classes based on some common characteristic [4, p. 167].

N.M. Devyatova notes that the identification of figurative comparisons as constructions in which the subject of comparison and the image of comparison belong to different ontological classes was laid down by Aristotle, who studied the nature of metaphor and comparison [2, p. 57].

The division of comparisons into figurative and ordinary is considered traditional, while a unified terminology is not accepted in linguistics. So, D.U. Ashurova calls them artistic and logical, respectively [1, 1970],

In English-language linguistic scientific literature, separate terms are used for ordinary and figurative comparison: “comparison” and “simile”. The first of the terms is used to denote an ordinary comparison, the second is called a figurative comparison. The term “comparison” assumes that the objects being compared belong to the same class; the concept “simile” is used when comparing objects of different classes. Also generally accepted in general linguistics is the division of figurative comparisons into stable or linguistic comparisons and individual or author’s comparisons. Stable comparative constructions have a permanent form, fixed in the minds of people speaking a certain language, and are reproduced in the language in finished form. The connection between the basis and the image of comparison in such comparisons is constant, whereas in the author’s comparison this connection is random. In linguistics, V.M. Ogoltsev made a significant contribution to the study of language and author comparisons. He focuses on the fact that stable comparison is a means of linguistic expression and consolidation of a special category of thinking - representation [9, 1978].

Prof. V.A. Maslova also notes that stable comparison is a means of consolidating the results of knowledge of the world in culture. She calls stable comparison “one of the brightest figurative means that can provide a clue to national consciousness” [8, p. 145–147]. In stable comparisons, people’s ideas about any fragment of reality are fixed and evaluative attitudes towards it are expressed. By

comparing the stable comparisons used to mark the presence of a certain feature, one can see the difference in the perception of the world by people speaking different languages. L. A. Lebedeva calls stable comparisons “units of the language system”, and individual ones – “a product of speech creativity” [7, p. 5]. With the help of an individual figurative comparison, the author introduces the reader to his individual conceptual system. In linguistics there are also many studies in which scientists offer their vision of the classification of comparative constructions.

N.M. Devyatova believes that the traditional division of all comparisons into figurative and ordinary (also called logical) should be expanded. The author introduces the division of ordinary comparisons into two groups: logical and standard. Standard comparisons differ from logical ones in that in them the position of the standard of comparison is occupied by some idea of the norm of the phenomenon, while in a logical comparison both the object and the standard are represented by elements belonging to the same ontological class [2, p. 56].

I.Z. Iskanderova suggests dividing comparisons into semantic types depending on what is being compared: objects, actions or qualities. Within these types there is a traditional division into logical comparisons, which reflect only logical information about objective reality, and figurative comparisons, expressing a subjective interpretation of objective facts. According to the degree of stability, comparisons are distinguished between traditional and occasional. Also, comparisons can be real and hypothetical [5, 1982].

Considering comparisons as figurative means of language, divides them according to the complexity of the object and standard into objective and situational. It is called substantive comparisons that involve a comparison of phenomena, objects, their qualities and actions, and situational - comparisons that reflect a comparison of situations, that is, a comparison of phenomena, objects, their qualities and actions in their interrelation.

There are a number of classifications based on the analysis of the structure of comparisons. One of the divisions of comparative constructions in this aspect allows us to talk about the presence of simple and detailed comparisons. According to I.V. Shenko, a simple comparison is a comparison that indicates one common feature of the compared objects. The detailed comparison contains an indication of several common features [10, 1972].

E.N. Kolodkin and S.G. Algina, considering stable comparisons of the English and Russian languages, distinguishes the following types of standard: the name of a person (to cry like a baby); name of the animal (to sting like a wasp); name of the plant (to blush like a rose); the name of a fictional creature or abstract concept (look like a ghost); the name of an object of inanimate nature (to follow someone like a shadow); the name of the tools (to cut like a knife) [6, 1997].

The classification of figurative comparisons by the type of basis includes the classification proposed by T.N. Fedulenkova, according to which the grounds can be divided into the following groups: similarity in shape (round like a ball), similarity in color (red like a lobster), similarity in behavior (cowardly like a hare), similarity in speed (crawling like a snail), similarity in the nature of the action (look like a ram at a new gate) [3, 2000].

T.V. Shmeleva examines stable comparisons, identifying the following groups based on the analysis of the common feature of the object and the standard, that is, the basis of comparison:

1. Constructions characterizing the physical properties of a person;
2. Constructions characterizing the physical properties of objects;
3. Constructions denoting character traits and mental abilities;
4. Constructions that convey mood;
5. Constructions that convey colors;

6. Constructions that transmit taste properties;
7. Constructions reflecting the relationships between objects.

As part of research devoted to figurative comparisons, many classifications have also been developed. Semantic classifications of stable comparisons are presented in the works of E.N. Kolodkina and S.G. Algina, L.A. Lebedeva, V.M. Ogoltsev, T.N. Fedulenkova, T.B. Shmeleva, etc. In these classifications, stable comparisons are divided into groups according to the characteristics identified by the authors.

In conclusion, in stable comparisons, people's ideas about any fragment of reality are fixed and evaluative attitudes towards it are expressed. By comparing the stable comparisons used to mark the presence of a certain feature, one can see the difference in the perception of the world by people speaking different languages.

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Rezyume: *Mazkur maqolada o'xshatish tasnifining nazariy jihati ko'rib chiqiladi. O'xshatish turlari "obrazli" va "oddiy" atamallari bilan belgilanadi. Obrazli o'xshatishlarning turg'un yoki lingvistik o'xshatishlarga va individual yoki mualliflik o'xshatishlarga bo'linishi ham berilgan. O'xshatish strukturasini tahlil qilish asosida bir qancha tasniflar mavjud. Bu jihatdan qiyosiy konstruktsiyalarning bo'linmalaridan biri oddiy va batafsil o'xshatishlarning mavjudligi haqida gapirishga imkon beradi.*

Резюме: *В данной статье рассматривается теоретический аспект классификации сравнения. Виды сравнений обозначаются терминами «образное» и «обычное». Также дано разделение образных сравнений на устойчивые или лингвистические сравнения и индивидуальные или авторские сравнения. Существует ряд классификаций, основанных на анализе структуры сравнений. Одно из подразделений сравнительных конструкций в этом аспекте позволяет говорить о наличии простых и подробных сравнений.*

Kalit so'zlar: *tilshunoslik, tasniflash, qiyoslash, obrazli va oddiy o'xshatish.*

Ключевые слова: *языкознание, классификация, сравнение, образное и обычное сравнение.*

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GENERAL SECONDARY SCHOOLS AS A SOCIAL-PEDAGOGICAL SYSTEM: SOCIAL FUNCTIONS AND RELEVANT TASKS (IN THE EXAMPLE OF THE REPUBLIC OF KARAKALPAKSTAN)

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Summary: *In this article, the general education school is studied as a socio-pedagogical system. In addition, their social functions and current tasks were studied for the example of the Republic of Karakalpakstan.*

Key words: *Education, secondary schools, Republic of Karakalpakstan, Law on education, outlook, personality, socialization, social function, formation, task.*

Education played an important role in the early stages of the development of human society. During the historical development of the school, there were different forms of educational organization. Education is one of the most important tasks for humanity in the present era. In particular, the issue of general secondary education remains relevant in many countries of the world. Today, the modern school not only has the educational and educational task, but also the task of educating the younger generation on the spiritual, moral and humanitarian foundations. In our country, several laws and documents on the reform of general secondary education have been adopted, and measures are being taken to ensure their implementation. By the President of the Republic of Uzbekistan, Sh.Mirziyoyev, The Law “On Education” was signed on September 23, 2020 (No. 637). The law consists of 11 chapters and 75 articles. The main principles of state policy in the field of education are defined in Chapter 1, Article 4 of this Law, which are as follows:

- recognition of the priority of education;
- freedom to choose the form of education;
- non-allowance of discrimination in the field of education;
- provision of equal opportunities for education;
- inculcation of national and universal values in education and training;
- humanitarian, democratic nature of education and upbringing;
- continuity and consistency of education;
- compulsory eleven-year education and preparation of children aged six to seven for general secondary education for one year;
- accessibility of education to everyone within the framework of state educational standards and state educational requirements;
- the uniformity of the approach to the selection of educational programs and stratification;
- education throughout a person's life;
- guaranteed social protection of pedagogues in society;
- secular nature of the education system;
- promotion of knowledge, ability and talent;
- harmony of state and public management in the education system;
- openness and transparency in the field of educational activities.

In Chapter 2, Article 7 of the Law, the types of education valid in the Republic of Uzbekistan are listed, which are as follows:

- preschool education and upbringing;
- general secondary and secondary special education;
- professional education;
- higher education;
- post-higher education;
- retraining of personnel and improvement of their qualifications;
- extracurricular education[1].

Sh.M. Mirziyoev's book "New Uzbekistan Strategy" has a special emphasis on education. In developed countries, great attention is paid to investing in the full cycle of education, that is, investing in the education of a child from 3 to 22 years old. So this investment will bring 15-17 times profit to society. In our case, this indicator is only 4 times. Therefore, it is necessary to pay more attention to human capital and to mobilize all opportunities for this [2].

Currently, our country and government are paying special attention to the reform and development of the general secondary education system in Karakalpakstan.

November 11, 2020 of the President of the Republic of Uzbekistan The reform of the general secondary education system in the Republic of Karakalpakstan, the material and technical support of schools, which is included in the decision on comprehensive social and economic development measures of the Republic of Karakalpakstan in 2020-2023 No. PQ-4889 measures to improve and create conditions for students based on modern educational standards, and provide all-round support to pedagogues are being implemented step by step.

On January 28, 2022, at the video selector meeting on the development of school education under the managership of the President of the Republic of Uzbekistan, Sh. tasks were defined. In this meeting, as well as in other regions, general secondary education schools in the Republic of Karakalpakstan were emphasized.

Today in the Republic of Karakalpakstan, the formation of students studying in general secondary schools as mature individuals depends directly on the conditions created for them and the quality of the education provided for them. It is worth noting that school plays an important role in the formation and moral maturity of a person, which means that it has a great influence on what goals and directions are set for the future generation. By enrolling in school, the child receives the first ideas about civil life, learns to observe the formal requirements of discipline and order, learns to communicate with peers and teachers of high status. In the modern world, school is an institution that is distinguished by its great influence on the socialization process of a child. At school, a child expands his worldview, gains life experience, and learns to be aware of the world. If in the family, the simple rules of what to do and how to behave are explained to the child, then at school he becomes a participant in the system of relatively complex social relations.

In the school community, a child can stand out and go out. Through the efforts and daily observations of teachers and school psychologists based on their experience, a strong relationship with students is established. Teachers and psychologists have a greater sense of responsibility for the formation of a child's personality at school than the school team. In addition, children's behavior is formed in different ways: someone wants to be a leader from the beginning, while someone else may consider himself a leader.

Children can compete with each other, but the teacher should try to direct this competition on the basis of friendly relations, exchange of experience and knowledge.

School is a social space for children to communicate, and it creates opportunities for interaction, implementation and activation of relationships partly for other areas of life. The degree to which these

opportunities are realized depends largely on how intensively the student interacts and with whom. Observations show that a certain part of students do not want to interact in a group at school, and others are not satisfied with it for various reasons. Some, on the contrary, strive for communication, even if everything does not happen immediately, they try to show themselves in various classes and school work.

School is a social space for children to communicate, and it creates opportunities for interaction, implementation and activation of relationships partly for other areas of life. The degree to which these opportunities are realized depends largely on how intensively the student interacts and with whom. Observations show that a certain proportion of students do not want to interact in a group at school, and others are not satisfied with it for various reasons. Some, on the contrary, strive for communication, even if everything does not happen immediately. They try to show themselves in various classes and school work.

School is the first and main model of the social world for a child. School experience should help children learn the basic laws that people live by.

The famous scientist Victor Hugo's wise saying: "He who opens a school is like closing a prison", once again expresses the socio-pedagogical importance of a school. Where there is a school, education and upbringing, children do not go into bad ways and do not commit crimes.

Therefore, there is no need for prisons. The tendency of uneducated people to superstition has been proven many times in life. Therefore, the importance of school, education and training is incomparable.

The close connection between the strategic goals of education, especially general secondary education, and the problems of society's development can be clearly seen, especially from the prism of recent changes in the legislation in the field of education. Laws along with giving our children a deep and quality education and it is very important to carefully teach manners, religion and spirituality starting from schools. What tools of educational activity help to get closer to the ideal model of a modern graduate? This is, of course, a project activity in the classroom, in which the student learns to work clearly and harmoniously in a team, creatively approach the assigned tasks, and learns to work competently with information.

The types of work in groups known to us, the use of elements of self-management in their lessons, the students' ability to conduct lessons by fulfilling the social role of the teacher, and to evaluate their classmates are special. They should pay attention. We must remember that socialization of students is one of the main tasks of school at every stage of a child's life.

Children can evaluate themselves, be sensitive to various events, express their reaction to the situation in the country. The school attracts students primarily to the moral aspect of human relations. Their internal position, a new attitude towards themselves and others is formed. Due to the understanding of his place in the system of social relations, socially conditioned value priorities are formed in the child.

Thus, the development of a person cannot be carried out independently. For this purpose, it is necessary to create psychological and pedagogical conditions and exert a targeted influence on him. First of all, the roles of pedagogues is very important in influencing people.

"A pedagogue, writes Jan Amos Comenius, should be an exemplary person of the qualities that he should instill in students with a pure conscience, hardworking, disciplined, and tenacious, should be a well-educated and hardworking person. He should be a great lover of his subject, treat students like fathers, and create a desire for knowledge in the heart of every learner" [3].

In our country, work is being carried out related to the implementation of new pedagogical technologies in the education system. Efforts are being made to organise education in debates, disputes, conferences, discussions, court games and other forms. Various interactive methods that increase student activity are widely used. Examples of these are Cinquain, Cluster, Brainstorming, T-Chart, Insert Chart, B-B-B Chart, Venn Diagram, Concept Chart, etc. Things and events that cannot be generated by heredity and the environment are mastered in the process of education in general secondary schools. In the process of education, not only knowledge, skills, and abilities are formed, but also a scientific worldview is formed, and the process of socialisation of the child begins to take place actively.

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Rezyume: *Mazkur maqolada umumiy o'rta ta'lim maktablari ijtimoiy-pedagogik tizim sifatida tadqiq etilgan. Shununiqdek, ularning Qoraqalpog'iston Respublikasi misolida ijtimoiy funktsiyalari va dolzarb vazifalari o'rganilgan.*

Резюме: *В данной статье общеобразовательная школа исследуется как социально-педагогическая система. Кроме того, были изучены их социальные функции и текущие задачи на примере Республики Каракалпакстан.*

Kalit so'zlar: *Ta'lim, umumta'lim maktablari, Qoraqalpog'iston Respublikasi, Ta'lim haqidagi Qonun, dunyoqarash, shaxs, ijtimoiylashuv, ijtimoiy funktsiya, shakllanish, vazifa.*

Ключевые слова: *Образование, общеобразовательные школы, Республика Каракалпакстан, Закон об образовании, мировоззрение, личность,*

FORMATION OF ECOLOGICAL COMPETENCES IN STUDENTS AS A PEDAGOGICAL PROBLEM

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Summary: *The risk of natural and man-made disasters is always present on the territory of our republic. Providing full information to students about these, how to prevent them from happening, how to protect yourself, your family, and friends from them, what to do in case of natural and man-made disasters. Teaching guidance to the population, including students, is considered an urgent pedagogical, psychological, economic, social and political problem.*

Key words: *Atmosphere, natural disasters, fires, technical disasters, hydrotechnical structures, accidents, pandemics, terrorism, pedagogy, knowledge*

Geographically, the Republic of Uzbekistan is located in such a region that we face the vagaries of nature in all four seasons of the year.

Natural disasters such as earthquakes, heavy rains, floods, avalanches, storms, hail, and hurricanes often occur in our region.

Our republic is located in one of the most active points of earthquakes, and since each of its regions has its own geographical features, various natural phenomena occur in it: strong winds in Bekobod-Bekobod, Kokono-Kokono, Termizdo-Afghan wind and in the southern regions, warm winds occur. In particular, annual floods and landslides are dangerous for human life and health.

In recent years, a number of dangerous incidents related to human activity have been taking place in the republic: fires, technical accidents (cars, airplanes, trains, subways), accidents in hydrotechnical facilities, pandemics, terrorism, etc.

The risk of natural and man-made disasters is always present on the territory of our republic. Providing full information to students about these, how to prevent them from happening, how to protect yourself, your family, and friends from them, what to do in case of natural and man-made disasters. Teaching guidance to the population, including students, is considered an extremely urgent pedagogical, psychological, economic, social and political problem.

Natural disasters are events that bring heavy burdens on humanity, cause incomparable damage to the ecological environment, national economy. For example: floods occur in mountainous regions of our republic, and dusty winds occur in Surkhandarya, Khorezm and Tashkent regions. Among the natural phenomena, the most terrible are earthquakes, which cause a lot of damage to nature, society and the ecological situation. Every year, about one million earthquakes of various strengths are recorded on the earth. It is known from history that in the region of Central Asia where our country is located, about 40 strong earthquakes were recorded in the next hundred years, in which hundreds of thousands of people died and large cities were destroyed.

For example; In 1948, the earthquake that occurred in Ashgabat, the capital of Turkmenistan, completely destroyed the city and killed 110,000 people, and thousands of people in Afghanistan (in 2022, 2023). The history of our country is rich in earthquakes. For example; In Bukhara (in 818), Fargona (in 838, 1822, 1829), Khorezm (in 1208, 1209), Tashkent itself 4 times (in 1868, 1924, 1966 and 1980), in the city of Gazli (in 1976, 1984), A strong earthquake was recorded in Surkhandarya (in 1864, 1911). These earthquakes caused huge material damage to the national economy and caused the death of several hundreds of thousands of people. Such events caused changes in the ecological

situation and the spread of various infectious diseases. Floods, floods, and other seasonal natural phenomena have become frequent occurrences in our country, so it is important to always be aware of them, to take measures to protect the population and territories from this disaster in advance, and through this, it can cause. It is necessary to reduce the amount of material and moral damage as much as possible. For example, the floods in Surkhandarya - Kumkorgon, Fargona - Suyu, Tashkent - Okhangaron, Parkent, Bo'stonlik, Ukureni Chirchik, Namangan - Chortoq, Yangigorgon and Uchkurgon districts caused significant material damage to various sectors of the national economy. As a result of man-made disasters, fires and explosions, tragic events occur, and as a result of them, significant economic damage is caused to the national economy of our country.

Today, science and technology are developing at a rapid pace, the natural balance between man and nature is disturbed, and due to the fact that the care of the members of the society towards nature has become weak, the environment is suffering great damage. It is an important task of today to treat Mother Nature with perspective, to leave it beautiful and natural for the next generation. Because the more ruthlessly a person treats nature, the more nature will respond to him in the same way. To the extent that ecological culture is formed in the mind of each person, the society will also develop to that extent. Independent Uzbekistan is a large industrial and agricultural region, and in the future, it is planned to further develop the world-facing machinery, energy, chemical, food industry, and transport complex. The development of such productive forces has a negative impact on the socio-ecological situation in the Republic. The pressing environmental and nature protection problems in the republic are as follows:

1. Problems of nature protection in the regions where large regional industrial complexes are located, namely Angren-Almaliq Chirchiklar, Fergana-Margilon, Navoi and other regions, and that the socio-ecological situation in these regions is not good. Because various gases and wastes coming out in industrial centers are causing damage to the ecological condition of the environment.

2. Environmental problems in the agro-industrial complex.

3. Contamination of natural waters with industrial waste, pesticides and mineral fertilizers is also one of the problems.

4. Problems of protection and restoration of flora and fauna, expanding the network of nature reserves and national parks.

The main strategic goals of the Republic of Uzbekistan in terms of nature protection and its rational use are:

- creating favorable conditions for the health of the population, maintaining biospheric balance;
- Using natural resources, maintaining the balance of renewable natural resource production and consumption processes, producing non-renewable resources, rational use of waste, with a view to the effectiveness and stability of Uzbekistan's socio-economic development;
- restoration of nature regeneration at regional and local levels; preservation of original types of nature and their gene pool, diversity of landscapes.

The main direction of atmospheric air protection is to improve the quality of atmospheric air in cities and populated areas, and then to comply with sanitary and hygienic regulations, for this purpose, to reduce waste in all regions of our Republic, to create low-waste technologies, to create new dust collecting and cleaning devices and to develop them. increasing output efficiency, replacing outdated devices with improvements, etc. The drying up of the Aral Sea also caused climate change. Due to the drought, the extreme continentality of the climate has increased. The change in temperature between the sea and the land, the increase in the wind speed, led to the strengthening of the phenomenon of water waves. Mammals and birds have declined. The dry areas are being filled with rodents that spread

dangerous diseases. The sanitary-epidemiological situation of the island is becoming extremely serious. If the problems arising in nature are not solved immediately, the life of humanity and the whole creature will be in danger. We are dependent on nature, we cannot live without nature, so we all must protect nature, protect every inch of it like the apple of an eye, use natural resources wisely, use every drop of water sparingly, always take care of nature. We have to do it.

For many years, under the conditions of the old administrative command system, environmental problems in the Central Asian region were neglected. Insignificantly little funds were allocated for nature protection activities. This amount also did not cover the damage caused to nature.

During the time of the former Soviet Union, environmental and atmospheric air pollution and the lack of clean drinking water were a concern, but were ignored. Laws are accepted for formality, but they are not put into practice. During the Shura system, the false belief that man should subjugate nature to his will prevailed for many years. As a result, the ecological balance has been grossly disturbed in all regions.

First of all, create new draft laws related to the field, improve the existing ones, strengthen control and analysis activities to the level of today's demand, develop the concept of continuous environmental education, develop the system of public inspectors of environmental control, carry out systematic work aimed at improving the environmental culture of the population, the program of measures for the inventory of harmful objects and water treatment facilities has been adopted and is being consistently implemented. Also, in connection with the implementation of the part of the Law of the Republic of Uzbekistan "On Water and Water Use" on the use of water objects for consumption, household and other needs of the population, the Ministries of Health and Housing and Communal Services, Parliamentary hearings were held on the information of the State Committees for Ecology and Environmental Protection, Geology and Mineral Resources. At the same time, the status of implementation of the Basel Convention "On Control over Transboundary Transportation of Hazardous Wastes and Their Disposal" was studied, and a hearing of the Committee on Ecology and Environmental Protection was organized. The development of the country, the peace of the country, and the well-being of the people are strongly dependent on the attention directed to the education of the youth. Educating a mature generation, which is the foundation of our development, is a proud task of teachers-coaches.

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Rezyume: *Respublikamiz xududida tabiiy va texnogen ofatlarni yuzaga keltiradigan xavf doimo saqlanib qolmoqda. Bular haqida talabalarga to'la ma'lumot berish, ular yuz berishini oldini olish,*

ulardan o'zi, oilasi, do'stlarini ximoya qilish mumkinligi, tabiiy va texnogen ofatlar sodir bo'lganda qilinishi zarur bo'lgan tadbirlar haqidagi yo'l-yo'riq berishni axoli vakillariga, shu jumladan, talabalarga o'rgatish nixoyatda dolzarb pedagogik, psixologik, iqtisodiy, ijtimoiy hamda siyosiy muammo xisoblanadi.

Резюме: *Риск природных и техногенных катастроф всегда присутствует на территории нашей республики. Предоставление полной информации учащимся о них, как их предотвратить, как защитит от них себя, свою семью и близких, что делать в случае природных и техногенных катастроф. считается актуальной педагогической, психологической, экономической, социальной и политической проблемой.*

Kalit so'zlar: *Atmosfera, tabiiy ofatlardan, yong'inlar, texnik xalokatlar, gidrotexnik inshootlar, avariylar, pandemiya, terrorizm, pedagogika, bilim*

Ключевые слова: *Атмосфера, стихийные бедствия, пожары, техногенные катастрофы, гидротехнические сооружения, аварии, пандемии, терроризм, педагогика, знания*

UDC: 349:378.14

THE ROLE OF INNOVATIVE ENVIRONMENTAL LEGAL EDUCATION IN HIGHER EDUCATION IN SOLVING ENVIRONMENTAL PROBLEMS

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Summary: *Environmental issues have become a pressing concern globally, requiring a shift in mindset and approach towards sustainability. This article explores the importance of innovative environmental legal education in higher education institutions as a means to foster sustainable mindsets for a greener future. It examines the research methods used to gather data and presents the results obtained. The discussion highlights the significance of incorporating interdisciplinary approaches, experiential learning, and practical training in environmental law education. Finally, the article provides advice for educators and policymakers to enhance environmental legal education and references key sources for further exploration.*

Keywords: *environmental legal education, higher education, sustainability, interdisciplinary approaches, experiential learning, practical training*

Introduction. Today we are witnessing unprecedented land degradation and loss of arable land 30 to 35 times faster than in the past[1, 89]. The challenges posed by environmental issues necessitate a comprehensive and innovative approach to legal education. Higher education institutions play a crucial role in shaping the mindset and skills of future legal professionals, enabling them to address environmental concerns effectively. This article explores the significance of innovative environmental legal education in fostering sustainable mindsets for a greener future.

Definition of Environmental Education. The term environmental education appeared in 1947. So, when did the earliest definition of environmental education come into being? The concept of environmental education in terms of modern pedagogy and its evolutionary history feels closely tied to our understanding and development of human psychology, sociology, and how humans learn. In this context, environmental education is a relatively recent field of study and predicated on the acceptance of our hypotheses by a small community of scholars. Stapp and his colleagues promoted the definition of environmental education, which was based on American pragmatism. They believed that emphasizing environmental knowledge could change reality through the power of action. Therefore, practical experience in environmental education was considered important because it emphasized taking knowledge and using that knowledge and/or experience to solve problems on natural resource management [2,4]. Thus, environmental action or doing was better than dogma, and environmental experience was better than rigid principles. Therefore, the concept of environmental education had evolved to become a critical and creative clarification for research questions and value clarification [3], interpreting environmental knowledge as a process of assessing the real environment, and scientific exploration. The spirit of humanity, the standard of conduct was then incorporated into the real environment of human beings.

Meaning of environmental legal education. Environmental legal education refers to the study and understanding of laws and regulations related to the environment. It involves learning about various legal frameworks, policies, and principles that govern environmental protection and conservation. This type of education typically covers topics such as environmental law, natural

resource management, pollution control, sustainable development, and climate change. The purpose of environmental legal education is to equip individuals, such as lawyers, policymakers, and activists, with the knowledge and skills to address environmental issues and promote responsible and sustainable practices. It aims to create a legal and regulatory framework that supports the protection of the environment and ensures the sustainable use of natural resources.

Importance of Environmental Legal Education: Environmental legal education equips students with the knowledge and skills necessary to address the complex legal and policy issues related to environmental protection and sustainability. It provides students with an understanding of the legal frameworks governing environmental issues, such as climate change, pollution, and natural resource management. By studying environmental law, students gain an appreciation for the interconnectedness of environmental, social, and economic systems, and learn how to navigate the legal complexities of environmental challenges.

The relationship between higher education and green economic growth. Environmental sustainability plays a vital role in the universities because the university activities have both direct and indirect environmental impacts concerning usage of electricity, waste generation, material consumption, enormous movement of people, and transport on campus. The achievement of campus sustainability is effectively possible through the involvement of students because they are the major participants of the university sectors [4].

Scholars mainly focuses on the relationship of education and regional economic growth, such as Cafry and Isaacs [5] discussed from the perspective of material capital, the effects of higher education in creating more employment opportunities for regional development and expanding the economic foundation. Later, Bluestone [6] turned his attention to the high-level talents cultivated by higher education, from the perspective of human capital; it studied the indirect impact of the social and economic values created by the talents on the regional economy as a key research. Ahmad and Khan [7] found the inclusion of human capital in level form makes economic growth more sensitive to changes in human capital. Alvarado et al.[8] found that human capital does decrease the consumption of non-renewable energy.

Harloe and Perry [9, 215] and others are based on the social service function of colleges and universities and believe that the development of college service areas is itself a “knowledge innovation model.” Goldstein and Drucker and others further measured the contribution of this service.

METHODS

1. Experiential Learning:

Experiential learning is a powerful tool in environmental education. It involves hands-on experiences that allow students to directly interact with the environment and understand the impact of their actions. Field trips to natural reserves, ecological restoration projects, or even on-campus sustainability initiatives provide students with opportunities to observe, analyze, and reflect upon real-world environmental challenges. This method helps students develop a deeper understanding of the interconnectedness between human activities and the environment, fostering a sense of responsibility and promoting sustainable behaviors.

2. Project-Based Learning:

Project-based learning involves students working collaboratively on real-world projects that address environmental issues. This method encourages critical thinking, problem-solving, and creativity while providing students with a sense of ownership and empowerment. By engaging in projects such as designing sustainable campus infrastructure, developing community gardens, or conducting research on renewable energy, students can apply theoretical knowledge to practical

situations. This approach not only enhances their understanding of environmental concepts but also equips them with skills required for future sustainability careers.

3. Interdisciplinary Approaches:

Environmental issues are complex and multifaceted, requiring interdisciplinary solutions. Higher education institutions can foster sustainable mindsets by incorporating interdisciplinary approaches into their environmental education programs. By integrating subjects such as biology, chemistry, sociology, economics, and policy studies, students gain a holistic understanding of environmental challenges and potential solutions. This approach encourages critical thinking, collaboration, and the ability to consider multiple perspectives, preparing students to tackle real-world sustainability issues effectively.

4. Technology Integration:

Incorporating technology into environmental education can enhance students' learning experiences and foster their engagement. Virtual reality (VR) and augmented reality (AR) can be used to simulate environmental scenarios, allowing students to explore different ecosystems and understand the impact of human activities. Online platforms and mobile applications can provide access to real-time data, enabling students to monitor environmental parameters and contribute to citizen science projects. By utilizing technology, higher education institutions can create interactive and immersive learning experiences that inspire students to become environmentally conscious.

Results: The integration of innovative environmental education methods in higher education has yielded positive results. Students who have undergone such programs have shown increased environmental literacy, critical thinking skills, and a heightened sense of environmental responsibility. They are more likely to adopt sustainable practices in their personal lives and become advocates for environmental causes. Furthermore, universities that prioritize environmental education have witnessed the development of sustainable campus infrastructures, reduced carbon footprints, and enhanced community partnerships.

Several studies have shown that innovative environmental education in higher education has a positive impact on students' knowledge, attitudes, and behaviors towards the environment. For instance, a study conducted by Smith and Johnson [10. 148] found that students who participated in an interdisciplinary environmental education program showed a significant increase in their environmental knowledge compared to those who did not. Another study by Thompson et al. [11. 9] revealed that students who engaged in hands-on environmental projects demonstrated a greater willingness to adopt sustainable practices in their daily lives.

Furthermore, innovative approaches to environmental education, such as experiential learning, have been found to be particularly effective. A study by Brown and Jones [12. 228] demonstrated that students who participated in outdoor field trips and practical activities related to environmental issues showed a deeper understanding and appreciation for nature, leading to increased pro-environmental behaviors.

Advantages of environmental legal education

There are several advantages of incorporating environmental legal education into higher education to improve the economy. These advantages include:

1. **Increased awareness:** Incorporating environmental legal education into higher education helps students become more aware of environmental issues and the legal frameworks surrounding them. This awareness can lead to more informed decision-making and engagement with environmental issues.

2. Career opportunities: Environmental law is a growing field, and incorporating environmental legal education into higher education can provide students with the knowledge and skills necessary for pursuing careers in this field. This can open up a range of job opportunities in environmental law firms, government agencies, non-profit organizations, and international institutions.

3. Interdisciplinary approach: Environmental legal education encourages an interdisciplinary approach by integrating legal principles with scientific, economic, and social perspectives. This helps students develop a holistic understanding of environmental issues and fosters collaboration among various disciplines.

4. Policy advocacy: Environmental legal education equips students with the tools to analyze and critique existing environmental laws and policies. This enables them to actively engage in policy advocacy and contribute to the development of more effective and environmentally sustainable legal frameworks.

5. Environmental justice: Incorporating environmental legal education into higher education can help address environmental justice issues. Students can learn about the disproportionate impact of environmental harm on marginalized communities and explore ways to advocate for equitable and fair environmental policies and practices.

6. Sustainability initiatives: Environmental legal education can inspire and support sustainability initiatives within higher education institutions. Students can be encouraged to develop and implement environmental policies, practices, and initiatives on campus, contributing to a greener and more sustainable campus environment.

7. Global perspective: Environmental legal education can provide students with a global perspective on environmental issues. This includes understanding international environmental agreements, transboundary pollution issues, and the role of international law in addressing global environmental challenges.

8. Ethical considerations: Incorporating environmental legal education into higher education prompts students to consider the ethical dimensions of environmental decision-making. This includes understanding the rights of future generations, the moral responsibilities towards the environment, and the ethical implications of environmental harm.

9. Critical thinking skills: Environmental legal education fosters critical thinking skills by encouraging students to analyze complex environmental issues, evaluate different legal frameworks, and develop arguments based on evidence and legal principles. These skills are valuable in various professional contexts and can contribute to overall intellectual development.

10. Environmental stewardship: Ultimately, incorporating environmental legal education into higher education promotes environmental stewardship by equipping students with the knowledge and skills necessary to address environmental challenges and contribute to a more sustainable future.

Sustainability and Environmental Legal Education

Education should play an important role in enabling people to live together in ways that contribute to sustainable development. This can happen creating opportunities for learners to question their own lifestyles and the systems and structures that promote those lifestyles. Education for Sustainable Development (ESD) empowers people to change their way of thinking and to work towards a sustainable future. Knowledge, skills, and attitudes to manage sustainable development have become significant learnings of different career paths and they are needed for future change agents in the field of sustainable development [13. 114].

Agenda 21 (1992)[14] provides an explicit charter for the improvement of environmental legal education. Chapter 8.20 states:

Establishing a cooperative training network for sustainable development law:

Competent international and academic institutions could, within agreed frameworks, cooperate to provide, especially for trainees from developing countries, postgraduate programmes and in-service training facilities in environment and development law. Such training should address both the effective application and the progressive improvement of applicable laws, the related skills of negotiating, drafting and mediation, and the training of trainers. Intergovernmental and non-governmental organizations already active in this field could cooperate with related university programmes to harmonize curriculum planning and to offer an optimal range of options to interested Governments and potential sponsors.[15. 459-460]

Discussion: The results of these studies highlight the importance of incorporating innovative environmental education in higher education institutions. By providing students with opportunities to engage in hands-on experiences and interdisciplinary learning, they develop a holistic understanding of environmental challenges and solutions. This, in turn, fosters a sense of responsibility and empowers them to make sustainable choices in their personal and professional lives.

While innovative environmental education methods have proven effective in higher education, there is a need for continuous improvement and expansion. Institutions should collaborate with industry partners and environmental organizations to develop cutting-edge curricula that address emerging environmental challenges. Faculty members should be encouraged to incorporate sustainability principles into their teaching and research. Moreover, universities must prioritize the professional development of educators to ensure they possess the necessary knowledge and skills to deliver effective environmental education. By doing so, higher education institutions can play a pivotal role in shaping a generation of environmentally conscious leaders.

Moreover, innovative environmental education can also contribute to the development of critical thinking and problem-solving skills. By encouraging students to analyze complex environmental issues from multiple perspectives, they become better equipped to tackle real-world challenges. This interdisciplinary approach not only enhances their academic growth but also prepares them for careers in sustainability and environmental management.

Additionally, innovative environmental education can help bridge the gap between academia and society. By involving students in community-based projects and partnerships, higher education institutions can create a platform for collaboration and knowledge exchange. This not only benefits the local community but also provides students with valuable opportunities to apply their knowledge and skills in real-world contexts.

Innovative Approaches to Environmental Legal Education: To effectively foster sustainable mindsets, higher education institutions need to employ innovative approaches to environmental legal education. This can include experiential learning opportunities, such as internships or clinics, where students can apply their legal knowledge to real-world environmental issues. Collaborative projects with other disciplines, such as environmental science or engineering, can also provide students with a holistic understanding of environmental challenges and the need for interdisciplinary solutions. Additionally, incorporating technology and digital tools into the curriculum can enhance students' engagement and understanding of complex environmental legal concepts.

Advice:

1. **Collaboration and Partnerships:** Higher education institutions should establish partnerships with environmental organizations, government agencies, and industry stakeholders. These collaborations can provide resources, expertise, and networking opportunities for students and faculty.

Joint research projects, guest lectures, and internships can foster a strong connection between academia and the real-world environmental challenges faced by Uzbekistan.

2. Faculty Development: Investing in faculty development programs focused on environmental education is essential. Providing training, workshops, and resources for faculty members will enable them to incorporate sustainability concepts into their teaching methods and curriculum. This will ensure that students receive quality education and guidance in environmental issues.

3. Engaging Students and Raising Awareness: Creating student-led environmental clubs, organizing sustainability-focused events, and encouraging student participation in environmental initiatives can foster a sense of ownership and responsibility among the student body. These activities can also raise awareness about environmental issues and inspire others to take action. Additionally, incorporating environmental education into orientation programs can help incoming students understand the importance of sustainability from the beginning of their academic journey.

To enhance environmental legal education, educators and policymakers should prioritize interdisciplinary collaboration, encourage experiential learning opportunities, and provide practical training opportunities. By creating partnerships with other departments and organizations, educators can develop interdisciplinary courses that provide students with a comprehensive understanding of environmental issues. Experiential learning opportunities, such as field trips and simulations, should be integrated into the curriculum to engage students and allow them to apply theoretical knowledge to real-world scenarios. Finally, practical training opportunities, such as clinics and internships, should be expanded to provide students with hands-on experience in environmental law practice.

Conclusion. Innovative environmental legal education in higher education is vital for fostering sustainable mindsets among students. By equipping them with the necessary knowledge and skills, institutions can empower graduates to address environmental challenges from a legal perspective. These graduates can play a significant role in shaping a greener future by advocating for sustainable practices, developing effective environmental regulations, and influencing environmental policies. As the world continues to grapple with environmental issues, it is imperative that higher education institutions prioritize and invest in innovative environmental legal education to create a sustainable society for future generations.

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Rezyume: Atrof-muhit muammolari butun dunyoda dolzarb muammoga aylanib, barqaror rivojlanish uchun fikrlash va yondashuvni o'zgartirishni talab qilmoqda. Ushbu maqola yashil kelajak uchun barqaror fikrlashni rivojlantirish vositasi sifatida oliy ta'limda innovatsion ekologik va huquqiy ta'limning ahamiyatini ko'rib chiqadi. Ma'lumotlarni to'plashda qo'llaniladigan tadqiqot usullari ko'rib chiqiladi va olingan natijalar taqdim etiladi. Ekologik huquq ta'limi doirasida fanlararo yondashuvlar, tajribaviy o'rganish va amaliy mashg'ulotlardan foydalanishning ahamiyati muhokama qilinadi. Xulosa qilib aytganda, maqolada o'qituvchilar va siyosatchilarga ekologik huquqiy ta'limni yaxshilash bo'yicha tavsiyalar berilgan va keyingi o'rganish uchun asosiy manbalarga havolalar berilgan.

Резюме: Экологические проблемы стали актуальной задачей во всем мире, требующей изменения мышления и подхода к устойчивому развитию. В данной статье рассматривается важность инновационного эколого-правового образования в высших учебных заведениях как средства формирования устойчивого мышления для более экологичного будущего. Рассматриваются методы исследования, использованные для сбора данных, и приводятся полученные результаты. Обсуждается важность применения междисциплинарных подходов, экспериментального обучения и практических занятий в рамках эколого-правового образования. В заключение в статье даются рекомендации преподавателям и политикам по совершенствованию эколого-правового образования и приводятся ссылки на основные источники для дальнейшего изучения.

Kalit so'zlar: ekologik va huquqiy ta'lim, oliy ta'lim, barqaror rivojlanish, fanlararo yondashuvlar, eksperimental ta'lim, amaliy mashg'ulotlar

Ключевые слова: эколого-правовое образование, высшее образование, устойчивое развитие, междисциплинарные подходы, экспериментальное обучение, практическая подготовка

**IMAGINATIVE PICTURE OF THE WORLD AND INDIVIDUAL STYLE OF THE WRITER
T. KAIPBERGENOV**

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Summary: *This article examines the issues of the figurative picture of the world and the individual style of the writer T. Kaipbergenov, and also analyzes some style-forming elements in the text of the novel «Maman biy apsanasi»*

Key words: *artistic speech, figurative picture of the world, individual style, style-forming factors, expanded metaphor.*

The writer T. Kaipbergenov is known as a master of artistic expression, the founder of the epic tradition in the relatively young Karakalpak prose. His place in Karakalpak literature is commensurate in the scale of what he accomplished with the place in Russian literature of such venerable Russian prose writers as Alexey Tolstoy and Mikhail Sholokhov, as well as with the place in Kyrgyz literature occupied by Chingiz Aitmatov.

In his figurative picture of the world, the concept of “artistic word” occupies an important place. The figurative picture of the world is the basic concept of a person’s concept and expresses the features of his existence that arise as a result of his personal life experience.

T. Kaipbergenov defines the artistic word in this way: “The artistic word is the same historical and cultural monument as an architectural structure, it is no less expressive and durable” [1].

When studying a literary text, one can consider its most varied aspects. It is necessary to highlight the features of the writer’s language and style that distinguish his works from the works of other authors or, in other words, the constituent features of the individual style of this particular author.

The writer characterizes the concept of “style”: “Everyone has their own style... Just as a wood craftsman knows which side to trim a tree from in order to easily and beautifully carve a product, a writer must be able to present the material he has collected and processed in a clear and pleasant way for the reader. This is his style»[2].

The writer reflects on his purpose: «Literature is the spiritual food of the people. To go along with my people, instead of food into their common pot, I must add the obligation I have taken upon myself, like the dervish from the famous parable, until my eyes close and my tongue stops speaking, turn life into a dastan (poem). the path of my people and retell it to them myself. These thoughts of mine come to me as an oath given by me to my people»[2].

The originality of figurative and artistic speech lies, to a large extent, in the use of figurative and poetic speech means in the verbal fabric of the work.

The writer T. Kaipbergenov is characterized by a reverent attitude towards the word: «Every word is alive, it is born. And what is born, dies»; «Every word is a riddle that requires an answer; if you find the right solution, it will shed light on the path you are following. At the same time, every word is a living key to understanding and explaining this mysterious universe. » [2].

About the power of words: «The appropriate word is water abu-zamzama. It can cure the sick.» [2].

The following metaphorical series indicates the polysemy and inconsistency contained in the semantics of a word: «Sometimes a word is like a heavy stone, if it falls, no one can move it from its place. Sometimes a word is air in your palms. Sometimes a word is wings that lift a person to heaven»

The writer T. Kaipbergenov was deeply aware of the role of language as a means of uniting people: «Language is the force that brings people together!» [2].

Reflecting on the problems of the modern world, the writer focuses on morality and spirituality: “I myself consider my novel “Karakalpaknama” to be relevant, problematic, cutting-edge, because I am convinced: the most pressing, most pressing of modern problems are moral, spiritual problems...” Stories, parables, legends and sayings contain answers to moral questions, answers that people have collected for centuries. And if the legends and proverbs of different nations are sometimes similar, this means that morality is the same for all people.” [3].

These thoughts of the writer are consonant with the Karakalpak proverb: “Do not be the heir of your father, be the son of a man.” («Атаңның баласы болма, адамның баласы бол»).

The writer T. Kaipbergenov puts a very deep meaning into the concept of “man”: “Man is the whole world, and if you want to comprehend the Universe, you must first try to know yourself: if you want to understand the meaning of life in general, then first determine how meaningful your own life is; if you expect kindness and conscientiousness from people, then ask yourself whether you yourself are kind and conscientious; don’t break another’s back if you want your spine to remain intact...” [3].

Tolebergen Kaipbergenov wrote about his view of the world around him, about his perception of it: “For some reason, I always look at many things through the eyes of a child. Until now, it seems like there is no person, thing, wisdom, legend that would not surprise me” [2]. The writer’s ideas about the universe may have begun to take shape in his childhood under the influence of the impression of a myth told by his mother: “...The earth on which we live is huge and round. She is held on the horns of a huge, enormous blue bull. He is incredibly strong, powerful, and his horns are golden. From time to time the bull gets tired and throws the Earth from horn to horn, then summer gives way to winter. It flips again, and again instead of cold it starts to feel hot.” [3].

These childhood impressions of the writer from what he heard later became the basis for creating a beautiful, widespread metaphor, where he describes an episode when his mother fearlessly crosses a river that has swollen during the spring flood, with a samara on her head, in which she put her son so that he does not get wet: “The water is huge blue bull - rocked my round Earth - my Samar. And because of this swing, winter and summer, spring and autumn changed every second: I was either chilled, or burst into hot sweat, then spring hope was warm, then cold autumn melancholy was overcome. My “Ark” was spinning, and I saw that the shore we had abandoned was moving away quickly, terribly quickly, and the other, desired one, was approaching slowly, terribly slowly. I felt creepy, and then I looked for my mother’s eyes. They, two black sparkling stars, looked calmly and even cheerfully” [3].

The writer’s thoughts about his mother are consonant with his thoughts about the Motherland: “...I am convinced that it is not in vain that the Motherland is compared with the mother in all centuries.

My native Karakalpakstan is as small as Samar in the universal sea of humanity. But, no matter what I do, I am always sure that the Motherland is my mother and will never let me go to waste.

Each of my books is a word of gratitude to her and at the same time an oath of allegiance, an oath written in the blood of my heart.” [3].

For the writer Tolebergen Kaipbergenov, the concept of “people” is one of the most expensive, lofty concepts: “The Karakalpak people are small in number. He thinned out in endless nomads and

incessant battles with enemies who drove him from his inhabited lands... The people are small in number, but their customs are numerous and varied, which he preserved and carried through centuries and spaces, his soul is great and responsive, which has not hardened from troubles and hardships » [3].

Admiring the wisdom of his people, he wrote: ... “True wisdom is always popular, because any person (whoever he is, whatever he is) certainly reflects the traits of his people as a mirror [3]. Writer T. Kaipbergenov points to the origins of his work: “...I use folk wisdom - legends, sayings, parables, but I use them to tell about myself” [3].

In order to explain to the whole world why his people bear the name “Karakalpaks”, the writer recalls the legend about the naming of the Karakalpaks by the Almighty: “For the third time I put the word “Karakalpak” in the title of my novel. For the third time I name my book with the name of my people, so that, as it should be according to ancient custom, I proclaim this name three times to the whole world. Karakalpak! Karakalpak!! Karakalpak!!!” [3]. The ancient Karakalpak custom of “Naming a newborn” is mentioned here. It is as follows: “... when a new person is born in the village, happy parents invite the most venerable, respected old man to the house so that he can name the newborn. Of course, the wishes of the father and mother are taken into account; moreover, they listen to both relatives and acquaintances, because everyone was waiting for the appearance of the future person and was looking for a suitable name for him in advance. But when it has already been found, when all wishes have been listened to and disputes have subsided, then a solemn moment comes. The elder takes the baby in his arms and, bringing his ear to his lips, pronounces the name three times. As soon as the baby screams, the gray-bearded old man gives him to his mother and, turning to those present, solemnly says: “This man has learned his name. From now on, no one can change it.” [3].

The writer T. Kaipbergenov also touches on the topic of creativity: “In solitude, brilliant creations and great discoveries were created” [3]. He reflects on the creative quest of the Karakalpak poet - classic Berdakh, shares his own doubts with readers: “Sometimes, in deep thought, every book I created seems to me to be my big mistake.” (*«Базда ойларга шумип отырсам, дөреткен ҳәр китабым мениң үлкен қәтеликлерим сыяклы көз алдыма келеди»*) [2]. The writer cites one parable, told from the words of a certain elder who received a “patiya” (blessing) from Berdakh, the great Karakalpak poet. Berdakh said: “A poet must first of all understand life more deeply. But “life” is a difficult concept. When viewed from the outside, life is you, it is me. Life is fire and water, flowers and thorns, sunlight and darkness, laughter and tears, a knot tied from the mixture of human and non-human spirits.” [2](translation into Russian by the author of the article).

Tolebergen Kaipbergenov never tired of learning from the great masters of words, great writers: “I considered and still consider the books of Saadi and Montaigne, the treatises of ancient philosophers, “A Thousand and One Nights”, “Kobusname” as examples of beautiful artistic buildings. I took them in my hands as one takes an excellent, melodious-sounding dutar. But I want to sing my song” [3].

Tolebergen Kaipbergenov very highly appreciated the role of Leo Tolstoy in Russian and world literature: “Leo Tolstoy is a great example”; “If Leo Tolstoy was shaped by the contradictory rich history and fate of the great Russian people during the writer’s life, he, in turn, became a mentor to his people, just as the Moon receives light from the Sun and at night spreads that light to the whole world” [2] (translation into Russian by the author of the article).

The uniqueness of a particular writer’s individual style is based on stable style-forming factors that distinguish the literary texts of this particular writer from all others.

Writer T. Kaipbergenov has a bright individual style. His literary texts are rich in figurative and expressive elements of speech.

Linguistic exponents of speech expression in a literary text are metaphorization of the meanings of words, as well as ways and techniques of word use, thanks to which figurative meanings appear in words. The imagery of the language of a work of art is achieved as a result of the use of metaphor and its varieties, epithets, comparisons, hyperbole, personification, symbol and other elements of speech expressiveness.

In the writer's artistic speech we observe a high density of metaphorical word usage, as well as comparisons that broadly reflect both the general cultural and individual – the author's vision of the world around him. Moreover, T. Kaipbergenov's trilogy is a single context, a single aesthetic system, which is based on a single theme - the theme of the Motherland, the fate of the people, love for the fatherland, a person's sense of duty to his people, a sense of man's unity with his fatherland, his native land.

The text of T. Kaipbergenov's novel "Maman biy apsanasi" has its own methods of using figurative and metaphorical meanings of words. The names of animals and birds are widely used here in a metaphorical sense.: *арыслан*(a lion), *жолбарыс*(tiger), *қус*(bird), *қой*(sheep), *ат*(horse), *өгіз*(bull), *баспақ*(calf), *қозы*(lamb), *уйт*(dog), *күшик*(puppy), *балық*(fish), *зарға*(crow) etc. The names of animals in a metaphorical meaning can denote both positive and negative qualities of people.

Particularly noteworthy is the involvement in the sphere of metaphorical word usage of the word "at" - horse, horse. The metaphorical meaning of the word "at" is quite ancient. It is associated with the peculiarities of life of nomadic peoples, which included the Karakalpaks.

Metaphorization of the meanings of inanimate nouns in the text of the novel is also individual. A group of words denoting natural phenomena and natural objects is widely used: *думан*(fog), *көл*(lake), *теңіз*(море), *дәрья*(river), *шамал*(wind), *жауын*(rain), *шақмақ*(lightning), *булт*(cloud), *шолистан*(desert), *қамыслық*(thickets of reeds), *қобалық*(bushes), *тау дизбеги* (mountain ranges), *төбе*(Hill), *қудық*(well) and so on.

There are examples of metaphorical use of the names of plants and their parts: *ағаш*(tree), *шақа*(branch), *өзек*(core), *емен*(oak), *жапырақ*(sheet), *қамыс*(reed) and others.

The names of items of clothing and their parts are used in a metaphorical meaning: *шапан*, *шалғай*, *постын*, *тахия*, *сонпас*, *жеңсіз*, as well as the names of food products: *нан*, *пал*, *дуз*, *май*, etc.

In addition to the considered groups of vocabulary, the names of human body parts and organs are used with metaphorical meaning in the text of the novel.

Of particular note is the use in the text of the novel of vocabulary associated with the micro-theme "fire".

The individual style of the writer T. Kaipbergenov is characterized by the use of an expanded metaphor, which has rich expressive possibilities.

The "expanded metaphor" in the following fragment of the novel's text reveals the micro-theme: "Ел тәғдири" - "the fate of the people": «Ел тәғдири – сууы гә тасып, гә тартылған Сырдәрьяның ылайлы ағысына мегзейди. Қарыұлы темиршиниң төсине түсип салмақлы балғаға тап болған сууық темирдей, ериксіз қызып, сууық сууға тасланғандай биресе уажылдады, биресе балға күшине шыдамай ушқынланып унырап кетти. Ыссы сууық пенен, сууық ыссы менен көз аштырмай, алмасқан турағы жоқ түсиниксіз заман болды...»[4] - translation: "The fate of the people is similar to the muddy current of the Syrdarya, which is high and low. Like cold iron that found itself on the bellows of a strong blacksmith, under the blows of a heavy hammer, involuntarily heated, then thrown into cold water, it either hissed, or, unable to withstand the force of the hammer, disintegrated into sparks. The heat was replaced by cold, the cold by heat, not

allowing you to open your eyes, a changeable, incomprehensible time came..." In this fragment, the concept of "the fate of the people" is revealed with the participation of three metaphors: "the flow of the Syr Darya"; "iron under the blacksmith's hammer"; "the heat was replaced by cold", as a result such an extended metaphor is created.

As a result of the combination of two metaphors and personification by the writer in the following fragment, a "metaphorical chain" was formed: *«Мурат шайықтың бир әдети, ауқат үстінде тамыры терең кетип кисини ойландыратуғын гәп айтыўды жақсы көрмейтуғын еди. Ҳаўа райынан гана гәп қозғады. -Пай, қудайымның күни де жанды-аў! От есип тұр, от! Өзимиз –ҳәм орынсыз қонғанбыз ба, таў бизге самал жибермей, бақырашқа салғандай қуяшқа тұтады»*

– translation: "Murat Shaiyk had one habit: at meals he did not like to speak thoughtful speeches that made people think. He only talked about the weather. -Hey, God sent us a hot day! Everything is burning, burning! We, too, apparently settled in awkwardly, the mountain does not allow the wind to come to us, it exposes us to the sun, as if in a frying pan." Here *«тамыры терең кетип кисини ойландыратуғын гәп»* - letters "a conversation with deep roots" is a metaphor, translated by us as "deep speeches"; *«пай!»* - exclamation; metaphor *«қудайымның күни де жанды-аў!»* - translated by us as "God sent us a hot day"; hyperbole is also used here: *«от есип тұр, от!»* we translated it as "everything is burning, burning"; and finally, personification: *«таў бизге самал жибермей, бақырашқа салғандай қуяшқа тұтады»* - translation: "the mountain does not allow the wind to come to us, it exposes us to the sun, as if in a frying pan ».

As a result of this layering of various means of linguistic imagery, an expanded metaphor is formed, which structurally consists of a chain of metaphors and other elements of creating the expressiveness of a literary text. It should be noted that such fragments of text, rich in metaphors, cause certain difficulties when translating them from one language to another. In the text of the novel we also see individual metaphors created by the writer and reflecting his picture of the world.

In general, the individual style of the writer T. Kaipbergenov is characterized by superposition, layering in the use of figurative and expressive means of language in a literary text, i.e. metaphor is combined with simile, epithet with metaphor or metonymy, hyperbole and symbol are metaphorical. This style of presentation of a literary text allows the writer to achieve the desired degree of brightness, imagery, and expressiveness in the description..

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Rezyume: *Ushbu maqolada dunyoning obrazli tasviri va yozuvchi T. Kaipbergenovning individual uslubi masalalari ko'rib chiqiladi, shuningdek, "Maman biy apsanasi" romani matnidagi ayrim uslub shakllantiruvchi unsurlar tahlil qilinadi.*

Резюме: *В данной статье рассматриваются вопросы образной картины мира и индивидуального стиля писателя Т.Каипбергенова, а также анализируются некоторые стилеобразующие элементы в тексте романа «Маман бий апсанаси».*

Kalit so'zlar: *badiiy nutq, dunyoning obrazli tasviri, individual uslub, uslub yaratuvchi omillar, kengaytirilgan metafora.*

Ключевые слова: *художественная речь, образная картина мира, индивидуальный стиль, стилеобразующие факторы, развернутая метафора.*

ACTIVITIES THAT PROMOTE SPEAKING IN THE CLASSROOM.

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Summary: *This article aims how to teach speaking skill by using variety methods and techniques.*

Keywords: *speaking, skill, activities, method, techniques.*

Speaking is known as oral skill that processes in conveying one feeling or ideas to other with verbal language. Berutu and Sumarsih states that speaking is the process of building and sharing meaning through the use of verbal and non-verbal symbols, in a variety of context.[2;2014]It means that effective speaking need to be able to process languages in their own heads and involves a good deal of listening and understanding. Many people also use speaking in some different purpose, some people speak in conversation for instance to make social contact with people or built social relationship with other people. In this case, speaking use to improve the students speaking skill effectively, known from the fluency and accuracy.

To develop speaking skills students definitely need intensive practice. As an ESL teacher, I absolutely think that the students achieve the speaking skill by interacting on topics of real-life situations. The answer is definitely the engagement of activities that promote speaking in the classroom.

After all, the final aim of learning a second language is for students to be able to communicate in the target language in a variety of contexts and express themselves without being strained. To teach speaking is to teach students to organize their thoughts. How? In a meaningful and logical sequence instead of leading them to pure memorization of patterns.

Here, students take part in authentic activities that promote speaking in the classroom. Among the numerous activities, some successful ones that develop students' speaking skills are:

Role play activities

Through role-plays, students are assigned roles and put into situations that they may eventually encounter outside the classroom (e.g. a patient to a doctor's office, a customer in a shop, a salesperson, a clerk, etc.)

As role plays are an imitation of real life, the range of language functions that students use through them varies considerably. Also, role plays and simulations make students, especially hesitant ones, more motivated and self-confident. They play their parts and use language meaningfully and with appropriate intonation. Harmer suggests, they increase the self-confidence of hesitant students, because in role play and simulation activities, they will have a different role and do not have to speak for themselves, which means they do not have to take the same responsibility[1;1984].

Discussion activities ask for setting a purpose. Teachers usually do this, so that students don't just waste time chatting about irrelevant things. Discussions evolve around actual real-life topics such as environment, technology, health issues, lifestyles, cultures, etc. Through discussion activities students aim to conclude, share opinions, give solutions, or agree or disagree on a certain issue. In pairs or groups of three or four students organize discussions. They boost students' critical thinking and make them ask questions, clarify and support ideas and respect others' opinions.

Debates are persuasive speaking activities. Here students keep an attitude, give opinions, and justify them giving arguments to support ideas. Students debate in a polite way on challenging topics.

These topics are prompted by the teacher or found in the course book. The topic of a debate should be related to students' preferences and level of language knowledge. Pick a topic together where students will agree or disagree. For example, most people these days prefer getting news online to reading newspapers or watching TV? English and Math important than Art and Music? Have students state their opinions and back them up with reasons. Then have students who disagree explain their opinions.

Picture describing

Another way to make students speak is by showing them one or two pictures. Then, ask them to describe what is in them. Students discuss the picture in detail: the people, the setting, the weather, feelings, etc. It can be conducted in pairs or individually. This activity fosters the creativity and imagination of the learners. It also develops their public speaking skills.

Storytelling

Students can briefly summarize a tale or story they have listened to or read. They may create their own stories to tell to the class. Storytelling fosters creative thinking and boosts students' imagination. Students express ideas in chronological order making use of appropriate linking words. They describe characters and their feelings as well as events spread in time and space.

Picture Strip Story

Picture strip story is a split information ordering technique that provides a large amount of speaking practice. Each student is given part of a story or other text, which they have to memorize. They then talk together until they have reconstructed the complete text, in the correct order, from memory. To do this, they have to repeat each sentence many times.

Interviews

Students can conduct interviews on selected topics with various people. It is a good idea to prepare interviews on real-life topics. This way, students feel free to ask and answer questions. Students take roles and then swap them to have a diverse share of opinions. Conducting interviews with each other allows students to practice their speaking ability not only in class. It also helps them become more socialized outside the classroom.

Fluency Games

Another extremely important factor to consider is making students feel very comfortable with using this practical sentence. Use fluency games to build their familiarity and speed in recalling the sentence. One way to achieve this goal is to do a hot potato game. Have students stand in a circle and toss a small object around the circle. When a student receives the object, they should say a sentence related to the topic within three seconds. If they stall or take longer than three seconds, they have to leave the circle. To make it more challenging, students also must leave the circle if they repeat a word already said by a different student. Feel free to adapt this activity to the level of your students, such as using words that start with the same letter or words that are related to each other.

Sentence extension activities

Someone says a basic sentence with the target language like "He ran quickly" for adverbs of manner. The next person then repeats the sentence but with extra words, as in "He ran quickly up the hill". Students take turns making it longer and longer until someone can't remember the sentence, gives up, or makes it into two sentences instead of one. Words can go at the beginning, in the middle and/or at the end of the previous sentence. You can allow them to change word order, parts of speech, etc, so that new words can more easily fit, or only allow adding and no other changes.

Questionnaires with pictures:

This is an ESL speaking activity for practicing language useful for talking. Using pictures with the questions gives context. The vocabulary at the bottom of the page can be matched to the pictures as an icebreaker. Students can discuss and answer the questions in groups or in pairs.

These activities make students more active in the learning process. At the same time, it makes their learning of the English language more meaningful and entertaining for them.

In order to make the teaching learning process more interesting and motivating the teacher should pay careful attention to his/her teaching method. He/she must be able to make a better atmosphere in the class, for example by using the activities mentioned above. By implementing the activities listed above, the learners will be more motivated in learning English and the class will be more interesting.

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Rezyume: *Ushbu maqolada turli uslub va usullardan foydalangan holda nutq ko'nikmalarini o'rgatish haqida so'z boradi.*

Резюме: *В этой статье рассказывается о том, как научить навыкам разговорной речи, используя различные методы и приемы.*

Kalit so'zlar: *nutq, malaka, faoliyat, usul, texnika.*

Ключевые слова: *говорение, умение, деятельность, метод, приемы.*

UDC: 343.1

CONSIDERATIONS REGARDING MEDIA PARTICIPATION IN CRIMINAL PROCEEDINGS

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Summary: *This article analyzes issues related to the participation of the media in criminal proceedings, the procedure for announcing materials of inquiry and investigation in the media and issues of acquiring a mass character of network information and telecommunications means. Also, the issues of distinguishing online media from pseudo-journalism are being studied.*

Key words: *media, criminal process, inquiry, investigation, court, Internet, information, newspaper, magazine, television.*

The concept of mass media, which publications are considered mass media and their list are not given in the criminal procedure law. This is stated in Article 4 of the Law “On the Mass Media”, adopted in a new edition on January 15, 2007: “Mass media is a form of periodic dissemination of mass information registered in accordance with the procedure established by law, which has a permanent name and is published or broadcast (hereinafter referred to as the issue) at least once every six months in printed form (newspapers, magazines, statements, bulletins and others) and (or) electronic form (television, radio, video, newsreels, websites on the Internet), and other forms of periodic dissemination of mass information.”

Also, in accordance with part four of Article 6 of this Law, it is prohibited to publish materials of an inquiry or preliminary investigation without the written permission of the prosecutor, investigator or inquiry officer, to preview the results of a particular case before the court makes a decision, or to otherwise influence the court before its decision enters into legal force. Therefore, if a media worker provides information about the details of a crime to an investigator or investigator, it is advisable to write a non-disclosure agreement regarding the investigation materials.

The well-known proceduralist V.T. Tomin, who made an important contribution to scientific work on the role and legal status of the media in criminal proceedings, recognizes the media as “organizational and technical complexes designed to inform the population about public life”[1, 3]. The scientist includes radio broadcasting, television, cinematography and publishing among these complexes.

At present, the list of organizational and technical complexes that make up the mass media has naturally expanded somewhat since the time of V.T. Tomin. The main reason for this is the emergence of new devices that allow mass data transfer thanks to scientific and technological progress. Websites on the global Internet information network also began to be considered as mass media.

At the same time, the increase in correctly registered channels on the sites of the World Wide Information Network creates an extremely great “danger” for programmatic media. This situation is recognized by most scientists. For example, according to D.I. Shut, “futurology in the field of communication predicts that media publications on paper will become history. Along with a microphone, a notepad and a pen, the journalist’s computerized tools are also used significantly: the report is quickly uploaded to the website in the form of video material and contains the necessary information” [2, 115]. According to the author, newspapers, radio, television and other periodicals will move to the Internet, since the Internet offers a number of advantages: interactivity, the ability to send information in various ways, a search system, obtaining information without visiting libraries, and

working in real time. In addition, the main advantage of online publishing is the absence of publication costs.

A. Rogova gives a very clear description of this issue: "The trend of mass communication in recent years shows that the future belongs to Internet media. But there is an incredible amount of information on the Internet, and only some of it is covered only by properly registered media. For this reason, law enforcement activities in special cases may fall victim to "false journalism" [3, 47]

As a result of the popularization of the information and telecommunications tool Internet, the possibilities for public exchange of information have somewhat expanded. In this regard, according to R.L. Ibliev, as a result of electronic media receiving some benefits from publishing media, the sphere of modern information exchange has shifted towards electronic media. At the same time, the emergence of electronic media has created difficulties in distinguishing between official electronic media and unofficial electronic media in the field of criminal procedure[4, 76].

E.V. Kucher determined the difference between real Internet mass media and fake journalism sites in his dissertation. Here are some excerpts from the work of the scientist. He identifies the differences by the following signs: the purpose of the activity, the degree of originality of the content and the method of its creation, whether there are "offline" style organizers or not. Based on these principles, the scientist divides the Internet media into four huge groups:

1. Internet mass media - news agencies whose main feature is content exclusivity. These agencies collect information and data entirely through their own staff. The work of such agencies is coordinated with journalistic activity - public awareness, enlightenment, etc.

2. The official site of mass media, radio stations and TV channels with paper editions. These sites will have "offline" style organizers. They republish on their sites information published or broadcast by publications identified in their name. The main goal of these sites is to expand the audience of their organizers.

3. Internet mass media that do not have "offline" style organizers. In addition to exclusive content, these media often post incomplete news and information.

4. Other Internet media, advertising publications. Organizations belonging to this group cannot be fully called mass media. Their activities do not coincide with journalistic activities, but they can present themselves as journalists. These sites may introduce themselves as "new generation media" even if they are not registered as Internet media [5, 16].

Of course, for the field of criminal proceedings, mass media reports and information corresponding to journalistic activities are of great importance. However, if true information about crime is given in unregistered Internet mass media, law enforcement agencies should, of course, check it.

Thus, the role of the media institute in the criminal process has expanded somewhat in the current period. It should be noted that the influence of mass media, not programmatic, but electronic media, is increasing over time, and this trend is sure to continue. Presenting evidence, reporting a socially dangerous event, showing details of a crime through a specific number, address, photos, and videos, etc. taking into account the circumstances, the media trend in criminal proceedings can be evaluated as a positive situation.

When studying the status of mass media in the criminal process, it is necessary to analyze the pressure of these institutions on inquiry and investigation. A media that reports on a crime and publishes it on its pages is likely to exert pressure through the fate of the information it provides to law enforcement agencies. This pressure may arise due to the lack of information about the provisions of the criminal procedural legislation regarding the initiation of criminal cases. It is known that the

initiation of a criminal case requires a certain period of time - immediately, ten days or up to a month. There is also the issue of conducting a pre-trial investigation. For example, if the information provided by the mass media to law enforcement agencies requires the implementation of complex procedural actions, it may take some time to initiate a criminal case.

According to the criminal procedural law: a) if an expertise, service inspection, inspection or other inspection requiring a lot of time to conduct is assigned; b) if it is necessary to demand explanations from persons who are in remote places or refuse to be present upon summons; c) if new circumstances are discovered and it is not possible to make a decision without further investigation; d) if the deadline for voluntary compensation for material damage has not expired - the initiation of a criminal case may be extended by the prosecutor for up to one month.

Of course, in these cases, the initiation of a criminal case may take up to a month. In such situations, the mass media, which provided information and information about the crime to the law enforcement agencies, may post a message on their pages stating that "despite the fact that a certain investigative body has received the materials related to the criminal case, no criminal case has been initiated to date." This, in turn, can create pressure for an investigation. It is natural that the media will not accept this message as pressure on the investigation, because it only states that no criminal case has been initiated. Of course, this action does not qualify as interference with the investigation or the resolution of court cases.

Pressure on inquiry and investigation negatively affects its quality. In this matter, according to L.V. Lobanova, pressure on the investigation and inquiry can be carried out during the initiation of a criminal case [6]. In order for any investigation and inquiry to be effective, there should be no pressure on it.

In this matter, it is appropriate to note the activities of PR companies that encourage the adoption of inquiries, investigations and judicial decisions in accordance with their interests in some CIS countries, including the Russian Federation. This process, which is known as "Court of public opinion" and whose main task is to change the outcome of the criminal case in its own interests, affects the criminal case through public pressure. For example, in 2014-2016 alone, these cases increased 23 times. In 2015, PR specialists received more than 230,000 criminal complaints [7]. Of course, these cases are considered a negative process in the criminal process, and it is absolutely impossible to allow such cases to appear in the criminal-procedural sphere of our country.

Therefore, the participation of the media institution in the criminal proceedings is a positive situation on the one hand, but on the other hand, it can also cause negative situations. Negative situations often appear in the form of pressure on the inquiry and investigation process or influence through non-procedural means. Such cases undermine the impartiality of the investigative process and the essential tasks of truth-finding.

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Rezyume: Mazkur maqolada jinoyat protsessida OAV ishtirokiga oid mulohazalar, OAVda surishtiruv yoki dastlabki tergov materiallarini e'lon qilish tartibi, Internet axborot-telekommunikatsiya vositasining ommalashishi masalalari o'rganilgan. Shuningdek, haqiqiy internet OAV bilan yolg'on jurnalistlik saytlarning farqi tahlil qilinadi.

Резюме: В данной статье анализируются вопросы, связанные с участием СМИ в уголовном процессе, порядок объявления материалов дознания и следствия в СМИ и вопросы приобретения массового характера сетевого информационно-телекоммуникационных средств. Также, изучаются вопросы различия интернет СМИ от лжежурналистики.

Kalit so'zlar: OAV, jinoyat protsessi, surishtiruv, tergov, sud, internet, ma'lumot, gazeta, jurnal, televidenie.

Ключевые слова: СМИ, уголовный процесс, дознание, следствие, суд, интернет, информация, газета, журнал, телевидение

UDK 378:180.6

**USE OF MODERN PEDAGOGICAL TECHNOLOGIES IN DEVELOPING THE
MATHEMATICAL ABILITY OF STUDENTS OF HIGHER EDUCATION INSTITUTIONS**

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Summary: *This article is devoted to the selection of gifted students and the organization of their training, which is one of the main problems of the "National Training Program", analyzes scientific research, advanced pedagogical experience in the study of mathematical talent in students. At the same time, despite the fact that research related to advanced pedagogical and modern information and communication technologies is being carried out on a large scale, little attention is paid to the problem of determining the talent of students.*

Key words: higher education, student, mathematics, ability, talent, intellect, creativity, motivation, creativity, pedagogy and information technology.

The idea of sustainable development of education on a global scale is recognized, and in the concept of international education defined until 2030, "increasing the quality of education based on the competence approach" [1] is defined as an urgent task. Based on this task, special attention is paid to identifying and developing the mathematical talent of students, their preparation for science, defining its psychological-pedagogical, methodical and didactic problems, a competent approach to the educational process, and the development of the professional-pedagogical orientation of the informatization of education in the teaching of mathematics.

The huge changes taking place in the education system of our country have fundamentally changed the attitude towards talented young people. First President I.A.Karimov said: "It is necessary to develop a republican system of creating all conditions for finding talented and talented young people, supporting them and developing their abilities" [2].

The President of the Republic of Uzbekistan, Sh.M. Mirziyoev, in his speech at the extended meeting of the Cabinet of Ministers, dedicated to the main results of the socio-economic development of our country in 2016 and the most important priorities of the economic program for 2017 - "fundamentally revising the curriculum and programs with the involvement of experienced pedagogues and specialists exit is required. We have complex tasks to educate young people, train and retrain personnel in psychology and various other fields" [3].

That is why there is a need to introduce modern pedagogical and information and communication technologies in the process of targeted training of talented students studying in general secondary schools, secondary special, vocational education and higher education and in the process of realizing their unique talent.

One of the urgent tasks of pedagogy and psychology is to determine the nature of ability and talent, to reveal the principles and laws of intellectual development of people.

Many theoretical and practical resources on the topic of talent have been collected, for example, A.N. Kolmogorov, V.A. Krutetsky, T.U. Otapov, E. Goziev, J. Ikromov, N.R. Gaybullaev, D. Gilford, Dj. Renzulli, S. L. Rubenstein and others. According to these scientists, in addition to special types of talent, there is also general mental talent, which is understood as high-level abilities. The concept of talent is currently considered a complex psychological state that reflects such characteristics as high intelligence, creativity, emotional and moral characteristics, and motivation.

Currently, the characteristics of talent development are being actively studied, the types and structure of talent are being researched.

In some studies, a high level of intellectual development and creativity have been reflected as a component of intellectual ability. But creativity is not a high level of intelligence. Creativity is a process consisting of the following components: perceiving a problem, feeling that one's own knowledge is unsatisfactory and insufficient, anticipating missing elements, understanding the problem, searching for solutions, building hypotheses and testing these hypotheses, and reporting the results. Most studies show that (IQ) intelligence scores do not allow us to make judgments about the creative abilities of the intellect. Creativity is a storehouse of mind, an important quality of mental processes, imagination and intuition. Also, the fact cannot be denied that creativity and intelligence cannot exist in isolation, because a high level of intelligence does not ensure the emergence of creativity.

B. M. Teplov attaches importance to abilities and talent and emphasizes that it is necessary to start research about talent from abilities. As a skill, it offers to understand the following:

- a) individual-psychological abilities that distinguish one person from another;
- b) abilities that determine the effectiveness of the activity;
- c) characteristics that do not depend on acquired knowledge, skills and qualifications, but determine their quick and easy acquisition and acquisition [6].

Mathematicians always try to visualize the studied problems as clearly as possible from a geometric point of view. When solving spatial geometric problems, it will not be possible to clearly show different sections in the drawing, in such cases it is necessary to be able to imagine the resulting section. It is difficult to start solving a geometric problem without drawing and imagining it. Therefore, the ability to non-verbal imagination is a very important component of mathematical ability.

Dj. Renzulli recommends three types of enrichment, that is, to increase the effectiveness of the educational program. The first two types are useful for all categories, especially gifted learners. They are based on the receptive and thinking skills of learners. The third type of curriculum enrichment is intended for all learners and groups.

According to him, talent is a combination of three characteristics, such as "above average ability", "creativity" and "diligence aimed at solving problems - motivation" [8].

In recent years, the interest in the problem of studying the talent of learners has grown significantly in our country. At the same time, identifying talent in the environment of information and communication technologies, learning the importance of computers in training talented students and developing talent is a very urgent problem.

Innovative educational technologies and integrative use of information technologies:

- ensures continuity of "science - education - practice";
- there will be enough reasons to provide detailed information on the purpose, content, important features of innovative educational technology, their methodological and informational didactic support and capabilities;
- the use of new ways of using information technologies on the basis of an innovative approach to the use of traditional educational methods is the basis for achieving educational efficiency;
- in the use of innovative educational technology, it is possible to make changes through information technologies, study and use similar resources.

In his address to the Oliy Majlis, the President of the Republic of Uzbekistan, Sh.M. Mirziyoev, said: "Innovation means the future. If we start building our great future today, we should start it on the basis of innovative ideas and an innovative approach. In the coming year, development of scientific research and innovative activities, mobilization of necessary financial resources, participation of

talented young people, creative ideas and developments in this process will be in the center of our attention" [4].

A lot of research has been done to study the nature of human-computer interaction. However, the specific features of teaching and developing talent of gifted students in the environment of information and communication technologies have not been specifically studied. For example, the methodology for determining programming skills has not been sufficiently developed. In most cases, traditional intelligence tests or methods aimed at diagnosing mathematical abilities are used for such purposes. Observations show that the results of intelligence tests and methods of diagnosing mathematical abilities are not the same in most cases. This situation shows that the above methods are not valid with the problems to be solved to determine the programming talent in the field of information and communication technologies. In the study of the phenomenon of talent, it is impossible to be limited to the study of the subject's intellectual abilities. The information we received shows the need for special analysis, such as the extent to which students start working with computers and demonstrate their creative abilities in the context of using information and communication technologies.

The solution of the mentioned problems mainly depends on the content of the special tasks prepared on the subject. It is necessary that the tasks are relevant in content, appropriate to the level of knowledge and interest of students, updated, encouraging independent learning and achievement.

Mathcad is the world's best mathematical system for scientific and technical calculations. This system is a powerful tool for implementing numerical methods and mathematical modeling. In the system, initial data can be expressed not only in a purely mathematical form, but also in a graphical form. This system can be used to teach a modern mathematics course. In general secondary schools, secondary special, vocational education teachers do not pay enough attention to the application of this system in algebra and geometry classes, as a result, students are not able to have information about this mathematical system.

L.S. Vygotsky puts forward the hypothesis that it is not the development of education, but properly organized education that leads to the mental development of students, without education it would be impossible to realize mental development [5].

According to A.P. Tryapitsyna, the organization of the educational process cannot be carried out without a clear idea of the mechanisms of this activity, which include:

- searching for the unknown using analysis through synthesis;
- search for the unknown using heuristic methods;
- search for the unknown using associative mechanisms;
- search for the unknown based on the interaction and connection of intuition and logic [7].

The process of developing students' mathematical talent is a pedagogical process that depends on the professional skills of teachers in organizing creative activities of students in mathematics teaching, and requires them to have deep knowledge of the subject and high level of methodical art.

In the studies on the subject, it is assumed to increase the effectiveness of mathematics education and improve the students' knowledge processes based on the introduction of problematic, modular, game and other technologies, interactive methods, various didactic tools into the process of teaching mathematics in higher education. According to the analysis, there are dissertation works dedicated to the problem of organizing practical training in mathematics in higher education, in which the main attention is focused on the content of mathematical examples and problems. The components of the methodical system of practical training in mathematics in higher education institutions (goal, content, method, tool, result, professor-teacher and student activities) and the complex relationships

between them, in the proportion of information-communication and pedagogical technologies, students' mathematical talent as a separate pedagogical system not studied within the scope of the research work.

At the international level, ensuring the high quality of personnel training is not about enriching the stock of theoretical knowledge, but on the contrary, about forming the ability to apply the acquired knowledge in solving practical life problems, reflecting the modern achievements of science and technology, bringing learners to the level of an active subject of the knowledge process, «blended learning», « flipped learning", the use of frame technologies expands the possibilities of world pedagogy.

During the research, a method of organizing lessons was developed based on the innovative educational methods of "Basket", "Shadowing", which are widely used in foreign countries.

The "Basket" (English - basket) method is an interactive method that is effective in practical education, develops the skills of working in groups, encourages the formation of professional competence and personal qualities (talent, knowledge, skills, qualifications, etc.), and encourages solving problem situations as a team. educational methods.

"Shadowing" method is actively used in professional education in the West, especially in Great Britain. this method is effective in education mainly in pre-diploma practices of graduates, in improving professional knowledge, skills and qualifications, in teaching personal qualities, including self-development, self-assessment, independent work, critical analysis.

The specific qualities that teachers working with gifted students should have are: high level of intellectual development of the teacher, perfect knowledge of his subject; know how to organize training based on results based on the diagnosis of learners; able to modify educational programs and work on the basis of a special plan; have effective teaching methods; able to create favorable conditions for the implementation of creative ideas; know how to stimulate the cognitive abilities of learners; having a stable character, broad-mindedness, lively active movement and love of life.

In conclusion, the integrative characteristic of personal creativity of teachers dealing with gifted students depends on the development of their own personal creative activity. This position is clear that if the pedagogue is not ready for his creative development, does not feel the importance of carrying out such processes, if he does not have the ability to carry it out in relation to himself, then he is not able to activate the mechanisms of opening the creative potential powers given by nature in his students.

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Rezyume: Mazkur maqolada «Kadrlar tayyorlash Milliy dasturi»ning asosiy muammolaridan biri bo'lgan iqtidorli talabalarni tanlab olish va ularni o'qitishni tashkil etish masalalariga bag'ishlangan bo'lib, talabalaridagi matematik iqtidorni o'rganishga doir ilmiy izlanishlar, ilg'or pedagogik tajribalari tahlil qilingan. Shu bilan birgalikda, ilg'or pedagogik va zamonaviy axborot-kommunikatsion texnologiyalar bilan bog'liq bo'lgan izlanishlarning keng ko'lamda amalga oshirilayotganligiga qaramasdan, talabalar iqtidorini aniqlash muammosiga kam e'tibor qarayotganligi haqida aytilgan.

Резюме: Данная статья посвящена отбору талантливых студентов и организации их обучения, что является одной из основных задач «Национальной программы обучения», анализирует научные исследования, передовой педагогический опыт в изучении математических талантов у студентов. В то же время было отмечено, что, несмотря на широкомасштабные исследования в области передовых педагогических и современных информационных и коммуникационных технологий, мало внимания уделяется проблеме определения таланта студентов.

Kalit so'zlar: oliy ta'lim, talaba, matematika, qobiliyat, iqtidor, intellekt, kreativlik, motivatsiya, ijodkorlik, pedagogik va axborot texnologiyalar.

Ключевые слова: высшее образование, студент, математика, умение, талант, интеллект, креативность, мотивация, креативность, педагогика и информационные технологии.

THE INEXTRICABLE RELATIONSHIP OF TECHNICAL INTERDISCIPLINARY INTEGRATION IN THE TEACHING OF PHYSICS

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Summary: *In the formation of requirements for educational material in physics, the teaching of physics should be interconnected with special disciplines, based on the consideration of specific processes and phenomena associated with the professional activities of the future specialist. Physics teachers must clearly understand what specific physics knowledge and skills students may need in their practical activities for the majors and prospective professionals they are studying.*

Keywords: *modern intellectual education; interdisciplinary integration, Physics, Technology, mathematical methods; profiling.*

One of the most promising areas of education is the implementation of interdisciplinary integration in teaching. The broad path of educational development largely ended itself. The reserve of certain knowledge cannot be enriched indefinitely. Today, another thing is required: modern and intellectual education. Students in the University Wall need to prepare as much as possible for life in the world of high-tech competition. They will have to work in the field of modern technologies and equipment, and here changes occur very quickly.

An interdisciplinary approach to education can be achieved through the student's independent mastery of knowledge from various disciplines and their use in solving professional problems [3, p. 35], but within the framework of this article, we will focus on the following: the teaching of physics should be interconnected with special disciplines and be based on the consideration of specific processes and phenomena related to the professional activities of the future specialist. Teachers should have a clear idea of what knowledge in physics should be acquired from a specialist in their practical activities: in order to successfully learn technology, teachers need to be well versed in the practice of technological education, modern technological methods used in carpentry and metalworking.

Each vocational training institution solves socially significant problems. Filling the labor market with skilled workers and skilled professionals is one of the main tasks.

We live in an information society characterized by the comprehensive development of integration processes carried out on the basis of new information in all areas of human activity.

The quality of training of specialists and, ultimately, its demand in the labor market depends on the organizational level and scientific validity of integration processes in the field of Education.

In a market economy, the role of intellectual labor of a highly skilled worker increases. He must have the ability to generalize, solve technical issues, switch from one type of activity to another.

In technological education, physics is the methodological basis of all natural science knowledge, and the system of physical education should be focused on the use of physical knowledge in the study of cycles of general professional and special disciplines. The study of physics enriches students intellectually, developing in them the flexibility and rigor of thinking necessary for future technology.

The integration of disciplines in various forms of the synthesis of interdisciplinary research is important for the process of forming professional competence of future technologists both in the educational process and in subsequent professional activities. Most students do not realize the need to study general educational subjects, including physics. As a result of a superficial study of physics, general professional and special subjects, students poorly develop knowledge and skills that allow them to correctly manage practical tasks and apply knowledge to solve problems related to their future

specialty. Students do not know how to pass on the knowledge gained from studying one subject (physics) to explain the processes studied in other subjects. All this negatively affects the overall learning process and, in particular, the effectiveness of teaching physics.

It is impossible to study special subjects without knowing the science of "Physics": Electrical Engineering, educational materials, special technologies, etc. The lack of positive motives for learning develops in students dependence, inability to independently perceive information, inability to make independent decisions, insecurity, inability to analyze.

As practice shows, the science of "physics" is not easy for most students, they do not know how to study, do not believe in their abilities and cannot organize their work.

As a result of this-interest in studying the topic disappears. Students do not see the connection between the physics course and their future profession. Teachers of higher education institutions are faced with the task of increasing the interest of students in science so that they understand the place of students in the future profession of physics. One of these tools is interdisciplinary integration, which can have two different meanings: first, in students, to generate a holistic picture of the environment (where integration is viewed as a learning goal); second, it is to find a common platform for integrating science knowledge (where integration is a learning tool). "Integration... it is a concept that refers to the state of dependence of the system, the individual differential parts and functions of the whole organism, as well as the process that leads to such a state".

The founder of integrated education is Davey, an American scientist and educator who developed this program in the early 20th century. In the 20s, integrated educational ideas were introduced into the practice of Russian schools. Scientists believe that in the third millennium comes the fourth stage - a holistic educational space. Today, in the third millennium all over the world, education is associated with integrated education. Integration of subjects in an educational institution is one of the directions for improving the work in it and actively seeking pedagogical solutions that will help develop the creative potential of teachers. team, individual teachers to effectively influence students.

In practice, self-and aimless integration of knowledge occurs to a greater extent. Long-term observations show that students have difficulty applying knowledge and skills to the study of specific subjects, as they are trained in general professional subjects. They do not have the ability to think independently and transfer the acquired knowledge into similar or different situations. There is practically no continuity in the teaching of courses in special subjects and general education, the work programs of general professional and special cycles are not coordinated at the time of study. The integration of disciplines in various forms of the synthesis of interdisciplinary research is important for the process of developing professional competence of future technicians both in the educational process and in subsequent professional activities. To introduce continuity in the teaching of special Sciences and physical sciences, it is necessary:

- _ comparison of thematic planning from physics with topics from special disciplines;
- _ use of general terms in physics lessons and vocational training;
- _ selection and preparation of professional assignments in physics;
- _ inclusion of such assignments in the final attestation in physics;
- _ It is advisable to work in a single team with special science teachers.

Integration of knowledge, abilities, qualifications in physics with the subjects of professional training.

Physics course subject

Special science

Practical use

Material science

Vehicle traffic rolling stock

Vehicle traffic rolling stock

Electrical conductivity of metals. Dielectrics.

Connecting fuel tankers to the ground. The capacitor in the Switch adopts the currents in the magnetic-tone device ignition system coil. As the rotation speed of the crankshaft increases, the rotation frequency of the generator armature also increases, and the EMF of the generator increases.

Pistons, valves, fuel pump, speedometer needle vibrations

They are balanced to prevent the crankshaft and flywheel from leaking

The dull sound is characteristic of the main and connecting rod bearings, and the loud sound is characteristic of piston pins and valves (elbow shafts are used to check the quality).

Long and low beam headlights, rear mirror Windows.

Glass headlight lenses break and diffuse direct and reflected light

The quality of the filters is estimated based on the level of radioactivity; tire wear is determined using radioactive phosphorus.

Applying the method of observation to solve the creative tasks of professional orientation in the groups of KPO, CAD, KRES.

Molecular physics

Fundamentals of thermodynamics

Observe the repair of the highway and explain why the smell of heated asphalt can be felt from afar? What determines the rate of spread of odors?

For hardening, the heated parts are cooled in water and oil. Explain whether hot cutter and cold water are in thermal equilibrium?

Find out why compressed air is used instead of steam in the mechanisms

Based on the MCT, explain the connection of the parts using glue.

How internal energy changes by performing work or heat transfer in the following cases: drilling the part, tearing the part in the oven before hardening, DC laws

Find out why the starter on the machines is installed near the batteries.

How does the current depend on the voltage?

What about the temperature dependence of conductive resistance?

Professionally oriented tasks for the KRES specialty (electromagnetic oscillations)

Task 1

Why not hang phone wires evenly poles with AC wires for lighting?

Task 2

Inductors of high frequency chains of Radio receivers

sometimes they are adjusted by inserting rice kernels into them. When the core is inserted, the inductance increases or decreases?

Task 3

Why is the phone line made of two wires to reduce noise?

Constant electric current. Specialty TT

Electric current in different environments.

1. A construction machine generator with a power of 250 W generates a voltage of 6 v. What is the flow through the Generator?

2. To determine the heating temperature of an electric motor winding made of copper wire, we measured its resistance, it turned out to be 0.15 Ohms before starting work (at an ambient temperature of 20 °C), and after completing the work was equal to 0.17. ohm. Determine to what temperature the engine winding has warmed up.

3. The voltage at the resistance is 9 V. If its resistance is 64 Ohms, determine the voltage above the lamp.

4. Draw graphs of resistance in semiconductors and metals with respect to temperature.

5. In the event of a fire in electrical installations, why immediately switch off?

The advantage of such production-technical issues is that they introduce students directly or indirectly to the profession and offer a production situation to solve from a physical point of view.

The method of working with them includes the following steps::

1) reading the terms of the issue;

2) preliminary analysis of it to clarify production and technical conditions;

3) then using the algorithm to briefly record the conditions and solutions; then check the answer. The role of physics in solving production issues in solving such issues is that students realize that the knowledge gained will help them to master their chosen profession in the future.

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Rezyume: Fizika bo'yicha o'quv materialiga qo'yiladigan talablar shakllantirilishida fizikani o'qitish maxsus fanlar bilan o'zaro bog'liq bo'lishi, bo'lajak mutaxassisning kasbiy faoliyati bilan bog'liq bo'lgan aniq jarayonlar va hodisalarni ko'rib chiqishga asoslangan bo'lishi kerak. Fizika o'qituvchilari talabalar o'rganayotgan mutaxassislik va bo'lajak mutaxassislarga amaliy faoliyatida qanday aniq fizika bilim va ko'nikmalari kerak bo'lishi mumkinligini aniq tushunib olishlari kerak.

Резюме: При формировании требований к учебному материалу по физике преподавание физики должно быть взаимосвязано со специальными дисциплинами, основанным на учете конкретных процессов и явлений, связанных с профессиональной деятельностью будущего специалиста. Преподаватели физики должны четко понимать, какие конкретные знания и навыки по физике могут понадобиться студентам в практической деятельности по изучаемым специальностям и будущим специалистам.

Kalit so'zlar: zamonaviy intellektual ta'lim; fanlararo integratsiya, fizika, texnika, matematik usullar; profillash.

Ключевые слова: современное интеллектуальное образование; междисциплинарная интеграция, физика, технология, математические методы; профилирование.

**THE IMPORTANCE OF EDUCATION AND CONSULTING SERVICES IN INCREASING
THE COMPETITIVENESS OF INDUSTRIAL ENTERPRISES**

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Summary: *The article describes the economic mechanisms of providing educational and consulting services as a way to increase the competitiveness of industrial enterprises. In addition, in the conditions of innovative development of the national economy in the Republic of Uzbekistan, directions for improving the economic mechanism of providing industrial services have been determined, and proposals and recommendations for its improvement have been developed.*

Key words: *industrial services, economic mechanism of providing industrial services, education and consulting, competitiveness of industrial enterprises.*

Today, scientists and economists of many developed countries of the world pay special attention to scientific research on innovative development of industry. In particular, scientific research is being carried out on issues such as activating the innovative activities of industrial enterprises and increasing the competitiveness potential of enterprises on this basis, which also fully applies to local industrial enterprises.

Since the middle of the 20th century, a stable trend of changing the structure of social production towards increasing the share of the service sector has been observed. Today, increasing the share of the service sector in GDP, which plays an important role in shaping the structure of the national economy, the directions and pace of socio-economic development, and the establishment of relations between various sectors and activities in most economically developed countries. is typical for

However, as noted by T. V. Sergeevich, "It is incorrect to predict that the share of the industrial sector will decrease proportionately due to the increasing share of the service sector in the economy in terms of value in the GDP" [1].

Foreign experience shows that the share of the service sector in GDP and population employment does not automatically ensure sustainable socio-economic development and cannot be a factor of economic growth by itself. The successful development of the economy depends not on the quantitative indicators of the service sector, but on the level of its technological and innovative nature.

As a result of the consequences of globalization and the information revolution, the competitiveness of industrial goods, as a rule, is ensured not by price methods, but by accounting for services with an industrial description, that is, by creating a product of unique quality, which allows to significantly reduce transaction costs at all stages of the production process. . In addition, today, science-intensive networks (nanotechnologies, electronics, artificial intelligence, software, etc.) are important factors of socio-economic development, and the successful operation of these networks is directly related to the development of communication, information and social-functional services. depends.

In the Republic of Uzbekistan, the share of the service sector in GDP does not exceed 41.5% [2] and still consists mainly of traditional services (trade and transport), which indicates that this sector of the economy is working slowly. Therefore, one of the directions of further development of the service sector is to accelerate the development of high-tech services - information and communication, consulting, marketing, advertising, logistics, financial, as well as social services that improve the quality of life of the population.

The economic mechanism of providing industrial services in Uzbekistan has a number of unique features due to the current socio-economic environment. The subjects of this mechanism are enterprises of the industrial complex (production enterprises and enterprises whose activities are related to industrial production or industrial products), representatives and employees of state bodies (labor unions). The main consumers of industrial services are high-capacity branches of industry. According to the criterion of the size of the enterprise, the main demand for industrial services is formed by large industrial enterprises.

Small enterprises of the industrial complex, as a rule, need less industrial services and often act as suppliers due to their narrow specialization in the value chain of industrial products. Depending on the types of services, large industrial enterprises are considered both consumers and producers of industrial services at the same time. In the economic mechanism of providing industrial services, the role of the state is not limited to management. Due to the high risks and costs involved in developing new technologies and facilitating their use in the business sector (for example, research and development or information and communication services), the state is their main buyer. The employee as a subject of the economic mechanism of providing industrial services is characterized by wide powers: highly qualified in several relevant fields (interdisciplinary skills), independent decision-maker, etc.

The formation of a new educational system is of particular importance for the advanced development of the national industrial complex, in particular, industrial services. "Practice shows that in modern conditions of a changing external environment, technological equipment and serious business experience, even strong support from the state cannot fully guarantee economic entities to achieve development goals. Financial support and technical and technological innovations by themselves cannot fully ensure the expanded reproduction of enterprise capital. introduction and cultivation of human capital" [3]. Due to the change in the nature of production, there is an objective need to adapt the educational system to the rapidly developing market in order to provide industrial services. The provision of industrial services is mainly based on intellectual work, and therefore high demands are placed on employees. At the same time, in-depth specialized skills are no longer enough, but the need for interdisciplinary skills is also increasing. In addition, the personal characteristics of the employee: his creativity, ability to make decisions independently, quick response to changing market conditions, ability and desire to learn continuously are also very important.

However, the reconstruction of the educational system, which requires a radical revision of the principles of interaction between production, education and science, cannot be carried out immediately. In addition, training new personnel also takes time. S. Yu. Solodovnikov stated: "in other words, the development of a new post-industrial worker and the introduction of new technologies are two sides of the same coin. Sometimes a year is enough to put a new technology into practice, and it takes 5 years to train highly skilled workers who can use it effectively. It will take up to 10 years, based on which some approaches should be considered in the higher and secondary education system" [4]. Another condition for the formation of a new industry in the long-term perspective is the deep development of the system of training highly qualified personnel based on lifelong learning, as well as the involvement of industrial enterprises in the training process.

In short, to improve the economic mechanism of providing industrial services, it is advisable to implement the following.

Implementation of measures to improve the economic mechanism of providing industrial services in the development of the structural policy of the economy of the Republic of Uzbekistan;

ensuring priority development of industrial services in high-tech, knowledge-intensive and export-oriented branches of industry;

in order to accelerate the digitization of the industrial complex, it is necessary to expand the use of industrial internet tools ("smart transport", "smart logistics", "smart home", etc.), which are the basis for the organization of "smart" production and the implementation of "smart" solutions.

the system of highly qualified personnel training must be reconsidered taking into account the principles of "lifelong continuous education", "involving industrial enterprises in the educational process" and "advanced development";

it is necessary to change the culture of conducting business in the direction of increasing openness and transparency.

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Rezyume: *Maqolada sanoat korxonalarining raqobatbardoshligini oshirish yo‘li sifatida ta’lim va konsalting xizmatlarini ko‘rsatishning iqtisodiy mexanizmlari muhokama qilinadi. Bundan tashqari, O‘zbekiston Respublikasi xalq xo‘jaligini innovatsion rivojlantirish sharoitida sanoat xizmatlari ko‘rsatishning iqtisodiy mexanizmini takomillashtirish yo‘nalishlari belgilab berildi, uni takomillashtirish bo‘yicha taklif va tavsiyalar ishlab chiqildi.*

Резюме: *В статье рассмотрены экономические механизмы предоставления образовательных и консультационных услуг как способ повышения конкурентоспособности промышленных предприятий. Кроме того, в условиях инновационного развития национальной экономики Республики Узбекистан определены направления совершенствования экономического механизма оказания промышленных услуг, разработаны предложения и рекомендации по его совершенствованию.*

Kalit so'zlar: *sanoat xizmatlari, sanoat xizmatlarini ko'rsatishning iqtisodiy mexanizmi, ta'lim va konsalting, sanoat korxonalarining raqobatbardoshligi.*

Ключевые слова: *промышленные услуги, экономический механизм оказания промышленных услуг, образование и консалтинг, конкурентоспособность промышленных предприятий.*

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REMOVAL FROM INHERITANCE OF UNWORTHY HEIRS

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Summary. *The article is devoted to the institution of unworthy heirs, in particular to the disclosure of theoretical and practical problems in its enforcement, as well as the scientific study of improving this legal institution. The subject of the study is the issues of theoretical and practical inheritance in the application of the institution of unworthy heirs. The results of this scientific work can be applied in educational, scientific, practical and other activities.*

Key words: *property, inheritance, heir, unworthy heir, will, testator, intentional act, possible heir, testamentary refusal, legal capacity, right, forgiveness.*

Each of us has property. It can include valuables such as a car, a home, or simpler items such as clothing or small appliances. Individuals may also own more complex property, such as securities, rights to government benefits, etc. Inheritance law provides the legal basis for deciding who will own a person's property, rights and obligations in the unfortunate event that that person becomes seriously incapacitated or dies.

Article 41 of the Constitution of the Republic of Uzbekistan, concerning economic and social rights of the individual, notes that the right to inheritance is guaranteed by law. Consequently, all citizens of our country have the same rights in the field of inheritance. In this matter, discrimination against persons based on gender, race, nationality, language, origin, property status, place of residence, attitude to religion, beliefs, and other personality factors is also not allowed.

In inheritance by law, the testator is both a legally capable and an incapacitated individual. The situation is different when the testator draws up a will. Since a will is a unilateral transaction made by a person who has expressed a desire to dispose of his property in the event of his own death, the testator must have full legal capacity at the time of this act. A person who married before reaching marriageable age or who became independent after acquiring full legal capacity (emancipation) can make a joint will with another capable person. Partially capable persons do not have this opportunity.

Even if the testator's incapacity occurs later (after the will has been drawn up), this provision does not in any way affect the legal status of the will drawn up during the period of the testator's legal capacity. In addition, this will can be challenged. Recognition of the person who made the will as incompetent can later play a significant role in solving the problem of eliminating the heir under the will as an unworthy heir. Therefore, it is a mistake to assume that all persons can act as heirs. In some situations, a person is not capable of performing such a role.

The norms of the civil code regulating the issues of removing unworthy heirs from inheritance often do not classify as unworthy those heirs who, from moral and ethical considerations, should be considered as such, does not clearly delineate the criteria for malicious evasion from fulfilling the duties that fall on them by force of law to support the testator, sets questions of a theoretical nature that have not been resolved before scientists and before judges in their law enforcement activities. All this determines the relevance of studying the problems of removing unworthy heirs from legal succession. Consequently, an attempt to propose optimal ways to solve legislative gaps on our part consists in the initiative to introduce the testator's right to determine the criteria of unworthiness into the will, as well

as in the elaboration of other aspects of the institution of inheritance, all this determines the novelty of our research.

As noted by O.E. Blinkov, “in determining the circle of heirs, it is necessary to establish those who do not have hereditary legal personality or may be excluded from inheritance due to certain circumstances when their calling would violate the foundations of public morality and ethics. This category of persons is usually called unworthy heirs” [1, p.145]

According to M.L. Kuznetsov, the criteria for unworthiness established in the will of the testators may be as follows: a) commission of crimes against the testator through negligence; b) criteria for conviction for intentional crimes of any nature; c) criteria for the heir's childlessness, if there is no question of this person's lack of place of residence at the time of opening the inheritance and proving the fact of this falls on the shoulders of the heir himself; d) other criteria. The assignment of responsibilities to notaries for household wills in the established circle of unworthy heirs must then be considered in court. Moreover, even for cases of this kind, the principles of persons who were exempt from paying state fees for maintaining cases in court should be observed [4, p.75].

These are the opinions and views of civil law scholars regarding the prospects for law enforcement and interpretation of legislation regulating the institution of unworthy heirs. At the same time, it is necessary to understand that legislation is constantly being improved and a new vision of resolving problems is emerging, therefore, the scientific analysis of the problems of theory and practice in the institution of unworthy heirs is explained by the trends of the times, the need to give the testator greater rights to establish specific criteria of unworthiness for potential heirs entering into legal succession.

The current legislation of the Republic of Uzbekistan provides grounds for depriving individuals, the so-called unworthy heirs, of the right to inheritance. So, according to Art. 1119 of the Civil Code of the Republic of Uzbekistan, persons who have deliberately taken the life of the testator or any of the possible heirs or have made an attempt on their life have no right to inherit anything either by will or by law.

With a literal interpretation of this provision, it becomes problematic to recognize a citizen as an unworthy heir, because it is impossible to commit a crime against the testator, that is, a deceased person, and because before the opening of the inheritance there is no heir, and therefore no right of inheritance. Such actions can be performed by a potential heir or another person both during the life of the potential testator and after his death, and they can be performed in relation to the potential testator himself or his heir or possible heir [2, p.399].

If any of the above actions are committed, the person is considered unworthy of inheritance. However, the law does not answer the question of when an intentional unlawful act must be committed, although this is significant, since the criminal act can be committed long before the death of the testator. The doctrine notes that it would be advisable to establish a certain period, but until it is established, one should proceed from the fact that, regardless of the elapsed time, the fact of committing these actions is sufficient grounds for declaring the heir unworthy [5, p. 25].

Article 1119 of the Civil Code of the Republic of Uzbekistan also classifies citizens who have committed illegal actions directed against the testator, any of the heirs (for example, their murder) or against the implementation of the last will of the testator expressed in the will (for example, forcing a change in the will or refusal of inheritance in favor of an unworthy heir) as unworthy heirs. In the latter case, such illegal actions should be aimed at calling an unworthy heir or other persons to inherit or at increasing the share of the inheritance for him or other persons. Thus, it does not matter in whose

interests the heir acted when committing illegal actions, he is in any case considered unworthy [3, p.489].

Parents do not have the right to inherit by law after children in respect of whom they were deprived of parental rights and were not restored to these rights by the time the inheritance was opened, as well as parents (adoptive parents) and adult children (adopted) who evaded from fulfilling the duties assigned to them by force of law to support the testator.

The legal connection between parents deprived of parental rights and the child does not completely cease, since, if there are sufficient grounds, it can be restored at any time before the child reaches the age of majority. In addition, a former adopted child can inherit legally after the death of the former adoptive parent only as a disabled dependent. Their inheritance after each other by will has no restrictions.

It should also be noted that socially vulnerable citizens (especially the elderly) need attention, care and help from their children, grandchildren and other close relatives. Therefore, in our opinion, those heirs who did not show attention and care towards the possible testator, and, when in need, did not provide them with material assistance, should also be recognized as unworthy. Moreover, Article 109 of the Family Code of the Republic of Uzbekistan states that able-bodied adult children are obliged to support and care for their disabled parents in need of help. And even the fact that parents are supported by state or non-state institutions does not exempt able-bodied adult children from caring for them and providing them with financial assistance.

All of the above circumstances, which serve as the basis for the exclusion of unworthy heirs from inheritance, are established by the court, at the request of the person for whom such exclusion gives rise to property consequences associated with inheritance. In any case, in order to recognize a person as an unworthy heir, it is necessary that the fact of committing an offense be established by a court decision. After this, unworthy heirs cannot be called upon to inherit either by law or by will.

Rules Art. 1119 of the Civil Code of the Republic of Uzbekistan applies to any heirs, including those who have rights to their obligatory share, and also applies to the so-called testamentary refusal.

If by the time a citizen is recognized as an unworthy heir, he has already taken possession of any property from the inheritance, then he has the obligation to return everything received unjustifiably. Moreover, the property must be returned in kind, that is, exactly those things and property rights must be returned in the form in which they were received. If it is impossible to return the property in kind, the acquirer must compensate its actual value. In addition to the return of property, the income that the unworthy heir derived or should have derived from this property is also subject to compensation [3, p.490].

In Art. 1119 of the Civil Code of the Republic of Uzbekistan, which establishes the grounds for eliminating unworthy heirs from inheritance, provides for the case when the testator, after an attempt on his life, made a will in favor of the attempter, that is, he forgave him. In this case, the person in whose favor the will was drawn up is not excluded from the inheritance.

True, the question remains open of what to do if the testator, when drawing up the will, did not know about the attempt on his life, and this circumstance was established after the opening of the inheritance. A detailed answer has not yet been given to the question whether an heir forgiven by the testator can inherit only by will or also by law (if part of the property remains untested). In this regard, we propose to add to the institution of general provisions on inheritance norms on forgiveness of an unworthy heir, which can be established by the irrevocable will of the testator, and due to the absence of the latter, by a court decision.

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Rezyume. Maqola nologyiq merosxo'rlar institutiga, xususan, uni qo'llashning nazariy va amaliy muammolarini ochib berishga, shuningdek, ushbu yuridik institutni takomillashtirish bo'yicha ilmiy tadqiqotlarga bag'ishlangan. Tadqiqot predmeti – nologyiq merosxo'rlar institutini qo'llashda nazariy va amaliy masalalari. Ushbu ilmiy ish natijalari o'quv, ilmiy, amaliy va boshqa faoliyatda qo'llanilishi mumkin.

Резюме. Статья посвящена институту недостойных наследников, в частности, раскрытию теоретических и практических проблем его применения, а также научному исследованию совершенствования данного правового института. Предметом исследования являются вопросы теоретического и практического наследования при применении института недостойных наследников. Результаты данной научной работы могут быть применены в учебной, научной, практической и другой деятельности.

Kalit so'zlar: mol-mulk, vorislik, merosxo'r, nologyiq merosxo'r, vasiyat, vasiyat qiluvchi, qasddan qilingan harakat, mumkin bo'lgan merosxo'r, vasiyat majburiyati, muomala layoqati, huquq, kechirim.

Ключевые слова: имущество, наследство, наследник, недостойный наследник, завещание, завещатель, умышленное действие, возможный наследник, завещательный отказ, дееспособность, право, прощение.

STRUCTURAL ANALYSIS OF HEAD/BAS SOMATISMS IN PHRASEOLOGICAL UNITS

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Summary. *In this article, a structural-semantic analysis of HEAD/BAS somatisms in phraseological units is carried out. And phraseological units are analyzed in terms of structural-semantic classification.*

Key words: *semantic analysis, phraseological units, somatism, English and Karakalpak languages, classification, morpheme.*

Introduction. It is known that phraseological units are of great importance for high-quality and meaningful communication in a foreign language, therefore, knowledge about the components and structural parts of the phraseological fund of any language is considered necessary. Phraseological units or phraseologisms are one of the most interesting linguistic phenomena and are widespread in all modern languages, in particular, in English and Karakalpak languages. Phraseological units, which are brightly colored, depict the conservation in a special way, provide expressiveness. In addition, they clearly explain the characteristics of a language shaped by the historical past, culture, and everyday life events of people, as well as provide the attitude and psychology of the language's owners, in particular, their way of thinking.

That is why, for modern philologists, the issues related to the theoretical and practical peculiarities of the use of phraseological units are important [Vishlenkova, Levina 2017:5].

The purpose of this part of the work is to create a thematic classification based on the analysis of the somatic component "head" and the structural and semantic differences of English and Karakalpak phraseological units, as well as semantic differences determined by analyzing the evaluation connotation.

All scenes drawn by different languages are similar in meaning and are different in some situations. The differences between all language depictions are, first of all, not translated into other languages, and described in language units that use the concepts characteristic of a certain language. Let's look at one of those words, that is, the content of the lexeme "Head/Bas" in the English and Karakalpak languages from the dictionaries.

Structural analysis

Morphology

"Head" is a monomorphemic word, that is, the content cannot be divided into several semantic units. Has only one morpheme.

"Bas" is a monomorphemic word, one morpheme means one meaning. It consists of only one morpheme.

Syntactic position

"Head/Bas" can be used as different parts of the speech depending on the functional tasks:

Noun: a part of the anatomical structure of the body, or used in the sense of a group leader.

Verb: it is used in the sense of leading or initiating an action.

Word formation form / Derivative form

The lexical unit "Head/Bas" is created in the process of word formation by combining other words or suffixes:

Headed: is formed by adding the suffix "-ed" of the past form of the verb and is used in the meaning of "started, begin, activate".

Header: the word formation suffix "-er" is added to the noun word, and the noun word is created with the content "indicating the person who is in charge of the thing or the leader".

Baslaw: It is formed by adding the verb formation suffix "-law" to the root morpheme "bas".

Basshi: this word is formed by adding the noun formation suffix "-shi/shi" to the word "bas".

Semantic analysis

Head noun (BODY PART)

[C]The part of the body above the neck where the eyes, nose, mouth, ears, and brain are:

[S]A person or animal when considered as a unit:

[S]A measure of length or height equal to the size of a head

Head noun (MIND)

[C]The [mind](#) and [mentalabilities](#):

Head noun (LEADER)

[C] Someone in [charge](#) of or [leading](#) an [organization](#), [group](#), etc.:

A head teacher UK

head boy/girl UK

a [boy](#) or [girl](#) who often [represents](#) his or her [school](#) on [formaloccasions](#):

head noun (TOP PART)

the [toppart](#) or [beginning](#) of something:

[C]The [larger](#) end of a [nail](#), [hammer](#), etc.

[C]The [toppart](#) of a [plant](#) where a [flower](#) or [leavesgrow](#):

[C]The [layer](#) of [whitebubbles](#) on [top](#) of [beer](#) after it has been [poured](#)

[C]The [upperpart](#) of a [river](#), where it [begins](#)

[C]The [toppart](#) of a [spot](#) when it [containspus](#)(= [yellowliquid](#))

Head noun (COIN SIDE)

[U]The [side](#) of a [coin](#) that has a [picture](#) of someone's head on it:

Head noun (DEVICE)

[C]The [part](#) of a [tape](#) or [videorecorder](#)(= [machine](#) for [recordingsound](#) or [pictures](#)) that [touches](#) the [tape](#) to [record](#) and [playmusic](#), [speech](#), etc.

Head noun (GRAMMAR)

[C]LANGUAGEspecialized

The [mainpart](#) of the phrase, to which the other [parts](#) are [related](#)

Head noun (LAND)

[C]GEOGRAPHYspecialized

A [narrowarea](#) of high [land](#) that [sticks](#) out into the [sea](#):

Head verb

Head verb (GO)

[+ adv/prep]to go in a [particulardirection](#):

headverb (SPORT)

[T]To [hit](#) a [ball](#) with [your](#) head:

[<https://dictionary.cambridge.org/ru/>]

"Bas" in the Karakalpak language is the root word, and new words are created as a result of adding word formation suffixes according to the law of agglutination. Bas+shı+lıq; bas+lıq; bas+pana; bas+ıw; bas+ıl; bas+ım; bas+tır+ma, bas+qospaó etc.

The word "bas" in the Karakalpak language comes in the structure of the following set of phraseological units and is used in various meanings related to the head of a person:

bas almadı – tınbay isledi (he kept working).

bas alıp ketti – pútkilley ketip qaldı (he left completely).

bas awırtpadı – oylamadı, qayǵırmadı, táshwish shekpedi (he didn't think, he didn't worry).

bas awırttı – oyladı, pikirledi (he thought).

bas awırırw boldı – qıynaldı, qayǵırdı; artıqsha táshwish (suffered, worried; excess transport).

bas awırırw qıldı – qıynadı, azapladı; oylandırdı (tormented; made to think).

bas–ayaǵı dúziw – deni saw, salamat, aqıl-esi durıs (healthy, healthy mind).

bas–ayaǵı joq – sheksiz (infinite).

In the explanatory dictionary of the English language, the lexical unit "head" is described in the meaning of a noun, verb and adjective: noun: Body part, mind, leader, high position, visual part of the coin, voice recorder, part of speech, geographical front; Verb: to start, hit with head. And in the Karakalpak language, it is noun in the sense of somatic unity, and as a component of a stable word combination, it also performs the functions of a verb, an adjective, a past participle, and an adverb.

Working out the thematic classification of learned language units helps to identify semantic differences, phraseological units with the "head" component were divided into the following thematic groups and analyzed: intellectual ability, object denoting, attribute denoting, situation denoting.

Structural analysis: Head over heels

- This word combination is a subordinate word combination;

- in this structure "head" is noun, "over" is preposition, "heels" is plural nouns.

Semantic analysis:

- this phrase means "being deeply in love or infatuated with someone/someone, being deeply in love".

- the formation of an idiomatic unit suggests radiating the idea of complete absorption or absorption in a substance or reversible changes (in this case, love).

Structural analysis: Keep your head above water

This idiomatic unit consists of complete parts of speech, or is also used in the form of imperative speech.

The word combination consists of the verb "keep" and the possessive pronoun "your", the preposition "above" and the noun "water".

Semantic analysis

This phrase is used in the sense of "managing to survive or cope with difficulties or challenges", it means the ability to survive a certain dangerous situation or overcome difficulties or troubles.

This idiomatic unity means that it is necessary to have a certain strength and ability to endure or not face difficulties, to be able to behave when facing the difficulties.

Structural analysis: Off the top of one's head

This idiomatic unit is a prepositional word combination, consisting of "off" and "of" prepositions, "the" article, "top" and "head" nouns, and the possessive pronoun "one's".

Semantic analysis:

The word combination is used in the meaning of "providing information or making a statement without prior thought or preparation", that is, expressing an opinion without any preparation or making a statement without thinking before or preparation.

Idiomatic unity is more often used when the given information or opinion made from the mind or knowledge of the speaker at speaking time, it is used when the commenter gives information without any deep thought.

Structural analysis: Banging your head against a brick wall

It is the gerund word combination: the gerund "banging", the possessive pronoun "your", the noun "head", the preposition "against", and the noun word combination "a brick wall".

Semantic analysis:

This word combination is used in the sense of "persistently trying to solve a problem or achieve something without success, often resulting in frustration", and it means persistent efforts to solve a problem or achieve success, but the efforts remain useless.

Structural analysis: Head in the clouds

It is a noun word combination, consists of the noun "head", the preposition "in" and the noun "clouds".

Semantic analysis

This phrase means "being day dreamy or not paying attention to what is happening in the real world", and this is used to refer to people who dream a lot or do not pay attention to what is happening in the real world. Idiomatic unit refers to the mental state of a person as if flying in the sky, when their thoughts are focused on another thing. It was determined that the "head" component of these idiomatic word combinations is connected with other words and elements, and differs from the individual meanings of its structural parts. Thus, the lexical unit "head" is a universal word that performs a multi-meaning and different grammatical function, and serves as both a noun and a verb in the studied languages. Its semantic meaning is dominated by the anatomical content, but it can also vary depending on the context of use in other branches and in different content.

Conclusion

In short, the analysis of the corpus of English and Karakalpak phraseological units with the somatic component "head" made it possible to identify a number of structural and semantic differences. Although phraseological units and word combinations are the most represented in both languages, on the contrary, the composition of phraseological units is very less found. Based on the conducted analysis, we can come to the conclusion that the main layers of the "head" component of the English and Karakalpak phraseological units correspond. However, along with this, some differences of the definition of this component have been determined, and the definition is given with the national special characteristics of the understanding of all linguistic phenomena.

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Rezyume: Ushbu maqolada frazeologik birliklardagi HEAD/BAS somatizmlarining tarkibiy-semantik tahlili olib boriladi. Frazeologik birliklar esa strukturaviy-semantik tasnifi nuqtai nazaridan tahlil qilinadi.

Резюме: В данной статье проводится структурно-семантический анализ соматизмов HEAD/BAS во фразеологических единицах. А фразеологизмы анализируются с точки зрения структурно-семантической классификации.

Kalit so‘zlar: semantik tahlil, frazeologik birliklar, somatizm, ingliz va qoraqalpoq tillari, tasnif, morfema.

Ключевые слова: семантический анализ, фразеологизмы, соматизм, английский и каракалпакский языки, классификация, морфема.

COMPETENT MODEL OF TRAINING STUDENTS AT UNIVERSITY

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Summary: *Providing student-centered education at a university is carried out through the variability of education within the framework of a competency-based model of professional training. The implementation of the main provisions of the new education paradigm is ensured within the framework of a competency-based learning model. The development and implementation of individual educational routes make it possible to develop both personal and professional qualities of students.*

Key words: *individual educational route, individual educational trajectory, student's personal development, student's professional development, student-centered education at a university, competency-based approach, variable education.*

Introduction. Education forms human capital, an important component of which is intellectual capital. Mobile and highly qualified human capital becomes the main resource for the development of culture and economy of a society where human capital is a complex of internal capabilities of an individual that determine the constant increase in intellectual and creative potential, professional experience.

The formation of human capital in society is possible through various educational paradigms, i.e. certain educational concepts that define the system of methods, functions and goals of education of a given society at a specific stage of its historical development. The innovative paradigm of education is based on human competence, considered as a socio-spiritual phenomenon, representing a set of competencies that determine the value-motivational and personal-activity nature of a person's cognition in the process of his professional development.

This phenomenon actualizes the educational conceptual trinity: value orientations - social-role functions - activity - as the basis for the personal and professional development of a specialist, which contributes to the formation of his moral, socially responsible, active position.

Main part. The competency-based approach most fully reflects the requirement for unification of the higher education system. It is necessary to develop a holistic model of learning in the context of the competency-based education paradigm, aimed at individual and personal learning, allowing for the development of both personal and professional qualities of students.

The competency-based approach is closely related to the system-activity and person-oriented approaches: lists of key competencies of specialists are built in accordance with the types of activities, while mastery of the activity "involves the transformation of social experience into personal experience." The building of competencies and competence itself are considered in the system of properties, traits and personal qualities of students. Thus, in the higher education system, in the conditions of implementation of the competency-based approach, both professional and personal development of students is laid down.

Providing student-centered education at a university is carried out through the variability of education within the framework of a competency-based model of professional training.

As science and practice develop, the concept of "variability" changes, develops, is supplemented, and is specified taking into account new conditions and requirements. Being in the process of forming a conceptual apparatus, variability today is considered as an opportunity to choose

an individual educational trajectory for students depending on socio-economic and individual personal factors.

Depending on the goals of the subjects of education, the individual educational trajectory (IET) can be built differently and, in this regard, defined differently (A.V. Khutorskoy, G.A. Klimov, I.S. Yakimanskaya, S.V. Vorobyova). We will consider an individual educational trajectory as a purposeful educational program that provides the student with the position of a subject of choice, development, and implementation of an educational standard, allowing for self-determination and self-realization when using pedagogical support, as well as varying didactic and methodological means based on the personal characteristics of the student.

Thus, in an individual educational trajectory two components can be distinguished:

- 1) the content component, which is determined by a purposefully designed differentiated educational program that takes into account the individual characteristics and needs of the student;
- 2) technological component, which is characterized by the method of implementing this program....

IOT design consists of the following stages:

- 1) functional stage: awareness and correction of the goals of individual educational activities, planning learning outcomes;
- 2) content stage: based on the analysis of training programs, identification of training modules and determination of methods, methods and technologies of study, taking into account the individual characteristics of the student;
- 3) operational stage: awareness of the temporal and functional sequence of actions; development of the structure of an individual educational route;
- 4) evaluation stage: the period of evaluation and logic of formal operations of one's own activities, reflection and self-assessment of learning results.

The process of choosing an IOT is influenced not only by the student's personal preferences and the tutor's recommendations, but also this process is impossible without taking into account the opinions of the psychologist and the students' parents. The implementation of IET is possible through the design of individual educational routes. We propose to consider the following options for individual educational routes (IER):

- 1) an educational route that maximally contributes to the development of applied practical activity of the student (IOM 1);
- 2) an educational route that maximally contributes to the development of the student's research activities (IOM 2);
- 3) an educational route that maximally contributes to the development of the student's pedagogical activity (IOM 3);
- 4) an educational route that maximally contributes to the development of the student's organizational and managerial activities (IOM 4).

Designing IET along the listed educational routes is possible both in academic (with the introduction of additional electives in the disciplines necessary for a particular type of activity, searching for practice bases in the area of interest) and in extracurricular activities of students: involvement in work in scientific student societies, specialized laboratories, to participate in scientific conferences, work in student government bodies.

Interactive learning tools occupy a special place in IOT design. To date, only individual components of interactive learning tools are used, and there are few completed research works in which the tasks of using interactive learning tools are considered comprehensively, as a whole. The lack of

research in the field of technical features (software and hardware) of interactive teaching aids, analysis of existing pedagogical and methodological developments in this area has an extremely negative impact on the introduction and active use of interactive technologies at all levels of domestic education.

Conventionally, interactive teaching aids can be divided into two components: an interactive training kit and interactive equipment. The interactive training kit is an educational and methodological complex: an interactive textbook, reference book, simulator, problem book, laboratory workshop and visual aids. Interactive equipment includes interactive whiteboards, tablets, plasma panels, mobile copy devices, projectors, testing systems, and small information technology tools [3]. A distinctive feature of interactive teaching aids is the relationship between interactive training kits and interactive equipment. The effectiveness of interactive kits largely depends on the equipment on which they are presented, and more often than not, a training kit cannot be developed without interactive equipment. The introduction of interactive technologies has two main directions. The first direction is the inclusion of new teaching aids in the educational process as an auxiliary tool in the context of traditional methods of the teaching system. In this case, interactive technologies act as a means of intensifying the educational process, individualizing learning and automating the teacher's routine work associated with recording, monitoring and assessing students' knowledge.

The second direction is the active use of interactive technologies as the main component of the educational process, which leads to changes in the content of training, revision of methods and forms of organizing the educational process, leads to the construction of holistic courses based on the use of interactive teaching aids in individual academic disciplines, which ultimately improves the quality and effectiveness of training in general [1]. An interactive educational and methodological set must ensure the completeness and continuity of the didactic cycle: provide the student with theoretical material, provide active training activities, build individual educational tasks, carry out operational control of the student's actions, implement feedback, and issue an assessment. The interactive training kit and its software component must be presented on appropriate equipment. It is advisable to use interactive equipment, such as an interactive whiteboard, tablet, projector, etc. [5].

Conclusion.

Interactive learning tools, due to their technological capabilities, make it possible to build connections with students of various forms and contents, for example, informative or reference, consulting or effective, verbal or non-verbal [6], using various functions: graphics, color, audio and video, peripheral equipment. The presence of feedback in interactive learning tools allows students to correct knowledge themselves, relying on consulting information [4]. Guiding information can be selected either by the student himself from the memory of an interactive learning tool, or on the basis of automatic diagnosis of errors made during educational work. These technologies make it possible to take into account the individual characteristics of students and build an individual trajectory for studying and monitoring the same material.

This implies varying degrees of depth and completeness of the content of the material, an individual pace of learning, as well as a sequence that can be chosen by both the teacher and the student himself. A large number of parameters are taken into account when working with such a learning tool: time spent studying or testing knowledge, the number of attempts and the number of errors. For example, the use of modern interactive teaching aids through enhancing ergonomics and clarity of perception of the material being studied increases cognitive activity, interest in the subject of study and educational motivation, which affects the effectiveness of learning in general [2].

Thus, student-centered education at a university in the context of a competency-based model of professional training allows for the most complete development of both personal and professional qualities of students.

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Rezyume: *Universitetda talabalarga yo'naltirilgan ta'limni ta'minlash kasbiy tayyorgarlikning kompetensiyaviy modeli doirasida ta'limning o'zgaruvchanligi orqali amalga oshiriladi. Yangi ta'lim paradigmasining asosiy qoidalarini amalga oshirish kompetentsiyaga asoslangan ta'lim modeli doirasida ta'minlanadi. Shaxsiy ta'lim yo'nalishlarini ishlab chiqish va amalga oshirish talabalarning shaxsiy va kasbiy fazilatlarini rivojlantirishga imkon beradi.*

Резюме: *Обеспечение студентоцентрированного образования в вузе осуществляется посредством вариативности образования в рамках компетентностной модели профессиональной подготовки. Реализация основных положений новой парадигмы образования обеспечивается в рамках компетентностной модели обучения. Разработка и реализация индивидуальных образовательных маршрутов позволяют развивать как личностные, так и профессиональные качества обучающихся.*

Kalit so'zlar: *individual ta'lim yo'nalishi, individual ta'lim traektoriyasi, talabaning shaxsiy rivojlanishi, talabalarining kasbiy rivojlanishi, universitetda talabaga asoslangan ta'lim, kompetensiyaga asoslangan yondashuv, o'zgaruvchan ta'lim.*

Ключевые слова: *индивидуальный образовательный маршрут, индивидуальная образовательная траектория, личностное развитие студента, профессиональное развитие студента, личностно-ориентированное обучение в вузе, компетентностный подход, вариативное образование.*

LEXICOGRAPHICAL ANALYSIS OF THE CONCEPT "FAMILY / SHAÑARAQ" IN ENGLISH AND KARAKALPAK LANGUAGES

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Summary: The concept of "Family/shañaraq" in English and Karakalpak languages share a similar meaning, referring to a group of people related by blood, marriage, or adoption who live together and share common values, traditions, and experiences. In both languages, the word for "family" is derived from a root word that signifies the idea of lineage or ancestry. However, there may be differences in how the concept is expressed and perceived within each culture. As a result, the article deals with the lexicographical analysis of the concept "Family/shañaraq" in English and Karakalpak languages. According to the result of the research, lexicographical analysis of the concept "Family/shañaraq" in English and Karakalpak languages is an important tool for promoting cross-cultural understanding and communication. It can help bridge the linguistic and cultural divide between different communities and foster greater respect and appreciation for diversity.

Keywords: linguistics, typology, concept, family, shañaraq, lexicographical analysis, English, Karakalpak.

Introduction.

Lexicographical analysis of the concept "Family/shañaraq" in English and Karakalpak languages involves examining the words used to describe the concept of family in both languages. In English, "family" is defined as a group of people related by blood, marriage, or adoption who live together and share resources. In Karakalpak, "shañaraq" encompasses parents, grandparents, siblings, and extended family members.

The analysis also involves looking at the specific words used to describe different family members. In English, "parent" refers to a mother or father, while "sibling" refers to a brother or sister. In Karakalpak, "ata-ana" refers to father and mother, "qarındas" refers to brother or sister, and "ul-bala" refers to son. By comparing the vocabulary used in both languages to describe the concept of family, lexicographical analysis can provide insights into cultural differences and similarities related to family structures and relationships. The concept of "family/shañaraq" is an important aspect of human society and culture. Therefore, a lexicographical analysis of this concept in both English and Karakalpak languages is crucial in understanding the nuances and cultural differences associated with it.

In English, the synonyms for family include household, kin, clan, tribe, and relatives. These words highlight the importance of blood ties and the sense of belonging that comes with being part of a family. On the other hand, the antonyms for family are strangers, enemies, and foes, emphasizing the idea of separation and conflict [3.1-14].

In Karakalpak, shañaraq is the word used for family, and its synonyms include ağayın and tuwısqan. These words also emphasize the importance of blood ties and the sense of belonging that comes with being part of a family. The antonyms for shañaraq are biyganalıq (strangeness) and dushpanlıq (enmity), highlighting the idea of separation and conflict. Furthermore, related words for family in English include parent, child, sibling, spouse, in-law, ancestor, and descendant. In Karakalpak, related words for shañaraq include ata (father), ana (mother), qarındas (sibling), úy (house), and ağayın (relative). These words reflect the cultural differences and nuances associated with the concept of family in both languages. Finally, collocations such as family tree, family reunion, family values, family dynamics, family traditions in English and shañaraq tariyxı (family history),

shańaraq toyı (family wedding), shańaraq nızamı (family rule), shańaraq qatnasıqları (family relationships) in Karakalpak highlight the importance of family in both cultures.

In English, poems could explore the different aspects of family life, such as the joys and challenges of living together, the bonds of love and support that unite family members, and the importance of family traditions and values. Poems could also reflect on the diversity of family structures in modern society, including blended families, single-parent households, and same-sex parents. In Karakalpak language, poems could focus on the cultural significance of family, highlighting the role of family in preserving traditional customs and beliefs. Poems could also celebrate the close-knit nature of Karakalpak families, emphasizing the strong bonds of kinship that exist between family members. Additionally, poems could explore the theme of family as a source of strength and resilience in times of hardship. We can find examples related to the concept “Family/shańaraq” in literary texts of the English and Karakalpak languages. By focusing on the literature of the English language, in the novel "Pride and Prejudice" by Jane Austen, the concept of family is portrayed as a crucial aspect of social status and identity “because she did not minister to the over-estimation of parental and filial love. To which might be added a different, though not contradictory admonition; not that such love is less important than we have got into the way of believing, or pretending to believe, but insofar as such love is truly important, it is far less imaginable – less sharable – than we have allowed ourselves to permit [4.94].” The Bennet family is used to highlight the differences in social class and the importance of marriage for women. The role of parents, siblings, and extended family members is also explored in the novel. As for the Karakalpak literature, in the poem "My Mother" by Ibrayim Yusupov, the concept of family is portrayed as a source of comfort and support.

"Ana"

*Sel burshaqtan qorg'ap o'z palapanin',
Kekimek qus o'lipti shiqpay uyadan.
Iske asqan a'rmanin'man, anajan.
Jaralg'ansan' meni jaratiw ushin,
Du'nyag'a tirishilik taratiw ushin,
Men dep uyqi ko'rmey tan' atiw ushin
Du'nyag'a kelgensen o'zin, anajan [6].*

The poet describes his mother as the center of their family, who provides love, care, and guidance to her children. The poem highlights the importance of family relationships and the role of mothers in Karakalpak culture. There are several factors that can affect lexicographical analysis of the concept of “Family/shańaraq” in English and Karakalpak languages. These include:

1. Cultural differences: The concept of family/shańaraq may have different cultural connotations and nuances in English and Karakalpak cultures, which can affect the lexicographical analysis.
2. Historical context: The historical context of the development of the English and Karakalpak languages can also impact the lexicographical analysis of the concept of family/shańaraq.
3. Language structure: The structure of the English and Karakalpak languages, including grammar, syntax, and vocabulary, can also affect lexicographical analysis.
4. Regional variations: There may be regional variations in the use and meaning of words related to family/shańaraq in both languages, which can impact lexicographical analysis.
5. Social factors: Social factors such as gender, age, and socioeconomic status can also influence the use and meaning of words related to family/shan'araq in both languages, which can affect lexicographical analysis [1.322-324].

It is important for lexicographers to consider these factors when conducting lexicographical analysis of the concept of family/shańaraq in English and Karakalpak languages to ensure accuracy and cultural sensitivity. The role of lexicographical analysis of the concept of “Family/shańaraq” in English and Karakalpak languages is significant in several ways. Firstly, it helps in understanding the cultural differences and nuances associated with the concept of family in both languages. This understanding is crucial for building cross-cultural understanding and appreciation of the importance of family in human society. Secondly, lexicographical analysis provides a comprehensive view of the various synonyms, antonyms, related words, and collocations associated with the concept of family/shan'araq. This knowledge can be used to improve language learning and teaching, especially for non-native speakers.

Thirdly, lexicographical analysis can aid in the translation and interpretation of texts related to family/shan'araq. It ensures that the meaning and context of the words are accurately conveyed in both languages. Besides that, lexicographical analysis can contribute to the preservation and promotion of cultural heritage. By documenting and analyzing the words and expressions related to family/shan'araq, lexicographers can help preserve and promote the cultural heritage associated with this concept [5, 80-83].

Moreover, lexicographical analysis of the concept "Family/shańaraq" in English and Karakalpak languages can provide a deeper understanding of the cultural and linguistic differences between the two languages. This analysis can help identify similarities and differences in family structures, roles, and relationships. It can also shed light on the cultural values and norms associated with the concept of family in each language. Furthermore, lexicographical analysis can be useful in language teaching and learning. It can help language learners to understand the nuances and complexities of the vocabulary related to family in both languages. It can also help language teachers to design more effective language learning materials and activities that are culturally appropriate and relevant. Finally, lexicographical analysis of the concept "Family/shańaraq" in English and Karakalpak languages is an important tool for promoting cross-cultural understanding and communication. It can help bridge the linguistic and cultural divide between different communities and foster greater respect and appreciation for diversity.

Conclusion. From the lexicographical analysis of the concept "Family/shańaraq" in English and Karakalpak languages, it can be concluded that both languages have similar definitions and understandings of the concept. Both languages define family as a group of people related by blood or marriage who live together and share responsibilities and resources. In both languages, family is considered an important social unit that provides support, love, and protection to its members. However, there are some differences in the way the concept is expressed in the two languages. For example, in Karakalpak language, the word "shańaraq" is used to refer to both immediate and extended family members, while in English, different terms are used to distinguish between the two. Additionally, the Karakalpak language places more emphasis on the role of the family in preserving cultural traditions and values.

Overall, the concept of family is an important part of both English and Karakalpak cultures, and it plays a significant role in shaping individuals' identities and relationships with others.

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Rezyume: Ingliz va qoraqalpoq tillarida "oila/shanarak" tushunchasi o'xshash ma'noga ega bo'lib, qon bilan bog'liq, nikoh yoki farzand asrab olish bilan bog'liq bo'lgan, birgalikda yashaydigan va umumiy qadriyatlar, urf-odatlar va tajribalarni baham ko'radigan odamlar guruhini anglatadi. Ikkala tilda ham "oila" so'zi nasl-nasab yoki kashshof g'oyasini bildiruvchi ildiz so'zidan kelib chiqqan. Biroq, ushbu kontseptsiya har bir madaniyat doirasida qanday ifodalanishi va qabul qilinishida farqlar bo'lishi mumkin. Natijada, maqola ingliz va qoraqalpoq tillarida "oila/shanarak" kontseptsiyasining leksikografik tahliliga bag'ishlangan. Tadqiqot natijalariga ko'ra, ingliz va qoraqalpoq tillaridagi "oila/shanarak" kontseptsiyasining leksikografik tahlili madaniyatlararo tushunish va muloqotni rivojlantirishning muhim vositasidir. Bu turli jamoalar o'rtasidagi til va madaniy tafovutni bartaraf etishga yordam beradi va xilma-xillikka nisbatan ko'proq hurmat va minnatdorchilikni kuchaytiradi.

Резюме: Понятие "Семья/шанарак" в английском и каракалпакском языках имеет схожее значение, обозначая группу людей, связанных кровными узами, браком или усыновлением, которые живут вместе и разделяют общие ценности, традиции и опыт. В обоих языках слово, обозначающее "семья", происходит от корневого слова, обозначающего идею родословной или предтечи. Однако могут существовать различия в том, как эта концепция выражается и воспринимается в рамках каждой культуры. В результате статья посвящена лексикографическому анализу концепта "Семья/шанарак" в английском и каракалпакском языках. Согласно результатам исследования, лексикографический анализ концепта "Семья/шанарак" в английском и каракалпакском языках является важным инструментом содействия межкультурному взаимопониманию и коммуникации. Это может помочь преодолеть языковой и культурный разрыв между различными сообществами и способствовать большему уважению и признательности к разнообразию.

Kalit so'zlar: Tilshunoslik, tipologiya, kontseptsiya, oila, shanarak, leksikografik tahlil, ingliz tili, qoraqalpoq.

Ключевые слова: лингвистика, типология, концепт, семья, лексикографический анализ, английский язык, каракалпакский язык.

**THE ROLE OF WATERWAYS IN THE DEVELOPMENT OF TRANSPORT LINKS
IN THE SOUTH ARAL REGION IN THE 19TH CENTURY**

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Summary: *In this scientific article, the Aral and Amudarya flotilla and its role in the history of waterways of the Southern Aral region are studied based on historical sources. It was noted that the reforms carried out for the development of ship transport connections in the waterways of the Aral Sea and Amudarya are of great importance in the improvement of the socio-economic life of the people of the region.*

Key words: *Amudarya flotilla, Aral flotilla, A.Butakov, fishery, steamboat, ship, wharf.*

Road communications and the history of transport are an integral part of the centuries-old history of our people. In the implementation of relations in the field of economics and art between states and peoples around our people, traditional road communications and means of transport were of great importance.

The emergence of waterways and vehicles moving on water in Central Asia has deep roots going back to ancient times. Small boats and rafts began to appear in the Neolithic period. This process was interconnected with the activities of the communities inhabiting the banks of the rivers and engaged in fishing.

If we proceed from the formation and development of navigation in the middle and lower reaches of large rivers, then the owners of the art of Kelteminar, who lived in the lower reaches of the Amu Darya River, can be considered one of the communities of the founders of shipping. This can be seen in the rock paintings of a ship found in Bestobe, located 20 km from the city of Nukus.

In Central Asia, including the lands of the Karakalpak coast of the Southern Aral Sea, water communications of the Amu Darya play an important role in the socio-economic spheres and in transport communication systems. Waterways passing along the currents of the Amu Darya, forming a network of regional communication systems, were of great importance in regional economic and creative relations.

In the Amu Darya, shipping developed in the Middle Ages. During this period, with the development of waterways, large shipbuilding centers began to appear. In the lower reaches of the Amu Darya, the city of Kat (the modern city of Beruniy) was considered such a center. [6, p. 75]

In Russian sources dating back to the end of the 19th century, the ships of the Amu Darya River were large, medium and small in size. The larger vessels were 56 feet long, 14 feet wide, 4 feet high, 1 foot deep (1 foot equals 30.48 cm). Other sources have data that small boats had a length of 5 fathoms, medium ones 10 fathoms and large ones 15 fathoms (1 fathom is equal to 2.13 meters). [5, p. 231]

Transportation of goods and passengers by boats in the waterways of the Amu Darya and other rivers was carried out at the expense of a certain fee. Accordingly, in different passages and periods the fee was different. In Russian sources dating back to the end of the 19th century, tolls were paid in the passages: for each person in a boat a quarter of a tanga, for a donkey 0.5 tanga, for a cart (with and without cargo) 1 tanga, for a horse and camel (with and without cargo). without load) 1 tanga. [5, p. 232]

The Amu Darya River and the Aral Sea were of great strategic importance in Central Asia. Therefore, the interest of the Russian military-political leadership in the waterways of Central Asia was

known before the conquest by the Russian kingdom. For example, we can cite the military expedition of Berkovich of Cherkassy, sent by Peter I to Khorezm [1, p. 55-58] and the mission of the Russian embassy led by Ignatiev in 1858 to Khiva and Bukhara, which was entrusted with the task of creating the opportunity for the use of the waterways of the Amu Darya River and the Aral Sea by Russian ships. [7, p. 200-203].

During this period, ships became widespread in the northern part of the Khorezm oasis. In them, the Karakalpak swam to Chardzhou, located in the upper reaches of the Amu Darya, the Aral Sea, located in the upper reaches of the Amu Darya, and from there to the Syr Darya delta. The ships sailed through the internal canals and ditches of the Karakalpak region.

The Kegeyli, Kuanyshzharma, Shortanbai canals located on the right side of the Amu Darya, as well as the Kyatjargan, Shomanay, Khanzhap canals located on the left side of the Amu Darya are inland waterways. The Kuanyshzharma Canal located on the right side of the Amu Darya River is of great importance, because... Many other canals take their bed from it. According to A.V. Kaulbars, who explored the Karakalpak lands in 1873, the name of the canal comes from the name of the person who dug the canal. [2, p. 204]

Many shipbuilders served as carriers between Khodjeyli and Nukus across the Amu Darya River. In addition, Kaulbars also noted the existence of a passage through the Kuanyshzharma channel. According to Danilevsky, Karakalpak shipbuilders were also engaged in transporting merchant caravans across Lake Aybuyir.

The main transport of fishermen were boats and reed rafts. In 1859, one of the Russian researchers wrote: "Karakalpak fishermen have ships, they are small, assembled from parts of wood, secured with metal. From the sea to Kungrad you can count up to 150 such ships. The largest of them can lift up to 150 pounds of cargo." Wealthy fishermen had their own boats, while poor fishermen made rafts from reeds and steered them with poles. [3, p. 110-111]

In 1863, the Hungarian explorer Vamberi, who was among the Karakalpaks and collected a lot of information about the historical monuments of the Amu Darya coast, about the traditions and customs of the Karakalpaks, and about communication roads, writes this way about his travels from Khiva to Kungrad. "In many cases, from Khiva to Kungrad in the summer they reach across the river. If the current of the Oxus is strong, you can reach it in 5 days. But strong currents in summer only occur during floods. In spring and autumn, the water recedes and the current decreases, the ship floats for a long time, but in winter the ships do not sail, because the Oxus is covered with ice." He left the following entry about the Amu Darya and its channels: "Between Nukus and Kungrad, the wide and deep Ugizketken channel originates from the river. It flows into Lake Shorkatchi. Due to the flooding of the Oxus water, ship movements are very difficult. Therefore, recent times have tried to cut off Lake Shorkatchi from the river, but this was impossible. When you reach the grave of an unknown man named Afakshadsha, the forest ends and the territory of the Kungrad region begins." [4, p. 9-11]

Vamberi did not consider the Amu Darya River from the delta to the Aral Sea suitable for sailing ships and steamships. Because at that time, its lower part - in the part from Zhumyrtau to Kipchak - in Kazanketken, the shipbuilders experienced very difficult conditions. After 1873, i.e. After the conquest of Khiva by Russia, shipbuilders corrected the impassable parts of the river, even making it non-stop for steamships to sail. [4, p. 20]

In 1847, after the foundation of the Aral Flotilla was created, steamships and sailing ships appeared. In 1848-1849, A.I. Butakov, who led the Aral expedition, conducted hydrographic studies of the Aral Sea. Based on the materials collected from the expedition, a map of the Aral Sea was printed. As a result of his study of the Aral coast, A.I. Butakov wrote several articles. In 1848, in the journal

“Bulletin” of the Russian Geographical Society, A.I. Butakova published an article “Information on the organization of an expedition to explore the Aral Coast,” and in 1853, the newspaper “Turkestan Vedomosti” published an article “Coasts of the Aral Sea.”

In 1848-1849, these schooners, under the command of Lieutenant Butakov and navigator Pospelov, were engaged in mapping and studying the Aral Sea. At the same time as the schooner "Nikolay" in Orenburg, the private vessel "Mikhail" was built and put into operation in Raim, on the basis of which the company founded on the initiative of Obruchev wanted to engage in fishing; This enterprise, established with the participation of investors from Moscow, was not successful and soon ceased its activities. Since sailing ships did not meet military requirements, in 1850 Butakov ordered two steam ships in Sweden: the steamer "Perovsky" (with 40 horsepower) and the steam barge "Obruchev", which were delivered to Raim, where they were launched in 1853. This marked the beginning of the Aral flotilla, which later included the following steamships: "Aral" (40 horse power), "Syrdarya" (20 horse power), "Samarkand" (70 horse power) and "Tashkent" (35 horse power). horse power), as well as iron-fortified barges, ferries, etc. The steamships of the island flotilla provided communication between their main wharf, Kazoli, on the one hand, and Nukus on the Amudarya River, and on the other hand, the cities of Perovsk and Chinoz, and were mainly engaged in cargo transportation, including state cargo and sometimes private cargo [8, p. 16].

In 1878 the flotilla consisted of six steamers, ten iron barges, and four ferries; the personnel consists of 597 ordinary sailors, 15 machinists and foremen, and 15 officers and officials; ships and barges were armed with guns. From 1865 to 1878, the amount of cargo carried by the flotilla varied over the years from 35,000 pounds to 180,000 pounds, and the number of passengers increased from 615 to 4,480. The annual cost of maintaining the flotilla was 123,000 rubles. Due to the weakness of steamships, unfavorable navigation conditions, frequent stops on land and the difficulty of supplying fuel, the flotilla steamers moved very slowly (the movement stopped at night) and erratically; The flight from Kozoli to Perovsk took 14 days (7 days ago), and from Perovsk to Chinoz 21 days (12 days ago). Under these circumstances it was natural that private customers avoided carrying their goods in flotilla vessels, and the maintenance of the latter was costly to the exchequer each year, causing heavy losses. Given these circumstances, the Aral flotilla was dissolved in 1882 after an unsuccessful attempt to transfer it to private hands, and part of the corresponding rolling stock was transferred to the Amudarya, forming the basis of the emerging Amudarya flotilla [9, p. 17].

One of the results of the short-term activity of the island flotilla was connected with the almost complete destruction of saxovull, which was collected up to 300 thousand pounds per year for heating steamers on the banks of the Syr Darya.

In 1873, an expedition was organized to conduct research in the lower reaches of the Amu Darya River and determine the possibility of sailing ships along the Amu Darya. This expedition was led by Colonel A.V. Kaulbars. In 1874, the Amudarya expedition of the Russian Geographical Society, headed by Colonel N.G.Stoletov, arrived in the lower reaches of the Amudarya and carried out research work for 5 months. The ethnographic statistical department included L.N. Sobolev, Riza-Kuli Mirza, N.A. Karazin.

The scientific expedition, with numerous difficulties, opened up the possibility of sailing steamships from the Petro-Alexandrovsky Fortress (modern Turtkul) to Chardzhou along the Aral Sea.

The creation of the Amudarya flotilla in 1887, the implementation of water communications of large ships and steamships shows the great attention of the military-political circles of Russia to the waterways of the Amudarya.

If in the initial period of the opening of the Russian flotilla in the Amu Darya the communication of two iron barges and two steamships with the names “Tsar” and “Tsarisa” was put into operation, then at the end of the 19th century in this flotilla there were 6 steamships with a carrying capacity of up to 25 tons and 13 barges with a carrying capacity of up to 50-100 tons. In addition, up to 600 boats moved along the Amu Darya, mainly transporting cotton and grain. [6, p. 243]

In conclusion, we can say that in the 18th-19th centuries the role of the Amu Darya River, its internal branches and the Aral Sea was very important in the development of transport communications in the country. These waterways were of great importance in the development of relations between neighboring peoples and the Russian state, in improving the socio-economic and cultural life of the people.

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Rezyume: *Bu ilmiy maqolada Orol va Amudaryo flotiliyasi hamda uning Januviiy Orol hududi suv yo'llari tarixida tutgan o'rni tarixiy manbalar asosida o'rganilgan. Orol dengizi va Amudaryo suv yo'llarida kema transport a'loqalarini rivojlantirish uchun o'tkazilgan islohotlar va transport vositalarining mintaqa aholisining ijtimoiy-iqtisodiy hayoti darajasining yaxshilanishida katta ahamiyatga ega ekanligi ta'kidlab o'tilgan.*

Резюме: *В данной научной статье на основе исторических источников исследуется водный путь в районе Южного Приарале, Аральско-Амударьинская флотилия и его роль в истории среднеазиатских водных путей. Отмечалось, что большое значение в улучшении социально-экономической жизни населения региона имеют проводимые реформы по развитию судовых транспортных сообщений на водных путях Аральского моря и Амударьи.*

Kalit so'zlar: *Amudaryo flotiliyasi, Orol flotiliyasi, A.Butakov, baliqchilik, paraxod, kema, pristan.*

Ключевые слова: *Амударьинская флотилия, Аральская флотилия, А.Бутаков, рыболовство, пароход, корабль, пристань.*

BAKHTIYOR NAZAROV AS A RESEARCHER OF OYBEK'S WORKS

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Summery: *In this article, the study of Oybek's literary and critical views and creativity, in particular Bakhtiyor Nazarov as a researcher of the writer's scientific and creative activity, is analyzed. B. Nazarov's role in Uzbek literary studies as an Oybek scholar is shown on the basis of the researches on Oybek's literary aesthetic views and artistic creativity in the books "This magical world" and "Life is a beautiful criterion".*

Key words: *criticism, Oybek, literary-critical views, Oybek scholar, "Life is a simple criterion", "This is a magical world"*

Musa Tashmuhammad's son Oybek has a special place among the creators who made a worthy contribution to the development of Uzbek literary studies, criticism, and artistic creativity. His scientific works based on deep observation and analysis continue to serve for the development of our literature to this day. Literary critic and critic Azod Sharafiddinov, while evaluating the work of the writer, writes that one of the diamond facets of Oybek's talent shines in his work of literary studies and criticism [1.124]. As a matter of fact, Oybek was as skilled and a master of his work as he was in artistic creation, so demanding and knowledgeable in scientific activity. Oybek's aesthetic views created the way for a new direction in Uzbek literary studies. But the study of these researches was carried out relatively late.

Famous Oybek scholars H. Yaqubov and M. Koshjanov created more monographic studies analyzing Oybek's artistic works[2.168]. Unfortunately, the literary and critical side of the writer's work, which is worthy of study, has not been thoroughly and deeply studied. In large-scale monographic studies devoted to Oybek, this issue has not been given enough attention. The article entitled "Self-sacrificing devotion to the art of words" from Azod Sharafiddinov's book "Glows of talent" (1976) is one of the first steps in the study of Oybek's literary and critical views. It talks about the writer's article on Navoi's lyrics, Alisher Navoi's research, and the pamphlet "A. Qadiri's creative path". In his work, the scientist focuses on the fact that Oybek is a skilled literary critic, analyzes his rich scientific and critical heritage. Later, he expressed his attitude to Oybek's work in many articles and studies. At this point, it should be noted that the researches of Hamil Yakubov, Naim Karimov, Matyakub Koshzhanov, Aziz Kayumov, Vahid Zahidov, Akbarali Sabirdinov, Maksuma Dehkonova, etc., are of great importance.

Literary scholar, academician Bakhtiyor Nazarov also studied Oybek's creative heritage, literary and critical views in a deep and detailed, comprehensive manner. As in every field, in literary studies, every advanced scientist has his own place, his own way of investigation, approach to problems, and his way of reacting. In this respect, the critic Oybek tries to study his creative and scientific activities as a whole.

"The poets and writers themselves were active in the literary process - both as artists and critics. This was not only their desire, but the demand of the new era for a new type of artistic creator. Professional critics themselves are the essence of the field and were at the stage of mastering the possibility. Therefore, the artists' diligent engagement with criticism was a product of subjective and objective needs.

This aspect had a very active influence on the process of formation of Uzbek criticism" [3.18-19]. The creators of the critical era - Gafur Ghulom, Oybek, Hamid Olimjon, Uygun, combined their methodological research into the synthesis of both art and science. "Science and artistry were the double wings of Oybek's genius. His artistic talent was nourished by his scientific potential, and his scientific thinking was strengthened by the cells of his artistic talent," Bakhtiyor Nazarov quotes [3.43].

"We can boldly say that in Oybek's creative work, not only Uzbek national literature of a new direction, but also the processes of formation of the aesthetic principles of this literature are a vivid reflection.

Oybek is both a poet and a critic of the historical-literary process of Uzbekistan at the same time, while coming in as a writer, he was able to show himself as a connoisseur of the history of Uzbek literature before and after the Shura period, in addition to staying in these directions until the end of his creative activity. In this sense, it should be applauded that B. Nazarov was one of the first to start a special study of this scientific-critical heritage of Oybek, the founder and creator of the new direction of Uzbek realistic literature. In addition to creating a new stage in the history of Uzbek literature and literary criticism, such work is also necessary to further strengthen the achievements of our literary science and fiction based on new principles," writes academician Izzat Sultan [4.5]. B. Nazarov, who began his scientific career with the research of Oybek's work, believes that it is appropriate to examine the artistic and scientific thinking in its entirety. According to him, the creative phenomenon of the poet is determined by "exuberant life, great news, great successes, centuries-old progressive traditions of Eastern and Uzbek literature." During the analysis of the poet's poem "Tovushim" (1928), the scientist draws attention to the fact that the synthesis of aesthetic criteria and artistic skills controls the nature of the creator. As the critic rightly noted, the signs of sociality are clearly visible in the first stage of the poet's work. In fact, it is necessary not to confuse creative expression style with "both scientific and artistic talent"! After all, the recognition that every writer defines his creative credo as "aesthetic principles, aesthetic idea and aesthetic ideal" prepares the ground for making an objective conclusion. After all, in the conditions where idealism is defined as the leading criterion, paying serious attention to the principles of artistry gives impetus to the formation of new scientific views. B. Nazarov impartially points out some mistakes in Oybek's work. In scientific interpretation, a critic's style of expression, armed with deep knowledge and feeling creative activity, is unique. In scientific interpretation, a critic's style of expression, armed with deep knowledge and feeling creative activity, is unique.

Bakhtiyor Nazarov devoted his candidate's thesis to the study of Oybek's literary and critical views. His book "It's a magical world" (1980) tells the story of Oybek's life, his entry into the world of creativity and his development as a skilled writer. At the same time, it analyzes Oybek's literary and critical views. The creative and scientific activity of Oybek is studied in the article entitled "Love that lived like the sun..." from the scientist's book "Life is a beautiful criterion" (1985). The title of the article comes from a charming line in one of his poems. The reason is that Aybek's love for literature and creativity lived in his heart like the sun. The style and skill unique to Oybek attracts the attention of the critic and proves his opinion by the fact that the writer was able to combine art and science even when writing a scientific article.

Then he comes to the following conclusion: decorating a scientific article with so many artistic flourishes, photographing and enlivening the issue and event being written, making the critical work as well-educated as possible, illuminating the borders between logical and figurative thinking with a strange mastery, infusing expressive feelings into the texture of the article he is writing is one of the qualities characteristic of Olim Oybek's style. As the critic noted, Oybek's scientific works and literary-critical articles appeared as children of necessity, as a product of necessity, just like a work of art.

B. Nazarov prefers to study Oybek's scientific activity in two groups. The first group includes the period (1924-1938) from the beginning of Oybek's work to the creation of the novel "Kutlug Khan". During this time, Oybek's first literary and critical opinions were formed, and the scientist divides this group into two: 1924-1932, the period when Oybek's first aesthetic and literary views were not influenced by Marxian-Lenin aesthetics, and 1932-1938, a period in which the principles of Marxian-Lenin aesthetics were slightly deepened compared to the previous years. The reason for this was that the events of 1932 not only made a radical change in Oybek's work, but also brought drastic changes for all Soviet artists. After that, Oybek's literary and critical views developed rapidly, and the novel "Kutlug Khan" was created, which is a perfect example of socialist realism. B. Nazarov includes in the second main period the period after the creation of this novel (1938-1968), before the creation of Oybek's last work, the epic "Navoiy va Guli". This periodization serves as a support for a wider study of Oybek's creative activity, to adequately illuminate the characteristics of each period. It shows the growing differences in Oybek's artistic-aesthetic, scientific-critical views.

In conclusion, it can be said that literary scholar and critic B. Nazarov's scientific interests are focused on the current literary process, the history, theory, and literary criticism of 20th century Uzbek literature. His dozens of monographs and treatises such as "This magical world", "Life is a beautiful criterion", "Uzbek criticism", "Ideology", "Method", "Hero", works on the history of criticism, Mahmudhoja Behbudi, Abdurauf Fitrat, Abdulhamid Sulayman's son Cholpon, Abdulla Qadiri, Oybek, Gafur Ghulam, Hamid Olimjon, Abdulla Kahhar, whose aesthetic views are closely related to artistic creation, literary criticism and literary process, was studied comparatively with Kazakh, Kyrgyz, Karakalpak, Tatar, Azerbaijani literature. In particular, he studied in detail the works and researches conducted on the study of Oybek's scientific activity and creativity, and revealed aspects that were not covered in them. In particular, he studied in detail the works and researches conducted on the study of Oybek's scientific activity and creativity, and revealed aspects that were not covered in them. The artistic and aesthetic views of the writer were divided into categories, and according to them, the study of Oybek's work was approached based on new directions. In his researches based on a good outlook, the formation and development of Uzbek literary criticism, its important problems, in particular, the researches of B. Nazarov have their place in the history of literary studies in terms of the historical connection of Oybek's aesthetic views with the development of literary and aesthetic thinking of the 20th century, as well as the comprehensive and generalized research of his work.

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Rezyume: *Ushbu maqolada Oybekning adabiy-tanqidiy qarashlari va ijodining o'rganilishi, xususan Baxtiyor Nazarov adibning ilmiy va ijodiy faoliyati tadqiqotchisi sifatida tahlil qilingan. "Bu sehrli dunyo", "Hayotiylik – bezavol mezon" kitoblaridagi Oybekning adabiy estetik qarashlari va badiiy ijodiga doir tadqiqotlari asosida B.Nazarovning oybekshunos olim sifatida o'zbek adabiyotshunosligidagi o'rni ko'rsatilgan.*

Резюме: *В данной статье анализируется исследование литературно-критических взглядов и творчества Ойбека, в частности Бахтиёра Назарова как исследователя научной и творческой деятельности писателя. Место Б. Назарова в узбекском литературоведении как*

ойбековеда показано на основе исследований литературно-эстетических взглядов и художественного творчества Ойбека в книгах «Этот волшебный мир» и «Жизнь – мерило красоты».

Kalit so‘zlar: tanqidchilik, Oybek, adabiy-tanqidiy qarashlar, oybekshunos, “Hayotiylik - bezavol mezon”, “Bu sehrli dunyo”.

Ключевые слова: критика, Ойбек, литературно-критические взгляды, ойбековед, «Жизнь – простой критерий», «Это волшебный мир».

LEXICAL-SEMANTIC CHARACTERISTICS OF NICKNAMES USED IN POSITIVE AND NEGATIVE MEANINGS

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Summary: *Abstract. This article provides information on the skills of learning nicknames of the population living in the Republic of Karakalpakstan, as well as the reasons for their origin, etymology, positive and negative aspects of nicknames.*

Key words: *nickname, nickname, etymology, positive and negative nicknames, dialect representatives, ethnography, onomastics.*

In world linguistics, nicknames have been studied as a scientific term for many years, and several studies are currently being conducted on nicknames. Many books and a number of articles have been written about the 2nd names that people have acquired during their lives. For example, Azerbaijani linguist A.M. Pashayev, Karakalpak linguist Yu.N. Khojalepesova, Russian linguists A.M. Selishev, V.K. Chichagov, G.V. Tropin, V.A. Gordlevsky seriously studied nicknames in their research. Observing the opinions of researchers about nicknames, we come across definitions of nicknames as "an additional name, secondary name, middle name of a person". In particular, E. Begmatov defines a nickname as follows: "Nicknames are names of a person according to a certain sign or feature in his appearance or character, according to his social status or lineage. Nicknames are also a noun" [1, 50;].

In Uzbek linguistics, a number of works have been carried out on the study of nicknames. In particular, the services of E. Begmatov, K. Azamatov, D. Abdurakhmonov, F. Abdullayev, O. Gafurov in Uzbek onomastics are noteworthy [2,88;]. In the 60s of the 20th century, Professor E. Begmatov made a scientific analysis of personal names, surnames, nicknames, surnames and nicknames in the Uzbek language in ethnolinguistic and linguistic directions for the first time [3,56;]. Also, theoretical and practical issues related to nicknames and nicknames were researched in a number of articles and books by E. Begmatov[4,56;]. M. Rashidova studied the characteristics of nicknames different from nicknames as part of her research on nicknames[5,89-90;], while Sh. Nizamova conducted research on the historical and linguistic research of nicknames. Kh. Kadirova also put forward her views on the structural-semantic and functional features of nicknames in Khorezm dialects.

Nicknames have been used in dialects since ancient times. Nicknames were once used to distinguish people from each other, and it served the function of the modern family. Nicknames are still widely used today. Hence, there is a need for nicknames. When we use nicknames in our language, we don't even think that when he praises someone, he puts someone else to shame. Nicknames based on appearance and defects are related to speech, ears, eyes, color, feet, defects related to human body parts in general, peculiarities in appearance and diseases. occur and they can only have a negative meaning, such as discrimination against people. Based on such needs, we study nicknames, conditionally dividing them into two groups according to their meaning:

1. Nicknames with a positive meaning.
2. Nicknames with a negative meaning.

Nicknames that express a positive meaning make people happy, and the owner of that nickname will be proud and satisfied with his nickname. For example, we can show the following nicknames:

Eshan [ешан] is actually a pronoun "they" used to show respect for a person, and later it came to mean "a priest who gained prestige among people"[6,142;]. Eshans teach their children to pray from the age of 7; women don't wear short, tight dresses, don't walk barefoot, don't go out in front of men; they call you big and small; does not drink, does not smoke; always perform ablution; they eat only halal products; weddings are kept small; the main thing is that they do not give daughters to strangers and do not take brides from strangers, they do not consider it worthy of them. Because of these nicknames, they are all appreciated in the country and they are proud of their nicknames.

Khoja [khöjə] is an honorary name of Muslims who consider themselves descendants of Chahariyars[7,435;]. Khojas consider themselves descended from the daughters of the Prophet Muhammad, who are praised and respected by everyone in the nation. From ancient times, original girls became brides of eshans and lords, this custom has almost been abolished today. Khoja is one of the nicknames passed down from generation to generation. This nickname is one of those nicknames that will not disappear because it is respected. In the explanatory dictionary of the Uzbek language, a person who comes from the generation of a landlord is called "khojazoda". But this word is not used among the people, the descendants of the master are also called master: Norimbat master [Narymbət khöja], Mahkam master [Makkam khöja]

Mullah [mullah] is an educated, pious man. A person who received madrasa education in the countries of the Middle East and Central Asia[8,634;]. When the mullah prays at weddings and reads the marriage, he recites various verses in the name of the deceased and the funeral prayer at the marakas: Sharifboy mulla [Sheryp molla], Rahimboy mulla [Rəxym molla]

Halfa [galpa] - An educated person who is well versed in the rules of Sharia[7,381;]. They read from the surahs of the Holy Qur'an to women during mourning ceremonies. Prophet Muhammad s.a.v. They tell stories and narrations that guide women to a good path, show the virtue of patience, and prove that God tests His beloved servants in various ways, and they heal the pain of women who have been afflicted with calamities: Mahfira Khalfa [Makhpira khalpə], Sharifa khalpə [Şəripə khalpə].

Nicknames with a negative meaning lower a person's dignity, humiliate him, insult him, and in some way have a bad effect on a person's psyche. Such nicknames can include:

Shybyn (mosquito) is a two-winged, long-whiskered blood-sucking insect, and in Amudarya, this insect is called peshshe. A fly (Persian - mosquito) is a double-winged insect that multiplies in summer and feeds on various liquid organic substances. The meaning of the word fly means a fly in Amudarya dialects: Malut khysyn (Fly in Mawlu). This nickname was given because the human body is very small, but alive and resistant.

Drunk [пиян] - This person is given this nickname because he is always drunk. Habibulla pawn [Habi pawn].

Donkey [yeshək] - this person's nickname was actually Kurra [kürrə] from his youth. He is now an adult and has lost his nickname and is working hard to change it. When there is no result, he gathers his friends, neighbors and other acquaintances, whom he calls Kurra, and throws a big party. He asks the guests not to call him Kurra during the party. At the end of the party, the older of the guests said, "You've grown up and become a big man, we don't call you Kurra anymore. When Kurra grows up, he becomes a donkey, now you'll be called a donkey and laughs." will be an ass. The word ass is used to refer to a person who is clueless, apathetic. It also has a derogatory meaning when applied to a person.

Kal (bald) is a person without hair. This woman's hair, no one knows why, fell out on its own within a day. Because of this incident, everyone calls him by this nickname. Bald boy [Thqqy kəl].

Word [word] - The journalist was a man. He would never leave a single sentence behind, he would search for the answer to that sentence and ask the interlocutor questions. [Amu Darya district. Mangit city. Companion word].

The word lame [mayman] has the meanings of crippled leg, lame, no arm or leg, disabled, and colloquially broken leg. Ahmed is lame. He was given this nickname because one of his legs is short. [Amu Darya District Bosuv OFY]. In the Tortkol dialect, such people are called "mayman". Riyim Mayman [Tortkol city].

Bukri, bukur [höky] means bent, relaxed. As a result of lack of iodine, a person becomes curvy due to the contraction of the thyroid gland. [Eshmurat höky Qilichboy OFY, Beshovul MFY].

In Karakalpaks, Bukri people are nicknamed "Iynogokh". Iyinogoch is called Obkash in Uzbek literary language. It is a Persian-Tajik word, and it is a wooden tool adapted for carrying water and other things on the shoulder, with a bucket hanging on the hook at both ends.

Manqa [manqa] - one who speaks in a slurred voice, one can speak in such a tone due to a cold. In modern medicine, it is called gaymorid. But some people speak in this way by birth and add the mongo nickname to such people. [Friday mongo. Qilichboy OFY, Beshovul MFY].

The meowing sound is like that of a cat, and it got the nickname "meow" because it kept repeating something. [Nurimbat Meow 1939, Amudarya District, Qilichboy OFY].

Tuyako`z - this is the nickname given to people with big eyes, round like the eyes of a camel. [Bakhtiyar tuyakoz Qilichboy OFY, Beshovul MFY].

People with big eyes are nicknamed tasray in Karakalpaks.

Ozhin [qyltyr] is so named by the people because he is thin. [Mangit city of Begzad qyltyr, Amudarya district].

Nicknames are a complex and unique linguistic phenomenon that occupies a very important onomastic space in the oral speech of the Uzbek people, and are used by the speaker and the listener to give a personal assessment of communicative relations in various speech situations. Nicknames are a unique component of our vocabulary. The article tried to reveal the lexical-semantic features of nicknames used in positive and negative meanings. Many occurrences of nicknames used in a more negative sense in our speech were studied. Nicknames, like phraseological units, determine how many vocabulary possibilities the language has in addition to giving imagery to a speech or an artistic text [9,198;].

Before using a nickname, people should first consider the impact on the person's dignity and worth. In many cases, nicknames based on a person's physical disability (nicknames related to a person's physical disability are based on the nature, character, similarity, congenital or acquired defect) of a person have a negative meaning. From a religious point of view, it is a sin for people to make fun of each other with nicknames: "Do not make fun of yourselves (each other) and do not call each other by nicknames! How evil is the name of iniquity after faith! Whoever does not repent, those are the wrongdoers" (Hujurot, 11). Due to the fact that the issue of responsibility for insulting someone is being taken seriously in our legislation, it is necessary to explain to people that nicknames should be used for the right purpose and not to discriminate others.

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Rezyume: *Ushbu maqolada Qorqalpog'iston Respublikasida yashovchi aholi vakillarining laqablarini o'rganish ko'nikmalari, shuningdek, kelib chiqish sabablari, etimologiyasi, laqablarning ijobiy, salbiy jihatlari haqida ma'lumot berilgan.*

Резюме. *В данной статье представлена информация о навыках изучения прозвищ населения, проживающего в Республике Каракалпакстан, а также о причинах их происхождения, этимологии, положительных и отрицательных сторонах прозвищ.*

Kalit so'zlar: *laqab, taxallus, etimologiya, ijobiy va salbiy laqablar, sheva vakillari, etnografiya, onomastika.*

Ключевые слова: *прозвище, прозвище, этимология, положительные и отрицательные прозвища, представители диалекта, этнография, ономастика.*

SOME ASPECTS OF ADULT EDUCATION

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Summary: *The article is devoted to the issues of adult education as a difficult task for teachers. It is noted that the processes of perception, memorization, thinking in an adult are not as productive as in a child or teenager. Methods and techniques of working with adults are recommended, psychological and pedagogical features of adult education are highlighted.*

Keywords: *andragogy, profession, methods, features, adulthood, training, practice, self-awareness*

Introduction. Working with adult learners has its own characteristics, which we, teachers, need not only to know, but also to be able to apply in our teaching activities.

Adult education is carried out according to the laws and principles of andragogy (with gr. aner, andros – adult man, mature husband + ago – I lead). For the first time the term "andragogy" was introduced in 1833 by the German scientist A.Kappom. There are basically three interpretations of the term in Europe today. Firstly, as a scientific approach to the process of teaching adults and studying adult learning methods throughout life. Secondly, andragogy is a theoretical and practical approach based on the humanistic concept of students and teachers-facilitators. Thirdly, andragogy is considered as "the practice of adult education", "specific teaching methods" and even as "the opposite of child pedagogy" [1].

Today, such an area of pedagogical science as androgogy, the science of adult education, is beginning to develop actively, and we need to take into account its recommendations.

"Adult" is determined not by age and not by the level of his education (general, professional, additional, second, etc.). "Adulthood" is fixed by the moment a person realizes the meaning of his life, his place in society, his human and civic duty.

An adult student has formed, well-established psychological qualities, i.e. he is aware of himself as an independent self-governing personality, has a stock of life and professional experience, strives to solve his problems and achieve specific goals through training. Therefore, it becomes obvious that training should take place in the process of joint activities of the trainees (teachers, classroom teachers, curators) with the trainees.

The problem of working with adults, as the main one, is that even with experience, many teachers understand this work differently. Unfortunately, the vast majority of teachers have neither their own methods nor approaches, organizing classes with senior students and correspondence students [5].

We often talk about the pedagogy of cooperation, without focusing on the quality of socialization of students. And it directly depends on the ability of trainees to adapt, which, in addition to external, objective factors, is determined by subjective factors: personal qualities and various levels of competence.

Competence should be understood as "a kind of integral ability to solve specific problems arising in various spheres of life."

Such an ability, of course, presupposes the presence of knowledge, but it is necessary not so much to have knowledge as such, as to have certain personal characteristics.

We must clearly understand today: the employer of the modern labor market is interested in the ability of the hired person to carry out specific orders, orders, instructions according to a given algorithm. However, not everything is so simple here either.

The main part. Psychological and pedagogical features of adult education are ambiguous. They can be structured in the following areas.

Firstly, an adult student is loaded with current affairs at work. The time allotted for training is clearly regulated, it does not allow you to immerse yourself in a new type of activity, standing in the position of a student. Secondly, the influence of biological age determines the features of mental processes: the capacity of a person's memory begins to decrease, thinking processes become less operational and flexible. Thirdly, the accumulated professional experience leads, on the one hand, to a weakening of the desire to join the educational space as students (i.e. suppresses cognitive activity, motivation to learn), and on the other, its adequate use in the educational process may be a prerequisite for successful learning.

Fourth, there are psychological barriers that act as internal obstacles (unwillingness, fear, uncertainty) of a person, prevent him from working successfully and boldly.

It can be suggested to conduct a questionnaire that will reveal the ability to self-development, factors that stimulate and hinder learning and development. Using a set of psychological barriers for protection, a person builds various reflections of the external environment. From the flow of external information, he chooses only the one that can be assimilated and added to the accumulated experience. But a static, established view of the world hinders the creative process of understanding the new. Therefore, the task arises of freeing a person from the influence of protection that deforms his personal growth. In middle age, the mechanisms of protection are quite rigidly, firmly fixed in the structure of the personality. When teaching adults, they have such traits as dogmatism, timidity, and suspiciousness.

Fifth, an adult has a stable system of professional stereotypes. The inability to overcome it in behavior and thinking does not allow a person to become more open, direct, sensitive to creative endeavors. This becomes a brake in the situation of professional activity restructuring, prevents from objectively assessing and analyzing one's own professional baggage [3].

When organizing training, we need to know the following:

- It is impossible to impose training on adults. They should want to learn. An adult's readiness to learn is formed from his conscious inner need.

- The leading role in the process of adult education should belong to them. Adult learners strive for independence, self-realization and self-management in their studies, as well as in other aspects of life.

- Adults will study with interest only what they need to solve professional problems, achieve their goals, and what they expect to immediately put into practice. Rather than knowledge, they need new patterns of activity.

- Adults will learn better in an informal setting, using a variety of forms and methods, without evaluation procedures and competition, but with an open diagnostic procedure that allows them to independently evaluate their activities.

- Adults have previous experience that needs to be used in the educational process. In the course of training, this experience can be not only problematized, but also updated. The general scheme of the educational process as a whole can be represented by the following elements:

- Providing educational motivation;
- Organization of students' activities in accordance with the principles of developmental learning;

- Monitoring of learning outcomes.

Creating educational motivation. This is not an easy task. According to the type of dominant motives, such groups of adults can be represented.

The first group. These are students who are distinguished by initiative, expressed desire for success, high results, competition and superiority. For them, the main motives are self-realization and self-development.

The second group. These are students who are characterized by diligence, but there is no special propensity for active actions. But for them, teachers should create an atmosphere of success and recognition, and then they can change their attitude to learning.

The third group. These are trainees who are focused not on the work itself, but on getting "grades" in any way.

Based on the practice of your teaching and communication with teachers, when asked what criteria you use to select educational material for adult students, you usually get two types of answers. Some – "we select everything new that is in this science." Others – "we select the need for material for the formation of practical skills." And, in my opinion, the second point of view is more important, it accumulates in a simple motto: "not new, not old, but necessary."

For the selection of educational material, it is advisable to use the following algorithm:

- identify individual difficulties of students in their professional activities and fix them;
- systematize the identified difficulties by dividing them into groups;
- identify the methods by which these difficulties should be addressed in each specific group;

Select the part of the training material that must be mastered to complete the task and develop certain skills. One of the most effective forms of developmental learning is a playful form of organizing the learning process with adults. The problem of adult education is not only the problem of direct formation of the new, but also the problem of retraining and overcoming resistance to learning. Game forms in this case are the most adequate. They contribute to the removal of stereotypes of past professional experience and the transformation of the educational process into a process of managing personal development.

Game forms are diverse and allow you to achieve different goals: from acquiring the skill to avoid conflict situations to developing creative abilities.

Role-playing games are most preferable. As a rule, they are aimed at developing the communicative abilities of trainees (the ability to act in conflict situations, to stand up to someone else's point of view, to understand another, to predict the impact of their actions on the interlocutor, etc.). The use of role-playing games involves the mandatory organization of reflection of the activity carried out. Otherwise, there is no teaching.

A business game is another type of game. Its potential is wider than role-playing games. They allow the participants of the game to form both a holistic view of professional activity, to convey the professionalism of knowledge in an active form, and to develop reflexive abilities.

The essence of the business game is to simulate professional activity. (For more information about gaming activity, its types, methods and methods of application, see my method. development). Didactic games as a means of cognitive activity of students.

The most multifunctional of the game forms is an organizational learning game (OLG). In the OLG, a full cycle of activity development is simulated – from an approach to solving a situation to a generalized assessment of the found solution method, which corresponds to the general structure of intellectual activity.

It includes the following procedures:

- 1) analysis of the situation and identification of problem points;
- 2) definition of the leading action strategy and definition of goals and action plan;
- 3) selection of methods and means of activity and implementation of the solution;
- 4) obtaining results and evaluating the effectiveness of the way to obtain them.

The result of the use of OLG is the acquisition by their participants of professional means of activity, since it is they who become the object in the game. So, having clearly set goals, formulated principles of the organization of training, selected content and an arsenal of methods and forms of training, a teacher can create a system of work in the classroom that will satisfy the cognitive needs of the most "untrained" student.

Control in relation to the adult learning process has its own specifics in comparison with the process of teaching adolescents. As noted above, adults do not like self-control, including in training. Therefore, when organizing the adult learning process, self-control should be preferred.

Of course, self-education of an adult is an individual process. The success of self-education depends on many factors:

- on the ability of the listener to organize his personal time;
- from drawing up an individual plan of self-education and the ability to implement it, etc.;

But the most important thing in this process is the desire and aspiration of the person himself for his own development and improvement.

In conclusion, it can be concluded that evening, correspondence, distance learning is the way of self-improvement of an individual, his desire to achieve a certain specific goal, a certain social and professional status, devote himself to his favorite profession with the help of training. The role of the teacher in this process is to create favorable conditions for the student by improving the teaching technology based on the laws and principles of andragogy.

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Rezyume: *Maqola o'qituvchi uchun qiyin vazifa sifatida kattalar ta'limi masalalariga bag'ishlangan. Qayd etilishicha, kattalarda idrok etish, yodlash, fikrlash jarayonlari bola yoki o'smirdagidek unumli emas. Kattalar bilan ishlashning metod va usullari tavsiya etiladi, kattalar ta'limining psixologik-pedagogik xususiyatlari yoritiladi.*

Резюме: *Статья посвящена вопросам образования взрослых как непростой задачи учителя. Отмечается, что процессы восприятия, запоминания, мышления у взрослого человека не столь продуктивны, как у ребенка или подростка. Рекомендуются методы и приемы работы со взрослыми, выделены психолого-педагогические особенности обучения взрослых.*

Kalit so'zlar: *andragogika, kasb, usullar, xususiyatlar, kattalar hayoti, o'rganish, amaliyot, o'z-o'zini anglash.*

Ключевые слова: *андрагогика, профессия, методы, особенности, взрослая жизнь, обучение, практика, самосознание.*

ANCIENT SACRED PLACES IN THE NORTH-WEST REGION OF UZBEKISTAN

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Summary: *The article, based on historical sources and archival documents, shows eco-archaeological monuments and sacred pilgrimage sites in the southern Aral delta of the Amudarya, where Turkic-speaking ethnic groups lived, who had Muslim spiritual people, served as propagators of Sufism among semi-sedentary tribes in the Middle Ages and modern times. These spiritual people, like Hakim Ata, Said Ata, Azler Ata, Murat Shaikh, Imam Iishan, Kutluk Iishan and many others, their holy places today have become the object of "internal pilgrimage" and Muslim tourism.*

Key words: *Aral region, sacred, pilgrimage, Ishan kala, sacred places.*

Introduction: The ethno-cultural, ethno-historical heritage and ethno-ecological sacred objects of the Aral region, the eastern Ustyurt and the lower Amu-Darya basin have been identified, their scientific evaluation and their place in "domestic tourism" and "pilgrimage tourism" in the historical enlightenment and their use in today's five-year anniversary. is one of the topical issues in the regional "development strategy".

The main goal and plans: the north-western region of Uzbekistan - the Karakalpakstan region - is a cultural landscape that belongs three thousand years.

World intellectuals, scholars and martyrs are increasingly interested in the material cultural heritage and non-material culture of Karakalpakstan. One of them is the archeology of Southern Aral and the material cultural heritage of the Karakalpaks - ancient sites, sacred archaeological objects are pointed out. In the Presidential Decree "On methods for deeply improving the spiritual and educational work" in the new state strategy in the spiritual and religious-educational spheres, the rules and solutions of the global and regional scope are set. "Preserving our centuries-old national and religious abilities, learning the precious tradition of our ancestors, who made a great contribution to the development of science and culture, spirituality, and in this regard, educating young people as perfect human beings, is one of the important conditions for providing a stable social and spiritual center in society," was stated.

In recent years, the Center of Islamic Civilization, Islamic Academy, High Madrasah of Mir Arab, Imam Bukhari and Imam Termezii International Scientific Research Centers, the international scientific conference dedicated to the 900th anniversary of Hakim-ata Sulaiman Bakirgani, have been developed in our country to study and history of our rich scientific and historical heritage will serve to promote our spirituality and enlightenment.

In our country, effective and practical work is being done in the direction of the state regulations, action strategy for studying and beautifying the places of historical interest and shrines in the areas of spirituality, social strategy, and places of historical interest. Identification, scientific evaluation and historiography of environmental archaeological objects in the Aral region, eastern Ustyurt and the lower Amudarya plateau is an important issue. How many cultural heritage objects and places of pilgrimage are there in the historical geography of the Aral? How many ethno-cultural and Islamic-enlightenment sites have been preserved in the Amudarya basin of the Aral Sea? It is clear that specialists and scientists have given a new look to these questions.

Middle-age sacrifice places. It was started by archaeologist G. Khozhaniyazov and historian O. J. Yusupov with good intentions, good thoughts, good actions, and scientific reputation in the

identification and propaganda of ancient places and places of pilgrimage related to the Middle Ages in the region of Southwest Uzbekistan - Karakalpakstan.

In the north-western region, between Konyrat and Moinak districts, in the present "Hakim Ata" village of the Village People Center, in the old "Hakim Ata" lake, in the shrine of "Hakim Ata", and the "Hakim Ata" tomb and mausoleum are located.

Archaeologists of the Karakalpak State University: under the leadership of J. Khakimniyazov, as a result of archaeological excavations in the "Hakim-ata" complex, they identified the places of sacred objects - mosques, houses - belonging to the 12th-14th centuries. This year, the archaeologists of Karakalpak State University conducted excavation work at the sacred object "Bogra Khan". Professors-teachers of Karakalpak State University S.Saitov, O.M.Kdyrniyazov, F.Utepbergenov and others conducted stationary excavation works in the city of "GYAUR" in Khozheli region. Nokis State Pedagogical Institute and Kazan University jointly conducted an international archeological excavation in the sacred landscape "KERDER /Kardar", where the ancestors of the Karakalpaks lived for many centuries and were the capital. Resources and historical enlightenment. The history of sacred place the delta of Amu Darya was mentioned in the works written by Khorezm historians. Abulgazy, then Munis, Bayaniy wrote: "Starting from Mizdahkhan, Tughkalasy, Bugra Khan, Hakim Ata" are places of pilgrimage. As our President mentioned that "We have a rich history worth cherishing, we have great ancestors worth cherishing, and a spiritual culture worth cherishing", indicates that in the Karakalpakstan region, we have the most sacred places that the world desires.

The hero of Uzbekistan, archeologist G.Khozhaniyazov, "About the sacred places of Uzbekistan (Hakim ota). "Central Asia and Islamic Civilization" made a presentation at the International Islamic Academy of Uzbekistan. He published several articles about the sacred places in our country. (3.) "Ethno-archaeological research of the monuments of the Southern Aral Sea region of the 17th-19th centuries. Proceedings of the international conference "Current issues of archeology, ethnography, history and historiography of the Southern Aral Sea region." Nukus, 2017. Inscriptions in the monuments of Uzbekistan. Karakalpakstan. Collection: «Kalmak city center of the Karakalpaks (XVII-XIX centuries)»Archeology of the Aral Sea region. Issue VII. A complex of archaeological sites on the Krantau Hills. Tashkent.2009. «Karakalpaks in the Aral microdistrict in the 16th-17th centuries».Actual problems of historical science. TD. Samarkand. 1997. (J. Khakimniyazov). Archeology of the Aral Sea region. Issue VII. A complex of archaeological sites on the Krantau Hills. Tashkent.2009. "Social and religious monuments of Mizdahkhan in the 17th-19th centuries." Issues of the history of Karakalpakstan. Conference materials. Nokis (jointly with J. Khakimniyazov). 2008. "Imamaddin Kayipnazar Biy Uly and his memories of his time". The famous scholar of Karakalpak people. Nokis, 2007. pp. 26-32. "Cult-funerary monuments of the Karakalpaks of the 17th-19th centuries based on materials from the Krantau burial ground."Imam Iyshan is a great scholar and enlightened person of the Karakalpak people. Nokis. 2005. Defensive structures of Bes kala of the Aral region during the Hakim Ata era (on the example of Kungrad) Sulaiman Bakyrangani and his life-time. MK. Nokis-Konyrat. 2002. "The medieval complex Belaya Khanaka in Mizdahkhane. *About Murat Shaykh and his exile*

Shaykh ul-Islami, the great sage and scholar of the Aral ethnic groups in the region of the Republic of Karakalpakstan in the middle ages in the north-western part of Uzbekistan. Hakim ata-Sulaiman Bakyrangani's heritage and his tomb have been preserved for 900 years and are becoming a national heritage and spiritual wealth. Renovation of Hakim Ata shrine, which was the pride of our great ulama and elder, our people, has been started, and the works of re-foundation of this holy place, on the model of "Zangi Ata" sacred complex in Uzbekistan (Tashkent region), have been started. In the

name "Zangi" the name "Zangi" was a historical person in the Aral region, the leader of Turkic-Saljuk communities, Ak-Sonkur uly Zanggi (Imad-ad-din Zanggi ibn Ak Sonkur - 521 Hijri - 1127 years). He lived during the reign of Seljukler Sultan Malik Shah. Sultan Malik Shah came from the city of «Jend» in the Syr Darya basin and sat on the throne in the city of "KYAT".

Sacred places in new era in Northern territory. The historical geography of Muslim graves in Karakalpak territory, the number of sacred places of our ancestors, and which places are "unknown" are not clear, currently, more that 400 cultural heritage objects have been identified, there are "unidentified remains"?! To research these issues should be the task of future young historians. One of the sacred places dating back to the 17th-19th centuries, the graves of Jiye Zhyriv, Otesh Shayr, and Khurliman-Kyz baqsi are located in the shrine of "Kabakly Ata".

Modernization and reconstruction of sacred places in our country. Preservation and improvement of sacred places in our country, construction, repair, reconstruction, beautification of buildings of mosques and religious educational institutions, preservation, repair, beautification of places of pilgrimage with historical and architectural importance, development of their infrastructure, promotion of sacred places of pilgrimage in the Muslim world, the problems of improving the reputation of these places, local trips ("domestic tourism") and "small hajj" pilgrimages for foreign Muslim travelers are one of the most important programs in the field of tourism in the strategy of state political actions.

In the "Kara Kum" cemetery in Shymbai district, Kunhoja's grave and Berdak's grave are located. On the northern highway road, in the city of Shymbai, a cemetery of spiritual and religious centers was established in a new place. There will continue to build a spiritual garden there.

The only functioning Muslim Friday Mosque in the capital of the Republic of Karakalpakstan was one of the largest mosques in Uzbekistan.

Our dear President gave a proposal for the complete reconstruction of the "Imam Ishan" Friday Mosque in Nokis, and construction works were completed in a short time. The leader of our country talked with elderly people in the mosque "Imam Eshan Muhammad".

- It is known in the past that sages have made a great contribution to the country and people in the fields of spirituality and religious education in the Aral land. The exemplary deeds of our ancestors are a mirror of our spirituality. The exemplary, virtuous, life experiences, moral results, benevolent virtues and legacies of our ancestors have become a priceless example.

One of them is Shayik Imamatiin Muhammed Ahun-Iyshan Kayipnazar Biy Uly, a spiritual figurehead of Karakalpak people, a religious-enlightenment place, an sage of northern territory, who created a new era in around Aral Sea along the Amudariya.

View of historical resources: The historiography "State of Khorezm" in the new era is considered one of the "Epic of Kings" by the historians of the Palace: In the book "Firdavs-ul-Iqbol" written by Sher Muhammed Munis and Muhammed Rizo Ogahii, about the great sages, elders, ahun-khwajas and qazi-iyshans who were created in the Aral region in the middle ages and in the new eras, and their sacred steps and shrines, sacred places are shown. There is a grave of Hazrat Shayik Sulaiman Bakirgani-Hakim, who was a great sage, priest of the Karakalpaks in the Amudarya river basin, around the Aral Sea, and the most reliable shrine is that Hazrat Sayyid Ahmed Said visited and served his grandfather, and then his family took care of the place.

Beautiful places Around the Aral Sea on the left side of the Amudarya. In the Khozheli "Mazdakhkan" region, Hazrat Sayyid Pirim Khoja-Iyshan, Sayyid Tursyn Khoja-Iyshan, Sayyid Geday Khoja-Iyshan were religious-educators of the settled people, pilgrims, and intellectuals who served in terms of spirituality and Muslim rights.

The Russian traveler, artist and writer N.Karazin in his painting "Suenli" channel (1874) took into account the madrasah and the mosque built near the tomb of Pirim Khoja-Iyshan.

According to the Khorezm historian Munis' mira, the tomb of Prophet Shamun, located in "Mazdakan" in Khozheli region, is a place of pilgrimage. "Mazlum Supy" there was a place of remembrance of the mosque of the priests.

At the end of the 18th century and the end of the 19th century, in the country of Karakalpak, in public relations, in religious and educational services, Hazereti Shayiks, "chained" Iyshans, Ahun-Iyshans. Ahun-Kazis and Khoja-Iyshans had status and influence.

Spiritual education and religious-enlightenment services of Molla Imam Ishan in the north took place in three historical geographical ethno-spaces.

At the end of the XVIII century, Priest Imam Iyshan, one of the four ahun-iyshans who founded the teaching madrasa in Bukhara, traveled along the "Kuvanish" canal and toured the country, Hazrat Shayk Murat Khoja-akhun visited some of the saints.

Priest Imamatiin Iyshan moved to Kyran mountain, along Amiudarya, and his supporter and friend Kanly Tolegen Bahadur, zhuzbasi and bii were responsible for the construction of the mosque. Esengeldi Mihrem Nazli Makat Bii was also financial supporter to Imam Iyshan.

Ethnogeography and ethnoarchaeological studies of holy places and places of pilgrimage in Kyran Tau have begun recently. Ethnologist Kh. Esbergenov about the "Kalmak city" cemetery, archaeologist G. Khozhaniyazov researched the ancient place of the Karakalpaks in "Kyran Tau" - a mound city, a cemetery, mosques and madrassas from an ethno-archaeological aspect.

Kypshik Allahberdi saint Aziz Khoja, Ahun-Iyshan, Aiteke Bektemir Ahun-Iyshan in spiritual, religious and educational services for the "seven tribes" and "fourteen tribes" in the Kyran Tau region. Kanly Imamatin Iyshan, Markabay Kazi-Iyshan, Ibaidullah Iyshans implemented social and spiritual needs by building mosques, mahbara, khanokha in the regions, public places of worship.

When Hazrat Shayk Imam Muhammed Iyshan built a new mosque in Kyran Tau, the great elder of the "Ak Mangyt" people - Maman biy yaktly went to visit him. Then Imam Iyshan slaughtered a black cow and showed great kindness to the wise old woman. This social event is sung by the villagers of Maman village and the elders of "Bolys village" in the village, exemplifying the love of two spiritual people for each other.

If we take a look at the table of Sheikh Ibn Muhamad Salah, who contributed to the spread of Islamic Sharia and Muslim knowledge in the social and social life of Arka Diyar along the "Kazakh Darya" and in the "Kara Kum" region, Mullah intellectuals, Akhun-Iyshans, in this work Kutuk Khoja Ishan Ibn Aziz, we feel that they are the descendants of the "shaykhs" and "khojas" of the Karakalpak people, who created them in the Aral region.

The historiography of Imamatiin Muhammed Ahun-Iyshan has become a good tradition to study the historical and spiritual figures of the past eras, their life and fate, their heritage, their services to the nation, and to show them as an example to the youth.

The genealogy table of Hazrat Sheikh Imamatiin Muhammed Iyshan was first published by "Aral" magazine (in 1993. Dame Khan Maksym Kyz Nuratdinova). Ishans with "Kum Kurd" were hunted by Ismayil Iyshan, the copy of which was recorded by Nuratdin Iyshan was known to the community.

In a press release, T. Aitanov said, "What kind of services does Imam Ishan have for the people?" Why is his name passed down from generation to generation?" In his article, he wrote that he was a great teacher in our country, a religious enlightener, a person who showed an example of spiritual maturity, who left a legacy in the way of morals and humaneness. A. Dawletmuratov

collected "oral histories" and epos from the Kegeili region "About Imam Iyshan", "He was a saint in his time, fortune teller, his words were sharp," he said. In K. Naimov's work: "Our ancestor Imamatdin ibn Muhammed Al-Khorezmiy" was mentioned on the table of Imam Ishaan.

He also mentioned that "Imam Iyshan's first ancestor Udayberdi Bey died in 1556 in a war with the Russians," according to alternative history. On the occasion of the 250th anniversary of the birth of the spiritual leader of the Aral region, Hazrat Shaik Imamatdin Muhammed Ahun-Iyshan, the first "religious-enlightenment" conference was held in our Republic entitled "The great figure of the Karakalpak people and scholars". Hazrat Shaykh Imamatdin Muhammed was Akhun, Ishan, spiritual, religious-enlightened person, and his heritage, wise and noble words will be a lesson for young generation.

The descendants of Hazrat Imam Iyshan built "Iyshan Kala" in the village of "Kum Kord" along the Kuwanysh grain, and led a large cultural, public education, and religious enlightenment event in that region. Since then, 100 years ago, the Soviet government and the Bolsheviks expanded to that holy place, against them the servants gathered from the "twelve bols" fought against them, and was the place of "godless" organization, red-lighters. It is necessary to fully study the history of the Kum river "City of Iishanlar", a sacred place along the "Kuwanysh Jarma", a branch of the northern Amudarya river. At present time, the shrine will become a place for domestic tourism, a sacred place of "small pilgrimage", a place of pilgrimage.

Conclusion: It is time to organize complex expeditions to the sacred places of Karakalpakstan, determine the environmental conditions of the monuments, beautify the surroundings of the holy objects, and include them in the tourism, domestic tourism and pilgrimage tourism programs.

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Rezyume: *Xulosa: Maqolada tarixiy manbalar va arxiv hujjatlari asosida Amudaryoning janubiy Orol deltasidagi turkiyzabon etnik guruhlar istiqomat qilgan, musulmon ma'naviyatiga ega bo'lgan, diniy ma'naviyat targ'ibotchisi bo'lib xizmat qilgan ekoarxeologik yodgorliklar va muqaddas ziyoratgohlar ko'rsatilgan. O'rta asrlarda va yangi davrda yarim o'troq qabilalar orasida so'fiylik. Hakim ota, Said ota, Azler ota, Murod Shayx, Imom Iishhon, Qutluk Iishhon va boshqa ko'plab ma'naviyatli kishilar bugungi kunda ularning muqaddas joylari "ichki ziyorat" va musulmon turizmi ob'ektiga aylangan.*

Резюме: *В статье на основе исторических источников и архивных документов, показываются эоархеологичекие памятники и святые поломнические места в Южной Приаральской дельты Амударьи, где жили тюркоязычные этносы, у которых были мусульманские духовные люди, служили пропагандами суфизма в среды полуседлые племена в средние века и новые времена. Эти духовные люди, как Хаким ата, Сайд ата, Азлер ата, Мурат шайх, Имам ийшан, Кутлук ийшан и многие другие, их святые места сегодня стало объектом «внутреннее поломничество» и мусульманские туризма.*

Kalit so'zlar: *Orolbo'yi, muqaddas, ziyoratgoh, eshon qal'a, osilgan joylar.*

Ключевые слова: *Аралский регион, сакраль, зияратгох, Ишан кала, свешенные места.*

SEVERAL ATTITUDES ABOUT THE ORIGIN OF THE "NUKUS" TOPONYM

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Summary: *This article provides information about the term "Nukus", the various relations of historians, linguists, on the history of the origin of the term. There are oral legends among the people on the term "Nukus".*

Keywords: *Nukus, Naukas, Nixas, Novkus-Artesian, Noghay, Shora, nukus ethnonym.*

Toponymy – is a branch of linguistics that studies land and water terms. The first information on the study of toponyms of Karakalpakstan can be obtained from the historical and ethnographic works written on the basis of scientific expeditions of Russian scientists in the territory of Karakalpakstan in the XIX-XX centuries with political and economic relations.

Information on the toponymy of Karakalpakstan S. P. Tolstov, T. A. Jdanko, B. V. Adrianov, G. I. Donidze, V. V. Bartold, L. Uspenskiy, N. A. Baskakov, S. Ataniyazov and in the works of H. Vamberi and a number of other scholars, little is mentioned [1]. They noted that the study of toponyms directly benefits the study of the history, ethnography, administrative-territorial territories of the people, as well as the lexicon of history, morphology.

Opinions about the hydronyms of Karakalpakstan are expressed in the work of Ya. G. Gulamov [2]. He wrote extensively about the irrigation networks in the Amudarya delta, the history of the irrigation system of Khorazm, as well as the hydronyms Purkhan, Eshim, Kuwanishjarma, Kokozeq, Qizketken, Dawqara, Kegeyli river, Mayjap and its tributaries in Karakalpakstan.

The first to study the toponyms of Karakalpakstan was K. Abdimuratov [3]. In his first article, the reasons for the origin of the term Nukus were scientifically substantiated. In 1966, the author developed his dissertation on the scientific-linguistic basis of Karakalpak toponyms.

He made a detailed study of the structural and semantic structure of a number of geographical terms in the region and analyzed them in terms of historical and etymological differences. The automated researches reveal the reasons for the origin of geographical terms in these regions, such as the branches of the Amu Darya, the lake horses in Karakalpakstan, the toponyms Nukus, Shimbay, Konirat, Khojeli and Tortkul. And in his article with T. Begjanov "Structure of Karakalpak toponyms" is devoted to the construction of Karakalpak toponyms [4].

In addition, a number of articles on local geographical terms of Karakalpakstan were published. For example, E. Murzaev mentioned the fact that the term Nukus is used in many places, while in the articles of M. Mambetullaev, A. Allamuratov and H. Esbergenov, the toponym of Knox, and O. Bekbaulov, on the other hand, notes that the Nawkas toponym and the Nukus ethnonym are similar in appearance, and that the time of formation, meaning, and construction do not correspond to each other [5].

In some sources, the word "Nukus", the term "Nukus" and the term "Nokus fortress" are used in folklore. If we listen to the mouths, "Seven Birds" means "The ancestor of the Karakalpaks, Kara Qahan, gave to his seven sons the seven birds. In the left style, the Karakalpaks say that from time immemorial the birds wore certain sweaters. Kara Qahan conquered Muyten – iytelgi, Qonirat – lashin, Qitay – qarshiga, Kipshak – burkit, Keneges – sunqar, Mangit – tuygin. And a bird of Karakalpakstan, and it symbolizes the Nurkus that our ancestors worshiped [6.5]. In the predictions related to the toponym "Nokis", in the word "Kiyeli kus jurti" in the Arab world. According to the predictions about

the toponym "Nokis", in the mouth "Kiyeli qus jurti" in the Arab world the name "qaqnus" ("haqqus" in the poems of Karakalpak poets) was known by Europeans as "phoenix". In other words, the phoenix is called in our language "Paniy bird". This indicates that the name of the bird has changed from the Eastern languages, especially its pronunciation to the Karakalpak language. Its original text is derived from the Turkic languages. However, the word "bird" in the Karakalpak language still retains its original meaning.

Also, in the Karakalpak language, this bird has another ancient term - nurqus, that is, a bird created from light, the meaning - the guardian of mankind. Qumayqus is a symbol of fortune and wealth, while Nurqus is a symbol of wealth, eternity and existence.

It is also said that the area of the town of Knox has been a bird bazar since ancient times. It is said that the place of Kuskhana-Qizketken was always a horde of birds. It is also said that the image of a bird was found in a vessel belonging to a distant age found in the fortress of Kuyik kala. Some researchers have speculated that the bird may be a "Qumay bird." Probably, the left bird is not a sandpiper, but it is not far from the possibility of being a lighthouse, and there are speculations that the terms mentioned in the original sources in the form of Nuwkas, Nawkas, Nixas may have been derived from Nurkus.

In addition to this, in the location of Nukus, in ancient times lived people from different tribes, and there were many lakes around the location. It is called "Nukus" because there lived numerous birds like "Nuw Qus". These mouths will remain mouths. In this article, we do not want to repeat all the words or summarize their meaning. The fact that the name of the city of Nokis is associated with the habitat of birds is likely to arouse some feelings of confidence in the readers. It is a fact that birds are constantly in the woods. For example, in the northwestern part of the Kegeyli region, beyond the present-day Kokshiyel population, there are large interconnected lake basins, such as Kokshiyel, Nagalay, Koltykkol, Dautkol, Kazanketken and Asphantay. Due to the large number of birds in the area, one of the mountains is now called Kuskhanataw.

As we have already mentioned, the word Nokis in the above-mentioned myths is derived from the word bird, but most scholars and researchers associate the name Nokis with the Nokis tribe. But we also see the diversity of opinions in this forecast. A number of scientific studies have shown that for the last 250-300 years there have been military defenses on the site of the Nokis Fortress. Academician Gayratdin Khojaniyazov, an archaeologist and scientist, puts it this way in his research: It is known that in 1740-1741 the Russian ambassadors headed by D. Gladishev, who left the Or fortress and went to Khiva in the Nokis Fortress, stopped there. Khiva historian Yusup Bayaniy in his "Chronicle of Khorezmshahs" in 1778 in the fortress of Nokis was in residence of the Karakalpak sultan Gayipkhan Eshimov's son Abdirahman. It is also known that in 1855 the Karakalpak khan Zarlyk lived in the Nokis fortress. By 1873, with the conquest of the Khiva Khanate by the Russian Empire, the Nokis Fortress had become a strategic stronghold in the region. There are a number of European-style buildings and barracks for soldiers in the castle", he said. Moreover, "The city of Nokis is a city rebuilt on the site of an ancient settlement. In the past, the city which was known by the names of Nuskas, Nawkas, Nikhan, and now Nawket or Shora, Shorasha (Shorsha) is now called by the names of the great Karakalpak tribe Nokis. The genealogy of the city of Nokis is closely connected with its ancient Shorsha, parts of the medieval settlement of Kuskhana, and it covers more than two and a half thousand years of Islamic history. The archaeologist points out that in the Karakalpak epic "Er Shora" the Shorsha fortress was the fortress of the Shora drowning, and that the archeological leak of the "Er Shora" fortress in the Taslaq settlement of the Nokis Fortress should not be leaked. However, it is very difficult to conduct archeological research in the Er Shora fortress, because now there is a deposit in its

territory, and therefore archeological research is limited there. The song "Shora batyr", which is a lyrical-epic composition of the Tugai people, contains the following trains:

Төре тувыл караман,
Анадан эгиз тувмай дараман,
Асылымды сорасанъ,
Нөкис улы тамаман.
Өз атымды сорасаң,
Нариктен тувган Шораман [7.74].

From the lines "If you ask for my nobility, I'm Nokis's son Tama" (Асылымды сорасанъ, Нөкис улы тамаман) we can see that the origin of Shora Batyr was from the Nokis tribe and the Tama tribe in his work. In the genus table of the Karakalpaks, the Keneges bee belongs to the Kogis, Nokis, Kenes, Kiyet, Altinpushak, Bozak, Jalayir, Jaypar, Koptir, Tama, Bayuli, Baymak, Mesit, and Jamanjaq clans. It should also be noted that the terms Jalayir, Tama, Baymak, Jaypar, Mesit are common in the Kazakh, Bashkir and Uzbek nations. Nowadays, the Nokis tribe belongs to the Keneges, and it is said that it has tires called Jamanjaq, Bozaq, Altinpushak, Gobdir.

There is a village called Nokis (Novkus-Artesian) in the Neftekumsk region of the Stavropol Territory of the Russian Federation [8.219]. The official name of the village is Novkus-Artesian. The name of this village is spelled Novkus and it is called Nokis. The local people who make up the village are the noghays. There is also a tribe called Nokis in Noghai, and the reason why this village is called Nokis, in our opinion, is connected with the ethnonym Nokis of Noghay. Noghay linguists also consider the toponym Nokis (Artesian-Novkus village) as an ethnotoponym, associating it with the Nokis tribe: "We have collected field materials and found out that ethnotoponyms are not evenly distributed in the place of creation of modern noghay. In these regions, the noghay were the main occupations of the peasantry, and until the 1920s, they lived a nomadic and semi-nomadic life in order to maintain tribal divisions [9.48].

To conclude, we believe that the name of Nokis is come from the name of Nokis tribe, considering that in the area of Karakalpakstan people lived together according to their tribes and the area where they live was called the name of their tribe and this custom is still preserved. There have been a number of studies on the history of the origin of the term "Nokis", which means that the term should be studied in more detail today, taking into account its similarity in the languages of other peoples.

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Rezyume. *Bu maqola “Nukus” atamasi haqida, atamaning kelib chiqish tarixi bo'yicha tarixchi, tilshunos olimlarning har xil nuqtai nazarlari haqida ma'lumot beradi. “Nukus” atamasi haqida xalq og'zidagi afsonalar ham bor.*

Резюме. *Данная статья про название города "Нукус". В ней даётся информация о различных точках зрения учёных историков и лингвистов по этимологии данного топонима. В народе ходят различные легенды про происхождение названия "Нукус".*

Kalit so'zlar: *Nukus, Naukas, Nixas, Novkus-Artesian, Noghay, Shora, Nukus etnonimi.*

Ключевые слова: *Нукус, Наукас, Ныхас, Новкус-Артезиан, Ногай, Шора, этноним Нукус.*

FORMATION AND DEVELOPMENT OF PROFESSIONAL COMPETENCE OF PRIMARY CLASS TEACHERS

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Summary: *The article provides a comparative analysis of the concepts of formation and development within the framework of the professional competence of a primary school teacher. It is concluded that development is understood as professional growth, and formation is understood as a qualitative and quantitative step-by-step change.*

Key words: *Competence, formation, development, primary classes, teacher, reforms, dictionary, program.*

Introduction. In Uzbekistan, the system of advanced training in primary education has been reformed through the widespread introduction of techniques and technologies that provide for the improvement of educational programs for preparing primary school teachers for innovative activities, by expanding the use of modern pedagogical and information technology tools, communication technologies in the system of training public education workers [1].

The system of advanced training is on a par with the training of qualified specialists in the global education system and is the main factor ensuring the sustainable development of professional competencies based on the growing social demands of society. A special role here is played by the organization of the process of advanced training based on advanced foreign experience in increasing the level of innovation and methodological training of primary school teachers, the use of technologies aimed at developing their creative pedagogical thinking, all this expands the possibilities of providing an improved educational process for the system of advanced training of teaching staff.

Main part. Considering the historical aspects of solving the problem of developing and establishing the professional competence of a teacher, including primary school teachers, we found that by now there is quite extensive experience in this area of scientific research. However, the analysis of scientific and pedagogical literature revealed the fact that in most studies devoted to this problem, based on a philosophical point of view, the science of logic, pedagogy and psychology, the content of the concepts “competence”, “professional competence of a teacher”, “competence of a primary teacher” is quite fully revealed, “competence” are sufficiently fully disclosed, but such concepts as “development of competence” and “becoming competence” are not sufficiently disclosed.

The concept of “becoming” is ambiguous. In scientific and pedagogical literature, the definition of “becoming” is revealed as “professional formation”, types of developing competence: informational, social, managerial, research, cultural. Within the framework of our research, the process of formation - the development of a teacher’s pedagogical competence - is a process of personal, informational-cognitive and functional-procedural entry into the specifics of professional activity. This is a process of changing the personality and activity of a teacher, carried out through the creation of a set of conditions: motivational, managerial, informational, material and technical. Mastering the theoretical and practical content of the psychological component of pedagogical education contributes to the emergence, quantitative and qualitative transformation of the specified personal resource.

An analysis of the understanding of the definitions of this term by various authors allows us to formulate the following conclusions:

1) there are many works in which the solution to the problem of a teacher's professional competence is considered without analyzing the generic properties of the concept of "becoming", which leads to the substitution of the concepts of "becoming" and "development", "formation" and "improvement";

2) currently there is no consensus on the issue of understanding the term "formation of competence" of a teacher, including primary school teachers - separating from the professional competence of a teacher one of the components (informational, socio-psychological, communicative, etc.) is included in the content of this concepts relevant aspects (for example, the development of information competence of a primary school teacher involves the development of information culture, mastery of activities related to working with information and communication tools and technologies;

3) the stages of development of a teacher's professional competence are not disclosed, making it possible to develop (identify) pedagogical conditions for formation, management mechanisms, forms and methods of work to achieve each stage.

Separately, I would like to note that the solution to the last of the identified tasks is, in our opinion, an important stage in solving the general problem of the study - the development of professional competence of a primary school teacher. This approach was successfully applied in solving the problem of teacher professional development by E. F. Zeer, T. V. Chernikova, E. A. Klimov, B. Z. Wulf, T. V. Kudryavtsev and others.

To clarify the concept of "becoming competence," we turned to philosophical literature. Thus, analyzing philosophical approaches to the interpretation of this term, we can conclude that "becoming" is a category of dialectics, the content of which includes a constant, covering all changes, occurrences or disappearances, the process of formation of any material or ideal object, the directed implementation of some internal goal "Becoming", according to a philosophical point of view, is "a movement towards being, that is, birth and transition to independent existence, after which development can follow as a more complex form of change" At the same time, philosophers note that the presence of irreversibility, direction and the patterns in this kind of change will distinguish it from any other processes. This specific sign of "becoming" is due to a number of factors:

1) reversibility is characteristic of processes that are characterized by the reproduction of existing structures and functions, rather than development;

2) direction presupposes the presence of a single goal;

3) regularity implies consistency and stability.

Thus, agreeing with V.G. Gorbachev, we believe that formation is a philosophical category that characterizes the initial stage in the development of objects and their acquisition of quantitative and qualitative certainty, that is, their characteristics.

Analyzing the approaches to understanding the term "formation" in the psychology of V. I. Baydenko and A. V. Petrovsky, it was found that most studies consider this definition as an integral part of the concept of "personality formation." So, for example, V.D. Simonenko, M.V. Retivikh believe that the formation of personality should be understood as a person's acquisition of new characteristics and forms in the process of development, approaching a certain state, a certain result of development.

N. F. Maslova, considering the professional development of a social teacher, writes about the formation of personality as a synthesis of awareness of being in the process of a person's self-determination, his upbringing and education. This process, according to the author, is aimed at realizing a person's internal goals through the development of mental properties, soul and will, as well as the creation of new human qualities from the moment of their inception to full bloom.

V. A. Slastenin connects the process of becoming a professional with the process of becoming a personality, characterized by such a quality as subjectivity - an active-selective, initiative-responsible, transformative attitude towards oneself personally and the world around it. The process of personality formation occurs under the influence of external factors and includes the intellectual, emotional-volitional sphere, the area of self-knowledge, skills and practical actions, as well as the formation of various socially significant aspects of the personality: moral, aesthetic, political, professional [5], etc.

Of interest is the point of view of S.A. Druzhilov, according to which formation can be considered as a process of maintenance and from the point of view expresses a peculiar staged nature of the process of developing teacher competence, that is, like any process, formation unfolds sequentially in several stages (stages, periods). Therefore, “the formation of a teacher’s competence” should be understood as: an irreversible, directed and natural process of qualitative and quantitative step-by-step change, in which at each stage a certain model of the activity of the teacher’s personality is maintained and constantly refined.

Thus, in the Russian literary language until the end of the 18th century, this concept was used in accordance with its morphological composition. In V. Dahl’s dictionary we find the following interpretation of the verb “to develop” - to unfold, unwind, unravel” [3, p.459]. In 1847, a different understanding of this word appears in the dictionary of the Russian Academy, formed under the influence of the French words *developper*, *development*: “to reveal mental abilities”, “to come into greater action; multiply, increase, open up” [5]. That is, starting from the end of the 18th century, the term “development” acquires an additional semantic connotation: “a series of immanent changes in an organic being that comes from a known beginning and is directed towards a known goal”, “growth, an increase in something in volume, quantity”, “constant strengthening, bringing to a significant extent,” development of a block of basic components of teacher competence.

Currently, in dictionaries, “development” is understood as: “progressive movement, evolution, transition from one state to another”; “the highest type of movement and change in nature and society, associated with the transition from one quality, state to another, from old to new”, “a line of transformation of the mechanism of something, changing the content of the “project” of maturation towards qualitative complication and the acquisition of additional potential for the efficiency of being”[6]. Thus, the closest generic concepts are “change”, “improvement”, “growth”, “evolution”, “the knowledge areas of these terms have “overlapping sectors” and “blurred” boundaries” [2, p. 22].

Conclusion.

Summarizing the above, we can conclude that development is a directed process of qualitative and quantitative change towards growth, improvement, and, within the framework of our research, professional pedagogical growth, improvement of competencies acquired within the walls of a university, as components of the competence of a primary school teacher.

Thus, clarifying the concepts of “formation” and “development” allowed us to formulate working definitions of the definitions “formation of competence” and “development of competence”, which will allow us to reasonably select the theoretical basis of the study and determine its logic.

Retrospective analysis of the solution to the problem of development and formation of professional competence of a teacher in most studies devoted to this area of research, the issues of identifying the content of key concepts - “development of competence” and “development of competence” are not considered. We clarified these concepts during the study.

Thus, the development of competence should be understood as a directed process of qualitative and quantitative change in the direction of growth, improvement, and in the framework of our research, professional pedagogical growth, improvement of competencies acquired within the walls of the

university, as components of the competence of a primary school teacher (in accordance with the developed model). Formation is understood as an irreversible, directed and natural process of qualitative and quantitative step-by-step change, in which at each stage a certain model of the activity of the teacher's personality is maintained and constantly refined.

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Summary: *Maqolada boshlang'ich sinf o'qituvchisining kasbiy kompetensiyasi doirasida shakllanish va rivojlanish tushunchalarining qiyosiy tahlili berilgan. Rivojlanish deganda kasbiy o'sish, shakllanish esa sifat va miqdor jihatdan bosqichma-bosqich o'zgarish demakdir, degan xulosaga keladi.*

Резюме: *В статье проводится сравнительный анализ понятий становления и развития в рамках профессиональной компетентности учителя начальных классов. Сделан вывод, что под развитием понимается профессиональный рост, а под становлением – качественное и количественное поэтапное изменение.*

Kalit soʻzlar: *Kompetensiya, shakllantirish, rivojlantirish, boshlang'ich sinflar, o'qituvchi, islohotlar, lugʻat, dastur.*

Ключевые слова: *Компетентность, формирование, развитие, начальные классы, учитель, реформы, словарь, программа.*

THE IMPORTANCE OF THE SKILL OF AN ACTOR IN A PUPPET THEATRE

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Summary: *This article tells about the actions of the actors of the puppet theatre, the development of character, plasticity, mutual understanding in acting. In the puppet theatre, the performance is divided into 3 groups depending on the age of the audience.*

Key words: *Theatre, actor, stage, education, culture, abilities, speech, doll, director, professional, performance, school, friendship, kindness, teenager, works, movement, group, events, truth.*

Puppet theatre is a theatre that primarily positively affects the upbringing of young children and smiles in their faces. Puppet theatre is one of the unique types of unique art. The interest of young spectators in theatrical art begins primarily with performances performed by puppet characters. This art form is a school that leads young viewers into the world of spiritual beauty and develops their worldview. "The work of fine art living on the theatre stage - the nature of puppet characters gives children special pleasure and joy. Animated dolls - beauty, friendship, courage, justice, honesty, love of work, loyalty to the Motherland - affect the heart of children. "[1.9] Thus, the role of puppet theatre in the comprehensive formation of the younger generation and the upbringing of a mature person is special.

Famous scientist, doctor of art history M. Kodirov in one of his studies on the history of puppet theatre: "The Asian puppet theatre is not just a game, but an important story related to philosophy, religion, literature, epic, music, folklore, fine art and, of course, the languages of the peoples of one continent art event." The works of the puppet theatre by genre are diverse, have rich content, must be sleeping [2.163]

The art of puppet theatre should become their smart guide, knowing the psychology of children, their principles, psyche, place in life, solutions to interests, aspirations, mysteries that surround the world around them. Along with this, the next requirement of creative children of different ages to have sufficient accuracy, taking into account the possibilities of mental perception of the world and compose works based on all the features of the puppet theatre.

The most necessary direction for a puppet theatre actor is the mobility of his hands. In the handshake theatre, which is indeed the most active performer of the human movement, I can demonstrate my magical power, rich in literature. To cultivate these characteristic qualities, you first need to engage in manual exercises. His hands will only tend to perform any action when the student can subdue his hands. Of course, elements of acting will help in mastering this process.

The process of working with sketches goes from simplicity to complexity. If we talk about the meaning of the word in the work of the actor. Of course, the meaning of the author's word in working on fragments does not matter. Because the word helps to extract the meaning of the work. Opinion is expressed in a word. The word is a product of the movement of thought, which reveals the internal content of the series and the meaning of the work being performed [3.25].

Puppet theatre has a great influence on the education of young people. We know that choosing a repertoire for puppet theatre is the most difficult process. The spectators who will come to this theatre are children of different ages. Therefore, writing or choosing a work without taking into account the specific age of children of a certain age is impractical. The theme received in a particular stage work

depends on the sequence of events, contradictions and their resolution, on which people are characters, on the peculiarities of their perception. These features will take place differently under given product conditions, in different processes. This is due to the fact that viewers accept works by age. Therefore, when creating the repertoire of the puppet theatre, depending on the age of the audience, three groups of works will be written [4.4].

The first group is a group of preschool children. The events of the plays written for the audience of this group should be simple, their words, actions are brief, shown in the form of a spectacular game. The appearance of puppet characters at the level of the image is based on actions and must be recorded in the form of subtle games, excellent songs. The main theme includes such events as entertainment from the life of children, the beauty of nature, the lifestyle of birds and animals living in it, the attitude of people towards them, raising a child in the family. The young viewer sees this process, tracks and analyzes the movements of the characters.

As a result, they have an interest in knowing, understanding life, striving for good and communicating with the characters of the scene. This serves as an auxiliary way of comprehensive - mental, spiritual and spiritual development of children. Such a process will affect the fact that young viewers grow, increase and grow. The audience of the second group will consist of students in the primary and secondary grades of the school. Works written for the audience of this group are plays in the spirit of family, school, study and training, labor, friendship, good, creativity, patriotism.

They include various themes and genres. He brings up such qualities as intelligence, loyalty, sincerity, wisdom, intelligence, kindness, friendship among schoolchildren. The third group is made up of teenage agents. They reflect national traditions, values, the path in which historical figures live and their contribution to the development of the world. Performances containing various genres should help the viewer determine their highest goal, introduce them to such human qualities as courage, devotion, humanity.

The actor must be primarily a seeker and observer. He is obliged to know the life, lifestyle, customs of the people, the psychology of people and character features, the world of nature and animals. All these are very necessary qualities for the actor. They all know well, but the roles they have played attract viewers with their nature as well as reality. One of the founders of the puppet theatre "Puppet" named after E. Demmeni, who currently works in St. Petersburg with this type of puppet, Evgeny Demmeni, who served for many years in this theatre as a director and actor, said: "All wonderful, surprising actions are light, lungs have the ability to indicate," says [5.113]

In the future, the student should become a mature specialist for the puppet theatre, that is, an actor of the puppet theatre. You need to start with the reproduction of one of the types of dolls. He picked up the doll and sought to move it. Of course not! And what can a fist do in the hands of a student who has not yet had time to withstand the tests, having received a full education, having passed through the steps of the art school? Nothing, of course. Because in front of you you can see a student who stumbled, not knowing how to hold herself. So, where to start the student who entered to study on "I will be an actor of the puppet theatre," from the first steps of the school of creativity?

Of course, every actor in the theatrical arts, unless they belong to some kind of theater, must behave sensibly in the first place, based on organic conditions. So, apparently, the question arises that the process of educating puppet actors would also be brought up by other theater actors. Of course, this is direct and purposeful. A puppet theatre actor, like all his creators, must read his secrets, primarily knowing the knowledge of acting. Only after that he will have the opportunity to master the knowledge related to the profession. The puppet theatre actor will have to work quietly on himself in living terms and recommend this direction to his stage based on the possibilities of this theatrical art, before picking

up a puppet on stage. The work of the actor during the period of creativity is to study and master the elements of acting. Training in this direction will be carried out in a "live plan." The word "Living Plan" is pronounced in the language of specialists in this field in the process of continuous work of the future actor. So we start with theoretical knowledge of the theatrical arts. That is, puppet theatre is deeply studied as a form of art, a history of origin, its place in life, tasks, the role and importance of modern puppet theatre in the formation of a children's worldview, the ethics of puppet theatre, theatre and the audience, a place in the puppet theatre of fine art [6.36].

All puppet views used in modern puppet theatre will consist of study and development. These are:

1. The kind of gloves.
2. Type of reed cuckoo (wired).
3. A type of pupa controlled by threads (puppet).
4. The type of wallet controlled by the open style (tablet).
5. The type of pupa that is removed and reproduced.
6. A doll to work with a mask.

Depending on the types of theatrical dolls, their launch methods will also take place in different directions. The technique of building different dolls differs from each other. Therefore, a special attitude to their study and development is necessary. Despite the fact that all this was said in one word, they were completely similar to each other from the technical and structured sides. Naturally, the question arises about what a doll is. This can be answered in different ways. In the first case, the doll resembles only a work of fine art, and in this case - a living object that is located in the shop window. It has nothing to do with a theatrical cocktail.

In the second situation, a person who was outside the doll is revived by energy and movement, creating certain images on a conditional level, and a work of fine and theatrical art becomes real. Because the work of fine art means a doll created by an artist, sculptor and master of dolls. And by the work of theatrical art, we mean the revival of the acting doll, putting it into action and creating a bright image. Thus, the theatre will be created through the visual arts and theatrical arts. The work of fine art is revived and moves only in the hands of the actor. The revival of the doll, that is, its management, equals half the work created and completed in the puppet theatre. The second half - in conditions when the puppet theatre includes the process of creating an image, real, creative work will be done in the theatre. From all this you can come to the following opinion. It includes two directions for creating an artistic image on the stage of the puppet theatre. Of course, studying and mastering elements of acting is theoretically accompanied by practice.

Therefore, the student is theoretically proved psychotechnical elements necessary for each actor, and then on the basis of exercises. Because during the period of mastering acting, the role of exercises is unlimited. In classes with the participation of elements, elements of acting will be studied. The exercises performed will never be similar to the athlete's classes, should be focused on specific goals. The purpose of selected works for the puppet theater is alone. It will also help ensure that young viewers become children and all-round people devoted to the Motherland. Ensures that our youth become more mature.

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Rezyume: Bu maqolada qo'g'irchoq teatr aktyorlarining harakatlari, obrazni ochip berishi, plastikasi, bir-birin sezishi, aktyorlik mahorati haqida so'z yuritiladi. Qo'g'irchoq teatrida tomoshabinlarning yoshiga qarab 3 guruhga taqsimlanib incho yozilishi haqida berilgan.

Резюме: В данной статье рассказывается о поступках актёров кукольного театра, развитии характера, пластики, взаимопонимании в актёрском мастерстве. В кукольном театре спектакль делится на 3 группы в зависимости от возраста зрителей.

Kalit so'zlar: Teatr, aktyor, saxna, tarbiya, madaniyat, qobiliyat, so'z, qo'g'irchoq, rejissyor, professional, spektakl, maktab, do'stlik, mehr, balog'at, incho, harakat, guruh, voqea, haqiqat.

Ключевые слова: Театр, актёр, сцена, воспитание, культура, способности, речь, кукла, режиссёр, профессионал, исполнение, школа, дружба, доброта, подросток, произведения, движение, группа, события, правда.

UDK: 94 (5)

THE EMERGENCE OF AIR TRANSPORT IN KARAKALPAKSTAN

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Summary: *Air transport in Karakalpakstan appeared in the 1920s and 1930s and has been developing for almost centuries until now. It requires in-depth study of this historical period.*

Key words: *Karakalpakstan, Dobrolet, airplane, aviation, Turtkul, airline, department.*

The people of Karakalpakstan are not left out the achievements of this science and technology. Everyone in Karakalpakstan dreamed flying in the clear white sky like other nations, flying to distant lands, high mountains, blue seas, and endless deserts. Their dreams and fantasies are described in folk songs and fairy tales. But since the 20s of our passing century, the dream of flying in the sky has become a reality. In March 1923, by the decision of the Soviet government, the free society of the all Russian Air Fleet, "Dobrolet" was established. The newly organized "Dobrolet" air transport facility was carried out in accordance with the three-year plan adopted by the Labor and Castle Council in 1923 and directed to the shores of the all Russian Aviation Management Council.

M.V.Frunze, V.Ya.Chubar, G.K.Otdzhonikidze, G.M. Krzhizhanovskys governed in "Dobrolet" joint-stock company, which is responsible for the opening of air routes in the territory of the Central Asian republics and Kazakhstan, will do a great service to introduce the achievements of the air fleet to the masses.[1,11]

In those years, the famous pilot N. K. Welling's visited the Central Asian republics several times and in May 1923 he accompanied with three passengers, he flew on the Moscow-Bukhara route, through the Caucasus regions in 76 hours on the way to Achxabad Kharkiv, Rostov-on-Don and took off on Tashkent Foundation. This was certainly one of the measures taken by the "Dobrolet" institution in those years to establish air routes in the territory of the former Soviet Union. Special attention was paid to the development of Central Asian and Far Eastern airways. In fact, the remoteness of Central Asia from Central Russia, the inferiority of railways and other industries forced more emphasis on air transport. In 1933, the "Central Asian Branch" of the All-Russian "Dobrolet" air fleet agency was established in Tashkent. Having studied the history of air transport in the Central State Archives of the Republic of Karakalpakstan, we found out that the Central Asian branch of "Dobrolet" is located at home number 9 in Pushkin street, Tashkent city.[2]

In September 1923, Petrov M. P. was appointed as the representative of "Dobrolet's" Amirdarya region. He was given resolution number 347 by the "Dobrolet" Central Asian branch office, and according to that decree, Petrov M.P was responsible for opening district branches in urban and rural areas of Karakalpakstan, with relevant testimonies and instructions from "Dobrolet" representatives, it was necessary to provide.[2]

On July 23, 1924, at the board meeting of the "Dobrolet" Central Asian branch, the full-fledged representative structure of the "Dobrolet" Amirdarya province was approved. Petrov M.P was appointed as the head of the board, Orlov and Epifanov as members. However, this composition was entrusted with drawing representatives of the local people into the composition of the meeting in the future.[1,12]

Therefore, it was shown that the necessity of using the air routes in Central Asia is to be studied in depth and opening the roads covered below.

They are:

Tashkent – Almata;

Bukhara-Khiva;

Bukhara-Termiz – Dushanbe.

On October 7, 1923, Krutov's statement on the opening of the Bukhara-Khiva air route was heard at the meeting of the temporary administration of the "Dobrolet" institution. A decision was made at this meeting and it was said: "Taking into account the long term of construction of the air station in Old Bukhara and the fact that the investments are sufficient, let's start equipping the temporary fields in Kogan, Dargan-ata, Tortkul and Khiva."

On October 24, 1923, the issue of the Bukhara-Khiva air route, which had to be officially opened, was resolved. Dargan-ata and Tortkul fields were soon involved.

The reason for opening the Bukhara-Khiva air route was as follows. First, it is considered appropriate to connect the capital of the Republic of Bukhara on the capital of the Republic of Khorezm. Second, 467 km. If it took 10-12 hours to cover the road by other means of transport, the plane used to cover this road in 3.5-4 hours. Between 1924 and 1946, the representative office of the Karakalpak Autonomous Region "Dobrolet" was composed head Petrov, M.P.Epifanov, Atashov, J.Baimuratov, the responsible secretary Orlov.A.M.[1,13]

During these years, one of the main tasks of the "Dobrolet" institution was the distribution of "Dobrolet" shares among the residents of the Karakalpakstan Autonomous Region. Many spatial and public institutions of the region and individual pukharas became shareholders of this organization. In particular, "Dobrolet" shares were distributed internationally in the markets of Shymbay, Khojeli, Kungrad, Shorakhan districts and Tortkul, Shabbaz, Biybazar, Tazabazar.

On February 21, 1925, there was a board meeting of the full-fledged representative office of the joint-stock company "Dobrolet" of the Karakalpak Autonomous Region, which was attended by Koryaev, Strakhov, Baymuratov, Dadashev, and Sryulov. At the meeting, successful distribution of "Dobrolet" shares among the residents of Karakalpak Autonomous Region, especially among the wealthy merchants of Shymbay, Khojeli and Kungirov districts, at least 5 som worth of shares to each of them, as well as a patent for sale in the regional finance department. It was necessary to convey the need to sell shares to the merchants who received them, and thus to strengthen the "Dobrolet" share at the expense of wealthy merchants.[3]

On April 1, 1925, there were 12,961 som worth of valuables in the cash register of the "Dobrolet" representative office. In the period from January 17, 1924 to March 31, 1925, the funds received by the regional office of "Dobrolet" were as follows.

1. Due to the equipment of the airfield - 1000 soms.
2. On sale of shares - 3288 soms.
3. For school improvement works - 34 soms.
4. Proceeds from the sale of promotional items - 136 soms.

From this, it is necessary to equip the airfield, maintain employees, provide social insurance, copy copies of orders, post-telegraph, participate in work, etc. The investment of in technical works is 1436 soms 75 tiyin. In general, the investments received from the sale of Dobrolet shares were intended for the purchase of airplanes, the construction of airfields and the opening of civil aviation air lines.[4.43]

The establishment of the Dobrolet joint-stock company became the reason for the first opening of air routes in Karakalpakstan. With the organization of air routes, Ámiwdárya region began to prepare for receiving aircraft. On November 21, 1923, at the presidium of the executive committee of

the Amiwdarya region, the representative of "Dobrolet" Petrovs "heard the statement about the airfield". After reviewing the preliminary drawing and plan, the presidium of the executive committee decided that "according to its size and border, the place of the land indicated in the plan should be assigned to the Dobrolet joint-stock company." Taking into account the importance of air routes in connecting Karakalpakstan with people, it was proposed to provide fast workers in order to speed up the opening of the airfield. Accordingly, the municipal utility company was commissioned to send the necessary equipment for the airport free of charge. Thus, on the 19th of 1924, the land plot of the airfield was fully planned. Tortkul airfield is located between Amiwdarya shore and New Bozjap canal, and occupies an area of 150 x 200 sagens (one sajen equals 2, 13 meters).

Among the leaders of the local population participated in the construction of the airport:

1. Uraz Matniyazov - from the Karakalpak community of Shorakhan wezd.
2. Erniyazov - Tortkul.
3. Nurman Kulekeev - from the Karakalpak community of SHorakhan wezd.

On August 6, 1924, the Bukhara-Khiva air route was approved, and according to it, non-stop air traffic on the following routes was established.

Saturday - at 4 o'clock Kagan - Khiva

Saturday - at 4 p.m. Khiva - Tortkul - Khiva

Monday - 4:00 p.m. Khiva - Kagan

According to the report of the People's Commission of Internal Affairs of Navkstan, the first airplane was created in Karakalpakstan on January 26, 1924.[3.23]

Not long after that, in April 1924, a great danger for the people of Khorezm and Karakalpakstan occurred in the village of "Aq-kamish" near Shorakhan Bollary of Amiwdarya Oblast. when he came out, a special commission consisting of specialist doctors and medicines were delivered to the plane.

When the first airplane appeared in Karakalpakstan, people looked at it with fear, and some people thought it was the "devil" and locked themselves in their houses.

From January 19, 1924 to January 1, 1925, there were 94 flights on the Kagan-Tortkul-Khiva air route, covering a distance of 44,832 kilometers, with a total of 199 people and 1645 kilograms of cargo, mailed. The second air line Kagan – Khiva, and then Tashawiz, by June 1925, had a gasoline storage and distribution center, a small workshop for repairing engines.

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Rezyume: Қарақалпағистонда ҳаво транспорти 1920-1930-йилларда шаклланган бўлиб, ҳозирги вақтга қадар деярли бир асрлик ривожланиш йўлини босиб ўтди. Бу эса шу тарихий даври теран ўрганишни ва таҳлил қилишни талаб қилади.

Резюме: Воздушный транспорт в Каракалпакстане появился в 1920-1930-х годах и развивается почти столетия до сих пор. Это требует более глубокого изучения данного исторического периода.

Kalit so'zlar: Қарақалпағистон, Добролет, самолёт, авиация, Торткул, авиалиния, звено

Ключевые слова: Каракалпакстан, Добролет, самолёт, авиация, Турткуль, авиалиния, звено.

UDK:82-1.

THE DIFFERENCE BETWEEN PRAGMATICS AND SEMANTICS

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Summary: *This article provides information about the object of research and specific features of pragmatics and semantics, which are separate fields of linguistics. Common aspects of pragmatics and semantics are presented and separated by sharp lines as mutually dependent fields.*

Key words: *pragmatics, semantics, linguistic sign, text, linguistic and non-linguistic factors.*

Pragmatics is a special field of linguistics, and its scope of research examines the selection of linguistic units in the process of communication, their use, and the impact of these units on communication participants [1:76]. In particular, the English scientist S.C. Levinson considers pragmatics to be a science of thinking about how to study the units that play an important role in the practical use of language [S. Levinson 1984].

Pragmatic features are determined in the process of practical use of language units in the text. Practical use includes linguistic features of language units as well as non-linguistic factors.

Language serves to express the basic information received by a person, and the text, which is considered its speech form, is a means of conveying information about a person and the world around him. The information is transferred to the expression plan in a specific time interval or in the speech situation in the space, event, natural events, movement pattern. The expressed situation consists of indicators of time and space, events, actions and situations. It is difficult to define the situation or event that you want to express within one sentence.

It is the text that fully reveals the content to be expressed and shows the interrelationships and connections of language units participating in the text. In this sense, the text is understood and interpreted as a pragmatic category. Text is a source of information that is understood from communication. The completeness of communication in content is manifested in the process of text and speech.

Constructive, semantic and communicative-pragmatic features are important in the formation of the text. Its constructive signs are based on unity, connectedness and syntagmatic, paradigmatic principles, its semantic signs are its construction on the basis of denotative and conceptual order. The communicative-pragmatic features of the text are manifested in the construction of the speaker and the listener in the text, the internal and external boundaries of the text, and the formation of the text based on deictic, presuppositional units.

Pragmatic content is also recognized as a phenomenon directly related to semiotics. The main concept in linguistic semiotics is a linguistic sign. A language is the existing events in the language memory of a person's brain and the rules of their use. Linguistic sign appears as a dialectical unity of form and content in certain texts and situations of communication.

The sign informs the representatives of a certain society about what it is conditionally related to. Linguistics studies the most important and complex system of signs. Sign systems are natural (human language, animal sign systems) and artificial (artificial languages, programming languages, symbol systems in physics, chemistry, mathematics, and logic). *Syntax, semantics and pragmatics* are mutually distinguished in the study of signs and their systems.

Syntax is the study of specific relationships between linguistic units that are used consistently in a chain of speech or in a specific text. Semantics studies the relationship between symbols and the objects they represent. Pragmatics studies the relationship between signs, the objects they represent, and users of the sign system [<https://uz.wikipedia.org/wiki/Semiotics>].

Every researcher thinking about pragmatics should be able to clearly distinguish between semantics and pragmatics. Regarding semantics, R. Stolneyker says that "a person uses language for various purposes, mainly to express a proposition that reflects the speaker's intention. A proposition itself is an abstract essence that expresses a condition of validity. Semantics studies this aspect of language, namely proposition" [2:420].

Semantic theory differs from pragmatics by its features, object of study, theoretical generalization and form of purpose. Semantics is concerned with the study of invariant "content invariants" used in a concrete situation, and the purpose of pragmatic research is to study language phenomena - variants used in a concrete situation.

V.Petrov refers to semantics to idealized objects, explains individual, empirical objects as objects of pragmatics. The mutual difference between both research objects is determined by the essence of the purpose of the theoretical concept.

Pragmatic theory, unlike semantics, does not explain the relationship between language and existence, but takes into account the hidden possibilities of the subject specific to the overt knowledge in that situation. So, "semantics studies the unchanging meanings - invariants in the language, while pragmatics works on the basis of variants that are integrally related to the concrete situation and serves as a basis for semantics [2:20].

Syntax, semantics, and pragmatics are considered independent directions, distinguished by their own characteristics, but in the analysis of language phenomena, they complement each other and complement each other. In the study of language phenomena, its form (syntactic), content (semantic) and language fact research, taking into account (pragmatic) aspects, which are integrally related to the context, help to create a perfect linguistic research.

Within the sentence, semantics is a field that studies the specific situation of each sentence or phrase in the language, the meaning of the components of the sentence and their syntactic composition. Semantics mainly studies the contextual and invariant meanings of linguistic units. Pragmatics is the study of context and expressions, the meanings expressed in the context of sentences, and the meanings associated with their meanings.

It studies the meaning, content and functions of language units in specific speech situations.

Pragmatics also covers such concepts as speaker and addressee, time and space. Pragmatics is a generalizing field that includes issues in semantics and syntax, and it is currently developing rapidly as a field that studies the relationship between language and context.

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Rezyume: Bu maqolada tilshunoslikning alohida sohalari hisoblangan pragmatika va semantikaning tadqiq obyekti, o'ziga xos xususiyatlari haqida ma'lumotlar keltirilgan.

Pragmatika va semantikaning umumiy jihatlari keltirilgan va bir-biriga uzviy ravishda bo'liq bo'lgan sohalari sifatida keskin faqlar bilan ajratilgan.

Аннотация: В данной статье представлена информация об объекте исследования и особенностях прагматики и семантики, которые являются отдельными областями языкознания.

Общие аспекты прагматики и семантики представлены и разделены резкими линиями как взаимозависимые области.

Kalit so'zlar: pragmatika, semantika, lisoniy belgi, matn, lisoniy va nolisoniy omillar.

Ключевые слова: прагматика, семантика, языковой знак, текст, лингвистические и нелингвистические факторы.

PERFECT STAGES OF EVOLUTION OF POETIC FORM IN NEW UZBEK POETRY

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Summary. *In this article, the views that are the basis for the formation of new Uzbek poetry are based. The updates of the form in the works of Furqat, Kamil Khorazmi, and Zavki are analyzed.*

Key words. *Poetry, enlightenment, modernity, homeland, nation, science, freedom, literature, realistic, comic.*

It is known that the representatives of the new enlightenment literature created mainly in the direction of poetry. The artistic prose and dramaturgy genres that appeared in the later stages of the development of our literature are not found in the literature of the Enlightenment. Enlightenment poets mostly wrote works in sub-types of poetry. There are certain historical reasons for this phenomenon, of course. The most important of these reasons is that poetry has developed widely in our classical literature, and it was convenient for enlightened poets to continue existing traditions in the field of poetry. In addition, poetic works, especially ghazals, are quickly absorbed by the masses, and because the answer to the high artistic taste of the people is now an artistic form, enlightened poets turned to it more often.

Thus, enlightened poets wrote works in sub-types of poetry: ghazal, mukhammas, musaddas, murabba, masnavi, fard, partially tuyuq and rubai genres. If we don't take into account the prose translations of Kamil Khorazimi, all great enlightened poets - Muqumi, Furqat, Zavqi, Avaz O'tar - created in these types of poetry.

This undoubtedly shows that the literature of the Enlightenment is somewhat limited in terms of genres. Along with the poetic types of the poetry of the past, the literature of the Enlightenment used its weight (aruz), rhyme system, and artistic image tools. It should be said that the use of a number of elements of the poetic form of the Enlightenment literature was, of course, temporary, transitory, and at the same time a forced phenomenon. Because every form is always behind its content. It can be said that there is no time when the form becomes fully worthy of the content.

In this way, the new content is forced to wear the clothes of the old form, even if only temporarily. But the literature of the Enlightenment, in expressing the new realist content, did not directly adopt the old poetic forms, did not blindly use them, but enriched it with new content, its character, changed its function to a certain extent. Because, as in all social phenomena, in literature, the old is not simply completely abolished, but changes its nature in accordance with the new. For example, although the old forms of classical literature (ghazal, masnavi, mukhammas, etc.) were used in the work of enlightened poets, these forms underwent a certain evolution and change in terms of content, and the form of old poetic types was preserved. However, the content has changed. So, enlightenment is not the same as the ghazal, mukhammas, etc. in classical literature, for example, the ghazal, mukhammas, etc. in the poetry of the 15th century, but a new type that has undergone a certain evolution.

For example, let's take Mukimi's "Hajvi Khalifai Mingtepa", Zavqi's "Hajvi Ichki Eshon", Avaz O'tar's "Khalkim" and "Sipokhiylarga". All these works are written in ghazal form. But they cannot be compared to 15th century ghazals in terms of their ideological and artistic characteristics. Although these ghazals are similar to the 15th century ghazals in terms of their form (stanzas, rhyme, rhythm), they are far away from them in terms of theme and ideological orientation, enriched with new content.

This situation can also be seen in mukhammas. For example, Zavqiy's "Ajab ermas" and Muqimi's "About Khapalak Village" can't be compared to the 15th century in their ideological and artistic aspects.

Such examples can be cited from all poetic types in the literature of enlightenment. In these examples, it is clearly seen that the poetic genres of the 15th century abandoned their dominant romantic-lyrical theme and traditional style in the work of enlightened poets and acquired a new content and a new spirit. So, enlightened poets enriched old poetic types with new content in new historical conditions and developed them. This idea is not only characteristic of satires and poems written on social topics, but also related to the lyrics of enlightenment literature.

In the narrow-intimate lyrics of the Enlightenment literature, this evolution, although not as clear and obvious as in satire or poems written on a social theme, is, in any case, a certain change in their ideological-artistic features. happened. Because the new creative and aesthetic principles of Enlightenment literature, ideological foundations such as Enlightenment and patriotism determined the essence of lyrics and created new ideological and artistic features in it. So, Enlightenment poets differ from classical literature in relation to old poetic forms.

While the representatives of classical literature blindly accepted the old poetic forms, preserving all their ideological and artistic features, and became imitators of the poetry of the 15th century, enlightened poets approached the issue creatively. they enriched them with new qualities, moved literary life one step forward, developed it. Undoubtedly, the Enlightenment poets were inspired by the style of poets like Makhmur, Gulkhani, Haziq, who were their immediate predecessors in this field, and continued it.

Humor, satire and humor in the literature of the Enlightenment, as the main and leading genre in the literature of this period, influenced the creative method that defines the essence of the Enlightenment literature, turned its realism into a realism with a critical character, i.e. critical realism. This enlightenment was the most important feature of satire and humor in literature.

Another important feature of Enlightenment literature that distinguishes it from other periods of humor is that the humor of this period began to reflect life through the images of a person who is the main object of literature. Reflecting life in the activities of typical characters acting in typical conditions is one of the signs that literature has reached adulthood.

For example, Hakimjon and Sultan Ali Khoja in Mukimi's satire "Tanobchilar", Hodikhoja in "The Description of the Muscovite Boy", Victor in "Voqeai Viktor" and others are personified characters embodying the essence of a certain social event. A travelogue is also a new genre in enlightenment literature. In the history of literature, there have been no such works describing travel memories in poetic form.

In general, travel and travel memories are often found in history. However, almost all of them are works of a memoir character and have different artistic stylistic features. Mukimi was the initiator of the creation of the travelogue genre in Enlightenment literature. Mukimi described the impressions of his travels in different directions (Koqon - Fergana, Koqon - Shahimardan, Koqon - Isfara) in his work entitled "Travel".

Muqimi's "Travel" was widespread and popular among the people at that time. This work still lives in the nation in various versions and is performed by art lovers. Mukimi's "Sayohatnama" published the views on time. It is known that the poet Zavqi also wrote "Travel" in the spirit of Muqimi's "Travel" while keeping its weight, rhyme, and clause system. There is information that the poet Tajalli, who accompanied Furqat during his trip to India and China in 1892, also wrote a "Travel" in response to Mukimi's "Travel".

Tajalli's "Travel" has not reached us in its entirety, only some fragments of it have been preserved. There is information that Furqat also wrote "Travel". But it has not been found yet.

Thus, a certain genre was born and formed in the literature of the Enlightenment, which is characterized by the same spirit and common artistic features written on the same topic - the genre of "Travel". Reminiscences of travel are a common theme in all of these works.

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Rezyume. Ushbu maqolada yangi o'zbek she'riyatining shakllanishida asos bo'lgan qarashlar asoslangan. Furqat, Komil Xorazmiy, Zavkiy ijodidagi shakli yangilanishlar tahlilga tortilgan.

Резюме. В данной статье обоснованы взгляды, являющиеся основой формирования новой узбекской поэзии. Анализируются обновления формы в произведениях Фурката, Камиля Хорезми и Завки.

Kalit so'zlar. She'riyat, ma'rifat, zamonaviylik, Vatan, millat, ilm, erk, adabiyot, realistik, hajviy.

Ключевые слова. Поэзия, просвещение, современность, Родина, нация, наука, свобода, литература реалистическая, комическая.

THE ROLE OF STORIES IN GOLDEN HORDE LITERATURE

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Summary: *The article deals with the role and meanings of Rabgusy in the development of janre of stories in literature "Golden Horde". In the article the autor states the affinity of stories included in "Kisasi Rabgusy" in fairy tales. Besicles, comparative analyses of some parables with religions and historic works wich were spread rapidly in the East.*

Key words: *The literature of Golden Horde, the work "Kisasi Rabgusy", story, fairy-tale, myth, symbol of the world, religions works, historical works.*

An important aspect of the stories in the "The tales of Rabguziy" is that Rabguziy changes the Lady's method with deviations from the requirements of the wisdom genre. Rabbah directs the story to the content and purpose of the work by telling it in a narrative style typical of fairy tales. First of all, this feature is seen in the implementation of the beginning of the fairy tales in the story. In particular, the story in the work "Kissai valodati Muhammad Rasulullah sallolohu alayhi wa sallam" is an example of stories created in this direction and undoubtedly attracts attention.

While reading the story, we will come across the narrative style that is at the beginning of the tales of the Turkish peoples. Usually at the beginning of fairy tales, a motive that will definitely set the stage for the hero's next adventures is an important factor that brings the story closer to a fairy tale. In particular, " *Malik in the province of Shom married a Fatima Cavalry girl. Erdin Tol stayed in Erdi. Ul ne qusab, his slaves, artillery, loaded cattle and came to Mecca. He set up a tent in Kara and died.*" After this event the reader will await the Later Adventures of the story. Of course, it turns out that an unexpected event will happen that will make a difference in Fatima's fate. The reader will feel this in advance. During the events, not only the storytelling method of the fairy tale is included, but also some details that show that the storytelling method specific to magical fairy tales lies at the heart of the story. Again we refer to the continuation of the above story. Now, along with the light detail that brings the story closer to fairy tales, Abdullah's image also comes: " *When Abdullah saw the tent, he went out hunting and lit up. "Here it is so early, let me see," said Thebes, coming into the tent. Fatimai Shomiya Abdullah saw the light in Elin*". The detail of the light in the passage is the main factor that brings the story closer to the fairy tale. Fatima came from Shom, who knew this light before and married Abdullah to get hold of this light. Fatima tries to reach Abdullah and then explains her purpose to Abdullah: " *She landed Abdullah in a tent. A teva was slaughtered. After eating, she made excuses and made herself worth it. "I came to you from the wind. Take my word for it, mania is a marriage phenomenon. " Abdullah said, " I'm writing this time. Go home, see Amina. Wish for marriage and get you," jumped Thebes. Fatima ul was a pleasure for this promise. The marriage began to make a deal. Abdullah went to the House and frowned at Amina "*. From this passage, it can be understood that Abdullah did not place much emphasis on the image of light, meaning that Abdullah was unaware of what changes the image of light would cause in the life of him and his wife Amina in the future.

The reason why the Lord did not emphasize the detail of the details was to focus the main attention on the miracle that occurred through the light and to preserve the mystery of the light image for the reader. We are not focusing on the religious beliefs in this story, but on the content and essence of the images and details in the artwork. Anyway, it is not our task to analyze how true the religious problems in the story are.

To show that the main factor in this story is the image of light, Rabgusiy shows his main intention from Fatima's proposal to Abdullah: *"ul Nur Amina Rahming'e kechti Ul in the conversation. Then Abdullah Fatima said to Sözin's father Abdul Mutallibgah as follows. Abdul Mutallib" Olgil "Teddy. Abdullah got on, Fatimagh came. Fatima ul Nur was not seen by Abdullah in elnin, she said, "O Abdullah, Shamak Maliki touched me. The goods were worth the goods. I did not accept them. I didn't come to man saing. I have come to the hope of the light that is Ul at hand, I have been deprived of the light of emdi ul " teb ah teyu ingranu got on and walked away. In Ul Hamid, Amina became a burden to the Prophet Muhammad ".*

In general, in the Eastern world, the image of light is a sacred detail. Alankuwo, the legendary mother of Genghis Khan's grandchildren, also becomes pregnant with light after the death of her husband Dobun Bayan. The Mongolian seeds came from Alonquvo, who became pregnant with this light. Abulgazi Bahodirkhan also mentions in his work " Shajarayi turk " that there is a legend that Alonquvo and Mongolian seeds come from light. "...Qayan naslindin and Qurlas (Quralas) urukindin Alanquva gave birth to three male sons without a weak husband. If God commands, we will say these words. We deserve to be told here too.

The lineage of Ul's three sons became quite a lot. These are niyrun Tedi. The meaning of sulbi is pure temak. It becomes a turkey aru egg theme. For Ani, they put this horse, which was the nurd of the three sons of zu'm from Mongol ul, that "[1. 18]. Details like this can be continued. The meaning of light, the concept of its function monand, is also present in all the works given by the divinity in the image of light. But the role of the light image in Rabghuzi's story, in the life of Amina's father Abdulmutallib and the late Abdullah, is reflected in the course of the story.

Berunius, in his work "Monuments left from ancient peoples", when talking about the nature of dates and the incompatibility of Nations on this issue, the Prophet. With the proofs in the Book of Isaiah, Hazrat. He tries to prove about Muhammad [2. 55].

The purpose of the rabbis from this story was actually to present the whole life of Muhammad to the reader. According to us, Rabgusiy combined several stories and allowed a full-fledged picture of Muhammad to appear in the reader.

After the events of the devil, the direction of the story changes radically. Lord *kelduk bayoqi so'zg'a* changes the content and purpose of the narrative as a preface. Above, we were talking about the features of this story that bring it closer to a fairy tale. Not only the content of the story, but also the change in its structure confirms our opinion. The events that started after the expression of the word *kelduk bayoqi so'zg'a* turn into miracles again exactly after the birth of Muhammad, for example, when a piece of white cloud falls and takes him everywhere, always next to Muhammad, and the Demons scatter around and an earthquake occurs.

The consistency of events continues in this way. While the above story ends with Muhammad being taken away by a cloud, the chaldean bayoqi begins with the cloud bringing Muhammad back after the utterance of the word. This story is based on the fact that Muhammad did not suckle his mother Amina, and after Muhammad became a yalavoch, Otika asked Muhammad, "Then why didn't you suckle your mother?" I know that I will lose my mother, I will not suck milk, I will not see her face." Rabguziy ends the story by giving the midwife Abul Mutallib to raise a son who has been orphaned even more than his mother.

This incident is similar to Rashiduddin Fazlullah Hamadani's situation in "Jome'ut tavorix", in which the mother of an Oghuz baby said to her mother without sucking her breast: "If you pray and fall in love with the true God, I will suck your milk"[3. 247]. Or there is exactly such a monand story in this work on the marriage tablet of the Sons. After Karakhan, Oguz's father, wished his son to marry

Oguz's daughter's third brother, Oguz said to the girl, "If you profess the secluded God, if you believe in him, I will marry you, I will entertain you". The girl accepts the request of her son. The image of Muhammad in the above story is monand in the image of Oghuz: "Oghuz became an extraordinarily pure and beautiful child when he was one year old, signs of mature intelligence and compassion shone on the path of true faith in manglayi".

The harmony of the image of Muhammad in the "Jome'ut tavorix" with the image of Oghuz in the above narration shows that Rashiduddin was well informed about the sources about Muhammad. He set himself the goal of portraying Oguz as a prophet. On the other hand, Rabgusiy used several stories to create this story and tried to convey the perfect image and innate perfection of Muhammad to the population of the Golden Horde, who had just converted to Islam.

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Rezyume: *Maqolada Oltin O'rda adabiyoti, Rabg'uziyning hikoyanavislik taraqqiyotida tutgan o'rni xususida so'z yuritiladi. Unda "Qisasi Rabg'uziy"dagi hikoyatlarning xalq ertaklari bilan mushtarak jihatlari o'rganilgan. Shuningdek, hikoyatlardagi ba'zi badiiy timsollar Sharqda keng tarqalgan diniy va tarixiy asarlar asosida qiyosiy tadqiq qilingan.*

Резюме: *В статье речь идет о роли и значении Рабгузи в развитии жанра рассказа в литературе Золотой Орды. В нем автором отмечается близость хикаятов, включенных в "Кисаси Рабгузи", к народным сказкам. А также подвергаются сравнительному анализу некоторые художественные притчи с религиозными и историческими произведениями, которые широко распространились на Востоке.*

Kalit so'zlar: *Oltin O'rda adabiyoti, "Qisasi Rabg'uziy" asari, hikoyat, ertak, mif, nur timsoli, diniy asarlar, tarixiy asarlar.*

Ключевые слова: *Литература Золотой Орды, произведение "Кисаси Рабгузи", хикаят, сказка, миф, символ света, религиозное произведение, историческое произведение.*

PROGRESS IN THE BRANCHES OF HANDICRAFTS OF KHOREZM DURING THE ANUSHTEGIN PERIOD OF THE KHOREZMSHAHS

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Summary: *The article is dedicated to the study of the branches of handicrafts in Khorezm during the period of Anushtegins on the basis of written and archeological sources. At that period, there were such highly developed branches of handicrafts as weaving, metal-working handicraft, jeweler, pottery, woodwork and stone craft. Ores, talc, and semi-precious stones such as turquoise and corneal, which are raw materials for handicrafts, were mined and processed from the Sultan mountain ranges. In that period, the establishment of a strongly centralized Anushtegin state and the development of interregional trade in Khorezm had a positive effect on the development of handicrafts.*

Key words: *Khorezm, sources, archeological research, middle ages, handicrafts, handicraft goods, weaving, metal-working, production, cities, trade, caravan roads.*

The emergence of a centralized state in Khorezm at the beginning of the 11th-13th centuries laid the groundwork for the development of economic life and trade-craft sectors. The annexation of rich regions such as Movarouannahr, Manghishlak, Syr Darya River regions, Iran, Azerbaijan, Iraq, which were the centers of handicrafts at that time, by the ruling dynasty Anushtegins, was a process that had a great impact not only on ensuring political stability, but also on the development of handicrafts and trade.

Due to the successes of Khorezm state in the military and political sphere, the mutual integration of about 400 fortresses in the East was created. In particular, during this period, cultural and economic exchanges with handicraft centers in the East, such as Jand, Nisa, Dehistan, Nishapur, Ray, Marv, had an important and positive value in the development of handicraft industries. In particular, a number of innovations and achievements were made in the production of arts and crafts products. A number of achievements were made in the production of artistic handicrafts, new ornaments and products in the traditions of Islamic art were introduced. Also, during this period, the development of Khorezm's international trade and economic relations with Western and Eastern countries stimulated the production of handicrafts in the cities of Khorezm.

In the written sources, it is noted that during the rule of the Anushtegin dynasty, the handicraft industries were highly developed in Khorezm. For example, the work "Ta'rifu shahru Xorazm (Description of the city of Khorezm)" provides detailed information that before the Mongols, Khorezm had 1,700 markets, 3,013 caravan palaces, 3,013 baths, and 4,400 neighborhoods. Nationwide, there were 1300 blacksmith shops, 1200 copper shops, 1500 shoemaker's shops, 1300 shoe shops, 1300 grocery shops, 1200 makeup shops, 1500 paint shops, 1400 money change shops and 2500 butchers shops, 5500 bakeries, 1300 salt sellers [3, p. 151-153].

It can be said that during this period, the art of craftsmen from different countries gathers in Khorezm. This opinion is confirmed by the information in Yaqut al-Hamawi's article about Khorezm: "... I went here in 616 (1219-1220 AD). Almost all cities of Khorezm have bazaars full of goods and stalls, and there is hardly a village without a bazaar" [6, p. 20].

In the period of Anushtegins, there were trade and craft industries in about 40 fortresses of Khorezm. Due to the growth of urbanization processes, new centers of handicrafts were formed in densely populated areas. At that time, handicraft centers spread in new areas – the districts on the

western edge of the Ustyurt mountains, North Davdon, Daryalikkol. Burgutkala, Qavatkala oasis, which turned into a desert for centuries, flourished again from the second half of the 12th century.

Zamakhshar is one of the craft centers of Khorezm during this period. Traces of craft workshops such as blacksmithing, glassmaking, pottery, and stone processing have been found in the city. These workshops belong to the beginning of the 11th-13th centuries.

During the Anushtegin dynasty, handicraft industries in Khorezm operated not only in cities, but also in rural areas. During this period, the concept of “city-village” appeared. This is confirmed by the author Yaqut al-Hamawi (beginning of the 13th century) who said, “It is difficult to find a village without a market in Khorezm and the market stalls in the village markets contain household items”.

Qavatkala oasis is one of the rural areas where crafts were active at the beginning of 11th-13th centuries [13, p. 100-102]. There were more than 90 rustics in the Qavat fortress oasis, where there were houses of artisans and farmers.

During excavations in houses 41, 43, 5, 9 and graves in the Qavatkala oasis of the beginning of the 11th-13th centuries, 675 items from house 41, 693 items from house 43, 45 items from house 5, 111 items from house 9 were found, as well as during the collection of archaeological findings on the surfaces of these monuments, the 222 pieces of beads, 766 pieces of handicrafts – a total of 2512 pieces of pottery, blacksmithing, coppersmithing, jewelry, glassmaking, stonework, etc. were found [8, p.53–57].

During this period, with the development of international trade and economic relations in Khorezm, cities such as Urganch, Kat, Khiva, Khazorasp, Mizdakhon become craft centers. In the cities, craft industries began to specialize and craft neighborhoods were formed.

Among the authors, al-Kurashi (beginning of the 13th century) writes that during this period, there were about 50 types of specialized handicrafts in the fortresses of Khorezm, while Zakariya al-Qazvini (13th century) wrote that the inhabitants of Gurganch (Ko'hna-Urganch-B.T.Q.) were skilled craftsmen, especially in the era of blacksmithing, carpentry and other industries were highly developed (Bunyatov, 1986. – P. 102). In other written sources, there is also a lot of information that emphasizes the specialization of craft areas. In the work “Muqaddimat ul-adab” by the Khorezm scientist Az-Zamakhshari (1075-1144), it is emphasized that there are specialized crafts such as goldsmith (jeweler), locksmith (kulfasaz).

In Khorezm, before the conquest of the Mongols (the beginning of the 13th century), metal products such as locks, gold and silver water-filled egar-jabduq, jugan-suvliq were exported and highly valued [14, p.3].

Pottery communities were active in the monuments of Zamakhshar (10th-11th centuries), Sadvar (9th-11th centuries), Jigarband (10th-13th centuries) and Mizdakhon (13th-14th centuries) of Khorezm (10, p.68-69). On the basis of those pottery communities of the 10th-11th centuries, craft associations were formed. The analysis of archaeological materials from this period shows that there was a neighborhood of potters, coppersmiths and blacksmiths in the Shahrlik fortress (12th-14th centuries) [5, p. 47. Fig. 3.), a craft neighborhood in Janpiq fortress (12th-14th centuries), there was a blacksmith's neighborhood in the northwest part of the Shemakha fortress (13th-14th centuries) [4, p. 174].

It is known from the medieval craft traditions that the workshops were mainly located in the neighborhoods where blacksmiths and coppersmiths lived, close to the bazaar or market, and they had their own associations. This testifies to the formation of craftsmen's quarters and the functioning of specialized associations in the Khorezm fortresses in the 11th-14th centuries.

During the Anushtegin dynasty, one of the industries that flourished in Khorezm was textiles. According to Arabic-Persian authors, in the 10th-13th centuries, cotton (karbos), woolen fabrics,

expensive carpets, cotton gauze called “arzanj” were exported from Khorezm for foreign trade [7, p. 180, 216]. During this period, in addition to cotton and wool yarns, production of silk fabrics was launched from Khorezm. According to the 13th century authors Shihabuddin Muhammad an-Nisawi, Zakariya al-Kazvini, Juvaini, Rashiduddin ibn Fazlullah, during this period, handicraft workshops producing natural silk were operating in the city of Urganch [2, p.102]. During this period, silk products were produced not only in individual households, but also in specialized workshops.

Yaqut al-Hamawi (13th century) writes about Khorezm: ‘... it is difficult to find an unmaintained, uninhabited place in the rural areas of the country. There are many green groves, especially gujum, mulberry trees, because they (the population) need timber for construction, and mulberry leaves are a source of silkworms.’ [7, p. 419]. This shows that the natural silk production industry was established on a large scale by the local population at that time.

In addition, Zakariya al-Qazvini (13th century) confirms the above information once again saying that “Urganch women are skilled embroiderers” [2, p. 102]. These data show the high development of textile, silk and embroidery industries in Khorezm.

During the period of Anushtegin Khorezmshahs, the development of metalworking crafts is observed. Compared to the 8th-10th centuries in Khorezm, the monuments of the beginning of the 11th-13th centuries clearly show that the types, forms, and quantity of artistic metal objects have increased and the processing technique has improved [11, p.17-18].

Especially in this period, the technique of artistic processing of non-ferrous metals was improved, and various technical methods were used, such as embossing, carving, moulding, pattern smoking, gilding, solution in gold and silver water. A change in artistic style has begun in the craft of artistic metalwork. During this period, the depiction of living nature in copper and bronze objects decreased sharply, and decoration in complex Islamic, geometric and epigraphic ornaments began to dominate. Artistic metal objects decorated at the level of such works of art are noted on zoomorphic and decorative items, bronze mirrors in the Shokhsanam castle (bronze pot), Aygeldi (bronze bowl), Qavatkala (bronze lamp) and other monuments of the beginning of the 11th-13th centuries [11, p. 17-18].

In addition to individual craft workshops, we can observe the formation of metallurgical quarters in the 12th-14th century fortresses of Khorezm. Among them, tools such as traces of workshops and crucibles were found in the neighborhoods of coppersmiths and smiths in the Shahrlik monument [11, p. 12]. Also, the slag remains of twelfth and fourteenth centuries in the territory of the blacksmiths' neighborhood located in the north-western part of the Shemakha fortress testify to the development of blacksmithing. In the north-western part of Zhanpiqkala, a craft quarter and living rooms dating back to the 12th-14th centuries have been identified. The total area of the crafts quarter is 900 square meters, metal and ceramic slags, crucible pieces, and semi-finished metal products were found in each of the 23 rooms here. In almost every room, there are small hearths, circular and sawtooth. In rooms 11, 13, 15, and 27 of the monument, it is noticeable that many copper products were produced compared to blacksmithing [11, p. 12].

One of the archeological finds that testify to the production of metal products by local artisans is a crucible made of talc stone. Such pits can be found in Qavatkala of 11th-13th centuries, Zhanpiqkala of 12th-14th centuries, Kazontov mine of talc stone in the middle ages on Sultan Buniyatov mountain [11, p.12]. L.B. Kogan, an expert on mining works, said that talc stone has the property of becoming stronger as it receives high heat, such quarries may have been used in metal melting [9, p. 77].

In addition, in that period, a part of the raw materials for the metalworking craft – copper ore was mined and processed in Aktogh (10th-14th centuries), Achchik mountain hill (10th-13th centuries),

Shaykhijali mountain (12th-14th centuries), Zangi Baba (11th-beginning of the 13th centuries) in the Sultan Buniyatov ridges (Turganov, 2009. – P. 10). It is even possible that gold ore was mined in Aktov mine 31 in the 10th-14th centuries.

In the 11th-13th centuries, in addition to mining and processing of metal ore, mining works were started in other areas in Khorezm. It was determined that talc chloride, cerdolic, turquoise and other raw materials were obtained from the Aktogh, Kuyanchik, Zangi bobo and Jamansoi mines in the Sultan Buniyatov mountain ranges [12, p. 46]. The raw materials were processed on site into semi-finished products and then refined in urban stone workshops.

Household items such as talc pots, pans, basins, millstones, covers, column bases, polished tiles, jewelry (amulet, bead, ring eye), lanterns, made of talc stone from 11th-13th centuries monuments were much found in archaeological investigations. Some of these items have been brought to the level of works of art by skilled craftsmen. In particular, a highly processed teapot is kept in the Ichankala Museum in Khiva, stone slabs decorated with carvings of the 11th-13th centuries were found in Kavatkala, and hanging stone lamps with eight pointed beaks were found in the Bugrokhan monument.

According to the historian of the 13th century Muhammad ibn Mansur: “Turquoise stone is mined from Nishapur, Khazan, Kermon and Khorezm and exported to Eastern countries” [12, p.46]. According to Balkh scientist Sultan Muhammad Balkhi (died in 1574), mining, processing and export of turquoise stone continued in Khorezm even in the late Middle Ages. He notes that there are five types of turquoise, namely, Nishapuri, Ghazni, Ilahi, Kirmani and Khorezm varieties [1, p. 17]. Semi-precious stones, such as turquoise and sardolid mined from the Sultan Buniyatov mountains, were processed into rings, amulets and jewelry by goldsmiths in Qavatkala, Jampiqkala, Mizdahkon and other cities of the 11th-14th centuries [12, p. 46].

In conclusion, it can be said that during the rule of the Anushtegin dynasty, the development of crafts in Khorezm reached the highest level. In international trade, relations with China, Mongolia, Movarunnahr, Iran, Iraq, Trans-Caucasus, Volga states (Bulgaria) and nomadic steppe tribes were given great importance. During this period, the Great Silk Road network connecting Khorezm through the Kara-Kum desert to South Turkmenistan (Khorasan), Iran, Iraq and Arab countries became important in the development of some handicraft industries. In addition to serving the international trade relations in the monuments of Dargan, Sadvar, Zamakhshar and Shahsanam, this direction was an important factor in the spread of handicraft products (silk, precious metal and glass products, chandeliers, enamels – “fake chandeliers”, “fake enamels”).

The information in Mirzo Ulugbek's (15th century) “History of Arba' ulus” once again confirms the high development of crafts in Khorezm until the Mongol invasion (1221). It is written that “the Mongolian army killed 100,000 people after conquering Urganch after a seven-month siege, and drove 100,000 artisans and artists to Mongolia” [1, p. 329].

Therefore, these data clearly recognize that Anushtegin is one of the major cultural and economic states in the East, where the trade and craft industries of the Khorezm cities developed during the reign of the Khorezmshahs. In that period, the establishment of a strongly centralized Anushtegin state and the development of interregional trade in Khorezm had a positive effect on the development of handicrafts.

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Rezyume: *Moqalada Anushtakin xorazmshohlar davridagi Xorazmning hunarmandchilik sohalari yozma va arxeologik manbalar asosida o'rganilgan. Bu davrda Xorazmda to'qimachilik, metallsozlik, zargarlik, kulolchilik, yog'och va toshga ishlov berish kabi hunarmandchilik sohalari yuksak rivojlangan. Hunarmandchilik sohalari uchun xom–ashyo bo'lgan rudalar, talk toshlari va firuzu, serdolik kabi yarim qimmatbaho toshlar Sultonuvays tog' tizmalaridan qazib olingan va qayta ishlangan. O'sha davrda kuchli markazlashgan Anushtakinlar davlatining tashkil topishi va Xorazmda mintaqalararo savdoning rivojlanishi hunarmandchilik sohalari taraqqiyotiga ijobiy ta'sir ko'rsatgan.*

Резюме: *Статья посвящена изучению отраслей ремесленного производства в Хорезме в период Ануштегин хорезмшахов на основе письменных и археологических источников. В этот период, высоко развивались в Хорезме такие отрасли ремесленного производства как ткачество, металлообрабатывающее ремесло, гончарство, ювелирное дело, переработка дерева и камней. Для ремесленного производства была использованы в качестве сырья и переработаны руды, камни из талька и такие полудрагоценные камни как бирюза и сердолика, выработки из недр горных хребтов Султанувайс. Образование сильного централизованного государства Ануштегинов и развитие трансконтинентальной торговли в Хорезме оказали большое влияние на развития ремесленного производства.*

Kalit so'zlar: *Xorazm, manbalar, arxeologik tadqiqotlar, o'rta asrlar, hunarmandchilik, hunarmandchilik buyumlari, to'qimachilik, metallsozlik hunarmandchiligi, ishlab chiqarish, shaharlar, savdo-sotiq, karvon yo'llari.*

Ключевые слова: *Хорезм, источники, археологические исследования, средние века, ремесло, ремесленные изделия, ткачество, металлообрабатывающее ремесло, производство, города, торговля, караванные пути.*

THE IDEOLOGICAL DIRECTION OF LOFS IN KARAKALPAK FOLKLORE

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Summary: *This article deals with the types of folklore and different genres, genres, types, periods of emergence, development, formation of national oral literature. Not every genre or type of folklore has to a certain extent taken away genre or species form since its first creation. Each folklore work will have special features.*

Key words: *Literature, folklore, creation, genres, ideology, anecdotes, performance, emergence.*

If we say that each country, each people will have a kind of folklore, then they experience different genres, genres, types, periods of emergence, developing, formation of national oral literature. Not every genre or type of folklore has to a certain extent taken away genre or species form since its first creation. Each folklore work will have special features.

We must view folklore itself as syncretic art side are visible the way of life of the people, theatre, word, melody in different forms, the art of constantly sounding songs, the performance of which does not separate from other as one and the same. These signs, characteristic of folklore works, were first voiced by the Russian scientist A.N. Veselovskiy. [1.200]

If we pay deep attention to the history of the emergence of folklore genres then together with life experience we see the house, its material basis is a language that develops from word to, from song to other types, huge genres have appeared.

Accordingly, the merits of the performers of these genres have also changed. We call them anonymous storytellers of folklore works, that is, fabulous, cash, responsible, speaking, poets, writers, bakhshi, fats, kissahonians, private owners, performers and improvisers of folk folklore. In science, folk poetry is called "folklore," and the field of science is called "folkloristics." Folklore continues its development from ancient times to the present day. Now in a new direction, and not in the previous folklore, the author is known and unknown. Of course, the author is unknown, that is, he can be created in public. It has an owner anyway. Especially often these types of folklore include genres related to ideology, politics. Because such genres are born from the reality of life, and the author remains secret. They can evolve and send people from different groups.

For example, such modern folklore works include poems, lofs, anecdotes (funny words), images, etc. As the German scientist found out, this is exactly how the folk-poetic I.F. Knaflning denoted the concept of "popular wisdom." "Folk people was also developed by the English scientist W.D.J. Toms and recommended folklore as a term that collects songs, lands, tales, legends, beliefs in my various beliefs." [3.3-8]

The opinions of N.T. Chernyshevsky, V.G. Belinsky, N.A. Dobrolyubov expressed around folk poetry are very noteworthy and interesting. So, for example, N.G. Chernishevsky [4.369-380] society flourishes, and during his lifetime folk poetry is lost in front of him, since it cannot give way to written literature and satisfy people of new times, V.G. Belinsky despite it "in folklore there will be no glorious heroes (famous personalities, names), the author of the artistic word in it - different people" Lives. Many scientists in its meaning, content, ideas, genres, types, features of folklore: N.P. Andreev, E. Vanichkov, F.I. Buslaev, A.N. Veselovsky, V.F. Miller, Yu. Gagarov. Such folklorists as Yu. M.M. Sokolov, A.E. Gusev, V. Ya.p, V.P. Anikin, Yu.G. Kruglov, I.G. Bagatirev expressed scientific

opinions and contributed to the developing of world folkloristics. For example, the famous scientist Abdreev N.P., speaking about the special importance of folklore materials for historians, ethnographer, linguists and researchers of the history of literature, connects it with folk life. [5.28]

V.N. Utilova describes folklore in combination with social and production relations of the people (collective), life. Of course, it is regarded as a syncretic art that gathered different qualities, and not just an artistic word. [6.100] Most folklorist scholars are reluctant to give folklore only one-sided meaning. Because there are scholars who remember that its parts, genres are an invaluable developing process, and say that folklore works should be treated with a comprehensive aesthetic view. However, some folklorists at one time gave a one-sided assessment. For example, E.V. Anichkov connects folklore with religious beliefs. [7.19]

When we are carried away by the thoughts of V.Ya. Chopp about folklore genres, we feel in him some living houses. When he says that the application of genres characteristic of the folklore of one people to folklore works of another country does not give a tangible result. They are:

- a) study the poetics of folklore works;
- b) identification of genres related to folk life in folklore;
- c) paying attention to the methods (form) of their implementation. [8.35]

It would be possible to add several more types of folklore works to what was said. This is the collective, private and multimillion-dollar quality of folklore, its variability, traditionalism, historicity, emergence depending on any ideology, authorship and obscurity, stylistics, etc. All of them are elements of folklore, forming content, idea, poetics. All this does not happen in one people, and in a number of national folklore they can manifest themselves.

For example: In karakalpak folklore in the second half of the 20th century, almost all of the above signs are visible. The creation of association with everyday life, will take place in all people. Without it, folklore will not be created and cannot be created at any time. Folklore sees no light without poetics. All theoretical forms must be displayed in folklore, at whatever stage they are. These are common signs of creating folklore.

The appearance of some of the above folklore works may not be among the same people. So, during the years of the Communist Party in our country (1917-1990), a series of folk songs of karakalpak folklore was created, such as funny words, legends, stories, cash articles, riddles. Perhaps some works of this karakalpak folklore were never created in other people of the world.

Because these people do not have such a regime as in Karakalpakstan, Soviet ideology, communist unilateral order. Therefore, it should be noted that V.E. Gusev "The result of a one-sided assessment of folklore works corresponds to its aesthetic nature." This decision has support and above V.Ya. Propp.

Folklore exists and develops. These two meanings are a popular path that fills and enriches each other. Individual genres and types of folklore may appear. However, thanks to the political and economic views taking place in society, it can also remain undeveloped. For example, separate works of folk poetry, anecdotes, religion, Islam appeared in karakalpak, which appeared in the 60-70s of the last century, and did not find their developing in terms of political ideology.

The works do not appear by chance. In each genre, a diverse conscious life, life, situation is created. Especially this reality dominates the developing of small genres of folklore. N.G. Chernyshevsky supported his rule "artistry (beauty) - life," primarily in a realistic context: "Only strength are rich, boiling life, pure, and with an honest people - folk poetry," the report says. [9.297]

Thus, he linked the reliability and educational activities of folklore with the idea of democracy, progress. This idea has huge support from us and is getting closer to our homes. In the

1970s and 80s, the leaders of Soviet power and the Communist Party began to experience a huge ideological decline. Now the democratic path of government has begun to decline sharply. Due to these social discrepancies, poor choice of personal, dissatisfaction of the population with the country's managers was created strictly through folklore works.

The content, idea, quality of their (folklore works) reflected honest folk life. The poem "The Ring" sets out the daily reality. Even people's names described what he did, what he did. These humorous and satirical songs, as G. G. Chernyshevsky said, were created by children of "pure, honest people with rich strength, abundant life, dignity."

Because they didn't enjoy it. He couldn't look at excessive insensitivity through his eyes and look at them. Measuring the living experiences inside, he created songs, anecdotes, touching words. These works created folk oral literature of the karakalpak people of the second half of the 20th century. They were a real folklore that came out of historical conditions. And although karakalpak folklore, which appeared in this situation, based on life facts, appeared in a hidden form, it was formed from the most faithful armenians and the houses of the people. They are divided into such types as folk songs from the karakalpak cycle, especially lively anecdotes, humorous words and statements. Just as these folklore genres have a holistic character, so its types have a rich character. Without studying the content, ideas, forms, internal divisions, the filled properties of each type of culture, it is difficult to get a complete understanding of it. In order to get a complete understanding of the works of karakalpak folklore created during these years (60-90s of the last century), first of all, we must be attentive to its classification. There is not yet a single folklorist who collected, completed and classified the karakalpak folklore formed during the years of independence. Only in this genus houses are presumably mentioned.

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Rezyume: *Mazkur maqolada folklor turlari va turli janrlar, milliy og'zaki adabiyotning kelib chiqish, rivojlanish, shakllanish davrlari ko'rib chiqiladi. Folklorning har bir janri yoki turi birinchi yaratilgan paytdan boshlab muayyan darajada janr yoki turni olgan emas. Har bir folklor asari alohida xususiyatlarga ega bo'lishi haqida aytilgan.*

Резюме: *В этой статье рассматриваются виды фольклора и различные жанры, жанры, типы, периоды возникновения, развития, формирования национальной устной литературы. Не каждый жанр или тип фольклора в определенной степени отнял жанровую или видовую форму с момента своего первого создания. Каждое фольклорное произведение будет иметь особые особенности.*

Kalit so'zlar: *Adabiyot, folklor, ijodkorlik, janrlar, g'oyalar, anekdotlar, spektakl, yaratilish.*

Ключевые слова: *Литература, фольклор, творчество, жанры, идеология, анекдоты, спектакль, возникновение.*

UDK 343.97

**REASONS AND CONDITIONS FOR THE ORIGIN OF THE CRIME OF SMUGGLING IN
THE REPUBLIC OF UZBEKISTAN**

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Summary: *this article provides general descriptions of the concept of the reasons and conditions for the origin of the crime, in particular, the reasons and conditions for the origin of the crime of smuggling are covered in detail. Also, the factors that are causing smuggling crimes are shown one by one, illuminated on the basis of examples, and the opinions of some legal scholars are cited. Some of the work carried out by the state on the study of the causes and conditions that are causing crimes are also reported.*

Keywords: *smuggling, crime, causes and conditions of criminality, criminological situation, criminology, customs authorities.*

The issue of the causes of crime is a central link in criminological research, since the approach to its solution depends on the organization of the fight against this negative social phenomenon.

Criminologists generally recognize that between the stage of understanding certain phenomena related to the crimes under study and the stage of organizing the fight against them, the stage of determining the determination and causes of these crimes is mandatory. This, of course, also applies to the crime of smuggling. When organizing the fight against the crime of smuggling, it is necessary to first influence what makes them appear, creates and develops conditions [1, 37].

In order to achieve effective results in the fight against crime, reduce its amount to the lowest, reduce negative consequences, it is necessary to study the phenomena, events and processes that require, determine, influence, act as causes and the presence and development of crime in society, and the causal connection between them [2, 65].

Since crime is a social phenomenon, the causes that cause it, determine its development, influence its growth are also social. The causes of crime in any society must be sought from the social life of that society [3, 65].

In many countries of the modern world, smuggling is rightfully recognized as one of the most dangerous types of criminal activity. This is no coincidence, since smuggling greatly harms the economic interests of any country, including the Republic of Uzbekistan. This type of crime-smuggling-has appeared since the earliest. That is, since the emergence of state and customs borders. Currently, it is generally recognized that smuggling exists in almost all countries. Almost all countries have a list of things that are prohibited or restricted from moving across borders. Accordingly, the need to transfer them designs the appearance of such a phenomenon as smuggling.

At the heart of any social phenomenon, change, first of all is the cause that causes it.

What does the reasons and conditions of origin of the crime of smuggling find its expression as the main issue that stands at the center of the analysis?

In order to answer this question, it is advisable to first contact the disposition of Article 246 of the CC(Criminal Code), in particular, the crime of smuggling is committed by using documents that are considered the subject of a crime by fraudulently avoiding customs control or hiding from customs control or using documents made to resemble customs documents or tools, without a declaration or it is carried out by crossing the customs border using a declaration written in the name of another person.

In this place, our reference to general rules related to the causes and conditions of committing a number of crimes makes it possible to draw conclusions that fully cover the facts related to the topic. For instance, the circumstances and causes of crime are a consequence of a certain socio-economic system and a system of negative social phenomena in the State [4, 158-159].

The condition of crime is an antisocial phenomenon that does not cause crime and crime in itself, but gives rise to the cause of the crime.

The causes of crime are socio – mental determinants that, as their legal consequence, directly generate separate crimes and crime and determine whether it occurs [5, 160].

Criminogenic determinants, that is, the causes and conditions of crime, consist of a system of many elements, which are specific conditions and causes of crimes committed for mercenary purposes, crimes committed using violence, recidivism, etc.

The main reasons for smuggling are in the socio-economic sphere, and first of all, it is a sharp shortage of consumer goods of domestic production. However, among the causes of smuggling there are also international factors. The dynamics of crime is also influenced by the growth of property stratification of the population and the spread of self-service and property activity, the accumulation of large amounts of money and valuable items in the hands of individuals.

The expansion of foreign economic activity of Uzbekistan contributes to the active import and export of goods. When foreign trade operations are carried out, foreign exchange revenues will grow, the state budget will be replenished and the national market will develop. These changes contribute to the growth of smuggling due to the lack of control and, in some cases, the powerlessness of law enforcement agencies. The state Customs Committee of the Republic of Uzbekistan, the Ministry of Internal Affairs, The State Security Service and other state bodies are actively involved in the suppression of this crime, nevertheless, the situation in the country remains difficult, which is especially evident in the transfer of goods at state and customs borders, in large cities, on air and rail.

There are a number of conditions for smuggling. For example, the "transparency" of the borders contributes to this crime, the lack of clear border and customs control on the state border, insufficient development of the legislative base regulating the activities of customs authorities, sufficiently clear interaction with territorial law enforcement agencies and other circumstances.

It is necessary to identify a number of methods used by smugglers in violation of the established procedure for transporting goods through the customs border, in particular:

- obtaining licenses or permits as a result of fraud of customs officers, providing false documents for goods illegally seized from someone else's possession;
- use of false customs declarations, licenses or permits issued by state bodies, as well as other documents that give the right to transfer goods across the border;
- use of documents granting the right to uncontrolled or preferential transportation of goods issued in the name of another person;

Sometimes such a trick is also used as a border crossing of one product under the guise of another. This smuggling technique consists in the fact that strategically important goods are exported from the state, but other goods are indicated in the documents. Such an operation, as a rule, is carried out in agreement with the declarant organization or with officials who carry out the clearance of goods.

Most often, raw materials are passed through the border under the guise of a finished product. In these cases, smugglers attempt to mislead individuals who are exercising control. Here it is important to obtain documents describing the chemical composition of goods and an expert opinion that the cargo belongs to the category indicated in the documents.

Smugglers also use the name of charitable foundations to smuggle goods. Charities have privileges for customs duties. And here the interests of the “merchants” and representatives of the fund coincide: some do not pay duties, while others receive commission payments for hiding smugglers.

M.A.Kochubey's emphasis is that smugglers use the following modes of action:

- hiding contraband objects in specially equipped warehouses, vehicles, clothing, luggage, bags and other places (67%);
- movement of contraband objects outside customs control, that is, outside the location of the customs authority (on roundabouts) or outside the working hours (30%);
- movement of contraband objects without specifying in the customs declaration (27%);
- the use of his official position by an official to transport contraband items unhindered, etc. (4%) [6].

Specific methods of smuggling used by criminals to avoid customs duties are not taking into account the real value of goods, raw materials, materials and products in industrial and technical purposes, which pass through exports and imports in cargo customs declarations and other cargo documents, misclassification of the origin of goods.

L.F.Rogatyx believes that the passage of goods and other objects through the customs border and the payment of customs duties is carried out at different times, that is, at different stages of customs control. However, this point of view cannot be accepted, since under current customs legislation, these actions are not always carried out at different times and can be carried out at one stage of Customs Control [7, 64].

In order to fully ensure customs control at the border, the employees of the customs authority must be closely familiar with all goods that are prohibited from being brought to the Republic of Uzbekistan. Below we will dwell on some of the normative acts, which contain types or lists of goods that are prohibited from being transported from the customs border by the legislation of the Republic of Uzbekistan:

- Decree of the President of the Republic of Uzbekistan dated December 15, 2017 “on additional measures to ensure the competitiveness of domestic products in the foreign market and promote exports” PF-5286 lists items that are prohibited from being imported (imported) into the Republic of Uzbekistan;

- The Cabinet of Ministers of the Republic of Uzbekistan On the basis of the decree of April 9, 2015 “on measures to introduce a system of mandatory energy marking and certification of domestic electrical appliances, new buildings and structures sold in the Republic” of April 86, the technical documentation, marking and labeling of which do not contain information about the corresponding class of electrical efficiency, the introduction of domestic electrical appliances with low electrical efficiency; The Cabinet of Ministers of the Republic of Uzbekistan banned the organization and conduct of gambling and other risk-based games (including totalizers) on the territory of the Republic of Uzbekistan on the basis of the decree of the Cabinet of Ministers of the Republic of Uzbekistan dated August 16, 2007 “on measures to further regulate the organization and conduct of gambling;

- The Cabinet of Ministers of the Republic of Uzbekistan According to the decision of October 20, 2015 “on measures to expand the domestic production of energy - saving lamps” No. 299, the capacity of the release of more than 40 W incandescent lamps into free circulation from July 1, 2016 and the realization of them on the territory of the Republic of Uzbekistan since January 1, 2017 is prohibited;

- According to Article 24 of the law of the Republic of Uzbekistan “on medicines and pharmaceutical activities” dated April 1, 2016, the import of poor-quality, counterfeit, unregistered

medicines and medical products, as well as illegal copies of medicines registered in the Republic of Uzbekistan is prohibited.

In addition, a number, the list of materials affecting human health, ecology and state security are reflected in other legislation.

It is worth noting that one of the main goals of smuggling is to avoid customs duties. The increase in smuggling is especially noticeable during the period of a sharp increase in customs tariffs on imported goods. M.A.Kochubey said that if: net income in the official import of food with payment of duties and indirect taxes is 10%, if smuggled, income will give a percentage of 50% [8, 119-129].

Currently, one of the most profitable areas of smuggling activity is the smuggling of weapons and ammunition.

The increased activity of criminal groups, trying to expand their influence on the field of foreign economic activity, blackmail customs officers, inclusion of their people in customs units, poses a serious danger, through which criminal groups receive the necessary information. Uncontrolled amounts allow bribes to customs officers.

Smugglers include smuggling across the border, crossing goods at designated locations for a fee, i.e. certain corridors for services. There are even certain tariffs. This work is carried out by Special "firms" and individuals specializing as carriers.

O.Zokirova divided the factors that contributed to the origin of the crime of smuggling into the following groups [9, 39]:

The first is associated with the identity of the offender. In this, the fact that a person is not brought up in a spirit of respect for his laws, does not feel the inevitability of punishment for a crime is a contributing factor to the occurrence of a crime. The presence of an unhealthy educational environment, obtained in the Family, School, among the community, causes a mood of impropriety to the law.

Secondly, the possibility of having a large amount of income, although illegal as a result of the crime. The feeling of having a large amount of income leads to this goal until the commission of a crime.

Thirdly, the low level of economic supply of members of society. This is characterized by a number of factors, such as the improper conduct of reforms in the economic sphere or the slow course of the reform process during the transition period.

Fourth, regional conflicts in neighboring countries. Stretched regional conflicts in Afghanistan and Tajikistan are generating negative phenomena, posing a serious threat to border states. Speaking about these negative incidents, one should dwell on such problems as illegal drug trafficking, international terrorism and arms smuggling. It is known that in conditions of devastation and political chaos, the conduct of war actions remains not only the main fist of the common population, but also a way of survival. At the moment, the production and sale of drugs for groups participating in the conflict in Afghanistan is becoming the most convenient means of making money for the purchase of weapons and making a fortune. According to the analysis of various international organizations, including the UN, Afghanistan has become not only one of the leading countries in the world that make blackcurrant raw materials, but also the largest base where drugs are transported. Through this space, a larger amount of drugs is being transported to the Central Asian states and then to the West. Naturally, a part of them is "absorbed" into our region. This causes an increase in crime, a breakdown of youth, and even the genophone of the nation to suffer [10, 31].

Let's focus on some examples of the crime of smuggling. In March 2023, a Lacetti car driving on the Namangan-Tashkent route was parked in the territory of the Ohangaron district at an express

event held by employees of the STT(State Security Service) Tashkent City Department in cooperation with other law enforcement agencies. When the car was inspected, it was found that inside the handbag belonging to a 21-year-old citizen born in the Fergana region, who was leaving as a passenger, there were 50 grams of heroin, 672 units of “Regapen” and 300 units of “Tropicamide” drugs of strong action, which were formalized in procedural order.

The rapid event was continued, and a 27-year-old person born in the Bukhara region, who bought these drugs smuggled into the territory of the Yangikurgon district by a citizen of Kyrgyzstan for \$ 1.8 thousand, was also caught in the RPS (Road Patrol Service) settlement “Chinor” in the Ohangaron district. It is noted that one of these persons was considered students of State and other non-state universities in the city of Tashkent, who were engaged in drug trafficking in the territory of the capital. It is reported that in August 2023, a quick event was held by employees of the Samarkand Regional Directorate of the STT(State Security Service) in cooperation with the regional dia (department of internal affairs). At the event, sisters born in 1978 and 1986 living in the Urgut district were caught selling 911 grams of opium drug for US \$ 12,000. In the course of the rapid inquiry action, it was found that they received this drug from two 33-year-old persons residing in this district, who were also arrested. Also, during the search-investigation actions carried out in the living quarters of these persons, 228 grams of opium, which was stored for the purpose of future sale from the House of one of them, and 7 kilograms of 187 grams of opium from the other, were formalized with the participation of witnesses.

It turned out that a total of 8 kilograms of 326 grams of opium, obtained during the rapid event, were smuggled into the country from Tajikistan [11].

Another case, a citizen of the Republic of Tajikistan R.A in mid-April 2023, a total of 20 units of drugs named “Tramadol” from a pharmacy located in Dushanbe, Republic of Tajikistan, bought for consumption by himself, keeping them near him on June 2, 2023, hiding them from customs control by smuggling them from the Republic of Tajikistan through the border customs post “Jartepa”, located in Urgut District, Samarkand region of Uzbekistan, without declaration, The border customs post “Jartepa”, owned by the Samarkand region Customs Department, was stopped by employees, who during a personal examination was exposed on the crime, a total of 19 pieces in 2 currencies from a brown-colored handbag next to it, drugs containing the substances “Tramadol” were identified as material evidence, and a criminal case was initiated.

It is also possible to refer to those below as an addition to these factors mentioned above.

The fact that individuals do not know what is the subject of the crime of smuggling, that is, their legal literacy is low;

The fact that there are corrupt cases in law enforcement and Customs Enforcement Agencies;

The size of the amount of certain customs duties and the fact that as a result of it there are attempts to carry them in illegal ways.

It should be noted that the risk of crimes related to the smuggling of drugs and psychotropic substances has increased dramatically in recent years. Because they are increasingly organized and large-scale, causing a large amount of damage to the interests of the state and society.

Analysis over the past 5 years shows an increasing number of common drug-related smuggling crimes. For example: drug-related crimes in the Republic of Uzbekistan, taking into account five-year statistics (2016-2020): smuggling increased by 29.9% [13].

Drug-related smuggling crimes in the Republic of Uzbekistan increased by 3-5 percent in 2018-2021.

The main part of smuggling crimes related to drugs is at the expense of the border regions with neighboring countries, namely Surkhandarya, Tashkent, Andijan, Fergana, Samarkand regions, where drug situation is complex. Cases of smuggling large amounts of drugs continue into the territory of our country by Interstate organized criminal groups. Still, the presence of a stream of drugs is showing its negative impact on drug situation in our country.

Large numbers of “Afghan” drug channels have been identified and criminal activities exposed to the Republic of Uzbekistan through the Afghanistan – Uzbekistan border. For example, it has been observed that the number of Afghan citizens trying to transport relatively small amounts of drugs to the territory of the Republic of Uzbekistan through customs posts has increased by 3 times [14].

At a meeting held under the President of the Republic of Uzbekistan on February 17, 2022 on priorities for further improvement of Customs Administration and transformation of the industry into a corruption-free system, the president noted that since the Republic of Uzbekistan is in the center of the region, it is extremely important to fight against smuggling, a number of works have been carried out in this:

- In 2018, 13 thousand mobile phones were legally imported, while in 2021 this number exceeded 3 million;

- from the beginning of the year, it was noted that 364 kilograms of drugs, 88 thousand units of psychotropic drugs and 181 billion sums of goods received illegal entry.

The meeting noted that there is still a lot of work to be done in the field.

According to the law signed by the President, the task was given to equip 22 main posts of customs authorities with equipment such as 3D-scanner, X-ray apparatus, video surveillance camera, server, transport scales, into which 80 percent of goods enter. 370 billion was set to be directed towards the implementation of these goals. In addition, it was tasked with establishing the electronic exchange of information on goods coming by rail. The relevant officials were also instructed to introduce an information exchange system for international shipments. The meeting was tasked with improving the effectiveness of the work carried out in the customs system to train personnel and improve their skills [15].

Let us briefly touch upon the general rules on the causes and conditions of the crime. While each crime committed has its own individual circumstances and causes, there is a connection and commonality between the causes of all crimes or crimes in a particular group.

The crime of smuggling is considered to be one of those crimes that, in relation to other crimes, have a greater impact on the lifestyle of members of society, actively affecting the formation of a criminal mentality among the population.

The convenience of the commission of a crime of this category by officials of the customs service authorities is due to the possibility of obtaining a very large amount of profit from the back of this crime. Determining the causes of crime in a particular category makes it possible to determine the reasons for the occurrence of crimes in this group.

In the legal literature, there is also a method of classifying the causes of crime in terms of content. Classification by content can be more related to the reasons associated with the material supply of society, mistakes and shortcomings in the management system, shortcomings in economic management.

When classifying the conditions of crime, they can be divided into two groups. The first group of conditions includes conditions associated with the formation of socio-group and individual consciousness in society, formed due to socio-economic, political ideological, educational, socio-mental, legal, organizational management and other contradictions in society.

The conditions of the second group can be errors and shortcomings that are allowed in the case of combating offenses and crime in general. These two groups of conditions will be in interaction with each other. Thus, criminogenic conditions and causes are expressed in connection with the social essence, that is, in contradictions in it. It is also possible to classify the causes and conditions of crime according to their internal and external sources. Internal sources include sources of an international nature, if there are conflicts in our society itself. For example: actions aimed at trying to move drug fashions through the territory of the Republic of Uzbekistan by international drug trafficking.

Today, a number of legal works have been carried out in our state on the elimination of crimes, having studied the causes and conditions. In particular, the decree of the Cabinet of Ministers of the Republic of Uzbekistan dated September 10, 2021 No. 565 “on the approval of the regulation on the procedure for discussing the causes of crimes and the conditions that allowed them to occur” was adopted. In the appendix to the regulation of this decision on the procedure for discussing the causes of crimes and the conditions that allowed them to be committed, the tariff is given to the following basic concepts:

- a person who commits a crime is a person who is found guilty of committing a crime by a verdict of the court that has entered into legal force;

- causes of crime—a set of social, mental and material factors that led to the commission of a crime;

- measures to eliminate the causes of the crime and the conditions that allowed it to be committed — a set of legal, social, organizational, educational, medical and other measures aimed at preventing the occurrence of a future crime;

- the conditions that have allowed the crime to take place are critically assessed situations that allow the crime to take place, that arise for reasons that depend on or are not related to the individual and society. Also, paragraph 3 of this regulation states: the main purpose of discussing the causes of crimes and the conditions that allowed them to be committed is to prevent crimes prematurely and increase the effectiveness of the Prevention of offenses.

Discussion of the causes of crimes and the conditions that allowed them to be committed:

- in the case of the crime committed — in the neighborhood in the area where the crime was committed, within three days from the date of the criminal case;

- in the case of the perpetrator of the crime — in the neighborhood of his place of residence, the conviction of the court, which has entered into legal force, is held within three days from the date of arrival in the internal affairs bodies.

The discussion of the causes of crimes committed directly in state bodies and organizations and the conditions that allowed them to occur can be carried out in the order established in the second and third paragraphs of this paragraph within these bodies and organizations themselves.

The Ministry of Internal Affairs of the Republic of Karakalpakstan, the main internal affairs departments of the city of Tashkent and the Tashkent region, and regional internal affairs departments are the working bodies for summarizing and keeping records of information about crimes committed and persons for whom the court's conviction has entered into force, and this working body organizes and carries out the work on the basis of the above-mentioned Regulation. Of course, the main purpose of these rules set by the state is to study and eliminate the causes and conditions of crime, as well as to prevent crime. In conclusion, it should be said that the slow conduct of customs inspection, improper organization of customs services of neighboring countries, crime and corruption in the country, the low level of social protection of the population, etc. are the main reasons for the occurrence of smuggling

crime. and can be recognized as conditions, and we must first eliminate the conditions, then work with the causes. Only then we can prevent this crime.

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Rezyume: ushbu maqolada jinoyatning kelib chiqish sabablari va shart-sharoitlari tushunchasiga umumiy tavsiflar keltirilgan, ayniqsa kontrabanda jinoyatining kelib chiqish sabablari va shart-sharoitlari batafsil yoritilgan. Shuningdek, kontrabanda jinoyatlarini keltirib chiqarayotgan omillar birma-bir ko'rsatlib, misollar asosida yoritilgan va ayrim huquqshunos olimlarning fikrlari keltirilib o'tilgan. Davlatimiz tomonidan jinoyatlarni keltirib chiqarayotgan sabab va sharoitlarni o'rganishga oid amalga oshirilayotgan ayrim ishlar haqida ham ma'lumotlar berilgan.

Резюме: в этой статье дается общая характеристика понятия причин и условий совершения преступления, особенно подробно рассматриваются причины и условия совершения преступления контрабанды. Он также иллюстрирует примеры, показывая один за другим факторы, способствующие преступлениям контрабанды, и приводит мнения некоторых ученых-юристов. Предоставлена информация и о некоторых работах, проводимых нашим государством по изучению причин и условий, вызывающих преступления.

Kalit so'zlar: kontrabanda, jinoyatchilik, jinoyatshilikning sabab va shart-sharoitlari, kriminologik vaziyat, kriminologiya, bojxona organlari.

Ключевые слова: контрабанда, преступность, причины и условия совершения преступлений, криминологическая ситуация, криминология, таможенные органы.

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THE PROBLEM OF THE TERM AS THE BASIC UNIT OF LANGUAGE IN PRESENT DAY ENGLISH

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Summary: *This article investigates the problem of the term as the basic unit of language in present day English*

Keywords: *language, paragraph, aspect, specific, grammatical, meaning, morphology, knowledge*

We can study the structure of language in a variety of ways. For example, we can study classes of terms (parts of speech), meanings of terms, with or without considering changes of meaning (semantics), how terms are organized in relation to each other and in larger constructions (syntax), how terms are formed from smaller meaningful units (morphology), the sounds of terms (perception and pronunciation or articulation), and how they form patterns of knowledge in the speaker's mind (phonetics and phonology) and how standardized written forms represent terms (orthography). Since this article is primarily devoted to the exploration of English through its terms, the focus in this website is on morphology (word structure) and other aspects of terms, such as etymology, lexical semantic change, term usage, lexical types of terms, and terms marking specific linguistic varieties [1;298].

All terms are, at their most basic, collections of different sounds. Phonetics is the branch of linguistics that deals with the sounds of speech and their production, combination, description, and representation by written symbols. Sounds are generally categorized by place of articulation, method of articulation, and voicing. While these individual sounds are the most basic elements of language, they do not have meaning in of themselves (apart from some sounds which can be considered sound symbolic).

Morphology is the study of the structure and form of terms in language or a language, including inflection, derivation, and the formation of compounds. At the basic level, terms are made of "morphemes." These are the smallest units of meaning: roots and affixes (prefixes and suffixes).

Native speakers recognize the morphemes as grammatically significant or meaningful. For example, "schoolyard" is made of "school" + "yard", "makes" is made of "make" + a grammatical suffix "-s", and "unhappiness" is made of "happy" with a prefix "un-" and a suffix "-ness". Inflection occurs when a term has different forms but essentially the same meaning, and there is only a grammatical difference between them: for example, "make" and "makes". The "-s" is an inflectional morpheme. In contrast, derivation makes a term with a clearly different meaning: such as "unhappy" or "happiness", both from "happy". The "un-" and "-ness" are derivational morphemes. Normally a dictionary would list derived terms, but there is no need to list "makes" in a dictionary as well as "make."

Morphemic analysis helps us understand a great many terms but indivisible morphological elements such as affixes and roots cannot account for all the terms and phrases in one's mental lexicon. Many terms appear to be swallowed whole, including base terms like *stem*, *umbrella* and *violin* and derivations like *happy* - *hapless* - *haphazard*. The number of blended terms has increased significantly, even explosively, in the last century, as many of the advertisements on this page illustrate, and English continues to adopt loan terms from other languages. Therefore, we must also master the strategy of analogy, learn how to use context clues and become familiar with the dictionary. A related limitation is

that morphemic analysis does not apply equally to every term. Terms that belong to a large family are more readily accessed than, for example, *squirrel*, *sabotage* and *smuggle*. We want to learn the more generative base terms, roots, and affixes. For example, if we know the term *stable* we should be able to use morphological problem-solving and context clues to decipher *unstable*, *stability*, *instability*, *stabilize*, *stabilization*-possibly even *establish*, *establishment* and-you guessed it-*antidisestablishmentarianism*. [2;298].

Morphemes are the smallest indivisible two-facet units composite terms are made of, e.g. teach-er, kill-joy. A morpheme can occur in speech only as a constituent part of the term. It may have different phonetic variants (allomorphs):

Decision – attention; inactive – illegal. Its meaning varies too: childish – reddish;

Encircle - enrich. Morphemes form an autonomous subsystem of language units. Each morpheme has its norm of combinability with certain other morphemes, cf.: break-

Age, development - break-ment, develop-age. Morphemes may be homonymous(motherly - quickly), synonymous (inactive - unhappy), antonymous (useful - useless). Affixal morphemes carry lexical and grammatical meaning. Functional affixes belong to grammar, they build word-forms: asked, long-er. Lexicology is mainly interested in derivational affixes, as they build terms: boy-hood, boy-ish, boy-like. lexical morphology deals with two different problems: term-structure (segmentation of terms into morphemes) and term-formation (making new terms with the help of morphemes).

In learning a language it is not enough for one to know what the morphemes of the language are, he should also know what they mean. Morphemes and terms as a rule have their own meanings. Term may be a single morpheme or a combination of several morphemes. No matter how many morphemes a term is composed of, it is usually the combination of the sound, the referent and the concept. Derivational morphemes may change not only the meanings of the terms to which they are attached, but also their class specifications. Inflectional morphemes, however, only serve to add grammatical meanings. Some semantic features are predictable, given the presence of others. For example, human automatically means being animated, since all human beings are also animate, but the reverse is not true.

A content term, when used in a sentence, usually has two kinds of meaning; lexical meaning and grammatical meanings. The lexical meaning of a term refers to the senses that a speaker attaches to a linguistic element as a symbol of an actual object or event. It may cover denotative, conceptual or cognitive meaning, and associated meanings.

The denotative meaning of a term is the basic or conceptual meaning which is based on or abstracted from the physical object or the abstract idea. It covers all the semantic features necessary to define the term. The denotative or conceptual meaning of a term is the central factor in linguistic communication. Speakers of a language cannot talk about their knowledge of a physical object or natural phenomenon unless the term that signifies the actual physical object or idea has the same meaning for all the speakers of the language. So the denotative meaning of a term involves the relationship between the term and the actual object or abstract idea that exists outside language. For instance, if one talks about a pen, without the presence of the actual object, by just giving the denotative meaning: "An instrument for writing or drawing in ink", it is readily understood by all English speakers. So it is the denotative meaning of lexical items that makes communication possible [3;137:79-93].

A derivational morpheme which is also called a derived morpheme is a type of bound morpheme which generates or creates new words by either changing the class of term or forming new terms. This change in term class, caused by the addition of a derivational bound morpheme, is not

restricted to a particular class of terms. It affects all classes of terms. This transformation does not, however, affect the lexical meaning of the base forms of the free morpheme. That is, the lexical meanings of the core or base or free morpheme remain unchanged. These examples are common in the English language: Nouns from Adjectives and Suffix Adjective Noun.

- **ity** *rapid rapidity* - **ness** *kind kindness*
- **ce** *fragrant fragrance* - **ity** *humble humility*

1. They change the meaning or word class e.g. govern + ment *government*.
2. They indicate semantic relations in terms e.g. the morpheme – *ful* in *hopeful* does not relate to any other word in the language except the free morpheme *hopeful*.
3. It operates a close circuit kind of relationship. For example, some bound morphemes like ‘hood’ carefully choose their root; they do not collocate with every other term in the language.
4. It occurs before the inflectional bound morphemes they should co-occur. For example, *teach* + *er* *teacher* + *s* *teachers* (verb) (bound morpheme) (a new word) inflectional Thus, ‘er’ comes before ‘s’ In the examples given above, the derivational morphemes resulted in a change from one word class to the other. This is what derivational morphology is all about.

Suffixes changing the lexical meaning of the stem can be subdivided into groups, e.g. noun-forming suffixes can denote:

- a) the agent of the action: -er teacher, -ist taxiist, -ent student;
- b) nationality: -ian Russian, -ese Japanese, -ish English.
- c) collectivity: -dom kingdom, -ry peasantry, -ship readership;
- d) diminutiveness: -ie horsie, -let booklet, -ette kitchenette,
- e) quality: -ness; quality of fitness, illness, happiness, madness, goodness, copelessness, -ity answerability;
- f) feminine gender: -ess actress, -ine heroine, -ette cosmonette;
- g) abstract notion: -hood childhood, -ness politeness, -ence/ance tolerance;
- h) derogatory meaning: -ard drunkard, -ster gangster.

Lexica-grammatical character of the stem. Suffixes added to certain groups of stems are subdivided into:

- a) suffixes added to verbal stems: -er commuter, -ing suffering;
 - b) suffixes added to noun stems: -less smogless, -ism adventurism;
 - c) suffixes added to adjective stems: -en weaken, -ish longish.
4. Origin of suffixes.
- a) native (Germanic) suffixes: -er teacher, -ful careful, -less painless, -ly swiftly, -dom, -ed, -en, -hood, -ing, -ish, -ness, -ship, -teen, -ty, -ward;
 - b) Romanic suffixes: -tion attention, -ment development, -able/-ible terrible, moveable, -age, -ard, -ance/ence, -ate;
 - c) Greek suffixes: -ist taxiist, -ism capitalism, -ize organize;
 - d) Russian suffixes: -nik filmnik.
5. Productivity of suffixes:
- a) productive: -er dancer, -ize specialize, -ly wetly, -ness closeness;
 - b) semi-productive: -ette kitchenette, -ward sky-ward;
 - c) non-productive: -ard drunkard, -th length.
6. Structure.
- a) simple: -er speaker, -ist taxiist;

b) compound –ical, ironical, -ation formation, -manship sportsmanship, ably/ibly terribly, reasonably.

According to their morphological composition we distinguish simple, derivate and compound nouns.

1. simple nouns are nouns which have neither prefixes nor suffixes. They are indecomposable: chair, table, room, map, fish, work.

2. derivative nouns are nouns which have derivative elements (prefixes or suffixes or both): reader, sadness, childhood, misconduct, inexperience.

Productive noun – forming suffixes are:

-**er**: reader, teacher, worker

-**ist**: communist, telegraphist, dramatist

-**ess**: heiress, hostess, actress

-**ness**: carelessness, madness, blackness, sadness

-**ism**: socialism, nationalism, imperialism

Unproductive suffixes are:

-**hood**: childhood, manhood

-**dom**: freedom

-**ship**: friendship, relationship

-**ment**: development

-**ance**: importance

-**ence**: dependence

-**ty**: cruelty

-**ity**: generosity

3. Compound nouns are nouns built from two or more stems. Compound nouns often have one stress. Many of the words in English are derived from Latin and Greek morphemes. In many cases terms taken from Latin or Greek retain the inflectional characteristics and gender from their original languages. Thus, the masculine singular form of "alumni" is "alumnus," while the feminine singular form is "alumna." This example also shows that despite the retention of these Latinate forms, particularly in "learned" language, they are often discarded in casual speech, and "alumni" has come to be a singular noun as well as a plural one.

Throughout the history of English new terms have been incorporated into the language through borrowing (from languages as varied as Latin, Greek, Scandinavian, Arabic, and many others) as well as through the application of morphological and derivational rules to existing terms and morphemes. Terms currently entering the language are called neologisms (from "neo" new and "log" word) [4; 137:79-93].

Lexical semantics may not be understood without a brief exploration of its history. Semantics as a linguistic discipline has its beginning in the middle of the 19th century, and because linguistics at the time was predominantly diachronic, thus lexical semantics was diachronic too- it dominated the scene between the years of 1870 and 1930. Diachronic lexical semantics was interested without a doubt in the change of meaning with predominantly semasiological approach, taking the notion of meaning in a psychological aspect: lexical meanings were considered to be psychological entities), thoughts and ideas, and meaning changes are explained as resulting from psychological processes. Structuralism and neostructuralist semantics: With the rise of new ideas after the ground break of Saussure's work, prestructuralist diachronic semantics was considerably criticized for the atomic study of terms, the

diachronic approach and the mingle of nonlinguistic spheres of investigation. The study became synchronic, concerned with semantic structures and narrowly linguistic.

Semantic structural relations of lexical entities can be seen in three ways:

- *Semantic similarity*
- *Lexical relations such as synonymy, antonym, and hyponymy*
- *Syntagmatic lexical relations were identified*

In language, term is the smallest element that may be uttered in isolation with semantic or pragmatic content (with literal or practical meaning). This contrasts with a morpheme, which is the smallest unit of meaning but will not necessarily stand on its own. A complex term will typically include a root and one or more affixes (rock-s, red-ness, quick-ly, run-ning, un-expect-ed), or more than one root in a compound (black-board, rat-race). Words can be put together to build larger elements of language, such as phrases (a red rock), clauses (I threw a rock), and sentences (He threw a rock too but he missed). The term may refer to a spoken word or to a written word, or sometimes to the abstract concept behind either. Spoken words are made up of units of sound called phonemes, and written terms of symbols called graphemes, such as the letters of the English alphabet. The ease or difficulty of deciphering a word depends on the language. Dictionaries categorize a language's lexicon (i.e., its vocabulary) into lemmas. These can be taken as an indication of what constitutes a "word" in the opinion of the writers of that language [5].

Bloomfield introduced the concept of "Minimal Free Forms" in 1926. Semantic definition: Leonard Words are thought of as the smallest meaningful unit of speech that can stand by themselves. This correlates phonemes (units of sound) to lexemes (units of meaning). However, some written words are not minimal free forms, as they make no sense by themselves (for example, the and of). Some semanticists have proposed a theory of so-called semantic primitives or semantic primes, indefinable terms representing fundamental concepts that are intuitively meaningful. According to this theory, semantic primes serve as the basis for describing the meaning, without circularity, of other terms and their associated conceptual denotations. In the Minimalist school of theoretical syntax, words (also called lexical items in the literature) are construed as "bundles" of linguistic features that are united into a structure with form and meaning. For example, the word "bears" has semantic features (it denotes real-world objects, bears), category features (it is a noun), number features (it is plural and must agree with verbs, pronouns, and demonstratives in its domain), phonological features (it is pronounced a certain way). The task of defining what constitutes a "word" involves determining where one term ends and another term begins—in other terms, identifying term boundaries. There are several ways to determine where the term boundaries of spoken language should be placed [6].

Some languages have particular rules of pronunciation that make it easy to spot where a term boundary should be. For example, in a language that regularly stresses the last syllable of a term, a term boundary is likely to fall after each stressed syllable. Another example can be seen in a language that has vowel harmony (like Turkish): the vowels within a given word share the same quality, so a term boundary is likely to occur whenever the vowel quality changes. Nevertheless, not all languages have such convenient phonetic rules, and even those that do present the occasional exceptions. In languages with a literary tradition, there is interrelation between orthography and the question of what is considered a single term.

Term separators (typically spaces) are common in modern orthography of languages using alphabetic scripts, but these are (excepting isolated precedents) a relatively modern development (see also history of writing). In English orthography, compound expressions may contain spaces. Examples are ice cream, air raid shelter, get up, and these must thus be considered as more than one term. (Ice,

cream, air etc. indisputably exists as free forms, the case of get is less clear.) In contrast, brownstone is spelt as a single term and would thus be considered as such for most purposes even though brown and stone are free forms. Vietnamese orthography, although using the Latin alphabet, delimits monosyllabic morphemes, not words. East Asian orthography (languages using CJK characters) also tend to delimit syllables (in the case of Chinese characters) or morale (in the case of kana) rather than full words. Hangul the Korean alphabet, delimits both syllables and words, by grouping graphemes into syllabic blocks but also adds spaces between terms.

Conversely, synthetic languages often combine many lexical morphemes into single terms, making it difficult to boil them down to the traditional sense of terms found more easily in analytic languages; this is especially difficult for polysynthetic languages, such as Inuktitut and where entire sentences may consist of a single term. In synthetic languages, a single term stem (for example, love) may have a number of different forms (for example, loves, loving, and loved). However for some purposes these are not usually considered to be different terms, but rather different forms of the same term.

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Rezyume: Maqolada zamonaviy ingliz tilining asosiy birligi sifatida atama muammosi ko'rib chiqiladi.

Резюме: В статье исследуется проблема термина как основной единицы языка современного английского языка.

Kalit so'zlar: til, paragraf, aspekt, o'ziga xos, grammatik, ma'no, axloqiy filologiya, bilim.

Ключевые слова: язык, абзац, аспект, конкретный, грамматический, смысл, морфология, знания.

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RESEARCH OF KARAKALPAK FOLK RIDDLES

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Summary. *This article deals with the research of riddles in Karakalpak and other languages. The scientific works in which the division of riddles into semantic types, their formal features is given are analyzed. Also, the problem of comparative learning of similar and different features of riddles in the studied languages is determined.*

Key words. *Folklore, riddles, comparative research, semantic types, formal differences.*

The people of Karakalpak, like other Turkic peoples, have a rich folklore works, and among them, the riddles, which are one of the oldest and most popular genres of folklore works, occupy an important place. Riddles were made related to people's life experiences, people's marriage events, traditions, thoughts and worldviews, all stages of development of society.

The riddles, among other folklore works, began to be studied by foreign scientists with great attention. As mentioned in the works of K. Maksetov and A. Tajimuratov, scientists like Muravin and Gladishev made ethnographic records of the Karakalpak people in the lower reaches of the Syr River during their journey from Orsk to Khiva in 1740-1742. In addition to this, P. Richkov, N. Karazin, Riza kuli Mirza, A. Kun and other scientific travelers collected examples of various genres of folklore works in Konirat, Chimbai, Kipchak, Petro-Alexandrovsk districts of Karakalpakstan. Among them, information about riddles, history and differences of its preparation was recorded [1.145].

Since 1920s and 1930s, collecting and researching the riddles reached a new level, and special works on this field began to appear. The well-known professor N.A. Baskakov came to Karakalpaks in 1926 and conducted scientific research. In 1951, he published a two-volume book entitled "Karakalpak language" based on the materials he had collected for many years. In the first volume of this book, there are more than 150 riddles about nature, people, clothes, food, animal world, birds, insects, fruits and vegetables, household chores and musical instruments. However, in this work, puzzles are not classified thematically [2].

In 1929, in the expedition led by A.A. Sokolov, K. Ayimbetov and O. Kojurovs went on an expedition to Konirat and Moinak districts and collected a number of materials related to folk poetry, including riddles, and published them in the first volume of the collection "Karakalpak Folklore".

In the 60s of the last century, the work of collecting riddles developed. In this, especially, the role of the employees of the Karakalpak folklore sector of the Institute of History, Language and Literature named after N. Daukaraev of the Kk Br of the Academy of Sciences of the Republic of Uzbekistan was important. A clear proof of this can be the information in the scientists' field notes who participated in the folklore-expeditions, which are regularly organized every year. They not only collect materials relevant to them, but also achieve the active participation of all schools, educational institutions and representatives of other public associations of our republic - researchers, artists, writers, students, and teachers in this work.

At the same time, among the above mentioned Russian scientists, several important works were done by local scientists. In particular, well-known science enthusiasts N. Daukaraev, K. Ayimbetov, N. Japakov, K. Maksetov, A. Tajimuratov expressed scientific opinions and carried out research on riddles. In K.Maksetov and A. Tajimuratov's "Karakalpak Folklore" published in 1979 the information about the terminological meaning of the word riddles, how it appeared and its place in society, the

reflection of the people's life and daily life, as well as the state of research in the Karakalpak language is given. Examples of riddles related to various topics are presented and analyzed. In this work, it was also discussed about the common views on folklore and other aspects of the folklore works.

Among the Karakalpak scientists, A. Alimov and S. Abbazov have a special place among the scientists who especially worked with riddles. In 1963, the collection of "Riddles" prepared by two scientists was published, and in 1970, the collection of "Riddles" prepared by A. Alimov was published. The third volume of the 20th volume of "Karakalpak Folklore", which was published on the occasion of the multi-year works of folklorists, is dedicated to Karakalpak folk riddles. The riddles included in this collection are divided into seven large groups related to nature, human, animal world, plants, and household items, common-used and riddles formed in the Soviet era, these groups are also divided into small thematic groups on their own. A. Alimov, who prepared this collection for publication and wrote a preface to it, wrote a research work on riddles, defended his candidate's thesis on this topic and published monograph entitled "Karakalpak Folk Riddles" as a book in 1990. In 1996, his compact version was reprinted in twenty-eight pages in book form. In this book, a general understanding of riddles, its specific features are revealed, and riddles are divided into thematic groups, such as riddles created related to nature, humanity, animal world, plants, house holding, study and knowledge, and new kind of question riddles [3].

Samples of Karakalpak folk riddles are presented in volumes 96-97 of the 100-volume "Karakalpak Folklore". In this collection, this type of folklore works is divided into two different thematic groups, such as riddles about the world of humanity and the world of nature [4].

In recent times, great attention has been paid to the linguistic study of the language of folklore works and works created by famous wordsmiths. Linguistic peculiarities of creativity of writer and poets and some folkloric genres were revealed by the scientific researchers. In addition, in recent years, the subject of lingua-folkloristics, a branch that special deals with complex learning of the language of folklore works has been appeared in the Karakalpak linguistics.

In the Karakalpak linguistics, no special research work was conducted to determine the linguistic differences of riddles compared to other folklore genres. Only some articles were published in this direction. For example, we can mention E. Naubetullayeva's article "noun sentences in Karakalpak Riddles" written in this direction in 2008. In this article, the expression differences of noun sentences in Karakalpak riddles, its structure is given in the basis of the semantic-stylistic analysis and the methods of comparative description of language facts. At the same time, in the course of research, the differences between noun sentences in riddles and literary language were shown [5.117].

From the point of view of literature, the articles such as "Karakalpak folk riddles" in 1964 by A. Alimov, "On the problem of some historical connections of riddles" in 1967, "Genre peculiarities of Karakalpak riddles" in 1972, "The riddle and its importance in youth education" by Z. Abdijalieva in 2005. , in 2022 "Depiction of natural phenomena in Karakalpak folk riddles" by A.K. Hamzaev was published.

In A. Alimov's article entitled "On the problem of some historical connections of riddles", the formation of riddles, the problem of their relationship with the people's society and the reasons for their multivariate nature, as well as the problems of meeting similar riddles in related Turkic peoples are explained with the help of examples of riddles [6.151] . And in the article "Genre features of Karakalpak riddles" it was mentioned about the distinctive features of riddles, distinguishing them from other genres, the performers of riddles, in which centers they are told, and the formal features [7.79].

Z. Abdijalieva's article "Riddles and its importance in youth education" focused on the term "riddles" and explained its meaning in a broad way. The role of riddles in children's education, their

contribution to spiritual and mental development is explained with the help of several examples. Also, the concreteness and clarity of the riddles, the fact that it is aimed at showing to the depth of life, its didactic influence on the child's mind, the educational quality of the riddles are mentioned, and the opinions are proved with relevant examples [8.106].

In A.K. Hamzeev's article entitled "Depiction of natural phenomena in Karakalpak folk riddles" the comments on the state of research of the riddle genre are given and main attention focuses on riddles related to natural phenomena from the thematic point of view. It is noted that these types of riddles talk about the mysterious world that surrounds us, i.e. almost all the sides of natural phenomena are revealed enigmatically and artistically with the help of folk wisdom and ingenuity [9: 202].

At the present time, in linguistics, the study of the regularities of one language in comparison with the regularities of another language is being learnt in many languages. However, such studies are found in a small number in the Karakalpak language, and we hardly meet the works on the comparative study of riddles. As for the related Turkic languages and other languages, on this field, the articles such as "Similar riddles of the Uzbek and Kyrgyz people" by G.A. Temirovna, "Kazakh and Chinese riddles: the reflection of color meanings in the language" by G.K. Kortabaeva, J.E. Muratbekova, E.V. Nikolaeva and A.I. Savelva's "Nature Concept in Russian and English Metaphorical Riddles", N.I. Faizullina's "Explanation of Comparative Relationships in Folk Riddles (as an example of Russian, English, Tatar Riddles)", A.O. Dubinkina and A.N. Beresneva's "Comparative analysis of English and Turkmen riddles with number 1" by A.N. Beresneva, "the phonetic structure of Yakut riddles" by V. V. Filippova have been published.

G.A. Temirovna's article "Similar Riddles of the Uzbek and Kyrgyz People" discusses the genre of riddles, its peculiarities, its meaning in our life, and analyzes the riddles in the Uzbek and Kyrgyz languages [10.72]. Along with showing the similarities of the riddles of the two countries, the reasons for their similarity are also discussed. At the same time, it has been shown with examples that due to the comparative-typological study of Uzbek and Kyrgyz riddles, it is possible to observe the existence of many similarities in their folklore. For example: in the Uzbek language riddles:

Otasi kótaram,
Onasi yorga,
Ógli qóshiqchi,
Qizi óyinchi. (ko'prik, suv, baqa, baliq)

In the riddles of the Kyrgyz language:
Atasi moldo,
Apasi jorgo,
Qızı biychi,
Balasi ırchı. (kópúró, suu, baliq, baqa)

These riddles are very similar to each other, but only there is a case that the bridge is assimilated to two objects. In the Uzbek language, the bridge is assimilated to *kóterem* (lift), while in Kyrgyz, it is assimilated to *moldo*, that is, a mullah. In the Uzbek language, the word "*kóterem*" is used to express the uniqueness of the bridge, which does not move anywhere, but can carry all people, while in the Kyrgyz language, the word "*moldo*" is similar to the word "*jorgo*" in the second line of the riddle, and it is used in connection with the fact that it sits in one place, hears and understands the problems of the crowd.

Also, in this work, the similarity of the riddles of the two countries is related to their belonging to the group of related Turkic languages.

Teg desam, tegmaydi,

Tegma desam, tegadi.

Since the state of the parts of speech in the pronunciation of the words given in the riddle text is similar in both countries, the answer is also similar. But if we tell by translate this riddle into Russian word for word, and then we can see that its content would be completely corrupted and the answer would be incorrect.

G.K.Kortabaeva and J.E. Muratbekova's article entitled "Kazakh and Chinese Riddles: Reflection of Color Meanings in the Language" has been studied the riddles in Chinese and Kazakh languages, which are two types of genealogical language groups from the ethnolinguistic point of view. It is shown that colors are actively involved in riddles in both languages, red, blue, green, black, and white colors appear in both languages, but they are often used not in the lexical, nominative sense, but in derivative or figurative meanings, as a symbolic sign. The meanings of each colors in two countries are analyzed with the help of examples [11.44].

E.V.Nikolaeva and A. I. Savelva's article entitled "Concept of Nature in Russian and English Metaphorical Riddles" comparatively studies Russian and English riddles, and metaphorical riddles in depicting nature are learned on the example of these two languages. The relevance of this work is due to the fact that there are few works that define the symbolic appearance of nature in the genre of metaphorical riddles, related to the same theme [12.116].

N.I.Faizullina's article entitled "Explanation of comparative relations in folk riddles (in the example of Russian, English, Tatar riddles)" comparatively revealed the differences of word combinations in the corpus of Russian, English and Tatar folk riddles. The study was carried out in terms of semantics-syntax analysis of folklore texts [13.58].

A.O.Dubinkina and A. N. Beresneva's article entitled "Comparative analysis of English and Turkmen riddles with the numeral "one" analyzes English and Turkmen riddles, learns the relative signs of the nomination "one" / "bir" using the examples of units of these languages, and the national-cultural peculiarities of puzzles with numeral "one" are revealed [14.70].

V.V.Filippova's article entitled "The phonetic structure of Yakut riddles" talks about the Yakut riddles, which included the phonetic code in which the denotator's name or visible signs are encrypted [15.110].

Such differences and similarities can be seen in riddles, which are one of the rich folklore works of the Karakalpak people. Comparative determination of their differences requires scientific research. Comparative study of Karakalpak folk riddles not only with Turkic languages, but also with other unrelated languages serves to reveal its own sides. Studies in this direction have a significant impact on comparative study of linguistics.

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Rezyume: *Ushbu maqolada qoraqalpoq va boshqa tillardagi topishmoqlarning tadqiqi masalasi o'rganilgan. Topishmoqlarning semantik turlari, ularning shakliy xususiyatlari berilgan ilmiy ishlar tahlil etilgan. Shuningdek, topishmoqlarning tadqiq etilgan tillardagi o'xshash va farqli jihatlarini qiyosiy o'rganish masalasi aniqlangan.*

Резюме: *Данная статья посвящена исследованию загадок в каракалпакском и других языках. Анализируются смысловые типы загадок, их формальные особенности. Также определяется вопрос сравнительного изучения схожих и разных аспектов загадок в изучаемых языках.*

Kalit so'zlar. *Xalq og'zaki ijodi, topishmoq, qiyosiy tadqiq, semantik turlari, shakliy xususiyati.*

Ключевые слова. *Народное творчество, загадка, сравнительное исследование, смысловые типы, формальные признаки.*

THE EMERGENCE OF THE AFGHAN ISSUE IN CONTEMPORARY U.S. FOREIGN POLICY

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Summary: *The article conducts research into the historical foundations for the formation of the United States of America's interest in Afghanistan within the context of foreign policy. The author analyzes Washington's actions regarding Afghanistan and discusses the strategic approaches developed in the Oval Office.*

Keywords: *United States, Afghanistan, foreign policy, relations, Taliban.*

INTRODUCTION

The early relations between the United States and Afghanistan evolved within the complex dynamics of international diplomacy during an era marked by political upheavals, shifting alliances, and Cold War rivalries. Following Afghanistan's declaration of independence from British influence in 1919, the United States recognized Afghanistan as a sovereign state and established diplomatic relations. While Afghanistan maintained neutrality during World War II, it engaged in extensive trade relations, capturing the geostrategic attention of the United States.

The onset of the Cold War introduced a new dimension to U.S.-Afghan relations. As the Soviet Union transformed into a global power, the United States sought to expand its influence in the region to counter communist expansion. During the 1950s and 1960s, the United States provided Afghanistan with assistance in economic, technical, and military training to support its efforts in development and modernization. This included contributions to infrastructure projects and educational reforms.

The Saur Revolution of 1978 marked a pivotal moment in Afghanistan's domestic politics and its external relations with the United States. The overthrow of King Zahir Shah and the rise of the communist People's Democratic Party of Afghanistan raised concerns among American policymakers. Subsequent Soviet intervention in December 1979 heightened tensions between the United States and Afghanistan. The presence of Soviet forces in Afghanistan was perceived by the United States as a threat to its interests in the region, prompting the commencement of open and extensive support to Afghan mujahideen by the United States. The Afghan resistance, backed by U.S. assistance, ultimately led to the withdrawal of Soviet troops in 1989.

Following the withdrawal of Soviet troops from Afghanistan, the country receded from the foreign policy agenda of the United States. Afghanistan was left in a state of devastation, desperately in need of economic assistance to, at the very least, stabilize the situation. However, both George H.W. Bush and Bill Clinton exhibited passive indifference to the Afghan crisis. The vacuum that emerged in the 1990s was filled by the Pakistan-backed Taliban, which sought to secure a strategically advantageous position vis-à-vis India. A relatively small group of them departed from the Pakistani city of Quetta and crossed into Afghanistan, rapidly gaining followers and, by mid-1995, capturing several southern provinces of the country. In the mid-1990s, it was challenging to categorize the Taliban as a purely political group. The Taliban espoused the slogan of ending the long-standing conflict in the country through armed means and establishing a "true Islamic state" (with an image of a Kalashnikov in one hand and the Quran in the other).

In our view, the emergence of the Taliban movement was not solely a result of Afghanistan's internal dynamics; international factors also played a significant role. In this context, it is pertinent to

mention the economic interests of several countries, notably U.S. and Saudi Arabian oil companies, which became involved in the competition for energy resources in the Caspian region and had plans for the Turkmenistan-Pakistan Gas Pipeline.

Furthermore, in August 1996, the Chairman of the Senate Subcommittee on Foreign Relations, H. Brown, during his visit to Afghanistan, held meetings with military commanders, including Rabbani, Masud, and Dostum. He then proceeded to Kandahar, where he met with the leader of the Taliban, Mullah M. Negotiations were conducted with Mullah Omar under the auspices of Pakistan's Minister of Interior, N. B. It is worth noting that the primary sponsors of the Taliban movement were the United States, Pakistan, and Saudi Arabia. The Taliban utilized Saudi funds, Pakistani weaponry, and American political support.

The Taliban movement swiftly gained control over a substantial portion of Afghanistan, and in our assessment, this was primarily due to its stark departure from preceding governmental structures. The movement resolutely opposed the Afghan tribal system, instead anchoring itself in religious, rather than ethnic, unity. In July 1998, the bombings of the U.S. embassies in Kenya and Tanzania by associates of Osama bin Laden led to a shift in the U.S. foreign policy stance toward Afghanistan. In response to bin Laden's refusal to extradite individuals sought by the United States, American forces launched missile strikes in August of the same year against his bases and camps in the provinces of Nangarhar and Khost.

In this context, the American statesman, diplomat, and international relations expert, Henry Kissinger, asserted: "American foreign policy reflects the belief that the principles of its domestic policy are universally applicable and always beneficial; The real issue for American foreign policy is not foreign policy in the traditional sense, but a project of spreading values to which all other countries should aspire." In our view, this statement succinctly encapsulates the essence of U.S. national interests in other nations, as well as the objectives and tasks associated with their implementation.

Since the mid-20th century, the National Security Strategy (NSS) of the White House administration has been developed with the aim of identifying national interests, threats to those interests, as well as the methods and means to address them in U.S. foreign policy. American diplomat George Kennan formulated the national security strategy during the heart of the Cold War and published it in influential American publications. It is noteworthy that renowned scholars and statesmen such as Henry Kissinger and Zbigniew Brzezinski contributed to the fulfillment of this task. The National Security Strategy is a federal statute, regarded as the primary official external political document of the President of the United States, and it is presented to Congress annually. The preparation of the National Security Strategy involves the National Security Council within the administration of the U.S. President. The document's content includes the overarching directions of foreign policy, the nation's external military and security obligations, as well as an analysis of the existing national defense capabilities.

Some American experts emphasize that the U.S. strategies regarding Afghanistan, formulated by the administrations of three presidents (George W. Bush, Barack Obama, and Donald Trump) in the 21st century, appear to resemble presidential speeches more than the classic strategy devised by George Kennan. The National Security Strategies (NSS) released by the administration of President George W. Bush in 2002 and 2006 delineated the directions and trends in U.S. foreign policy during the initial phase of the American military involvement in Afghanistan following the events of September 11, 2001. These strategies placed particular emphasis on Afghanistan, which had become a focal point of instability globally, both as a subject and a threat to international security.

On September 20, 2002, the U.S. National Security Council declared the fight against international terrorism as a top priority for the current government among global threats and risks. Following the attacks by the international terrorist organization Al-Qaeda, the United States of America announced the application of all forms of military power, including armed forces, law enforcement agencies, and intelligence services, to protect its citizens. In this strategy, often referred to as the "Bush Doctrine," U.S. foreign policy towards Afghanistan, alongside the battle against international terrorism, also encapsulated the objective of nation-building and the establishment of a democratic state.

During the implementation of the tasks outlined in the "Bush Doctrine," changes were observed in the regional policy of the United States, starting from the end of 2005. At the dawn of the 21st century, the United States viewed Central Asia as a territory inhabited by five independent states and aimed to comprehensively address security and cooperation issues in this macroregion. Under the leadership of F. Starr, the director of the Institute of Central Asia and the Caucasus at Johns Hopkins University in Washington, the "Greater Central Asia" project was launched, with the goal of uniting Central and South Asia into a unified system of cooperation.

Taking into account demographic and other natural factors between the two regions, based on new approaches, the project "Greater Central Asia" was renamed to "Greater South Asia" by the U.S. Department of State. As noted by the expert in the study of U.S. foreign policy in the region, V. Paramonov, at the beginning of the 21st century, the "peak of conceptual understanding of the importance of the Central Asian region was observed in the framework of U.S. National Interests."

Due to the urgent need for Central Asian transit facilities to support coalition military operations in Afghanistan, the United States actively sought measures to establish alternative transit routes through regional countries. However, these efforts did not yield the expected results.

However, the implemented efforts did not yield the expected results. In this context, the renowned scholar Nazif Shahani, analyzing the outcomes of the recent foreign policy pursued by the United States in Afghanistan, expresses the following viewpoint: "The United States and its international allies' policy in Afghanistan over the past eight years has proven to be incorrect and counterproductive in achieving the promised security, stability, and democratic governance. The misjudgments of the U.S. government's top advisers, decision-makers, and many Afghan and Pakistani interlocutors have contributed to the resurgence of the Taliban and the fragility of the Karzai government and the international project to rebuild Afghanistan. Moving forward, the Obama administration should adopt a more nuanced strategy, based on a thorough understanding of the historical context and a culturally sensitive approach, to improve the dysfunctional governance system in Afghanistan, in addition to increasing military and economic assistance levels beyond the counterproductive levels inherited from the Bush administration."

This perspective highlights the need for a revised and culturally sensitive strategy, emphasizing governance improvement and increased support in Afghanistan, departing from the flawed policies of the past eight years.

CONCLUSION

In summary, it is imperative to assess the historical and contextual implications of the official strategies pursued by the U.S. government concerning Afghanistan as follows:

The U.S. engagement in the Afghan conflict represents the longest-lasting war in U.S. military history and has involved a protracted struggle against various armed groups and insurgencies, contributing to the overall complexity of the security environment. Since the outset of the conflict in 2001, Afghanistan has become a battleground for a multitude of security forces and rivalries backed by Western and regional powers.

Furthermore, the U.S. strategies in Afghanistan have aimed at mitigating the expanding influence of Russia and China in the region, driven by long-term strategic interests. These strategies have been instrumental in pursuing far-reaching strategic benefits while failing to fully consider the resolution of the Afghan conflict as an immediate and definitive priority.

These observations underscore the need for a comprehensive reevaluation of U.S. foreign policy towards Afghanistan, given the historical significance, geopolitical complexities, and enduring consequences of this engagement.

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Rezyume: *Ushbu maqolada Amerika Qo'shma Shtatlarining tashqi siyosat Afg'oniston vektorini paydo bo'lishining tarixiy asoslari bo'yicha tadqiqot olib borilgan. Muallif tomonidan Vashingtonning Afg'onistonga nisbatan tashqi siyosati tahlil qilingan va ishlab chiqilgan strategik yondashuvlar ko'rib chiqilgan.*

Резюме: *В статье проводится исследование исторических оснований для формирования интереса Соединенных Штатов Америки к Афганистану в контексте внешней политики. Автор анализирует действия Вашингтона в отношении Афганистана и обсуждает разработанные в Овальном кабинете стратегические подходы.*

Kalit so'zlar: AQSH, Afg'oniston, tashqi siyosat, munosabatlar, Tolibon.

Ключевые слова: *Соединенные Штаты, Афганистан, внешняя политика, отношения, Талибан.*

УДК: 81'22

LEXICAL CHARACTERISTICS OF TELEVISION CAPTIONS

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Summary: *Vocabulary is a holistic, complex system based on certain laws. It should be noted here that vocabulary directly or indirectly expresses existence. Changes in society, changes in the material and spiritual life of the people, first of all, are reflected in vocabulary. Because words denoting newly emerging things, events and processes serve as a means of enriching vocabulary, and non-use of other things, events and processes in the life of society leads to the obsolescence of these concepts and the words denoting them. Studying the lexical features of screen recordings improves the effectiveness of language use on television.*

Key words: *vocabulary, screen recordings, properties, neologisms, archaisms.*

Humanity has been using language as a means of communication throughout its historical development. Speech, which is the manifestation of language, can be said to be a type of communication between people using linguistic devices formed according to certain rules. Speech activity includes factors such as forming an opinion using linguistic means, understanding linguistic devices. In this regard, the level of lexicology, which checks the meaning of the word, is of great importance. Lexicology has been studied by linguists for many years as a wealth of vocabulary and a lexical system. After all, the word and its meaning have always been one of the most pressing issues of linguistics.

Also, one of the changes in the lexicon is that words in general use are included in the restricted layer, and words of a restricted layer are included in the range of words in general use. Lexical means, in fact, all the words and vocabulary of a certain language. Among linguists, it is customary to include phrases in the lexicon, as the meaning is equal to one word: "The vocabulary of a language is called the lexicon in linguistics, it includes all the words in a particular language and the static constructions (phrases) with a figurative meaning consisting of the connection of these words" [1:125]. At the same time, "the term lexicon can be applied to a separate layer of words of the language, to all words used by one creator, or to a work" [2:106].

There is no pure language in the world, including words borrowed from languages that are not related to Uzbek. The Persian-Tajik, Arabic, and Russian languages can be mentioned as the main sources of word acquisition in the Uzbek language. At present, words from English and other languages are being directly adopted. It seems that borrowed words are an integral part of the vocabulary of the modern Uzbek language. The gradual development of the language shows that the educated layer is getting richer due to international words. For this reason, the active use of native words in television captions is considered a norm. Latin words such as *president, company, forum, vaccine, chamber, investiture, final, medal, memorandum, station, function, rector, index, director* used in the analyzed screen recordings; *electricity, energy*, as Greek; English, such as *business, champion, holding*; French like *cigarette, billionaire*; Arabic, such as *negotiation, ceremony, proposal, communication, winner, award, team*; Persian words like *host, leader, program* prove our point. Among them are international words such as *president, company, forum, vaccine, camera, investment, final, medal, memorandum, station, rector, index, director, electricity, energy, business, champion*.

It is known that word acquisition is different from the case of using words of another language. Acquisition of words is a natural process, and inappropriate use of a word of another language is a prohibited phenomenon from the linguistic point of view. Because “in practice, there is no need to use such words. It only reflects the nature of the speech of some individual” [3:173]. The purity of the language does not prohibit the acquisition of words, but the use of words of another language instead of words that have an alternative in their layer. “The purity of the speech is manifested in a unique way in the artistic speech. In such a speech, dialectal words, phrases, grammatical forms, words and phrases that have not been acquired in the Uzbek language can be used for various purposes” [4:49]. For example, one of the television captions used on the TV channel “Uzreport TV” is formatted as follows: “Uzavto Motors awarded the winners of the creative competition” [5].

The use of the word “competition”(konkurs) in this sentence is barbaric from the point of view of linguistics. After all, this word can be translated into Uzbek as “view”(ko‘rik) and even “view-match”(ko‘rik-tanlov). In the above sentence, the word “choice”(tanlov) should have been used. It is desirable for journalists to observe the standards of literary language and professional ethics.

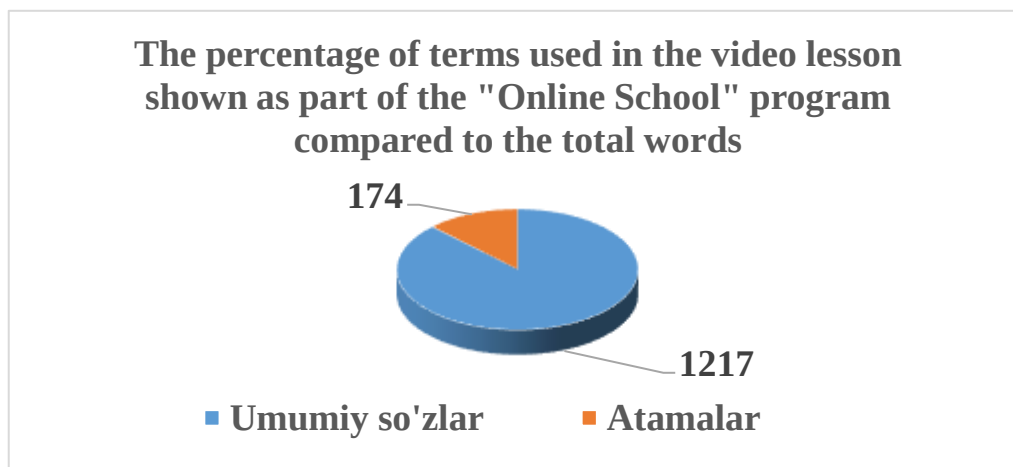
In general, it is common to use units that have not mastered the Uzbek language in screen recordings based on the request of the television channel audience. The words representing the names of enterprises and organizations such as “SX Group”, “Nebras Power”, “Al-Mirqab capital”, “Honda” used in the analyzed screen recordings prove our point. Due to the fact that such words do not have a place in the lexicon of the Uzbek language, we can observe the individual approach of the creators of the television channel, who used them as a script, to their spelling.

Analyzing the lexical features of specific language units, it is necessary to comment on their relation to time. As noted, the language and its vocabulary are constantly changing and developing. In particular, the use of old or new words in screen notes will be related to the images shown in the television program and their essence. For example, if the movie being shown is in the fantasy genre, and the events in it are planned to take place in the future, then newly appeared words are used. In the screen notes prepared for this movie, of course, new words, sometimes not yet in the lexicon, are used. Words such as *innovek*, *electric car*, *transporter*, *transformer*, *offside*, *elysium*, *nestone*, *cover* used in the analyzed screenshots prove our opinion. The regular use of such words in voiceover and screenwriting on television may ensure that some of them enter our lexicon as literary standards. This also shows the importance of television and screen recordings, which are one of the means of expression, in the life of society.

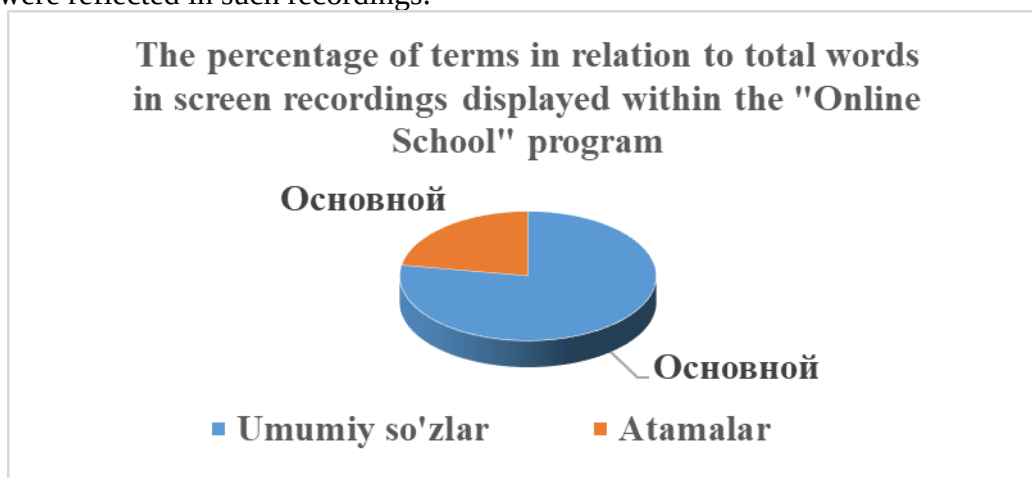
The use of obsolete words, as well as neologisms, is directly related to the characteristics of the television program. It is known that archaic and historical words are used in artistic works in order to express the spirit of the past more clearly or to ensure the upliftment of speech. Using the word “bashar” instead of “person”, its archaic alternative, will undoubtedly increase the impact of the speech. Words and phrases such as *ko‘ngil rozim*, *Jayhun*, *sabo*, *sarvi xiromon* used in the analyzed screen recordings prove our opinion. In general, obsolete words are words that are no longer used in modern speech for certain reasons. “We can understand and use these words through their modern linguistic synonyms. But nowadays some obsolete words have no replacement synonyms, and we don't feel any need for them” [6:552]. It is understood that in historical documentaries and feature films, historical words that do not have synonyms among modern words are used more often, while in television programs that require artistry and creativity, archaisms are used that have synonyms in the modern lexicon.

When analyzing the restricted layer words used in screen recordings, it is impossible to avoid the terms of a certain field and the words of profession.

Depending on the nature of the shows and films shown on television, and their purpose, the weight of terms and professional words in the screen recordings varies. For example, it is taken for granted that many terms are used in educational television programs. In entertainment programs, their amount is relatively small. In the video lessons of the "Online-school" program shown on television, it was shown that the amount of terms in relation to the commonly used words is around 10-15 percent. It can be shown in the table as follows:



Their weight in screen recordings increased to 30%, because the terms reflecting the essence of the lesson were reflected in such recordings:



At this point, it should be mentioned that the terms can be actively used not only in educational programs, but also in advertising programs that have an important place on television. In advertising texts, the terms ensure the reliable output of information related to a specific product or service field for buyers and users. This is especially useful in the advertising of medicines, cosmetics, and food products. We can observe a similar situation with the term "sublimated" used in a popular coffee advertisement. The soundness of the term, the fact that it is not understandable to the general public, causes a positive change in the opinion of customers about the product. It gives the impression that it has passed through difficult processing steps. All this will increase the interest in the product. Actually, this term is a simple term meaning "the process of changing a substance directly from a solid state to a gas state without changing to a liquid state" [7]. But copywriters (creators of advertising text) are not interested in using such an understandable sentence. At the same time, in some advertisements, terms

may be displayed in imperceptible writings. This is observed in cases that are not related to the characteristics of the product shown in the advertisement, but are related to the legal requirements for advertising. For example, in the advertisement of the drug “Cupen”, medical terms related to its composition, such as *diclofenac*, *methylsalicylate*, *menthol* are displayed for a few seconds as small screen notes. [8]. It is clear that the presence of the listed substances in the product does not affect its sales. But according to the Law "On Advertising" in the advertising of drugs, its content must be reflected in the screen notes [9].

Information about taboos and euphemisms are used side by side in linguistic sources. This should be accepted as a natural state. Because these events are a process that takes place with the appropriate choice of words for speech. The ability to choose words and phrases suitable for the speech situation requires excellent knowledge of all areas of linguistics. After all, “understanding, distinguishing, choosing and using words requires knowledge and understanding. It takes knowledge, discernment, and logical thinking to determine appropriate and inappropriate use” [10:27]. In this sense, being able to replace some rude words and expressions with suitable alternatives in the screen recordings also requires the creators of the television show to have a high level of linguistic knowledge. Modern society is distinguished by the fact that it enjoys the results of the policy of freedom of information, and has the opportunity to quickly obtain information about the events happening in our country and in the world. For this reason, along with other users, the audience of television viewers is also in demand. In such a situation, journalists have to avoid providing information to users in a constant, standardized form, and to provide certain information in a form that is acceptable to users. That's the only way the television show will get a place in the hearts of the viewers. In addition, the fact that television is broadcast on a national scale, and sometimes has an international audience, shows how important it is to use euphemisms. Euphemisms are one of the tools that ensure softness and civility in journalistic speech. It should serve the popularization of speech culture among the population in the form of television viewers. “In journalism, euphemisms are considered as an important tool to influence the audience and communicate with them”.

It can be a clear example in the screen recordings used on television, the use of words and phrases such as “victim” instead of “dying”, “death” and “injured” instead of “broken arm” or “leg” and “arrested” instead of “imprisoned” are euphemisms in the speech of journalists.

The analysis of the lexical features of the screen recordings shows that when creating such texts, journalists focus on influencing the television viewers and gaining their attention. Therefore, lexical tools also serve to reveal the intended purpose of journalists, television shows or films. Some of the follies in the creation of screen recordings occur due to the desire to attract attention, to quickly and clearly convey information to the television viewer, while some of them appear due to the creators' disregard for the standards of the literary language.

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Rezyume: *Lug'at ma'lum qonuniyatlarga asoslangan yaxlit, murakkab tizimdir. Bu yerda shuni ta'kidlash kerakki, lug'at to'g'ridan-to'g'ri yoki bilvosita mavjudlikni ifodalaydi. Jamiyatdagi o'zgarishlar, xalqning moddiy va ma'naviy hayotidagi o'zgarishlar, eng avvalo, lug'atda o'z ifodasini topadi. Chunki yangi paydo bo'lgan narsa, hodisa va jarayonlarni bildiruvchi so'zlar lug'at boyligini boyitish vositasi bo'lib xizmat qiladi, jamiyat hayotidagi boshqa narsa, hodisa va jarayonlardan foydalanmaslik esa bu tushunchalar va ularni bildiruvchi so'zlarning eskirishiga olib keladi. Ekran yozuvlarining leksik xususiyatlarini o'rganish televideniada tildan foydalanish samaradorligini oshiradi.*

Резюме: *Лексика – это целостная, сложная система, основанная на определенных законах. Здесь следует отметить, что лексика прямо или косвенно выражает существование. Изменения в обществе, изменения в материальной и духовной жизни народа, прежде всего, отражаются в лексике. Потому что слова, обозначающие вновь возникающие вещи, события и процессы, служат средством обогащения лексики, а неиспользование других вещей, событий и процессов в жизни общества приводит к устареванию этих понятий и слов, их обозначающих. Исследование лексических особенностей экранных записей повышает эффективность использования языка на телевидении.*

Kalit so'zlar: *lug'at, ekran yozuvlari, xossalar, neologizmlar, arxaizmlar.*

Ключевые слова: *лексика, экранные записи, свойства, неологизмы, архаизмы.*

LEGAL NATURE OF ACQUIRING CONTROL OVER THE CORPORATION

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Summary: *The article discusses the emergence and development of corporate governance law, the concept of corporate governance, its content, the theoretical foundations of corporate governance, as well as the features of corporate governance. Important issues related to corporate activities were also thoroughly examined.*

Key words: *corporate governance, joint stock companies, corporate securities, corporate regulation, corporate governance code*

Corporate governance was formed as a result of the necessity of running a large business. Naturally, a long-term process of formation of corporations took place before that. At a certain stage, the international community was forced to develop common standards and templates that would allow for the simplification and uniformity of the management processes of corporate structures regardless of their location. Analyzing the global trends in the formation of corporations, experts distinguish three main stages. Each stage reflects the characteristics of corporations formed at that time in society. Corporations that emerged during the Industrial Revolution at the beginning of the 20th century were considered the property of their owners. They were considered to serve only the purpose of providing a return (effectiveness) commensurate with the invested funds.

The theoretical foundations of corporate management cover the elements of firm management and model the development trends of a firm with a defined management and production organizational structure to a multi-profile large business [1].

Mechanisms of corporate governance work on the basis and framework of certain rules, norms and standards developed in the circles of state regulatory bodies, judicial bodies and businessmen. This set of rules, norms and standards forms the institutional basis of corporate governance. When talking about corporate legislation, it is permissible to first dwell on the relevant articles of the Constitution. According to articles 53-54 of the Constitution of the Republic of Uzbekistan, property in various forms forms the basis of the economy of Uzbekistan aimed at the development of market relations. Taking into account the primacy of consumer rights, the state guarantees freedom of economic activity, entrepreneurship and labor, equal rights of all forms of property and legal protection [2]. Another main document related to corporate legislation is the Civil Code of the Republic of Uzbekistan. Chapter 4 of this Code contains the concept of legal entities, types, their founding documents, creation, state registration, reorganization, liquidation, including bankruptcy, liability, types of commercial organizations, their legal status, rights and obligations, and corporations. Other similar important rules related to the activity are reflected.

Other relevant articles of this Code also contain many norms regulating corporate legal relations. In addition, the Tax Code of the Republic of Uzbekistan regulates the types of taxes and other mandatory payments arising from the activities of citizens and legal entities, including corporations, the procedure for their calculation and payment to the State budget and state special funds, and the consequences of not fulfilling tax obligations. The Customs Code sets out the basic rules regarding the transportation of goods and vehicles through the customs border of the Republic of Uzbekistan by these subjects, the procedure for collecting customs fees from them, customs clearance, customs control, as well as liability for violations of customs legislation.

It should be noted separately that the term corporate legislation includes not only substantive legal norms, but also procedural legal norms that determine the procedure for protecting the rights and interests of corporations through court. In this sense, the relevant legal norms recorded in the Economic Procedural Code of the Republic of Uzbekistan can be considered as a manifestation of the norms of corporate legislation. In particular, according to paragraph 5 of the first part of Article 25 of this Code, cases on corporate disputes specified in Article 30 of this Code, with the exception of labor disputes, are referred to the economic court. Main links (structure of shareholding rights):

I. Norms and rules of state law - issued by the state, regulate the activities of joint-stock companies (centralized norms). These include company laws, securities laws, shareholder and investment protection laws, bankruptcy laws, tax laws, etc.;

II. Norms enforced by shareholding societies and regulating its internal life (shareholder corporate norms): mutual agreement on voluntarily accepted standards of corporate governance and internal norms defining the procedure for their implementation at the company level (requirements for listing of corporate securities, codes and recommendations on corporate governance) ;

III. Norms given in the so-called organizational contracts, that is, in agreements aimed at establishing, continuing, terminating (in other words, organizing) business relations with other parties;

IV. Community practice and business culture.

Corporate law is a system of rules developed in an enterprise, which expresses the will of interested parties and regulates various aspects of the organization's activities.

Signs of corporate law:

- corporate law consists of norms, i.e. rules of mutual relations of a general nature;
- corporate law forms a system of norms regulating all aspects of the organization's activity;
- corporate norms are mandatory for every member of the organization, every employee of the enterprise;

- corporate norms are usually expressed in written form, and corporate documents serve as a form of their establishment;

- corporate norms are accepted in the enterprise and represent the will of a separate independent union team;

- provided by coercion when corporate norms are violated.

Corporate regulatory documents must meet the following requirements:

- reflect the object's truthfulness;
- does not contradict the current legislation;
- to be understandable for all members and employees of the company;
- to have a certain structure without creating a chaotic set of norms;
- to have all the necessary requisites.

Global standards of corporate governance:

- international standards of financial reporting (the second half of the 90s of the 20th century);
- The World Bank's global program for improving the state of corporate governance is aimed at significantly improving the national systems of corporate governance and disclosure of information about the activities of companies in different countries (1998);

- Principles of Corporate Governance adopted by the United Nations Organization for Economic Co-operation and Development (OECD) Council in May 1999[3].

Corporate regulation (corporate law) In paragraph 8 of the Decree of the President of the Republic of Uzbekistan "On measures to introduce modern corporate management methods in joint-stock companies" No. PF-4720 dated April 24, 2015, the commission for increasing the efficiency of

the activities of joint-stock companies and improving the corporate management system is another interested party. In cooperation with the ministries and agencies, based on the successful experience of Germany and other developed countries, it is indicated that the Corporate Governance Code should be developed and approved by August 1, 2015, and the main directions and rules that should be reflected in it are determined. The corporate governance code is a set of voluntary standards and internal norms that establishes and regulates the order of corporate relations. The code should contain the basic norms and recommendations that apply to all important elements of corporate governance in the corporation. Issuers' primary interest in complying with the Code is their efforts to attract investment through the securities market [4].

This Code consists of a set of recommendations on important areas related to ensuring the openness of the activities of joint-stock companies, introducing modern methods of corporate management into their management activities, increasing the investment attractiveness of enterprises, and effectively organizing the work of management bodies. the decision on acquisition shall be made by the general meeting of shareholders by a simple majority vote. Also, it is noted in the Code that non-compliance with its recommendations does not lead to the application of measures by state bodies, but the general meeting of shareholders has the right to impose a measure of responsibility on the officials of the joint-stock company for non-compliance with the recommendations of the Code or non-disclosure of information provided for in the Code.

In addition, the Code prescribes internal corporate behavior, taking into account the nature of the network and the uniqueness of its activity, in order to ensure the openness of its activities to joint-stock companies, to introduce effective internal control, effective mechanisms for mutual cooperation with shareholders and investors, to ensure the realization of the rights and legal interests of shareholders. it is shown that it can be done. Because the relevant clauses of the Code recommend the adoption of several internal documents by joint-stock companies.

For example, "Regulation on Information Policy", "Regulation on Internal Control", "Regulation on the Procedure for Action in the Time of Conflict of Interest", etc., in order to ensure the openness of its activities. The procedures in the code have a recommendatory nature, and although they do not have the force of law, that is, although their implementation is not enforced by the state, information about the adoption of these recommendations by many joint-stock companies of our republic and their voluntary implementation of their compliance can be found on their websites. - published through the sites. Announcements of this content are officially published in Uzbekistan on the website www.openinfo.uz.

Re-approval of these documents, including the recommendations noted in the Corporate Governance Code into the company's internal documents. It should be noted that among theoreticians there are different opinions on whether to recognize the recommendations of the Code of Corporate Governance as a normative legal document or not. Some scholars argue that the provisions of this Code have a recommendation nature and cannot be included in the norms of corporate law, while some consider that these provisions are norms of corporate law, taking into account the fact that they are mandatory for the corporation. In our opinion, since the provisions of the Code of Corporate Governance have a recommendation character, it is not recognized as a normative legal document, but it is included in the norms of corporate law. It is not the same because its recommendations are adopted by the corporation and its provisions are incorporated into the internal local documents of the corporation.

It is binding for the corporation and its shareholders (participants), employees. Even in this case, non-compliance with the procedures in the recommendations by these persons is a basis for applying appropriate measures of responsibility to them through the court. In addition, from the content

of the Corporate Governance Code adopted in Uzbekistan, although the validity of its recommendations is determined only for joint-stock companies, but the procedures (recommendations) contained in it are applicable to other types of corporations, including economic societies and companies, if they believe that compliance with recommendations can be enforced if they voluntarily accept them.

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Rezyume: *Ushbu maqolada korporativ boshqaruv huquqining vujudga kelishi va rivojlanishi, korporativ boshqaruv tushunchasi, mazmuni va korporativ boshqaruvning nazariy asoslari xamda korporativ boshqaruvning o'ziga xos xususiyatlari haqida yozilgan. Shuningdek, korporatsiyalar faoliyatiga oid muxim masalalar atroflicha tadqiq qilingan.*

Резюме: *В статье рассмотрены вопросы возникновения и развитие права корпоративного управления, понятие корпоративного управления, его содержание, теоретические основы корпоративного управления, а также особенности корпоративного управления. Также были тщательно исследованы важные вопросы, связанные с деятельностью корпораций.*

Калит сўзлар: *корпоратив бошқарув, акциядорлик жамиятлар, корпоратив қимматли қозғозлар, корпоратив тартибга солиш, корпоратив бошқарув кодекси*

Ключевые слова: *корпоративное управление, акционерные общества, корпоративные ценные бумаги, корпоративное регулирование, кодекс корпоративного управления*

RELATIONSHIPS BETWEEN PARENTS AND CHILD IN THE FAMILY

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Summary: *This article is about the relationship between parents and children in the family.*

Keywords: *family education, retraining of teaching staff, child, relationships, parental unpreparedness.*

Children, he believed, must be kept strictly and must be punished. But the Renaissance philosopher Michel Montaigne, on the contrary, opposed any violence when raising a young soul: “There is something slavish in severity and coercion, and I find that what cannot be done with the help of reason, prudence and skill cannot be achieved by force.”

... I have not seen any other results from the rods, except that children only become more cowardly and slyly stubborn from them.”

The founder of modern psychology is J.-J. Rousseau believed that through proper education, fundamental social problems could be solved. According to Rousseau, a child from birth does not have any bad traits, he is a kind of perfection;

The teacher's task is to preserve it. “The freedom and initiative of the child, respect for his personality and the study of his interests - this is the basis of real education.” What is the optimal relationship between parents and children?

How to properly raise children so that they become full-fledged members of modern Uzbekistan society and successfully undergo socialization?

Purpose of the study: to determine effective ways of relationships between children and parents for successful socialization.

Methods: 1) theoretical: analysis of specialized literature; hypothetico-deductive; generalization; 2) empirical: observation; questionnaire; correlation.

Results and Discussion. To achieve this goal, in December 2013 at a high school, students were asked to answer questions in a sociological questionnaire.

Conclusions: Parental unpreparedness, lack of understanding of the characteristics of adolescence, unwillingness to accept the changes that are taking place, learn to react correctly to them and thereby help the teenager survive this, which is also a difficult period for him. The formation of a teenager's personality is a complex and ambiguous process: along with pedagogical influence, the process of self-education occurs.

Therefore, when building relationships with teenagers, it is extremely important to know and take into account the patterns and values that they are guided by, what is important and significant for them.

The process of instilling a value-based attitude towards family in high school students will be successful if: family education in school education acts as a basic component of the formation of values and the education of value-based relationships between a teenager's personality and family.

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Rezyume: Maqolada hozirgi davrda hayotning jadal sur'ati kattalar o'rtasidagi munosabatlarda axloqiy yo'qligi, shuningdek muloqotning past ijtimoiy-psixologik madaniyati otalarning va bolalar o'rtasidagi munosabatlardagi buzilishlar haqida yoritilgan.

Резюме: В статье освещаются быстрый темп жизни в современное время, отсутствие этических и моральных принципов во взаимоотношениях взрослых, низкая социально-психологическая культура общения, нарушения взаимоотношений между родителями и детьми.

Kalit so'zlar: oilaviy ta'lim, pedagogik xodimlarni qayta tayyorlash, bola, munosabatlar, otalarning tayyor emasligi.

Ключевые слова: Семейное воспитание, переподготовка педагогических кадров, ребенок, взаимоотношения, неподготовленность родителей.

**PEDAGOGICAL OPPORTUNITIES FOR MODERNIZING PRIMARY EDUCATION IN
IMPROVING TRADITIONAL PROVISION**

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Summary: *The article discusses pedagogical opportunities for modernizing primary education in improving traditional provision. The essence of the linear method of creating educational programs is that individual sections (chapters, parts) of educational material are arranged in a row, and the joints, firmly connected and interconnected with each other, are continuously connected, and the chapters of educational work are laid out only once.*

Key words: *national educational programs , linear and concentric methods, STEAM*

According to the Decree of the President of the Republic of Uzbekistan on the State Program for 2023, “Starting from the 2023/2024 academic year, students of secondary educational institutions should develop humanistic and national abilities, in the spirit of patriotism, and the task of implementing new educational programs aimed at developing skills such as communication skills, critical and creative thinking, working in partnership and research.”

For this purpose, in grades 1-4, teaching is carried out according to lessons developed within the framework of “Previous foreign experience” (in the annex to the resolution - in the state program for 2023, this task is indicated in the form of “preparation of elementary school lessons in the context of international standards”), for 5- 11 grades were given tasks such as “Defining clear measures for the introduction of STEAM subject lessons in general education institutions and educational complexes, as well as taking into account foreign experience.” .

According to the explanation in the text of the Decree on the approval of the National Program for the Development of School Education for 2022-2026 (paragraph 4), the implementation of new educational programs is expected step by step starting from the 2023/2024 academic year.

If the decree is adopted, the implementation of the National Education Program will continue (paragraph 167).

By Presidential Decree of November 6, 2020, the task of “Developing a national curriculum with the participation of experienced teachers, researchers, psychologists and foreign experts” was assigned to the Ministry of Public Education and the State Inspectorate for Quality Control of Education.

The Development Strategy of New Uzbekistan for 2022-2026 (point 42), approved by the relevant decrees of the President, and the National Program for the Development of Public Education for 2022-2026 plan for the full implementation of this program by 2026. In 2021, the state educational standards of general education expired and secondary specialized education approved for 12-year education.

246 specialists, as well as school teachers, methodologists, teachers of higher educational institutions, as well as specialists from the United Nations Children's Fund (UNICEF) and the United States Agency for International Development (USAID), joined the educational programs of the republic. develop educational programs in 22 subjects. “The National Curriculum sets out the skills that students should develop to meet the demands of the 21st century.”

In the analysis of the education sector of Uzbekistan for 2021, prepared by UNICEF, the British Council and other organizations besides UNICEF and USAID participated in the implementation of the

National Education Program; the process was carried out in several stages; trainings were organized for teachers who took part in the implementation of the program. UNICEF alone has allocated US\$150 thousand to support this reform in 2020-2021.

Creating a large-scale document such as a national curriculum covering all subjects and compulsory education is a time-consuming and expensive process. Even developed countries with sufficient material and human resources do not often create such a document.

For example, in the UK, the national curriculum introduced in 1988 was only revised in 1994-95, and even then a new curriculum was not developed, but the existing curriculum was revised to simplify teaching content. The new national curriculum currently in use was introduced in 2014. In Finland, 2004 national curriculum replaced the program created ten years ago. In Estonia, the only post-Soviet country ranked in the top ten in 2018 PISA international study, the national curriculum is revised approximately every ten years.

The theory and practice of developing training programs are based on two methods: linear and concentric. Recently, in particular, in the creation of school programs, we will focus on the method of the so-called spiral method of S. Kupisevich.

The essence of the linear method of creating educational programs is that individual sections (chapters, parts) of educational material are arranged in a row, and the joints, firmly connected and interconnected with each other, are continuously connected, and the chapters of educational work are laid out only once.

Such construction of educational programs reveals favorable and unfavorable phenomena in learning. The advantage of the linear method of organizing curriculum content is that it saves time by eliminating repetition of material. The advantage of the linear method is that due to the age and psychological differences of students, especially in primary education, schoolchildren cannot understand the meaning of phenomena that are synthetic in nature.

The concentric method of creating educational programs allows you to explain the same material (question) several times, but it is taken into account to expand and enrich the learning content with new structural parts, deepen the understanding of the connections and connections between them. In the program, the concentric arrangement of material does not imply simple repetition, but observable events and processes, and the same issues are studied in an expanded form. Concentration reduces the quality of school education and requires spending a lot of time on mastering educational material.

This is especially evident in the process of learning language, mathematics, history and other subjects taught in primary and then secondary school. A similar phenomenon is observed in the study of other subjects.

Avoid the negative methods of the linear and concentric method of constructing educational programs, and when creating educational programs, you can prevent them by moving to the arrangement of educational material in the form of a spiral, as a result of which you can combine the rhythm and cycle of learning.

The peculiarity of this method is that students gradually expand and deepen the range of related knowledge, without losing sight of the basic training. sometimes, even after several years, it separates from the concentric structure and returns to the original structure, but in a spiral structure such breaks do not occur. In addition, it differs from the linear structure and has a spiral structure, the study of individual topics is not limited to a one-time sentence.

To teach the Karakalpak language, teachers must work in accordance with state educational standards, curricula and the current curriculum. The concept of the new program is to use the acquired knowledge, skills and abilities of students to solve practical problems in specific situations and in life.

If the goal of the previous program was to model theoretical knowledge, then the goal of the current program is to develop language skills (listening, speaking, reading and writing) and functional literacy. If in the previous program the subject of studying the Karakalpak language was memorizing the given rules, i.e. mechanical learning, then in the new program language learning is focused on the communicative function and explains the acquisition of communicative competence by students.

Communication competence:

- this is the wealth of the dictionary;
- development of oral and written speech;
- development of the ability to understand;
- development of universal skills in working with text, that is, the ability to simultaneously use audio and graphic messages;
- stimulation of speech and thinking using authentic texts of all genres;
- development of research skills and critical thinking;
- regulatory, i.e. development of abilities that contribute to the formation of character necessary for work in society;
- training, development of functional literacy; explains the ability to listen, speak, read and write socially.

For many years, the traditional goal of school education has been to change the knowledge system of subjects. Students' memories are filled with facts, methods, and concepts. For this reason, schoolchildren in most countries significantly exceeded their peers in terms of actual education.

However, the results of international comparative studies conducted over the past twenty years show that schoolchildren perform more reproductive tasks than schoolchildren in many countries, have subject knowledge and skills, but their results are low when performing tasks to reinforce knowledge in practical, life situations, analyzing information or more generally, difficulty in describing the results of molding or specific changes.

For this reason, the State Educational Standard has established new requirements for the results of educational programs.

Primary school students need to learn not only the subject, but also model universal ways of doing things to ensure they can continue their education at the next school; develop the ability for self-improvement to solve educational problems; showed the need to ensure individual treatment in areas of personal treatment.

In the modern era, the quality of education is understood as the level of special, extracurricular skills associated with self-determination and self-understanding of the individual, where knowledge is not aimed "at the future", but in the context of a model of future activity, life situations.

True knowledge largely loses its weight in a changing world, because all information ages over time. What is needed is not knowledge itself, but knowledge of how and where to apply it. But you also need to know how to get information, how to tell it, or create new information. Both the second and third are activity-results, and activity is problem solving.

Thus, the emphasis in learning shifts from mastering actions (result - knowledge) to mastering ways of interacting with the world (result - skills); we understand the need to change the nature of the educational process and the ways in which students act.

For this reason, there was a need to improve the method of teaching language skills. The vocational teaching method represents the improvement of the learning process, with the focus on the student's active and multifaceted, unbiased learning activities. The active abilities of students are limited only to passive mastery of new tasks, but only to impartial learning and cognitive activity.

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Rezyume: Maqolada an'anaviy ta'minotni takomillashtirish sharoitida boshlang'ich ta'limni modernizatsiya qilishning pedagogik imkoniyatlari ko'rib chiqiladi. O'quv dasturlarini yaratishning chiziqli usulining mohiyati shundan iboratki, o'quv materialining alohida bo'limlari (bo'limlari, qismlari) bir qatorda joylashtirilgan va bir-biri bilan mustahkam bog'langan va o'zaro bog'langan bo'g'inlar uzluksiz bog'langan va boblar. tarbiyaviy ishlar faqat bir marta amalga oshiriladi.

Резюме: В статье рассматриваются педагогические возможности модернизации начального образования в условиях совершенствования традиционного обеспечения. Сущность линейного метода создания образовательных программ состоит в том, что отдельные разделы (главы, части) учебного материала располагаются в ряд, а стыки, прочно связанные и взаимосвязанные друг с другом, непрерывно соединяются, а главы учебной работы выкладываются только один раз.

Kalit so'zlar: milliy ta'lim dasturlari, chiziqli va konsentrik usullar, STEAM.

Ключевые слова: национальные образовательные программы, линейные и концентрические методы, STEAM.