ҚОРАҚАЛПОҒИСТОНДА ФАН ВА ТАЪЛИМ

ҚАРАҚАЛПАҚСТАНДА ИЛИМ ҲӘМ ТӘЛИМ

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NUMERICAL SOLUTION OF A HEAT AND MOISTURE TRANSFER EQUATION

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Summary: Difference schemes of high accuracy are constructed and studied for the non-stationary Aller equation, based on the finite difference method. The stability and convergence of the constructed difference scheme are proven, and accuracy estimates are obtained for a sufficiently smooth solution to the original differential problem. An algorithm for implementing the constructed scheme is proposed. The method was tested on exact solutions.

Key words: finite difference method, difference schemes, stability, convergence, accuracy.

1. Introduction. Applied problems in hydrogeology, mathematical biology, ecology, economics, building physics, management, etc. belong to the area of heat and moisture transfer problems. In most cases, their mathematical models lead to non-stationary equations with local and non-local boundary conditions [1], [2].

Let us consider two examples. The first example is from mathematical economics. The basis of mathematical models of monetary and material savings of a group of families, and the value of securities are problems of some systems of differential equations [2]. For example, in the case of a model of money savings for a group of families, the following problem can act as such a system: to find solution $\vartheta = \vartheta(x,t)$ to the following equation regular in domain D :

$$\frac{\partial}{\partial x}\left[\frac{\partial \vartheta}{\partial t} + a\frac{\partial \vartheta}{\partial x} - \frac{1}{2}\frac{\partial}{\partial x}\left(b\frac{\partial \vartheta}{\partial x}\right)\right] = f \ ,$$

which is continuous in domain D , and satisfies some initial and nonlocal (integral) boundary conditions. In [3], this nonlocal boundary value problem is reduced to the following local boundary value problem:

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 w}{\partial x \partial t} + a\frac{\partial^2 w}{\partial x^2} - \frac{1}{2}\frac{\partial}{\partial x}\left(b\frac{\partial^2 w}{\partial x^2}\right)\right] = f \ ,$$

$$w(0,t) = 0, \ \frac{\partial w}{\partial x}(0,t) = 0, \ w(r,t) = \Phi(t), \ t \in [0,T] \ ,$$

$$\frac{\partial^2 w}{\partial x^2}(x,0) = r(x), \ x \in [0,r].$$

The second example is from mathematical biology, for example, from population theory [4]. This is the Fokker-Planck equation (or Kolmogorov equation):

$$\frac{\partial u}{\partial t} = \frac{1}{2}\frac{\partial^2}{\partial x^2}\big[\mu(x)u\big] - \frac{\partial}{\partial x}\big[\alpha(x)u\big],$$

where $\alpha(x) = \alpha_0 - \alpha_1 x + \alpha_2 x^2$, $\mu(x) = \beta_0 - \beta_1 x + \beta_2 x^2$, α_i and β_i $(i = 0,1,2)$ are some biological parameters. As is known, this equation and its various modifications are successfully used in population theory.

At present, such problems, due to their complexity, are solved mainly by numerical methods. In particular, by methods of the theory of difference schemes, where much attention is paid to numerical methods of high accuracy in solving non-stationary equations with local and non-local boundary conditions, including heat and moisture transfer equations. However, numerical methods also have their limitations in terms of stability, accuracy, and economy.

In this article, based on the results of the theory of difference schemes, the authors analyze difference schemes for solving a more general Aller equation. The initial boundary value problem of the first kind for this equation is approximated by the finite difference method. Here, the main attention is paid to obtaining an estimate for the accuracy of difference schemes in classes of smooth solutions.

2. Statement of the problem. Consider the Aller equation in closed space-time domain $\bar{Q}_T = \{(x,t),\ 0 \le x \le l,\ 0 < t \le T\}$ [2]:

$$\theta\frac{\partial u}{\partial t} = Lu + \mu\frac{\partial}{\partial t}\big(Lu\big) + f(x,t), \quad (x,t) \in Q_T \tag{1}$$

with initial

$$u(x,0) = u_0(x), \quad x \in \bar{\Omega}, \tag{2}$$

and boundary conditions:

$$u(0,t) = \mu_1(t), \ u(l,t) = \mu_2(t), \quad t \in (0,T]. \tag{3}$$

Here $Lu = \dfrac{\partial^2 u}{\partial x^2}$, $Q_T = \bar{Q}_T \cap \Gamma$, θ, μ are positive constants.

3. Approximation in space. Equation (1) is first approximated with respect to space variables. To do this, we introduce uniform grid $\bar{\omega}_h = \{x_i = ih : i = 0,1,2,...,N;\ h = l/N\}$ with step $h = l/N$ into $\Omega = \{x : 0 \le x \le l\}$. Then, approximating equation (1) with respect to x, we obtain a system of ordinary differential equations

$$D\frac{du_h(t)}{dt} + Au_h(t) = f_h(t), \quad u_h(0) = u_{0,h}, \tag{4}$$

where

$$D = \theta E - \mu\Lambda, \ A = -\Lambda, \ \Lambda y = y_{\bar{x}x}, \tag{5}$$

$y_{\bar{x}x} = (y_{i+1} - 2y_i + y_{i-1})/h^2$, where y approximates u at fixed node $x_i = ih$, $u_{0,h} = P_h u_0(x)$, $u_{1,h} = P_h u_1(x)$ are the interpolants of the initial conditions, P_h is the projection operator, $P_h : H_h \to H_h$ and $f_h(t) = P_h f(x,t)$. Here H_h is the space of discrete functions u_h corresponding to H.

The scalar product and the norm in H_h are defined as $(u,\vartheta) = \sum\limits_{i=1}^{N-1} u_i \vartheta_i h$, $\|u\|_0^2 = (u,u)$.

The boundary conditions are approximated exactly.

The difference operators D and A approximate the differential operators $\theta E + \mu \dfrac{\partial^2 u}{\partial x^2}$ and

$\dfrac{\partial^2 u}{\partial x^2}$, respectively, with the second order of the approximation error.

In what follows, to obtain the accuracy estimate of the scheme, we assume that there are necessary bounded derivatives with respect to the space and time variables.

To increase the order of approximation in space, we take difference operator Λ in the following form:

$$\overline{\Lambda} y = \Lambda y + \frac{h^2}{12} \Lambda y + O(h^4).$$

Then, operators

$$\overline{D} = \theta E - \mu \overline{\Lambda}, \ \overline{A} = -\overline{\Lambda} \tag{6}$$

approximate differential operators $\theta E + \mu \dfrac{\partial^2 u}{\partial x^2}$ and $\dfrac{\partial^2 u}{\partial x^2}$, with the fourth order in h, i.e.

$O(h^4)$. Hence, we obtain the following semi-discrete problem:

$$\overline{D} \frac{du_h}{dt} + \overline{A} u_h = \overline{f}_h, \ t \in (0, T], \tag{7}$$

$$u_h(0) = u_{h,0}, \ x_i \in \overline{\omega}_h. \tag{8}$$

4. Approximation in time. Let the discrete function y approximate $u_h \in H_h$. We introduce uniform grid $\omega_\tau = \left\{ t_n = n\tau, \ n = 1, 2, ..., M, \ \tau = T/M \right\}$ over t. Problem (7), (8) is approximated by the following difference scheme:

$$\overline{D} y_{\overset{\circ}{t}} + \overline{A} y^{(\sigma_1, \sigma_2)} = \varphi, \ y^0 = u_0, \ y^1 = u_1, \tag{9}$$

where

$$(\theta + \mu L) u_1 = L u_0 + f(x, 0),$$

$$y^{(\sigma_1, \sigma_2)} = \sigma_1 \hat{y} + (1 - \sigma_1 - \sigma_2) y + \sigma_2 \overset{\vee}{y} = y + \tau(\sigma_1 - \sigma_2) y_{\overset{\circ}{t}} + \frac{\tau^2}{2} (\sigma_1 + \sigma_2) y_{\overline{t}t}. \tag{10}$$

Here $\tau > 0$ is the time step.

Difference scheme (9) with identity (10) can be written in the canonical form of three-layer difference schemes:

$$\overline{B} y_{\overset{\circ}{t}} + \tau^2 \overline{D} y_{\overline{t}t} + \overline{A} y = \varphi, \ y^0 = u_0, \ y^1 = u_1, \tag{11}$$

with operators

$$\overline{D} = \frac{(\sigma_1 + \sigma_2)}{2} \overline{\Lambda}, \ \overline{B} = \theta E + \left[1 + \tau(\sigma_1 - \sigma_2) \right] \mu \overline{\Lambda}, \ \overline{A} = A. \tag{12}$$

5. Stability and convergence. Let us determine the error of scheme (11) through $z = y - u$. Then, substituting $y = z + u$ into (11), we obtain the problem for the error (11):

$$\overline{B} z_{\overset{\circ}{t}} + \tau^2 \overline{D} z_{\overline{t}t} + \overline{A} z = \psi, \ z^0 = 0, \ z^1 = \overline{z}^0, \tag{13}$$

where ψ is the approximation error of scheme (11) of solution $u(x,t)$ to equation (1). By direct calculation, we verify that $\psi = O(\tau^2 + h^4)$.

To study the stability of scheme (11), we use well-known theorems on the stability of three-layer difference schemes from [5]. Since, constant difference operators are $\bar{D} = \bar{D}^* > 0$, $\bar{B} = \bar{B}^* > 0$, then, according to Theorem 1 [5, p. 231], under the following conditions

$$\bar{A} > 0, \ \bar{D} > \frac{1}{4}\bar{A}, \tag{14}$$

$$\bar{B} + \frac{\tau}{2}\frac{\rho-1}{\rho+1}\bar{A} \geq 0, \ \rho \geq 1, \tag{15}$$

there is an a priori estimate

$$\left\|y^{n+1}\right\|_A \leq \rho\left\|y^n\right\|_A, \ n = 0,1,..., \ \rho \geq 1, \tag{16}$$

where

$$\left\|y^n\right\|_A = \frac{1}{4}\left\|y^n + y^{n+1}\right\|_{\bar{A}}^2 + \left\|y^{n+1} - y^n\right\|_{\bar{D}-\frac{1}{4}\bar{A}}^2.$$

Conditions (14), (15) with (12) take the following form:

$$\left(\frac{\sigma_1+\sigma_2}{2} - \frac{1}{4}\right)\bar{\Lambda} > 0, \quad \theta E + \left\{[1+\tau(\sigma_1-\sigma_2)]\mu + \frac{\tau}{2}\frac{\rho-1}{\rho+1}\right\}\bar{\Lambda} \geq 0.$$

Since $\rho \geq 1$, then difference scheme (9) is stable for all τ and h, if its parameters satisfy the following inequalities:

$$\sigma_1 + \sigma_2 > 0.5, \ \sigma_1 \geq \sigma_2. \tag{17}$$

So, the following theorem is proven.

Theorem 1. If condition (17) is satisfied, difference scheme (9) is stable with respect to the initial data, and estimate (16) holds for its solution $y^n \in H_h$.

Based on this theorem and Theorem 3 from [5, p. 257], the following assertion holds.

Theorem 2. Let conditions (17) be satisfied. Then the solution to the difference scheme (9) is stable with respect to the initial data and on the right-hand side, and the following a priori estimate holds for its solution $y^n \in H_h$

$$\left\|y^{n+1}\right\|_M \leq e^{0.5ct_n}\left(\left\|y^0\right\|_{M(0)} + \sum_{k=0}^{n}\left\|B_1^{-1}\varphi^k\right\|_{\bar{D}}\right), \tag{18}$$

where $\bar{B}_1 = \bar{B}/(2\tau) + \bar{D}$, $\left\|y^{n+1}\right\|_M = \frac{1}{4}\left\|y^{n+2} + y^{n+1}\right\|_{\bar{A}}^2 + \left\|y^{n+2} - y^{n+1}\right\|_{\bar{D}-\frac{1}{4}\bar{A}}^2$.

Taking into account the error problem (13) and a priori estimate (18), we obtain a theorem on the convergence and accuracy of scheme (9).

Theorem 3. Let conditions (17) be satisfied. Then the solution to the difference scheme (9) converges to a smooth solution of the original problem (1)-(3) and the following accuracy estimate holds for it:

$$\left\|y(t) - u(t)\right\|_A \leq M(\tau^2 + h^4), \ y(t), u(t) \in H_h.$$

6. Algorithm for implementing scheme (9). Since the inverse operator $\tilde{D}^{-1}$ exists, the scheme is calculated as an explicit scheme. Therefore, the scheme is easy to program.

7. Test calculations. Let us proceed to the description of the numerical results. We choose the parameters of problem (1)-(3) as $l = \pi$, $T = 1$, $\mu = \theta = 1$. Then, for exact solutions $u(x,t) = e^t \sin x$, problem (1)-(3) takes the following form:

$$\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2} + \frac{\partial^3 u}{\partial t \partial x^2} + 3e^t \sin x,$$

$$(x,t) \in Q_T = \{x: \ 0 < x < \pi, \ t \in (0,1]\},$$

$$u(0,t) = u(\pi,t) = 0, \ t \in (0,1],$$

$$u(x,0) = \sin x, \ x \in [0,\pi].$$

The order of the rate of convergence in space p^h and time p^τ variables is determined by the following formulas:

$$p^h = \log_2 \left(\|z\| / \|z_{1/2}\| \right), \ \ p^\tau = \log_2 \left(\|z\| / \|z_{1/2}\| \right),$$

where $z_{1/2} = y_{h/2,\tau/2} - u_{h/2,\tau/2}$. Tables 1 and 2 show the values of the order of the rate of convergence of the approximate solution to the exact one when stability condition (17) is satisfied and $\sigma_1 = \sigma_2 = 0.5$.

Table 1. Rates of convergence in space direction

Space step	Time step	Error	Convergence
$h = 0.01$	$\tau = 0.01$	2.69E-06	
$h = 0.005$	$\tau = 0.01$	6.76E-07	4.092768
$h = 0.0025$	$\tau = 0.01$	1.71E-07	3.9855
$h = 0.00125$	$\tau = 0.01$	4.34E-08	4.074529

Table 2. Rates of convergence in time direction

Space step	Time step	Error	Convergence
$h = 0.01$	$\tau = 0.01$	2.69E-06	
$h = 0.01$	$\tau = 0.005$	6.71E-07	2.003222
$h = 0.01$	$\tau = 0.0025$	1.68E-07	1.997852
$h = 0.01$	$\tau = 0.00125$	4.19E-08	2.003439

As seen from the results of numerical calculations, the considered difference scheme has fourth-order accuracy in space and second-order accuracy in time variables.

8. Conclusions. In this article, based on the finite difference method, a numerical method with a high degree of accuracy was developed and studied for solving the first boundary value problem for the generalized Aller equation. The stability and convergence of the constructed

difference scheme were proven and accuracy estimates were obtained on their basis. Conducting a computational experiment, the schemes were tested and their comparative analysis was performed. The conducted computational experiment illustrates the efficiency of difference schemes built on the basis of the finite difference method of fourth-order accuracy in space and second-order accuracy in time. The results obtained can find further application in the study of other similar initial-boundary value problems, including local and non-local ones.

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Rezyume: Ushbu maqolada statsionar bo'lmagan Aller tenglamasi uchun chekli ayirmalar usuliga asoslangan holda, yuqori aniqlikdagi ayirmali sxemalar qurilgan va tadqiq qilingan. Tuzilgan ayirmali sxemaning turg'inligi va yaqinlashishi isbotlangan va dastlabki differentsial masalani yechining etarlicha silliqligida aniqlik baholari olingan. Tuzilgan sxemani amalga oshirish algoritmi taklif etilgan. Usul aniq echimlar bo'yicha sinovdan o'tkazildi.

Резюме: В работе для нестационарного уравнения Аллера на основе метода конечных разностей построены и исследованы разностные схемы повышенной точности. Доказан устойчивость и сходимость построенной разностной схемы и получены оценки точности при достаточной гладкости решения исходной дифференциальной задачи. Предложен алгоритм реализации построенной схемы. Проведено тестирование метода на точном решений.

Kalit so'zlar: chekli ayirmalar usuli, ayirmali sxemalar, turg'inlik, yaqinlashish, aniqlik.

Ключевые слова: метод конечных разностей, разностные схемы, устойчивость, сходимость, точность.

AGROCHEMICAL CHARACTERISTICS AND SALT REGIME OF FIELD SOILS ON WHICH MAIN CROPS ARE PLANTED
(as an example of the farm "Xojamurat Utambetov" in Khojeli region)

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Summary: At present, scientific research has been carried out on the positive and negative effects of the crops that are grown as the main crop every year in the development of farming culture, obtaining high and quality yield from crops, and increasing soil fertility.
Key words: Nutrient elements, soil, humus, salt, wheat, cotton, rice.

By determining the agrochemical structure of the lands, determining the fertility of those lands, knowing how many crops can be harvested, it is possible to determine how much fertilizer we can apply in the future, and thus ensure the expected harvest. Therefore, the total amount of N, P, K nutrients for the main crop was determined.

According to the data in Table 1, the humus content of wheat field soils before planting was 0.76-0.7%, mobile nitrogen was 20.6-12.7 mg/kg, mobile phosphorus was 34.5-30.0 mg/kg, mobile potassium was 155.9-134.6 mg/kg, this indicator increased by - humus 0.04-0.03%, mobile nitrogen 16.1-1.8 mg/kg, mobile phosphorus 2.2-3.0 mg/kg, mobile potassium 6.6-5.9 mg/kg before the first watering, it was found that it increased by 0.09-0.08%; 27.9-8.0; 5.6-1.3; 30.1-16.3 mg/kg compared to before harvesting.

When we determined the total nitrogen, phosphorus and potassium content of the soil in the cotton field, this plant could not accumulate total phosphorus and potassium, the amount of humus decreased by 0.04-0.05 % after the first watering, and it became known that the indicator increased by 0.01-0.02% before harvesting.

Table 1.

Agrochemical composition of wheat field soils, % (2021).

Layer, cm	Humus, %	Total amount, %			Changeable forms, mg/kg		
		N	P	K	$N-NO_3$	P_2O_5	K_2O
Before planting							
0-30	0,76	0,088	0,263	0,575	20,6	34,5	150,0
30-50	0,69	0,072	0,172	0,420	15,4	34,0	140,7
50-70	0,65	0,061	0,161	0,346	12,7	33,5	155,9
70-100	0,57	0,048	0,148	0,400	19,5	30,0	134,6
0-50	0,72	0,080	0,217	0,497	18,0	34,2	145,3
0-100	0,66	0,067	0,161	0,435	14,5	33,0	145,3
Before the first watering							
0-30	0,80	0,091	0,270	0,561	36,7	36,7	162,5
30-50	0,70	0,072	0,170	0,320	38,4	35,4	143,4
50-70	0,65	0,059	0,060	0,366	23,4	33,0	160,2
70-100	0,60	0,050	0,044	0,410	14,5	28,5	140,5

0-50	0,75	0,081	0,220	0,440	37,5	36,0	152,9
0-100	0,68	0,068	0,136	0,414	28,2	33,4	151,6
Before harvesting							
0-30	0,85	0,100	0,270	0,600	48,5	40,1	180,4
30-50	0,77	0,090	0,175	0,380	44,3	38,0	150,1
50-70	0,70	0,065	0,100	0,400	31,6	33,4	160,9
70-100	0,65	0,060	0,049	0,410	20,7	30,5	150,7
0-50	0,81	0,095	0,222	0,490	46,4	39,0	165,2
0-100	0,74	0,078	0,148	0,447	36,2	35,5	160,9

The amount of mobile nitrogen before harvesting is 23.5-7.2 mg/kg, mobile phosphorus is 7.7-2.6 mg/kg, and mobile potassium is 40.8-15.1 mg/kg was markedly increased. The reason is that the total phosphorus and potassium content of the soil in the cotton field is decreasing. Therefore, applying phosphorus and potassium fertilizers to the cotton field in the spring and watering the cotton field will provide an opportunity to get an abundant harvest.

Table 2.

Agrochemical composition of cotton field soils, % (2021).

Layer, cm	Humus, %	Total amount, %			Changeable forms, mg/kg		
		N	P	K	$N-NO_3$	N	P
Before planting							
0-30	0,81	0,087	0,258	0,580	21,3	33,8	145,0
30-50	0,78	0,069	0,169	0,434	17,3	34,5	148,6
50-70	0,69	0,058	0,157	0,352	13,5	32,6	152,8
70-100	0,56	0,045	0,150	0,405	18,6	31,5	135,7
0-50	0,74	0,077	0,210	0,500	17,8	33,6	140,4
0-100	0,65	0,069	0,170	0,446	15,0	32,1	143,2
Before the first watering							
0-30	0,75	0,091	0,270	0,561	36,7	36,7	162,5
30-50	0,69	0,072	0,170	0,320	38,4	35,4	143,4
50-70	0,60	0,059	0,060	0,366	23,4	33,0	160,2
70-100	0,58	0,050	0,044	0,410	14,5	28,5	140,5
0-50	0,72	0,081	0,220	0,440	37,5	36,0	152,9
0-100	0,61	0,068	0,136	0,414	28,2	33,4	151,6
Before harvesting							
0-30	0,85	0,100	0,270	0,600	48,5	40,1	180,4
30-50	0,77	0,090	0,175	0,380	44,3	38,0	150,1
50-70	0,70	0,065	0,100	0,400	31,6	33,4	160,9
70-100	0,65	0,060	0,049	0,410	20,7	30,5	150,7
0-50	0,81	0,095	0,222	0,490	46,4	39,0	165,2
0-100	0,74	0,078	0,148	0,447	36,2	35,5	160,9

When we determined the effect of the rice plant on soil nutrients in Table 3, the amount of NO_3 before irrigation was 1.45-3.84 mg/kg, the amount of P_2O_5 was 3.79-7.50 mg/kg, K_2O amount was 185.9-215.5 mg/kg, before harvesting it was observed that this indicator - NO_3 amount was 2.47-3.40 mg/kg, P_2O_5 amount was 4.10-6.60 mg /kg, the amount of K_2O was 189.6-287.0 mg/kg.

Table 3

Agrochemical characteristics of rice fields

Soil layer, cm	Total amount,%			Mobile forms, mg/kg		
	N	P	K	NO₃	P₂O₅	K₂O
Before watering						
0-30	0,071	0,270	1,61	3,67	7,50	215,5
30-50	0,070	0,170	1,20	3,84	5,00	200,3
50-70	0,059	0,060	1,66	2,34	4,00	197,6
70-100	0,050	0,044	1,10	1,45	3,79	185,9
0-50	0,070	0,220	2,40	3,75	6,25	207,9
0-100	0,062	0,136	1,39	2,82	5,07	202,4
Before harvesting						
0-30	0,068	0,268	1,57	2,47	6,60	204,1
30-50	0,070	0,147	1,10	2,34	4,85	287,0
50-70	0,055	0,062	1,58	3,40	4,90	205,3
70-100	0,040	0,040	1,00	2,75	4,10	189,6
0-50	0,069	0,207	1,33	2,40	5,72	245,5
0-100	0,058	0,129	1,31	2,74	5,11	221,5

In the study of mobile nitrate, phosphorus, and potassium nutrients in rice fields, samples were taken from the dug up and analyzed in the laboratory.

Before the first irrigation, the amount of dry residue in the cotton fields was 0.292-0.405%, and by the end of the season it increased to 0.260-0.440%, while in the wheat field, the amount of toxic salts before salt washing was 0.383 mg/kg in the cultivation category, it was 65.7% of total salts. It was observed in our scientific activity that it decreased by 2.3% to 0.231 mg/kg at the end of saline washing.

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Rezyume: Hozirgi vaqtda dehqonchilik madaniyatini rivojlantirishda, ekinlardan yuqori va sifatli hosil olishda, tuproq unumdorligini oshirishda har yili asosiy ekin sifatida ekilib kelayotgan ekinlarning tuproqqa ijobiy va salbiy tasirlari bo'yicha ilmiy izlanish ishlari olib borilgan.

Резюме: В настоящее время проводятся научные исследования положительного и отрицательного влияния культур, выращиваемых в качестве основных, на почву в развитии культуры земледелия, получении от сельскохозяйственных культур высоких и качественных урожаев, повышении плодородия почвы.

Kalit so'zlar: Ozuqa elementrlar, tuproq, gumus, tuz, buǵdoy, paxta, sholi. Yerlarning agrokimyoviy xossalarini aniqlash bilan, o'sha yerlarning unumdorligini aniqlash, qancha ekilgan ekindan hosil olish mumkin ekanligini bilishimiz bilan, kelasi yillari qancha o'g'it berishimiz kerak ekanligini bilishimiz mumkin. Binobarin asosiy ekinga ozuqa elementlar umumiy N, P, K miqdori aniqlanib borildi.

Ключевые слова: Питательные элементы, почва, перегной, соль, пшеница, хлопчатник, рис. Определяя агрохимические свойства земель, определяя плодородие этих земель, зная, сколько урожая можно собрать, мы можем знать, сколько удобрений мы можем внести в ближайшие годы. Поэтому определяли общее количество элементов питания N, P, K для основной культуры.

SPREAD OF RODENTS BETWEEN VOZROZHDENIE ON THE BUILT BOTTOM OF THE ARAL SEA

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Summary: *Article, the dry bottom of the Aral Sea is common among the Tawny-father Vozrojdenie (Citellus fulvus L.,) The location of the reddened Sandpiper (Meriones erythrourus), the numerical indicators of the seasonality indicators and the factors affecting it are referenced in the mountain.*
Key word: *location, distribution, number, migrator, seasonality, nutrition.*

The location of the reddened Sandpiper (Meriones erythrourus), the numerical indicators of the seasonality indicators and the factors affecting it are referenced in the mountain feeding Attachment to the large size of the islands located in the Aral Sea aquatoria they are of physical-geographic quality of medicine, knowledge of the changes that occur in the soil, fauna and flora, study ecology disaster is considered a matter of greater scientific and practical importance than the eye of Capricorn. Therefore, the island of Vozrozhdenie is located in the northern west of the Aral Sea, the territory of two-thirds of its territory belongs to the Moynok District of the Republic of Karakalpakstan.

The are a of the island was estimated at 21-25 thousand hectares during the period when the sea was overflowing, namely 1950-1960, the summit-father Peninsula Hill itself has a spit of tepsan sand covered with hos plant species, which there is mainly the night and red-tailed sand mouse (Merionts meridianus), and the yellow hummingbird is a common and abundant species. Its abundance drops to 30 -50 per so many 100 davilkas (a small wooden bag). In this aspect, the animal world of the island of Tokmaq-Ota (Moose) is close to the animal world of Ustirt.

The godly distribution of the domidant rodent species of the Vozrojdenie Island section, the counting number routes, their location in biotopes, their seasonal indicators are shown in full in Table 10, map and Table 5.

The number figures for the tokmaq-Ota island rodents are given in Table 5, with the Eastern Koh-Shoki, Selevli, Kenderli island rodent narrowing, biotopy location, count-counting routes and number indicators cited in Map 6, Table 5.

Purpose of the study: yellow hummingbird (Citellus fulvus L.) on the dry bottom of the Aral Sea on the island of Tokmak-father Vozrazjdenie.,) Red-tailed sandpiper (Meriones erythrourus G.,) consists of studying the distribution of numbers, counting routes, their location in biotopes

Research object. At the bottom of the dried degis, the Yellow hummingbird (Citellus fulvus L.,) To study the distribution of red-tailed sandflies, their location in biotopes. Yellow hummingbird (Citellus fulvus L.,) Is common on the ridge plain of the island of Vozrojdenie, with a number of 2-3 heads per hectare. In other biotps, the No One flies very sparsely in the eyebrow, is considered a small number of species. However, the Yellow hummingbirds of this place are a few large compared to the Ustir yellow hummingbirds. The average weight and length of the body also turned out to be greater than that of the Ustir populace when we measured 27 hummingbirds of different ages and genera.

The distribution of the yellow hummingbird in the God of the island of Vozrozhdenie and the number of heads per hectare can be seen from 1 map.

Compared to the data on the map, the yellow humerus flies in small numbers, that is, the number of heads per hectare does not exceed one head; the number of yellow humerus is second only to the tall hard-humerus plain. This makes up about 80-90% of the total Island God. The average head count of the yellow humerus is 1.1 to 5.0 per hectare. In the center of this island territory, its head number is higher than 5 heads per hectare, and its area is equal to 5-10% of the island. From this we see that the yellow humerus is a domidant species in this biotope, which is distributed within other rodents and from the hip.

The yellow hummingbird also has a tendency to spread to newly withered deities. Some favorable years of yellow crustaceans are well multiplied, the number ortip, there is a possibility of expanding the oreali by occupying specific favorable deities in klajak (map 1).

On the eastern islands, the Yellow hummingbird flies very sparsely. The thigh has a lower index among rodents other than the hyacinth.
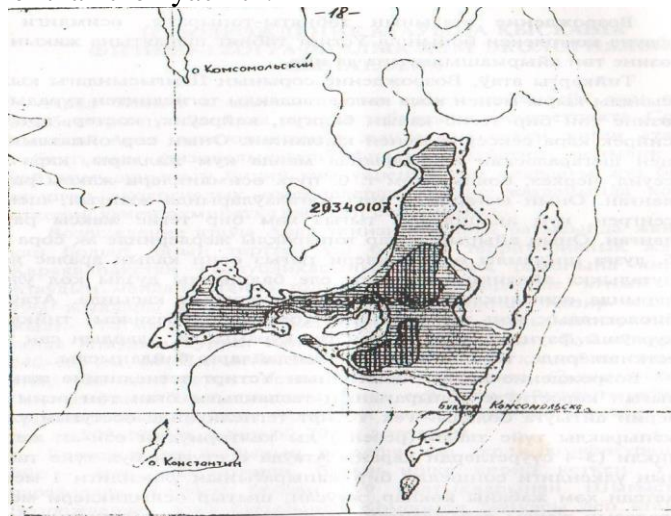
Map 1. Location and number indicator on the island of Vozrozhdenie to the yellow mum.
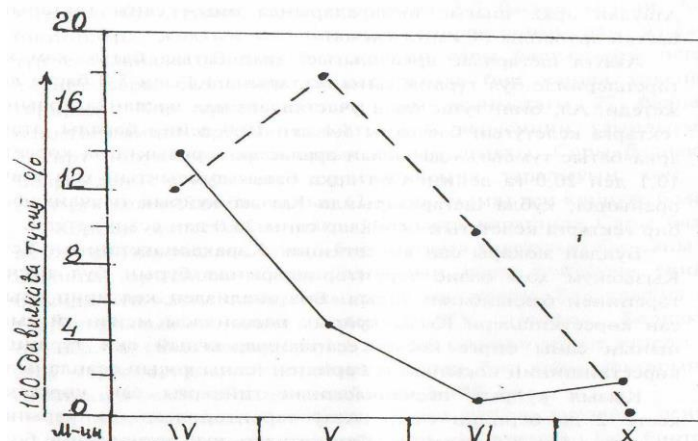
Photo 1.The godly location of the red-tailed sand mouse on Vozrojdenie island.
Defined by conditional symbols
_____ Red-tailed sandpiper

Red-tailed sand mouse (Meriones erythrourus G.,). While Vozrojdenie is common in the island khudid, the stony ridge does not exceed one head per hectare in the lowland biotope in small numbers. In this biotope, many of their abandoned, uninhabited colonies fly.

This species has recently dried up in the island god but remain serdon in the White branch and other. various thick grasslands are considered to be a large number of species. The red-tailed sand mouse is a common and abundant species on the newly drained seafloor ridge bordering the island. Even on the north eastern borders of the island, its number does not exceed 1 Head per hectare (map 11).

On the north east, north west, bordering the island, and on the south sides this turing number reaches from 1.1 to 5.0 different per hectare. This means that in the adjacent northern gods, their head count per hectare goes from 5.1 to 10.0. In the thick mixed white branch on the north western tip of the island, it reaches an indicator of 10.1 to 20.0. On that North western tip and in the center of the island, on the southern border, the red-tailed sand mouse has a head count of over 20.0 per hectare. Such a high number indicator is the Ustir, Kyzylkum and other of Karakalpakstan. an indicator that was not observed before in their gods. The number indicators we analyzed are calculated by adding up the red-tailed sand mouse with the number of the house mouse, that is, the number indicator of the two species is given together.

The main number indicator for the red-tailed sand mouse is about 3 biotopes of the island god: buryannics, rows of Sandmen, if we divide it into a ridge plane, so inside this species makes a living in buryannics at the highest number indicators by finding an optimal position for itself. For species that feed on this fine grain, the White salinity circulates instead of their few living their number figures per 100 caps built at night, averaging 4-7% in spring. This is a very high performance. In other bare dunes and the ridge Plains, it barely reaches 1.%. In areas where the force of the armor has begun, the number of this species does not exceed 0.2-0.4% per 100 cap (table 3).

Conclusion; especially the most numerous and common of the red-tailed sand mouse and the Yellow hummingbird, which are distributed on the island of Vozrojdenie, we are the tip novelty. The reason is that these gods were in their autonomy under the hands of the long-time harbors, and the world of plants and animals there came to be unknown to us until today. If I studied before, then the result was unknown to us. That is why our data is of great practical and theoretical importance in the study, in knowing the fauna and flora of the island.

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Rezyume: Moqolada oroldengizining qurigan tubida Vozrajdenie orolida keng tarqalgaan Sariq yumironqoziq (citellus fulvus L.,) Qizildumli qumsichqoni (Meriones erythrourus) ning ko'payish mavsumi va unga tasir qiluvchi omillar tog'risida malumot keltirilgan

Резюме: на височшем дне Аролского Моря в маколада распросранен на острова Токмак-Ата Вазрожденяаа жёлтий суслик (citellus fulvus L.,) Краснохвосеая песчаная (Meriones erythrourus) с информасией О Местонахождении, сезонних показателях численности И фокторах, влияютиших на Нее

Kalit so'zlar: *Ko'payishi, tarqalishi, soni, miqtori,mavsumlik,oziqlanishi,*
Ключевые слова: *Размножение, распространение, численность, количество,*

INFLUENCE OF SOME PARAMETERS ON THE STRUCTURE OF SHIRT FABRICS

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Summary. The work studied the influence of some parameters on the structure of shirt fabrics. In particular, the influence of the ratio of yarn diameters on the density of fabrics in the warp and in the weft, the height of the bending wave of the warp and weft yarns in shirt fabrics of plain weave was studied. The patterns of changes in the density of fabrics, the height of the wave of bending of the yarns, depending on the location of the yarns without gaps in shirt fabrics of plain weave, are determined. The structure and properties of the fabric are determined by the tension of the warp and weft yarns and the ratio of their tensions, which change the location of the yarns in the fabric, and consequently, the crimp of the yarns of the fabric.
Key words: yarn, warp, weft, fabric, parameters, crimp, regularity, tension, model.

Introduction. Under the structure of the fabric, it is customary to understand the mutual arrangement of the warp and weft threads in it, due to their interaction [1]. The forces of interaction between the threads in the fabric are created in the process of its formation on a loom and determine the relative position of the threads in the fabric. The mutual arrangement of the threads in the fabric depends on the following factors: technological parameters of filling and fabrication; warp and weft tensions and tension ratios; the type of weave of threads in the fabric; type of raw material used; diameters of warp and weft threads and their ratios; density of the fabric in warp and weft and their ratios [2-3]. Of the technological parameters that have a significant impact on the structure and properties of the fabric are the tension of the warp and weft threads and their ratios, which change the location of the threads in the fabric, and consequently the wear of the threads in the fabric, the breaking load of the fabric. Another main parameter of threading on the machine is the value of the spade, which determines the amount of additional tension of the warp threads at the moment of formation (surf) of the fabric. With an increase in the spade, the tension of the main threads at the time of the surf increases, which will lead to a change in the structure of the fabric - density, wear of threads in the fabric, breaking load and elongation of the fabric. Therefore, with a change in the filling tension and the size of the spade on the machine, it is possible to change the structure and properties of fabrics. In addition, the structure and properties of tissues are influenced by the position of the rock, the height and depth of the throat, the position of the spatulas.

The type of weave has a great influence on the structure and properties of the fabric. In particular, plain weave (short overlap) fabrics have greater breaking load and warp and weft wear than other weaves (long overlap), and fabric wear (short overlap) is accompanied by great tension.

The type of raw material for the designed fabric is selected taking into account the purpose of the fabric and the requirements that apply to it. The properties of the threads used in the warp and weft largely determine the properties of the fabric made from them. Changing the type of raw material in at least one system of threads in the warp or in the weft of the fabric has a significant impact on the technological parameters of its production, the structure of the fabric and its properties.

The diameters of the warp and weft threads used to make the fabric have a significant impact on the technological parameters of the fabric, not its structure and properties. When designing a fabric, the diameters of the threads are determined depending on the purpose of the fabric and the

requirements that apply to it. Increasing the diameter of the weft threads increases the breaking load and elongation of the fabric in the direction of the weft, the wear of the warp threads and reduces the wear on the weft. Consequently, the ratios of the diameters of the warp and weft threads have a great influence on the parameters, structures and properties of the fabric. The density of the fabric in warp and weft, and their ratios have a great influence on the structure and properties of fabrics. A change in the density of the fabric by weft, other things being equal, causes a change in the technological parameters of production, the structure and properties of fabrics. In particular, an increase in the weft density of the fabric leads to an increase in the tension of the warp threads and a decrease in the wear of the warp threads and the width of the fabric [4-5]. The density of the fabric in the warp and in the weft depends on the diameter of the threads used and the type of weave of the threads in the fabric. The maximum possible density of a plain weave fabric (with short overlaps) is less important than any other weave of threads (with long overlaps) in a fabric (gunny, rep, twill, satin). It is very difficult to work out fabrics with the maximum possible density on the warp and weft on a loom. Most of the fabrics produced have a density in one system of threads, or in both systems, less than the maximum. Therefore, the ratio of the actual density of the fabric to the maximum characterizes the filling of the fabric with fibrous material, that is, it characterizes the intensity of fabric production on the loom [6].

Theoretical part. Based on the change in the coefficient of the ratio of thread diameters K_d from 0.5 to 2 for a given linear density of threads in warp and weft T_o and T_w and η_w it is possible to calculate the diameters of the warp threads d_o *and* weft d_y, the heights of the bending wave of the warp threads h_o and weft h_y, the geometric density of the warp threads l_o and weft l_y, the maximum and maximum density of the fabric according to the warp P_o and according to the weft P_y, coefficients determining the phase order of the fabric structure according to the warp K_{ho} and according to the weft K_{hy}, provided in the first variant, when the warp threads are located without gaps $l_o = d_o$, in the second variant, when the weft threads [6]. located without gaps $l_w = d_w$. The calculations were carried out according to the method described in [7].

1. Thread diameter in fabric:

$$\text{based on } d_o = 0.03162\, \eta_o\, C_o\, \sqrt{To} \ (1), \text{ weft } d_y = 0.03162\, \eta_y\, C_y\, \sqrt{Ty} \ (2)$$

$$\text{average thread diameter } d_{cp} = \frac{d_o + d_y}{2}$$

2. The diameter of the thread in the fabric, depending on the ratio of the ratio of diameters and the average diameter of the thread

$$\text{warp } d'_o = \frac{2K_d d_{cp}}{K_d + 1} \ (3), \quad \text{weft } d'_y = \frac{2 d_{cp}}{K_d + 1} \ (4)$$

3. Ultimate fabric density

$$\text{based on } P_o = \frac{100}{d_o} \ (5), \text{ by weft } P_y = \frac{100}{d_y} \ (6)$$

4. Maximum fabric density

$$\text{warp } P'_o = \frac{100}{l_o} \ (7), \text{ weft } P'_y = \frac{100}{l_y} \ (8)$$

5. The height of the bending waves of the threads

warp $h_o = d_{cp} \cdot K_{ho}$ (9), weft $h_y = d_{cp} \cdot K_{hy}$ (10)

6. Geometric density of fabric for plain weave

based $l_o = \sqrt{(d_o + d_y)^2 - h_o^2}$ (11), weft $l_y = \sqrt{(d_o + d_y)^2 - h_y^2}$ (12)

Experimental part. For a shirt fabric with a linear density of warp threads $T_0 = 11.8x2$ tex and with a linear density of weft threads $T_Y = 11.8x2$ tex, the coefficient of the ratio of the diameters of the threads $K_d = 0.5 \div 2$ are defined in variants where the threads are arranged without gaps along the warp $l_o = d_o$ (Table 1) and the threads are arranged without gaps along the weft $l_y = d_y$ (Table 2), diameters of warp and weft threads, bending wave height of warp and weft threads, geometric density of warp and weft threads, limiting maximum fabric density in warp and weft, coefficients that determine the order of the fabric structure phase [7-8].

Table 1

**The results of calculating the parameters for the location of the warp threads
no gaps in fabric $l_o = d_o$.**

Odds -fi-cent relatively -nia diameters – Kd	Dia -meter of warp threads d_o, mm	Dia -meter of weft threads d_y, mm	Limit - del -naya raft-basis P_o, n /dm	Bending wave height		Geometric plot – weft l y, mm	Maximum weft density – P_{Omax}, n/dm	Odds -fi-cent determining phase order, K_{ho}
				base - you h_o, mm	weft h_y, mm			
0.5 _	0.180	0.360	555	0.510	0.030	0.5392	185	1.88
0.6	0.202	0.348	495	0.500	0.040	0.5384	186	1.85
0.7	0.222	0.332	450	0.492	0.048	0.5378	186	1.82
0.8	0.240	0.316	416	0.484	0.056	0.5370	186	1.79
0.9	0.256	0.294	390	0.476	0.064	0.5362	186	1.76
1.0	0.270	0.270	370	0.468	0.072	0.536	186	1.73
1.2	0.294	0.256	340	0.452	0.088	0.5328	187	1.68
1.4	0.316	0.240	316	0.438	0.102	0.5302	188	1.63
1.6	0.332	0.222	301	0.426	0.114	0.5278	189	1.58
1.8	0.348	0.202	287	0.414	0.126	0.525	190	1.53
2.0	0.360	0.180	278	0.402	0.138	0.5220	191	1.49

Table 2

**The results of calculating the parameters for the location of the weft threads
no gaps in fabric $l_y \backslash u003d d_y$.**

Coefficient relatively nia diameter - ditch K_d	Dia - meter of warp threads d_o, mm	Dia - meter of weft threads d_y, mm	Limit - del - naya raft- weft P_y, n/ dm	Bending wave height		Geometric plot - base l about , mm	Maximum weft density P_{Omax}, n/ dm	Coefficient determining phase order, K_{hy}
				base - you h_o, mm	weft h_y, mm			
0.5 _	0.180	0.360	278	0.138	0.402	0.5220	191	1.49
0.6	0.202	0.348	287	0.126	0.414	0.5250	190	1.53
0.7	0.222	0.332	301	0.114	0.416	0.5278	189	1.58
0.8	0.240	0.316	316	0.102	0.438	0.5302	188	1.63
0.9	0.256	0.180	340	0.088	0.452	0.5328	187	1.68
1.0	0.270	0.270	370	0.072	0.468	0.5360	186	1.73
1.2	0.294	0.256	390	0.064	0.476	0.5362	186	1.76
1.4	0.316	0.240	416	0.056	0.484	0.5370	186	1.79
1.6	0.332	0.222	450	0.048	0.492	0.5378	186	1.82
1.8	0.348	0.202	495	0.040	0.500	0.5384	186	1.85
2.0	0.360	0.180	555	0.030	0.510	0.5392	185	1.88

Tables 3 and 4 show the results that show the effect of the filling tension of the warp and weft threads in the production of shirt fabric on a loom on the production of threads in the fabric [9-10].

Table 3

Influence of the warp filling tension on the threads in the fabric

No.	Warp thread tension cN /thread	Filling tension of weft threads cN / thread	Thread yield %	
			based on	by weft
1	5	15	7.5	6.1
2	10	15	6.9	6.7
3	15	15	6.6	7.6
4	20	15	6.2	8.2
5	25	15	5.7	8.7

Table 4

Influence of filling tension of the weft on the wear of threads in the fabric

No.	Warp thread tension cN /thread	Filling tension of weft threads cN / thread	Thread yield %	
			based on	by weft
1	5	15	5.7	8.7
2	10	15	6.0	8.1
3	15	15	6.6	7.6
4	20	15	6.9	6.9
5	25	15	7.6	6.4

Discussion. Based on data from tables 1 and 2 graphs (Fig. 1-2) of the density of the fabric along the warp and weft, the height of the bending waves of the warp and weft threads depending on the ratio of the diameters, with a geometric density along the warp equal to the diameter of the main thread $l_o = d_o$ and geometric density in the weft equal to the diameter of the weft thread $l_y \u003d d_y$.
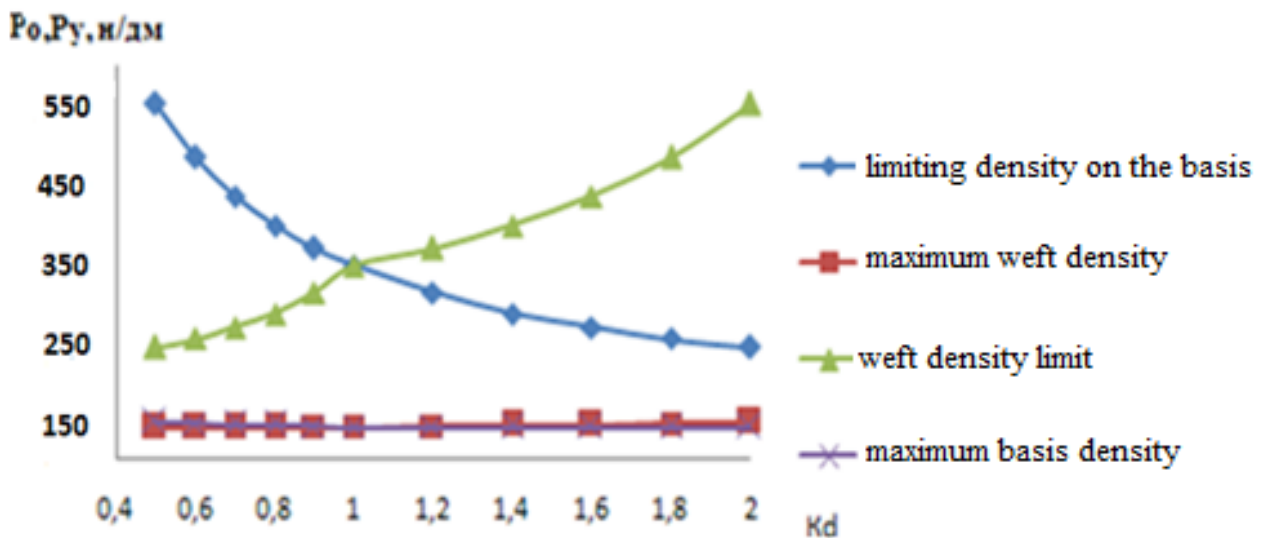
Fig. 1. The density of the fabric on the warp and weft of a linear density of 11.8x2 tex, depending on the ratio of the diameters, with $l_o = d_o$ and $l_y \u003d d_y$.

ho,hy, мм
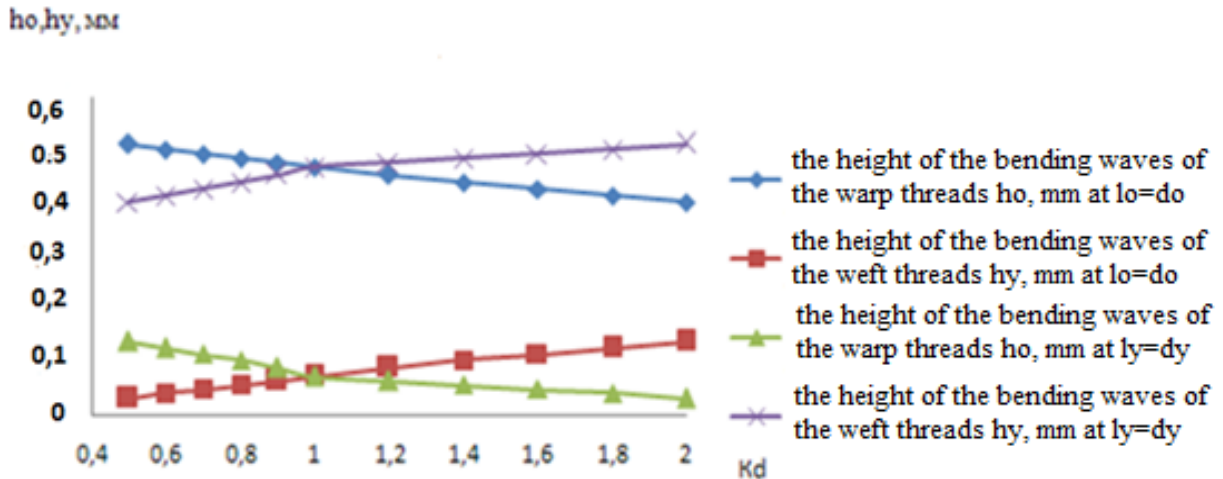
Fig.2. The height of the bending wave of the warp and weft threads with a linear density of 11.8x2 tex, depending on the ratio of the diameters, with $l_o = d_o$ and $l_y \backslash u003d\ d_y$.

From the analysis of Fig. 1 and 2 it follows that when the ratio of thread diameters changes from 0.5 to 2: for the geometric density along the warp equal to the diameter of the main thread ($l_o = d_o$) - the limiting density along the warp and the bending wave height of the main threads decrease, and the maximum weft density and the height of the bending waves of the weft threads in the shirt fabric increase slightly; for the geometric weft density equal to the diameter of the weft thread ($l_y = d_y$) - the maximum density along the warp and the height of the bending wave of the warp threads decrease, and the limiting weft density and the height of the bending wave of the weft threads increase. Therefore, the ratio of bending waves (warp-weft) shows the formation of shirt fabrics on the loom, i.e. for the first option with $l_o = d_o$ (Fig. 1 and Fig. 2), the structure of the tissue will correspond to the seventh and eighth phases of the structure, since $h_o / h_y > 1$ (Fig. 2), and for the second option with $l_y = d_y$ (Fig. 2), the tissue structure will correspond to the second and third phases of the tissue structure, because $h_o / h_y < 1$.

From fig. 3 and 4, it follows that with an increase in the filling tension of the warp threads, other things being equal, the working out of warp threads in a given fabric decreases, and weft threads - increases. With an increase in the tension of the weft threads, on the contrary, the wear of the main threads increases, and the weft decreases.

Rice. 3 . Influence of the warp filling tension on the threads in the fabric
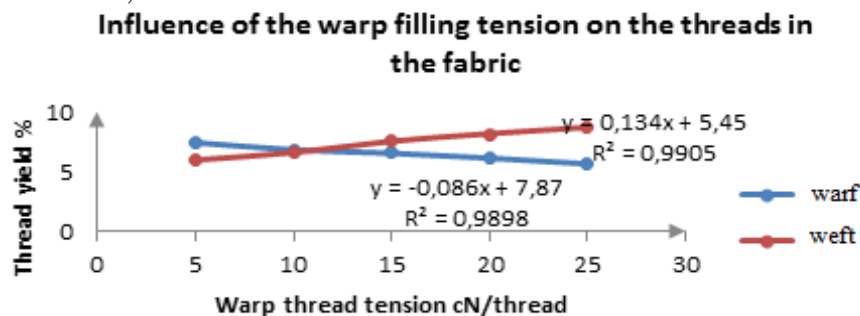
Influence of the warp filling tension on the threads in the fabric
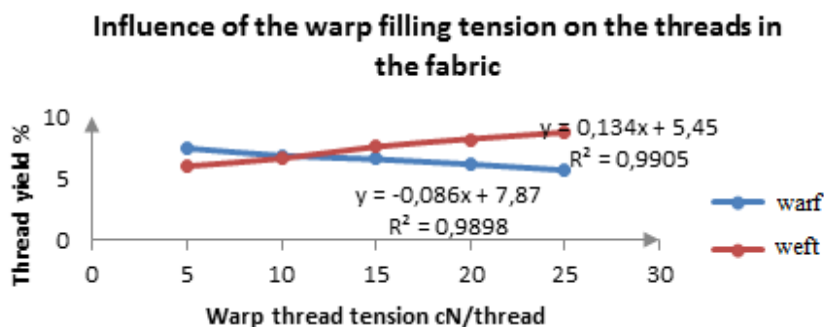
Fig.4. Influence of filling tension of the weft on the wear of threads in the fabric .

Plain weave shirt fabric is characterized by the fact that each weft thread is intertwined with each warp thread. Parameters of plain weave fabric repeat weave on warp $R_0 = 2$ and weft repeat $R_y = 2$. Plain weave shirt fabric has the same number of main and weft overlaps on the front and back sides.

The appearance of a harsh plain weave shirt fabric depends on the following factors:

- the tension of the warp and weft threads (determines the amount of bending of the threads of one system relative to the other, i.e. the phase of the fabric structure);

- the density of the fabric on the warp and on the weft (fabric with a high density on the warp has longitudinal scars on the surface, and with a high density on the weft has transverse scars on the surface);

- the ratio of the linear densities of the warp (T_o) and weft (T_y) (at $T_o > T_y$, longitudinal scars appear on the surface of the fabric, and at $T_y > T_o$ transverse scars);

- the size of the spade and the position of the rocks in height (with an increase in the spade and a change in the position of the rocks in height, the surface of the fabric has a more flattened and even structure);

- the direction of twist of the warp and weft threads (with the same direction of twist of the warp and weft, the surface of the fabric has a more pronounced pattern of plain weave).

Conclusions

1. Regularities of changes in the limiting maximum density and height of the bending waves of the warp and weft threads were obtained when the coefficient of the ratio of the diameters of the threads changed from 0.5 to 2 for a shirt fabric.

2. The structure and properties of the shirt fabric are affected by the tension of the warp and weft threads and the ratio of their tensions, which change the location of the threads in the fabric, and therefore the wear of the threads of the fabric.

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Rezyume: Ishda ba'zi bir ko'rsatkichlarning ko'ylak matolarining tuzilishiga ta'siri o'rganildi. Jumladan, polotno o'rilishli ko'ylak matolarida ipning qalinligini (diametrini) to'qimaning tanda va arqoq bo'yicha zichligiga, tanda va arqoq iplarining egilish to'lqinining balandligiga ta'siri o'rganildi. Polotno o'rilishli ko'ylak matolarida, iplarning egilish to'lqini balandligini, iplarning bo'shliqlarsiz joylashishiga qarab mato zichligining o'zgarish qonuniyatlari aniqlandi. Matoning tuzilishi va xossalariga, iplarning matoda joylashuvini o'zgarishiga ya'ni matodagi iplarni qisqarishiga tanda va arqoq iplarining tarangligi hamda taranglik nisbati ta'sir qilishi aniqlandi.

Резюме: В работе изучено влияние некоторых параметров на строение сорочечных тканей. В частности исследовано влияние отношения диаметров нитей на плотность тканей по основе и по утку, высоту волны изгиба основных и уточных нитей в сорочечных тканях полотняного переплетения. Определены закономерности изменения плотности тканей, высоты волны изгиба нитей, в зависимости от расположения нитей без промежутков в сорочечных тканях полотняного переплетения. Определено на строение и свойства ткани оказывает влияние натяжение основных и уточных нитей и соотношение их натяжений, которые изменяют расположение нитей в ткани, а следовательно, уработку нитей ткани.

Kalit so'zlar: ip, tanda, arqoq, to'qima, parametrlar, qisqarish, muntazamlik, taranglik, model.

Ключевые слова: нить, основа, уток, ткань, параметры, уработка, закономерность, натяжение, модель.

INFLUENCE OF TEMPERATURE ON THE OPTICAL PROPERTIES OF THE CDSE/ZNSE HETEROSTRUCTURE WITH QUANTUM DOTS

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Summary: *The emission spectra of quantum-well CdSe/ZnSe heterostructures with quantum dots were determined by an optical method. CdSe/ZnSe heterostructures with quantum dots were grown at different temperatures; therefore, surface and deep-level minibands corresponding to the compositions of the structure were determined in the emission spectra. In the photoluminescence spectra, the shift of the radiative spectra is determined depending on the temperature of the grown quantum-size structures.*

Keywords: *Photoluminescence, photo reflections, quantum dot, relaxation.*

In the recent decade, the processes of quantum dot (QD) formation in CdSe/ZnSe heterostructures grown by molecular beam epitaxy (MBE) as well as their

structural, optical and luminescent properties have been extensively studied [1-4]. In particular, it was found that self-organization of CdSe QDs via Stranski-Krastanow growth mode is hindered by cadmium segregation [5, 6] and Cd/Zn interdiffusion [2, 7, 8]. It was shown that because of significant intermixing of CdSe and ZnSe layers a CdSe sheet transforms into cadmium enriched CdZnSe QDs of different sizes buried into 3-4 nm thick two-dimensional CdZnSe wetting layer [2, 4, 7]. The peculiarities of structural properties of epitaxial CdSe/ZnSe QD heterostructures determine their optical and luminescent characteristics in many respects [1, 3, 4].An interest to CdSe QDs grown by MBE was stimulated by their potential application in optoelectronic devices, in particular in green laser diodes [9-11] instead of CdZnSe quantum wells (QWs) [12]. Green laser diodes based on II-VI compound low-dimensional structures are still of interest because of both absence of commercially available alternatives and high demands for such devices. Specifically, they can be a new light source for plastic optical fibres with PMMA, compact full colour projector screens, laser TV projectors, etc.

The first injection lasers and optically pumped lasers that used the sheets with CdSe QDs as an active media demonstrated several advantages over QW-based

devices, namely a reduced threshold for optical pumping and higher degradation stability. Heterostructures with CdSe QDs were found to be more stable against photo-degradation as compared to CdZnSe QWs. These advantages were explained by effective localization of carriers in QDs that hinders their diffusion to relaxed QDs and other regions where carriers can recombine nonradiatively and stimulate defect multiplication in the active region. However, degradation processes in CdSe QD heterostructures have not been studied in details. In particular, the peculiarities of Cd/Zn interdiffusion stimulated by external influences in asgrown CdSe QD heterostructures have not been studied at all. At the same time, it is known that degradation of light-emitting devices based on CdZnSe QWs is accompanied not only by noticeable reduction of QW emission caused by dislocation multiplication in active region, but also by the shift of QW emission band towards high energy spectral region (blue shift) due to Cd/Zn interdiffusion across QW heterointerface [13]. Study of the processes of Cd/Zn interdiffusion in CdZnSe/Zn(S)Se QW heterostructures by applying thermal annealing revealed that diffusion of Cd from the QW is governed by column II vacancies (VZnor VCd) and the diffusion

coefficient of Cd can be varied by about two orders of magnitude by varying the concentration of column II vacancies. It was shown also that intermixing of the materials of QW and the barriers under thermal annealing occurs via the vacancies generated at the surface of the sample and diffuse into the structure [14]. In addition, we have found earlier in CdSe/ZnSe QD heterostructures that column II vacancies during the growth gather in the CdSe layers and influence significantly the QD selforganization process up to its full suppression. It can be supposed that presence of the vacancies in the wetting layer will influence degradation of QD luminescent characteristics, too.

In this paper, we report photoluminescence (PL) study of CdSe/ZnSe QD heterostructure subjected to thermal annealing with the aim to find a method for improvement of QD luminescent characteristics and to obtain additional information about their degradation connected with Cd/Zn interdiffusion.

Experimental details

The studied structure was grown on (001) GaAs substrate by MBE and contained 250-nm thick ZnSe buffer layer, 12 vertically stacked CdSe inserts separated by ZnSe spacers of about 15 nm thickness and 150-nm thick ZnSe cap layer. Nominal thickness of CdSe inserts was 5 monolayers. The growth rate was 5 nm/min. The growth temperature was 280 ºC for ZnSe buffer layer and 230 ºC for the rest of ZnSe layers as well as for CdSe layers. To stimulate QD formation, after the deposition of each CdSe layer the Cd beam was blocked, and the structure was heated up to 340 ºC and then cooled down to 230 ºC under Se flux. The duration of both steps was 4 min. The reflection high-energy electron diffraction(RHEED) was used for in situ control of threedimensional island formation.The PL signal was dispersed using a prism spectrometer (when the PL was excited by the light of a halogen lamp) or a grating spectrometer (when the PL was excited by the light of an Hg-lamp) and collected by photoelectronic multiplier.Samples cut from wafer were thermally treated for 15 min at 200, 220, 270, 300, 335, 370 and 430°C in nitrogen ambient to avoid surface oxidation.

Experimental results

The PL spectrum of the as-grown sample is shown in Fig. 1a (curve 1). In the spectrum, the band I_{QD} peaking at 544 nm (2.277 eV) and caused by radiative recombination of excitons in QDs dominates. The full width at a half maximum (FWHM) of this band is ~100 meV and is related with dispersion of QDs both in composition and in size. In the PL spectrum, a defect related band I_D peaking at 670 nm (1.844 eV) and of ~300 meV FWHM is also present. The intensity ofID band is more than 10 times lower than that of I_{QD} band. Fig. 1a also shows the excitation spectra of both the QD and defect related bands (curves 2 and 3, correspondingly).

The excitation spectrum of I_{QD} band was detected in the low energy tail of the band, while the excitation spectrum of I_D band was measured in the band maximum. In the spectra, in addition to the region caused by absorption of excitation light in ZnSe layers (λ=445 nm) two peaks can be distinguished: (i) the peak WL_{at} ~505 nm (2.455eV), and (ii) the peak X_{at} ~470 nm (2.638 eV). Our previous investigations of similar multistack QD structures have shown that the peak WL is caused by ground state heavy-hole-like exciton absorption in the wetting layer, while the peak X can be ascribed to ground state light-hole-like exciton absorption in the wetting layer [15].

We have found earlier the linear dependence of the I_D band maximum position versus the spectral position of WL peak in I_D band excitation spectra [16]. Approximation of this dependence to the value of the ZnSe energy gap revealed that I_D band is caused by defect

complex including column II vacancy and shallow donor. Thus, the excitation spectra of I_D band indicate the presence of column II vacancies in the wetting layer of the as-grown sample. The changes introduced to the PL and PL excitation spectra by thermal treatment at 270, 300 and 370 °C are also depicted in Fig. 1b, c and d, correspondingly. Fig. 1b shows that annealing at 270 °C results in a noticeable increase in the intensity of both the PL bands and in no change of their spectral position and excitation spectra. However, in the sample annealed at 300 °C the I_D band intensity stops growing, while the intensity of IQD band starts to decrease (Fig. 1c).
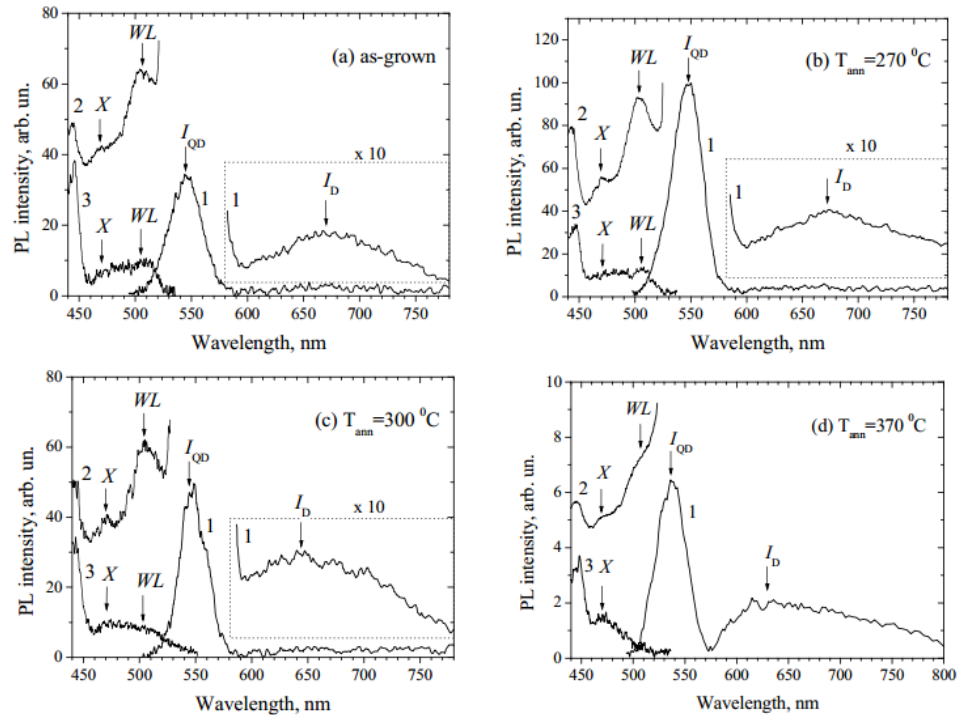
Fig. 1.PL (curves 1) and excitation spectra of I_{QD} band (curves 2) and of I_D band (curves 3) of the as-grown sample (a) and of the sample annealed at 270 (b), 300 (c) and 370^0C (d).

These are accompanied by the shift to shorter wavelengths of the spectral position of the I_D band maximum and the decrease of WL peak intensity in its excitation spectrum. At the same time, no change is found in the excitation spectrum of the I_{QD} band. In the sample subjected to thermal annealing at 370 °C, the intensity of both PL bands decreases and their spectral position shifts to shorter wavelengths (blue shift) (Fig. 1d). The excitation spectrum of I_{QD} band still does not change, but in the excitation spectrum of I_D band the intensity of WL peak keeps decreasing. Thus, the post-growth thermal treatment of CdSe/ZnSe QD heterostructures results in changes in the PL intensity (at first the increase and then the decrease) and in the shift of PL band position to the high-energy spectral region (blue shift). The increase of the PL intensity is observed at low annealing temperatures (T_{ann}~270^0C) and is not accompanied by any change in the spectral position of PL bands or in their excitation spectra. The effect of PL intensity increase has been found earlier in CdZnSe/ZnSe QW heterostructures subjected to postgrowth thermal annealing at 250-700 0C and explained by interfacial smoothing resulting from the small-scale lateral diffusion. The increase in the intensity of QW luminescence band was observed without any changes in its spectral position [16] or with a noticeable blue shift. A similar effect was also found in the InGaAs/GaAs heterostructures with QWs or QDs subjected to thermal treatment and was ascribed to QW interface smoothing or nonradiative defect

annealing. We suppose that the increase in intensities of both I_{QD} and I_D bands is the result of the annealing of as-grown defects (point defects, for example) that act as the centers of nonradiative recombination and are located in different layers of heterostructure. The decrease in intensity of both PL bands observed at higher temperatures (Tann>270-3350C) is probably caused by generation of the centers of nonradiative recombination under thermal treatment. In particular, it can be due to multiplication of extended defects (dislocations) nearby the stacking faults at ZnSe buffer layer/GaAs substrate interface and their following growing into the active layers (QD layers). It was proposed earlier to explain both quenching of CdZnSe QW emission after rapid thermal annealing treatment and rapid degradation of blue-green laser diodes based on CdZnSe QWs. However, the only rise of nonradiative defect concentration in the result of annealing can not explain different rates of the decrease of the I_{QD} and I_D band intensities. As it was mentioned above, quenching of the QD emission occurs much sharply than that of defectrelated band. This can be due to the increase of concentration of defects giving rise to I_D band and/or the decrease of QD concentration. Of the two mechanisms, the former can be realized if column II vacancies are generated during annealing at the surface of the sample and then diffuse into the structure as it was observed. This explanation agrees with the blue shift of ID band position and the decrease of WL peak in its excitation spectra. Both of these are observed in the same range of annealing temperatures ($T_{ann}=300-335^0C$) and are very likely caused by the increase of contribution of emission of vacancy-related defects localized in the ZnSe layers to the I_D band (Fig. 1c, d). At the same time, the blue shift of defect-related band is accompanied by the increase of its FWHM, which in the sample annealed at 430^0C is 1.5 times larger than that in the as-grown one. In addition, the WLpeak decreases but not disappears in the ID band excitation spectrum upon nnealing. These indicate that even after thermal treatment at 430 0C the I_D band emains mutlicomponent and the contribution of defects localized in the wetting ayers to the I_D band is large enough. The data obtained imply that the total concentration of column II vacancies increases in the structure.

Conclusions. In conclusion, we have found that post-growth thermal treatment of CdSe/ZnSe QD heterostructures influences the QD luminescence intensity and results in up to 100 meV blue shift of the QD luminescence band position. It is revealed that annealing of the samples at temperatures up to 270^0C allows raising the QD luminescence intensity by 2 to 3 times with no changes in other QD luminescent characteristics. The effect is supposed to be due to annealing of as-grown centers of nonradiative recombination. The blue shift occurs at annealing temperatures of $370-430^0C$ concurrently with the decrease in the QD luminescence intensity and is not accompanied by the changes in the energy of the ground state excitonic transition in the wetting layer. This effect is ascribed to strain-enhanced lateral Cd/Zn interdiffusion in the QD layers through the vacancies generated during the growth of the structure.

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Rezyume: Kvant nuqtaviy CdSe/ZnSe getereostrukturaning optik usullari va nurlanish spektri tadqiq etildi. Kvant nuqtaviy CdSe/ZnSe getereostrukturalarning har xil haroratda o'stirishga bog'lik ularning sirt va chuqur markazlardagi tarkibini aniqlovchi kichik sathlarning nurlanish spektrlari o'zgarishi sodir bo'ladi. Fotolyuminesetsiya spektrlarida kvantli strukturalarning o'sirilishi haroratga bog'liq fotolyuminesetsiya jarayonida nurlanish spektrlarning o'zgarishi aniqlandi

Резюме: Гетероструктры CdSe/ZnSe с квантовыми точками выращивались в разных температурах, поэтому в излучательных спектрах меняется расположения поверхностных и глубоко уровневые мини зоны отвечающие составам структуры. В фотолюминесцентных спектрах определены смещение излучательных спектров зависимо от температуры выращенных квантово- размерных структур.

Калт сўзлар. Фотолюминесценция, фотоқайтиш, квантли нуқта, релаксация.
Ключевые слова. Фотолюминесценция, фотоотражения, квантовая точка, релаксация.

FACE RECOGNITION TECHNOLOGIES AND METHODS

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Nukus branch of the Tashkent University of Information Technologies named after Muhammad al-Khorazmi

Summary: Face recognition is the automatic localization of a human face in an image or video and the identification of a person based on existing databases. Interest in these systems is huge due to the wide range of tasks they solve. This article mainly discusses different approaches to create a face detection algorithm. A general classification of face recognition technology is given.

Keywords: Techopedia, face recognition, face recognition algorithm, face recognition technologies.

Introduction. Techopedia defines facial recognition as a biometric software application that is capable of uniquely identifying or verifying an individual by comparing and analyzing templates based on a person's facial contours[1].

Face detection - it is a way of identifying or confirming a person's identity by their face. A facial recognition system can be used to identify people in photos, videos or in real time.

Facial recognition belongs to the category of biometric authentication systems. There are other types of biometric authentication systems, such as voice recognition, fingerprint recognition, etc. These technologies are mainly used for security and law enforcement, but the use of this technology is also gaining interest in other areas.

Simply put, everyone has a unique facial structure. Special software is then able to analyze it by comparing it with the information in the database to determine who you are.

Face recognition technology

Most people are familiar with the FaceID facial recognition technology used to unlock the iPhone (this is just one example of the application of facial recognition technology). In general, facial recognition technology does not use a huge photo database to identify a person. It identifies and recognizes one person as the sole owner of the device and restricts access to other people.

In general, facial recognition technology works by matching the faces of people passing by special cameras with images of people on a watch list. Watchlists can contain photographs of anyone, including people who are not suspected of any wrongdoing. Images can be from any source, even social media accounts. The main disadvantage of face recognition technology is the deterioration of recognition quality, namely:

* deterioration of light;
* related to changing the position of the head or the corner of the face [3].

There are several approaches to creating a face detection algorithm.

An empirical approach was used early in the development of computer vision. It is based on some of the same rules that a person uses to identify a face. For example, the forehead is usually brighter than the center of the face, which in turn has the same brightness and color. Another important sign is the parts of the face in the picture - nose, mouth, eyes. For face detection, the image area in which the presence of a face is estimated is significantly reduced or perpendicular histograms are constructed. These methods are easy to implement, but this method is almost useless when there are a large number of extraneous objects in the background, several persons in the frame, or when the angle changes.

The following approach uses invariant features specific to the face image. Its basis, as in the previous method, is empirical, that is, it is an attempt of the system to "think" as a person. The

method reveals the characteristic parts of the face, its border, changes in shape, contrast, etc., combines and checks all these signs. This method can be used even when turning the head, but when there are other people or a heterogeneous background, recognition becomes impossible.

The next algorithm is face detection using templates set by the developer. The person is represented as a certain template or standard, and the goal of the algorithm is to check each segment for the presence of this template, and the check can be done for different angles and measurements. Such a system requires time-consuming calculations.

All modern facial recognition technologies use systems that learn using test images. Bases containing faces and faceless images are used for training. Each piece of the studied image is described as a vector of features, with the help of which classifiers (object detection algorithms in the frame) determine whether a certain part of the image contains a face or not.

Technologically, the systems can sometimes be very different in terms of facial recognition, but they all have approximately the same principles of operation[11].

There are different facial recognition technologies, but in general they work like this:

Step 1: Face detection

At the start, the camera detects whether the person's face is alone or in a crowd. A face is best detected when a person is looking directly at the camera, but modern technological advances also allow it to be detected when the person is not looking directly at the camera (within certain limits of course) allows face detection.

Step 2: Face analysis

Then a photo of the face is taken and the analysis begins. Most facial recognition solutions use 2D images instead of 3D volumetric images because they can compare 2D photos with photos available in a public or database. Each face consists of distinct characters or nodes. Every human face has 80 nodal points. Facial recognition software analyzes key points such as the distance between your eyes or the shape of your cheekbones.

Step 3: Convert image to data

After that, in the process of analysis, the analog data is converted into a digital data set based on human facial features, that is, the analysis of your face becomes a mathematical formula. Your facial features become a digital code. Such a digital code is called a faceprint. Similar to the unique structure of a thumbprint, each person has a unique faceprint.

Step 4: Find a fit

Next, your code will be compared to a database of face prints. This database contains photos with comparable IDs.

The FBI has access to more than 650 million photos, including 21 state databases, including the DMV. Another example of a database that many people have access to is Facebook photos. Any photos tagged with a person's name will become part of Facebook's database.

After that, it will determine the matching of your specific information to the database. The result is a personal address identification with additional information (name, etc.)[6].

Move the face automatically

One of the most interesting and results-oriented actions is the automatic calculation of the exact coordinates of a number of anthropometric points (corners of the eyes, tip of the nose, lips, etc.)[10].

The peculiarity of this task is the difference between the images that are related to the points, such as eyes, mouth, in other words, as a problem, a person.

Triangular task, the nose, because the specific features of each output of the human face (eyes, facial features of the face, etc.) are so different, to solve the whole problem, a separate production is required to provide any facial features. must be released. The accuracy of the selection affects the reliability of the face recognition of the entire system of this device. how, each method includes two steps: takes quadruple games.

Let's give some concrete examples.

To obtain window coordinates in the search for nose and mouth, Brunelli et

Poggio uses the method of integral projections [7]. Face images from the original receive two integral projections - horizontal and vertical. This is done as follows: let $I(x,y)$ be the original image, then the vertical projection of the image $I(x,y)$ is defined as a square with angular coordinates $[x_1,y_1]$ and $[x_2,y_2]$ [9]

$$V(x) = \sum_{y=y_1}^{y_2} I(x, y).$$

The horizontal projection is calculated similarly:

$$H(y) = \sum_{x=x_1}^{x_2} I(x, y).$$

The vertical coordinates of the nose and mouth regions are obtained using the anthropometric relations of the parts of the human face, while the horizontal coordinates are obtained by analyzing the histograms of integral projections. In the second step, the location of the nose is found along the peaks of the vertical gradient in the horizontal projection, and the location of the mouth is found along the gaps, because the linear images between the lips appear too dark.

Nasal boundaries are assessed by the largest right and left peaks and the coordinates of the characteristic points of the mouth are determined in a similar way in the vertical projection.

Brunelli and Poggio found the images of the eyes in a different way - using the method of comparison with a standard. The search is limited to the window above the eye (the location of the eye must be determined in advance) and is carried out using a vertical integral projection. In the authors' algorithm, the peaks of the intensity gradient are searched in two opposite directions. Pairs of vertices on one eye are compared to pairs on the other eye, and the most similar ones are matched. When finding the lower border of the face without a beard (cheekbones, chin, etc.), the authors use a special elliptic coordinate system (the ellipse in the given system is represented by a straight line), and thus they manage to minimize the computational costs for determining the lower contour of the face, which and approaches a straight line in the given coordinate system [7].

Another approach detects facial features using a geometric model built according to geometric relationships between facial parts. Thanks to this model, recognition difficulties caused by emotional expression and facial orientation can be easily overcome. At the first stage of the algorithm, high-pass filtering is used, which emphasizes (amplifies) the images. After that, the image obtained as a result of filtering is binarized. Then, the pixels of the binary image obtained in the first step are grouped and identified. First, the eyes are searched, they should be in a line close to the horizontal. Second, the distance between the eyes is about two eye lengths. Considering these and other features, the authors examine all pairs of regions and select one pair that meets the mentioned conditions. After that, based on anthropometric statistics, the relative location of the mouth and other parts of the face is found. The processing speed of this algorithm on the Sun-20 workstation was about 5 seconds for each portrait, and more than 70% of the time was spent on preprocessing.

Areas where facial recognition technologies are used

Face recognition technologies are used in various fields[3]:

* ensuring safety in crowded places;
* security systems, prevention of illegal access to the territory of the facility, search for intruders;
* face control, search for suspicious and potentially dangerous guests in the dining and entertainment segment;
* checking bank cards;
* online payments;
* contextual advertising, digital marketing, Intelligent Signage and Digital Signage;
* photo technique;
* forensic examination (criminology);
* teleconferences;
* mobile applications;
* search for photos in large photo databases;
* tagging people in photos on social networks, etc.

Below are examples of amazing uses of this technology.

Device security

Some apps use facial recognition to protect your data. Even a secure password cannot protect your accounts and data from experienced hackers, so people have decided to turn to facial recognition technologies. These apps require you to show them your face to unlock your smartphone or access your personal information.

Identification of genetic diseases

There are specialized medical applications such as Face2gene and DeepGestalt that use facial recognition to detect genetic diseases. They analyze the faces and compare them to a database of individuals with various genetic disorders.

Shoplifting

Many stores have facial recognition systems that identify people as threats if they shoplift. Such a system can identify a shoplifter and notify the shopkeeper of his previous tricks, even if such a shoplifter has never visited the shop before. . Although such a system can be of great benefit to store owners, the effectiveness of such systems is often questioned. If an innocent person is identified as a thief, it can affect their life.

Purchase of alcoholic beverages

Some grocery stores and bars in the UK use facial recognition to determine whether a customer is of legal age to purchase alcohol. Grocery stores allow customers to use the self-checkout system without the need for an additional employee to check the passport. If the system determines that the customer is under 25 years of age, he must provide a passport for verification.

Safety in schools

Facial recognition has begun to be introduced in schools. One school in Sweden uses FRT (Facial recognition technology) to check attendance in classes. Schools in the US, particularly in New York, have begun testing the use of facial recognition technology as an "early warning system" against threats from individuals such as sex offenders. The technology can also recognize 10 weapons to prevent acts of violence in schools.

Use in airlines

Airlines like Delta and JetBlue use facial recognition to identify passengers. Biometric facial scanning is optional, but allows passengers to use their face as a ticket, saving time and reducing costs for ticket checks.

Apps that make you old

Has your social media news feed been filled with old people over the past few months? FaceApp's age filter, which uses facial recognition to age your face, has gained momentum in the social media world. Unfortunately, there are concerns that the personal data it collects is not adequately protected.

Advantages of facial recognition technology

In addition to unlocking your smartphone, facial recognition has other benefits:

Improve security

State-level facial recognition can help identify terrorists or other criminals. At a personal level, facial recognition can be used as a security tool in device locks and personal security cameras.

A decrease in the crime rate

Facial recognition makes it easy to find robbers, thieves and criminals. Just knowing that a facial recognition system exists can act as a deterrent, especially for petty crimes. In addition to physical security, there are also advantages in cyber security. Companies can use facial recognition technology instead of passwords to access computers. In theory, this technology cannot be hacked, because nothing can be used to steal or change it, as with a password.

Eliminating bias during stop and search

Public concern about unreasonable stops and searches is a source of contention among police. Facial recognition technology can improve this process. Identifying suspicious individuals in a crowd through an automated, human-driven process, such as facial recognition technology, can reduce potential bias and reduce stops and searches of law-abiding citizens.

Comfortability

With the spread of facial recognition technology, shoppers can pay in stores using their face and avoid withdrawing credit cards or cash. This saves time in line at the checkout. Since facial recognition does not require any contact like fingerprinting or other security measures, this technology is especially useful during the COVID outbreak. Facial recognition provides fast, automatic and seamless verification.

Fast processing

The facial recognition process takes one second, which benefits companies that use facial recognition technology. In an era of cyber attacks and advanced hacking tools, companies need secure, fast technology. Face recognition allows you to quickly and efficiently verify a person's identity.

Integration with other technologies

Most facial recognition solutions are compatible with security applications. In fact, this technology integrates seamlessly. This will reduce the amount of additional investment required for its implementation.

Disadvantages of facial recognition technology

Some people don't mind removing them, and there's nothing against using facial recognition where there's a clear benefit or need. However, the use of this technology can cause a strong reaction in other people. Some of the disadvantages or problems with face detection are:

General observation

Some fear that the use of facial recognition technology, widespread video cameras, artificial intelligence and data analysis will pave the way for mass surveillance and could limit personal freedom. While facial recognition technology allows governments to hunt down criminals, it also allows them to hunt down ordinary law-abiding people.

Possible errors

The result of facial recognition does not rule out mistakes, and it can lead to people being accused of crimes they did not commit. For example, a slight change in camera angle or a change in appearance, such as a hairstyle, can cause an error. In 2018, Newsweek reported that Amazon's facial recognition technology falsely identified 28 members of the US Congress as people arrested for crimes.

Violation of privacy

The issue of ethics and privacy is the most controversial issue. Governments have been known to store photographs of citizens without their consent. In 2020, the European Commission said it was considering banning the use of facial recognition technology in public places for up to five years to give time to develop a regulatory framework to prevent privacy and ethics violations.

A large database

Face recognition software is based on machine learning technology and requires large data sets to learn and produce accurate results. Such huge data sets require reliable storage. Small and medium-sized companies may not have enough resources to store the necessary data.

Conclusion. There are several effective methods of facial recognition technologies, and it is also worth mentioning some areas of scientific research that are not related to the topic of facial recognition, but whose results can be applied to search. They study psychophysics. Currently, the use of facial recognition technologies is yielding effective results. Above are the advantages and disadvantages of this technology. Companies and users using facial recognition technology instead of passwords to access computers has shown advantages in the field of cyber security in addition to physical security.

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Rezyume: Yuzni aniqlash - bu tasvir yoki videoda inson yuzini avtomatik ravishda lokalizatsiya qilish va mavjud ma'lumotlar bazalari asosida shaxsning shaxsini aniqlash. Ular hal qiladigan keng ko'lamli vazifalar tufayli ushbu tizimlarga qiziqish juda katta. Bu maqolada asosan yuzni aniqlash algoritmini yaratish uchun har xil yondashuvlar ko'rib chiqilgan. Yuzni tanish texnologiyasini umumiy tasnifi keltirilgan.

Резюме: Распознавание лиц — это автоматическая локализация человеческого лица на изображении или видео и идентификация человека на основе существующих баз данных. Интерес к этим системам огромен в связи с широким спектром решаемых ими задач. В этой статье в основном обсуждаются различные подходы к созданию алгоритма распознавания лиц. Дана общая классификация технологий распознавания лиц.

Kalit so'zlar: Techopedia, yuzni aniqlash, yuzni aniqlash algoritmi, yuzni aniqlash texnologiyalari.

Ключевые слова: Техопедиа, распознавание лиц, алгоритм распознавания лиц, технологии распознавания лиц.

GRAVITATIONAL LENSING IN PLASMA

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Summary: *The Janis-Newman-Winicour (JNW) metric is a general solution to the Einstein massless scalar equations for static spherically symmetric systems, involving an additional parameter v. It includes the Schwarzschild metric as a special case when v=1, and it exhibits a globally naked strong curvature singularity. We study the effect of weak-field lensing by JNW spacetime naked singularities in the presence of plasma, considering three types of distributions: uniform, singular isothermal spheres, and non-singular isothermal gas spheres. The presence of plasma alters the gravitational deflection compared to the deflection in a vacuum. We also discuss how plasma affects the formation of lensed images produced by photons.*

Key words: *Janis-Newman-Winicour (JNW) metric, gravitational lensing, plasma effect, black hole.*

I. Introduction.

Gravitational lensing is a phenomenon predicted by the theory of relativity, where light rays are bent when passing through a gravitational field. This allows for the observation of multiple images of a single source object due to the lensing effect of intervening masses. Gravitational lensing is a valuable tool in astronomy, providing information about sources, lenses, and the large-scale structure of the Universe. It has also been used to test theories of gravity and detect exotic objects in the universe [1,2]. The weak-field approximation of the gravitational lensing (GL) phenomenon, combined with the investigation of plasma effects, can assist in detecting dark and massive objects. The influence of plasma on the deflection of starlight has been studied by Synge [3], including explicit estimations [4]. Previous studies have shown that a naked singularity's lensing behavior can differ qualitatively from that of a black hole [5,6]. The existence of a naked singularity remains one of the most significant unresolved problems in general relativity. Gravitational collapse ultimately leads to singularity formation [7], but whether a naked singularity exists or not is still unknown.

II. Gravitational lensing in JNW metric.

We are focused on finding a static, spherically symmetric, and asymptotically flat solution to the Einstein equations using a massless scalar field as an energy-momentum source. This solution, obtained by JNW [8], describes a smoothly matching gravitational field with the external Schwarzschild spacetime. The JNW metric satisfies the Einstein equations with a massless scalar field.

$$\mathcal{R}_{\mu\nu} = 2\nabla_\mu \phi \nabla_\nu \phi, \quad \nabla_\mu \nabla^\mu \phi = 0 \qquad (1)$$

and the metric is

$$ds^2 = -F^\nu dt^2 + F^{-\nu} dr^2 + r^2 F^{1-\nu}(d\theta^2 + \sin^2\theta\, d\phi^2). \quad (2)$$

where

$$F = \left(1 - \frac{r_g}{r}\right) \text{ and } \Phi = \left(\frac{1-\nu^2}{2}\right)\ln F \qquad (3)$$

The solution is

$$\nu = \frac{2M}{r_g} \text{ and } r_g = 2\sqrt{M^2 + q^2} \qquad (4)$$

In this context, M represents the ADM mass, q denotes the scalar charge of the compact object. Now, we analyze the deflection angle of a photon in a plasma medium using the JNW metric.

We expand the function f up to $O(r_g^2)$ for the weak field regime and $\frac{r_g}{r} >> \left(\frac{r_g}{r}\right)^2$, the JNW metric (2) is now

$$ds^2 = ds_0^2 + \frac{vr_g}{r}(dt^2 + dr^2) + (v-1)r_g r(d\theta^2 + \sin^2\theta \, d\phi^2) \qquad (5)$$

The components $h_{\alpha\beta}$ in Cartesian coordinates, reads

$$h_{00} = \frac{vr_g}{r},$$

$$h_{11} = \frac{(4v - 3 - \cos 2\theta + \cos 2\phi \sin^2\theta)r_g}{4r},$$

$$h_{22} = \frac{(4v - 3 - \cos 2\theta + \cos 2\phi \sin^2\theta)r_g}{4r},$$

$$h_{33} = \frac{(2v - 1 + \cos 2\theta)r_g}{2r},$$

$$h_{12} = \frac{\sin^2\theta \sin 2\phi \, r_g}{2r},$$

$$h_{13} = \frac{\cos\phi \sin 2\phi \, r_g}{r},$$

$$h_{23} = \frac{\sin 2\theta \sin\phi \, r_g}{r}.$$

where $r = \sqrt{b^2 + z^2}$ and $\cos\theta = z/r$ are introduced in [9]. The impact parameter b determines the photon's orbit. From the general equation for the deflection angle, we can determine the deflection angle relative to the impact parameter b for a black hole in the presence of a plasma medium [10]

$$\hat{a}_b = \int\limits_{-\infty}^{+\infty} \frac{b}{2r}\left[\partial_r\left(\frac{(2v - 1 + \cos 2\theta)r_g}{2r}\right) + \partial_r\left(\frac{vr_g}{r}\right)\frac{\omega^2}{\omega^2 - \omega_e^2}\partial_r N\right] dz . \qquad (6)$$

Formula (6) allows us to calculate the deflection angle for a photon moving in the JNW spacetime with a spherically symmetric distribution of plasma, considering both inhomogeneous and homogeneous plasma, and depending on the photon frequency.
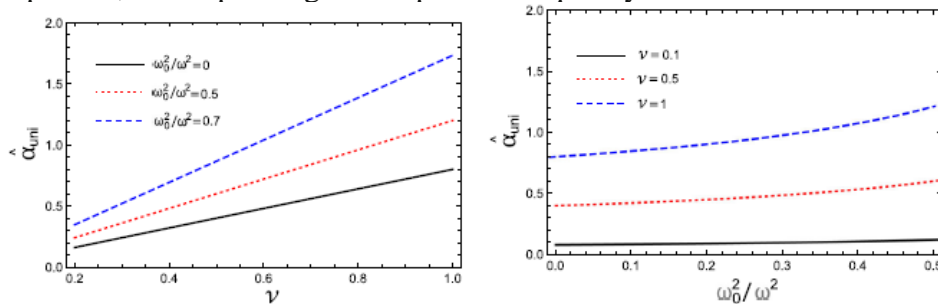
Fig.1. The dependence of deflection angle on v and $\frac{\omega_0^2}{\omega^2}$

a. For a uniform plasma with constant $\omega_e^2 = const$, the refractive index does not depend on space coordinates, resulting in no refractive action. In this case, the deflection angle of light in a uniform plasma can be computed using equation (6)

$$\hat{a}_{uni} = \frac{vr_g}{b}\left[1 + \frac{1}{1 - \frac{\omega_0^2}{\omega^2}}\right]. \qquad (7)$$

Remarkably, even in a homogeneous plasma, the photon deflection angle differs from the vacuum case and depends on the plasma and photon frequency. Formula (7) is valid when $\omega > \omega_0$ since waves with $\omega < \omega_0$ do not propagate in the plasma. As ω approaches $\omega \to \omega_0$, the gravitational deflection in plasma can be significantly larger than in a vacuum. Fig. 1 illustrates the influence of the plasma parameter and JNV ν parameter on the light deflection angle, showing that decreasing ν increases the deflection angle. When there is no scalar field (q=0), i.e., ν=1 corresponding to $r_g = 2M$, the deflection angle formula (7) takes a specific form.

$$\hat{a}_{uni} = \frac{2M}{b}\left[1 + \frac{1}{1 - \frac{\omega_0^2}{\omega^2}}\right]. \qquad (8)$$

b. Considering a non-uniform case, we examine lensing situations involving a singular isothermal sphere (SIS), often used for lens modeling of galaxies and galaxy clusters. The SIS density distribution is described by an equation

$$\rho(r) = \frac{\sigma_v^2}{2\pi r^2}, \qquad (9)$$

where σ_v^2 represents the 1-dimensional velocity dispersion for stars in galaxies.

The concentration of the plasma medium can be expressed using a formula,

$$N(r) = \frac{\rho(r)}{\kappa m_p}, \qquad (10)$$

where κ is a dimensionless constant coefficient that may account for the dark matter contribution to the Universe, and mp is the proton mass. By utilizing equations (9), and (10), we can determine the plasma frequency

$$\hat{a}_{SIS} = \frac{2vr_g}{b} + \frac{r^2\omega_c^2}{b^2\omega^2}\left(\frac{1}{2} - \frac{2vr_g}{3\pi b}\right). \qquad (11)$$

Consequently, we obtain corrections to the gravitational deflection caused by the plasma. To simplify further analysis, we introduce a new plasma frequency ω_c^2 for the SIS.
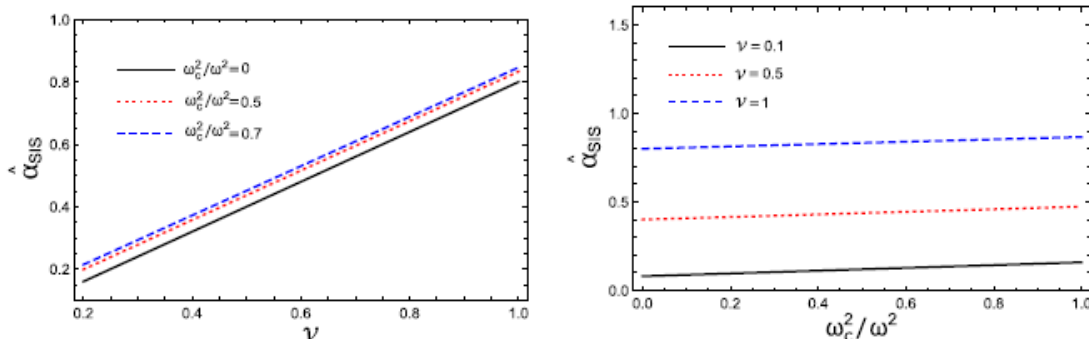
$$\omega_c^2 = \frac{\sigma_v^2 K_e}{2\kappa m_p R_s^2}. \qquad (12)$$

c. Additionally, we consider the deflection angle for another non-uniform case, the non-singular isothermal gas sphere (NSIS). This scenario is more relevant when discussing a black hole in the universe. The NSIS model represents a plasma distribution with a finite core replacing the singularity, and its density distribution is given by an equation.

$$\rho(r) = \frac{\sigma_v^2}{2\pi(r^2 + r_c^2)}. \qquad (13)$$

The concentration of the non-uniform plasma medium can be expressed using a formula,

$$N(r) = \frac{\sigma_v^2}{2\pi\kappa m_p(r^2 + r_c^2)} \qquad (14)$$

The non-uniform plasma frequency

$$\omega_c^2 = \frac{K_e \sigma_v^2}{2\pi\kappa m_p(r^2 + r_c^2)}. \qquad (15)$$

The gravitational deflection caused by the plasma for the case NSIS

$$\hat{a}_{NSIS} = \frac{2vr_g}{b} + \frac{r_g^2 \omega_c^2}{\omega^2}\left(\frac{vr_g}{\pi b r_c^2} + \frac{b}{2(b^2 + r_c^2)^{\frac{3}{2}}} - \frac{vb \tanh^{-1}\frac{r_c}{\sqrt{b^2 + r_c^2}} r_g}{\pi r_c^3 \sqrt{b^2 + r_c^2}} \right) \qquad (16)$$
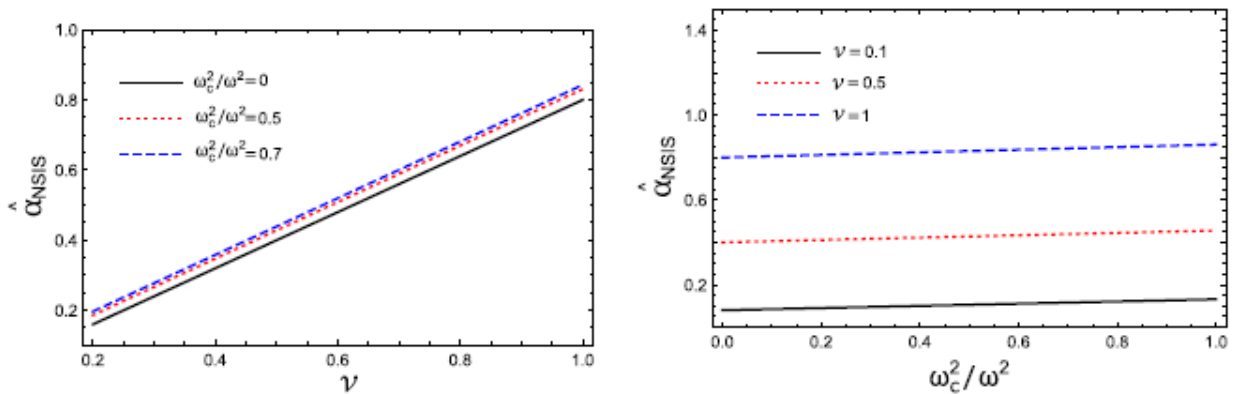
Fig.3. The dependence of deflection angle $\hat{a}_{NSIS}$ on v and $\frac{\omega_0^2}{\omega^2}$

Fig.4. The dependence of deflection angle $\hat{\alpha}_{NSIS}$ on b. We consider the case where $\omega_0^2/\omega^2 = 0.5, \omega_e^2/\omega^2 = 0.5$

III. Conlusions

The observations from the Event Horizon Telescope (EHT) suggest that the shadow of the M87* black hole is consistent with a black hole. However, there is a possibility that specific naked singularity models could also produce a similar shadow. Therefore, it cannot be definitively concluded that the M87* object is a black hole, and further investigation of lensing and shadow phenomena is needed to confirm the existence of an event horizon and thus a black hole.

In this study, the researchers examined light propagation features in the spacetime of JNW naked singularities. They modeled the massive compact object as a JNW naked singularity and analyzed the impact of a plasma medium on gravitational lensing (GL). Three cases were considered: uniform plasma, singular isothermal sphere (SIS), and non-singular isothermal gas sphere (NSIS). The deflection angle of the light ray in the weak deflection limit for JNW naked singularities was estimated based on these cases. The analysis showed that gravitational lensing and plasma effects result in complex dynamics for light ray propagation around JNW naked singularities, leading to various outcomes.

Furthermore, the calculations were performed for models with non-uniform plasma distributions, specifically singular and non-singular isothermal spheres in the background of JNW naked singularities. A comparison of the three plasma cases (uniform, SIS, NSIS) revealed that the deflection angle in the presence of a uniform plasma case is larger than the other two cases.

Although conclusive proof for the Cosmic Censorship Conjecture (CCC) is still lacking, and no counterexample to CCC has been identified, these results can contribute to differentiating observational features between black holes and naked singularities in astrophysics. Specifically, in the weak deflection limit, the gravitational lensing behavior could help distinguish between a Schwarzschild black hole and a JNW naked singularity, which may have implications for the CCC.

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Rezyume: Janis-Nyuman-Vinikur (JNW) koʻrsatkichi qoʻshimcha n parametrini oʻz ichiga olgan statik sferik simmetrik tizimlar uchun Eynshteyn massasiz skalyar tenglamalarining umumiy yechimidir. U Shvartsshild koʻrsatkichini n=1 boʻlganda maxsus holat sifatida oʻz ichiga oladi va u global yalangʻoch kuchli egrilik oʻziga xosligini namoyish etadi. Biz JNW fazo-vaqt yalangʻoch singulyarliklari tomonidan zaif maydonli linzalarning taʼsirini plazma ishtirokida oʻrganamiz, bu taqsimotning uchta turini koʻrib chiqamiz: bir xil, yagona izotermik sferalar va yagona boʻlmagan izotermik gaz sharlari. Plazmaning mavjudligi vakuumdagi ogʻish bilan solishtirganda

gravitatsiyaviy burilishni o'zgartiradi. Shuningdek, plazma fotonlar tomonidan ishlab chiqarilgan linzali tasvirlarning shakllanishiga qanday ta'sir qilishini ham muhokama qilamiz.

Резюме: Метрика Яниса-Ньюмана-Виникура (JNW) представляет собой общее решение безмассовых скалярных уравнений Эйнштейна для статических сферически-симметричных систем, включающее дополнительный параметр v. Он включает метрику Шварцшильда как особый случай, когда v = 1, и демонстрирует глобально обнаженную особенность сильной кривизны. Мы изучаем эффект линзирования слабого поля голыми сингулярностями пространства-времени JNW в присутствии плазмы, рассматривая три типа распределений: однородные, сингулярные изотермические сферы и неособые изотермические газовые сферы. Наличие плазмы изменяет гравитационное отклонение по сравнению с отклонением в вакууме. Мы также обсудим, как плазма влияет на формирование линзированных изображений, создаваемых фотонами.

Kalit so'zlar: Janis-Nyuman-Vinikur (JNW) metrikasi, tortishish linzalari, plazma effekti, qora tuynuk.

Ключевые слова: метрика Джениса-Ньюмана-Виникура (JNW), гравитационное линзирование, плазменный эффект, черная дыра.

GEOMETRIC PROPERTIES OF GEOMETRIC TRIPOTENTS AND SPLIT FACES IN NEUTRAL *SFS* -SPACE

Ibragimov M.M.

Karakalpak State University name after Berdakh

Summary: *The present paper is devoted to the study of geometric properties of split faces of a unit ball of neutral SFS-space and to the study of properties of relations in the set of geometric tripotents. Namely, we give the condition under which the complete orthomodular lattice of geometric tripotents is a Boolean algebra and prove that the relations $\leq_r, \leq_c$ are preorders in the set of geometric tripotents.*

Keywords: *Neutral SFS -space, geometric tripotent, symmetric face, split face, strongly split face, Boolean algebra, pre-order.*

1. Introduction

The facially symmetric spaces first introduced and studied in [1-2] by Y.Friedman and B.Russo provide an appropriate structure that allows us to study the problem of characterizing the unit ball of a predual space JBW^*-triples, describing important properties of the convex set in geometric terms. In [1-4], the face structure of the unit ball of a facially symmetric space and its dual space was deeply analyzed, and basic notions such as *orthogonality, projective unit, normed face, symmetric face, generalized (or geometric) tripotent,* and *generalized (or geometric) Pierce projections* were defined using purely geometric terms. In this paper, we will continue to study the geometric properties of these spaces and the aforementioned notions.

The structure of this paper is as follows. The second section introduces the necessary concepts and information from the theory of facially symmetric spaces, which are necessary to present the results of the study. Note that in this paper we use the terminology and notations used in [1-5].

In [2, Proposition 4.5] it was proved that for any fixed geometric tripotent ω in a neutral strongly facially symmetric space Z (SFS -space) the set $L_\omega := \{v \in G\mathcal{U} : v \leq \omega\} \cup \{0\}$ is a complete orthomodular lattice with smallest element 0, largest element ω and orthomplement $v \mapsto v^\perp = \omega - v$, where $G\mathcal{U}$ is the set of all geometric tripotents of the unit ball of the dual space Z^*. In [8, Definition 3.1] we defined a strongly split face of the unit ball of a neutral strongly facially symmetric space and proved that if for any $u \in L_\omega$ a symmetric face F_u is a strongly split face, and then L_ω is a Boolean algebra (see in [8, Theorem 3.2]). In the third section, we study geometric properties of split faces of the unit ball and show that in neutral SFS -space with condition (FE) the notions of split face and strongly split face coincide. Consequently, we give conditions (in Corollary 3.7) under which a complete orthomodular lattice $L_\omega := \{v \in G\mathcal{U} : v \leq \omega\} \cup \{0\}$ is a Boolean algebra in neutral SFS -space with condition (FE) .

In [5, Section 2.1] the relations, $\leq_r$, $\leq_c$ in the set of tripotents of JB^*-triples were defined and it is shown that they are pre-orders, i.e., they are reflexive, transitive and not antisymmetric. In Section 4, these relations are similarly defined on the set of geometric tripotents $G\mathcal{U}$, in the dual space of SFS -space and it is shown that they are pre-orders. Moreover, we investigate geometric properties of these relations necessary for further study of the theory of facially symmetric spaces.

2. Preliminaries

Let Z be a real or complex normed space. Elements $f, g \in Z$ are called *mutually orthogonal* if $\|f + g\| = \|f - g\| = \|f\| + \|g\|$. Mutually orthogonal elements $f, g \in Z$ are denoted by $f \Diamond g$. *A norm-exposed face* of a unit ball Z_1 of space Z is a non-empty set (not coincident with Z_1) of the form $F_x = \{f \in Z_1 : f(x) = 1\}$, where $x \in Z^*$, $\|x\| = 1$. For subsets S, T of the space Z, $S \Diamond T$ means that $f \Diamond g$ for all $f \in S$, $g \in T$. For any subset $S \subset Z$, let $S^{\Diamond} = \{f \in Z : f \Diamond g, \ \forall g \in S\}$ and call $S^{\Diamond}$ the *orthogonal complement* to S. An element $u \in Z^*$ is called a *projective unit* if $\|u\| = 1$ and $\langle u, F_u^{\Diamond} \rangle = 0$. This means that a norm-exposed face F_u is "parallel" to $F_u^{\Diamond}$. By $\mathfrak{F}$ and $\mathcal{U}$ we denote the set of norm-exposed faces of Z_1 and projective units in Z^*, respectively. The mapping $\mathcal{U} \ni u \mapsto F_u \in \mathfrak{F}$ is not a bijection (see [1, Example 4]).

Definition 2.1. A norm-exposed face F_u of Z_1 is called a *symmetric face* if there exists a linear isometry S_u from Z into Z with $S_u^2 = I$ whose set of all fixed points exactly coincides with the topological direct sum of the closure $\overline{spF_u}$ of the linear envelope of the face F_u and its orthogonal complement $F_u^{\Diamond}$, i.e., coincides with $\left(\overline{spF_u} \right) \oplus F_u^{\Diamond}$.

Definition 2.2. A projective unit $u \in \mathcal{U}$ is called a *geometric tripotent* if F_u is a symmetric face and $S_u^* u = u$ for symmetry S_u.

By $S\mathfrak{F}$ and $G\mathcal{U}$ we denote the sets of symmetric faces Z_1 and geometric tripotents Z^*, respectively.

Definition 2.3. A real or complex normed space Z is called a *weakly facially symmetric space* (*WFS*-space) if each norm-exposed face Z_1 is symmetric.

In [2, Proposition 1.6] it is proved that there exists a bijection $G\mathcal{U} \ni u \mapsto F_u \in S\mathfrak{F}$ on the *WFS*-space Z.

On the *WFS*-space Z for each symmetric face F_u, *the geometric (or generalized) Pierce projections* $P_k(u)$, $k = \{0, 1, 2\}$, are defined as follows:

$$P_1(u) = \frac{1}{2}(I - S_{F_u}), \quad P_1(u)(Z) = \{f \in Z : S_u f = -f\};$$

$P_0(u)$ and $P_2(u)$ projects Z onto $F_u^{\Diamond}$ and $\overline{spF_u}$, respectively.

A contractive projection Q on a normed space Z is called *neutral* if for any $f \in Z$ there follows $Qf = f$ from $\|Qf\| = \|f\|$.

A normed space Z is called *neutral* if for every symmetric face F_u the corresponding projector $P_2(u)$ is neutral.

Definition 2.4. A *WFS*-space Z is called a *strongly facially symmetric space* (*SFS*-space) if for every symmetric face F_u of Z_1 and every $v \in Z^*$ with $\|v\| = 1$ and $F_u \subset F_v$ we have $S_u^* v = v$, where S_u is the symmetry corresponding to F_u.

Definition 2.5. A neutral *SFS*-space Z is said to have the property (FE), if any norm-closed face of a unit ball Z_1 (different from Z_1) is a norm-exposed face.

Definition 2.6. Let Z be an *SFS*-space and $u, v \in G\mathcal{U}$. If $F_u \subset F_v$, then we write $u \leq v$.

Let Z be an *SFS*-space and $u, \omega \in G\mathcal{U}$. If $u \leq \omega$ and $u \neq \omega$ then it follows from [2, Lemma 4.2] that $(\omega - u) \in G\mathcal{U}$ and $(\omega - u) \lozenge u$. Moreover, it is shown in [7, Lemma] that $F_{\omega - u} = F_u^\lozenge \cap F_\omega$. In this case, the geometric tripotent $\omega - u$ is called the *orthogonal complement* of u and denoted by $u^\perp$.

3. Properties of split faces

Recall (see [6]) that a face F of a convex set K is called a split face if there exists a face G, called complementary to F such $F \cap G = \varnothing$ and K is a direct convex sum $F \oplus_c G$, i.e. any element $f \in K$ can be uniquely represented as $f = tg + (1-t)h$, where $t \in [0;1]$, $g \in F, h \in G$.

In a neutral *SFS*-space Z, instead of a convex set K we take a symmetric face $F_\omega \in Z_1$ corresponding to a fixed geometric tripotent $\omega \in Z^*$ and for a symmetric face $F_u \subset F_\omega$ we introduce the following definition.

Definition 3.1. Let Z be a neutral *SFS*-space and ω a fixed geometric tripotent in the space Z^*. A symmetric face $F_u \subset F_\omega$ is called a *strongly split face* if the equality
$$F_\omega = F_u \oplus_c F_{u^\perp}$$
is hold.

Clearly, if F_u is a strongly split face, then it is a split face. The validity of the converse statement remains open. Therefore, in [8] we formulated the following problem.

Problem 3.2 ([8, Problem]). *Let Z be a neutral SFS space and ω a fixed geometric tripotent in the space Z^*. Is any split symmetric face $F_u \subset F_\omega$ a strongly split face?*

We have solved this problem for a neutral *SFS*-space with condition (FE).

Theorem 3.3. *Let Z be a neutral SFS-space with condition (FE) and $\omega \in G\mathcal{U}$ a fixed geometric tripotent. Then for a geometric tripotent $u \leq \omega$ the following properties are equivalent:*

(i) F_u is a split face;

(ii) F_u is a strongly split face.

We first prove the following lemmas, which will be used in the proof of the theorem.

Lemma 3.4. *Let Z be a neutral SFS-space, $\omega \in G\mathcal{U}$ a fixed geometric tripotent and $u, v \in L_\omega$. If $u \wedge v = 0$ and $u^\perp \leq v$, then $u^\perp = v$.*

Proof. It follows from [2, Lemma 4.2] and [7, Lemma] that $F_{v-u^\perp} = F_v \bigcap F_u$, i.e. $F_{v-u^\perp} = \varnothing$, hence, $v - u^\perp = v \wedge u = 0$, therefore, so $v = u^\perp$.

Lemma 3.5. *Let Z be a neutral SFS-space and $\omega \in G\mathcal{U}$ is a fixed geometric tripotent. Let for some $u \leq \omega$ symmetric space F_u is split and its complementary face is $F_v \in S\mathcal{F}$, i.e. $F_u \oplus_c F_v = F_\omega$. Then for any $x \in L_\omega$, for which $x \wedge u = 0$ the relation $x \leq v$ is satisfied.*

Proof. Let $x \neq 0$. Then $x \leq \omega$, i.e. $F_x \subset F_u \oplus_c F_v$. Therefore, an arbitrary element $f \in F_x$ can be represented as $f = \alpha g + (1-\alpha)h$, where $g \in F_u$, $h \in F_v$ and $\alpha \in [0,1]$. Since $x \wedge u = 0$, i.e. $F_x \bigcap F_u = \varnothing$, then $\alpha \neq 1$. If $\alpha \in (0,1)$, then it follows from the definition of face that $g, h \in F_x$. $F_x \bigcap F_u = \varnothing$. This is not true since. Hence, $\alpha = 0$, i.e. $f = h$. Therefore, $F_x \subset F_v$, i.e. $x \leq v$.

Lemma 3.6. *Let Z be a neutral SFS-space and $\omega \in G\mathcal{U}$ a fixed geometric tripotent. Let for some $u \leq \omega$ symmetric face F_u be a split face and its complementary face be $F_v \in S\mathcal{F}$. Then $F_v = F_{u^\perp}$.*

Proof. Since $u^\perp \leq \omega$ and $u^\perp \wedge u = 0$, we obtain from Lemma 3.5 $u^\perp \leq v$, hence from Lemma 3.4 we have $v = u^\perp$, i.e. $F_v = F_{u^\perp}$.

Proof of the theorem. $(i) \Rightarrow (ii)$. Let for $u \leq \omega$ a symmetric face F_u be a split face, i.e., $F_\omega = F_u \oplus_c G$, where G is a complementary face for F_u. It follows from condition (FE) that $G = F_v$, for some $v \in G\mathcal{U}$. Then from Lemma 3.6 we obtain that $v = u^\perp$, hence $F_\omega = F_u \oplus_c F_{u^\perp}$, i.e., F_u is a split face.

Implication $(ii) \Rightarrow (i)$ is obvious.

The following corollary follows from [8, Theorem 3.2] and Theorem 3.3.

Corollary 3.7. *Let Z be a neutral SFS-space with (FE) condition and $\omega \in G\mathcal{U}$ a fixed geometric tripotent. Suppose that for any $u \in L_\omega$ the symmetric face $F_u \subset F_\omega$ is a split face. Then L_ω is a Boolean algebra.*

4. Properties of relations $\leq_r$ and $\leq_c$ in the set of geometric tripotents

Definition 4.1 (see. [5, Section 2.1]). Let Z be a strongly facially symmetric space and $u, v \in G\mathcal{U}$. We sy that

- $u \leq_r v$, if $u \leq v$ or $-u \leq v$;
- $u \sim_r v$, if $u \leq_r v$ or $v \leq_r u$.

Definition 4.2 (see. [5, Section 2.1]). Let Z be a complex strongly facially symmetric space and $u, v \in G\mathcal{U}$. We sy that

- $u \leq_c v$, if there exists such a complex unit α, such that $\alpha u \leq v$;
- $u \sim_c v$, if $u \leq_c v$ and $v \leq_c u$.

Proposition 4.3. *Let Z be a strongly facially symmetric space. Then*

(a) *relation $\leq_r$ is a pre-order on the set $G\mathcal{U}$;*

(b) *for $u, v \in G\mathcal{U}$ we have $u \sim_r v$ if and only if either $v = u$ or $v = -u$.*

Proof. (a) The reflexivity of the relation $\leq_r$ is obvious. Let us show the transitivity. Let $u \leq_r v$ and $v \leq_r \omega$ hold for $u, v, \omega \in G\mathcal{U}$. Then

$$u \leq v \quad \text{or} \quad -u \leq v,$$

and

$$v \leq \omega \quad \text{or} \quad -v \leq \omega.$$

The following cases are possible.

Case 1. $u \leq v$ and $v \leq \omega$. Then $F_u \subset F_v$ and $F_v \subset F_\omega$, hence, $F_u \subset F_\omega$, i.e. $u \leq \omega$, therefore $u \leq_r \omega$.

Case 2. $u \leq v$ and $-v \leq \omega$. Then $F_u \subset F_v$ and $-F_v = F_{-v} \subset F_\omega$, hence, $F_{-u} \subset F_{-v} \subset F_\omega$, i.e. $-u \leq \omega$, therefore $u \leq_r \omega$.

Case 3. $-u \leq v$ and $v \leq \omega$. Then $-u \leq \omega$, i.e. $u \leq_r \omega$.

Case 4. $-u \leq v$ and $-v \leq \omega$. Then $F_u \subset F_{-v}$ and $F_{-v} \subset F_\omega$, hence, $F_u \subset F_\omega$, i.e. $u \leq \omega$, therefore $u \leq_r \omega$.

Thus, if $u \leq_r v$ and $v \leq_r \omega$, then $u \leq_r \omega$, i.e., the relation $\leq_r$ is transitive.

(b) **Necessity.** Let $u \leq_r v$ and $v \leq_r u$ be satisfied for $u, v \in G\mathcal{U}$. Then we have that

$$u \leq v \quad \text{and} \quad -u \leq v$$

and

$$v \leq u \quad \text{and} \quad -v \leq u.$$

Consider the following cases.

Case 1. $u \leq v$ and $v \leq u$. Then $F_u \subset F_v$ and $F_v \subset F_u$, hence $F_u = F_v$. Therefore, since according to [2, Proposition 1.6] there exists a bijection $G\mathcal{U} \ni u \mapsto F_u \in S\mathcal{F}$, then $u = v$.

Case 2. $u \leq v$ and $-v \leq u$. Then $F_u \subset F_v$ and $F_v \subset F_{-u}$, hence, $F_u \subset F_{-u}$. Hence it follows that $F_u = \varnothing$. Therefore, this case is not satisfied for any $u, v \in G\mathcal{U}$.

Case 3. $-u \leq v$ and $v \leq u$. Then $F_{-u} \subset F_v$ and $F_v \subset F_u$, hence, $F_{-u} \subset F_u$, i.e. $F_u = \varnothing$. Therefore, this case is also not satisfied for any $u, v \in G\mathcal{U}$.

Case 4. $-u \leq v$ and $-v \leq u$. Then $F_{-u} \subset F_v$ and $F_v \subset F_{-u}$, hence, $F_v = F_{-u}$, i.e. $v = -u$.

Sufficiency. Obvious.

Proposition 4.4. Let Z be a complex *SFS*-space. Then

(a) *the relation $\leq_c$ is a pre-order on the set $G\mathcal{U}$;*

(b) *for $u, v \in G\mathcal{U}$ we have that $u \sim_c v$ if and only if $u = \gamma v$ for a complex unit γ.*

We first prove the following auxiliary lemmas.

Lemma 4.5. *Let Z be an SFS-space. Then for any $u \in G\mathcal{U}$ and any $\alpha \in K$ ($K = \mathbb{R}$ or $K = \mathbb{C}$) with $|\alpha| = 1$ we have*

(i) $\alpha u \in G\mathcal{U}$;

(ii) $F_u = \alpha F_{\alpha u}$.

Proof. (i) Since $u \in G\mathcal{U}$, then $\|u\| = 1$ and $\langle u, F_u^\diamond \rangle = 0$. Then $\|\alpha u\| = |\alpha| \|u\| = 1$ and $\langle \alpha u, F_u^\diamond \rangle = \alpha \langle u, F_u^\diamond \rangle = 0$, hence, $\alpha u \in \mathcal{U}$. In [9, Theorem 1] it is proved that $\mathcal{U} = G\mathcal{U}$, so $\alpha u \in G\mathcal{U}$.

(ii) Let us rewrite the inclusion $F_u \subset \alpha F_{\alpha u}$ in the form $\frac{1}{\alpha} F_u \subset F_{\alpha u}$. Let $\forall f \in \frac{1}{\alpha} F_u$, hence,

$f = \frac{1}{\alpha} g$, where $g \in F_u$. Then $\|f\| = \left|\frac{1}{\alpha}\right| \|g\| = 1$ and $f(\alpha u) = \left(\frac{1}{\alpha} g\right)(\alpha u) = g(u) = 1$, i.e. $f \in F_{\alpha u}$.

Thus, $\frac{1}{\alpha} F_u \subset F_{\alpha u}$, i.e. $F_u \subset \alpha F_{\alpha u}$. Now let $\forall h \in \alpha F_{\alpha u}$. Then $h = \alpha l$, where $l \in F_{\alpha u}$, hence,

$\|h\| = |\alpha| \|g\| = 1$ and $h(u) = (\alpha l)(u) = l(\alpha u) = 1$, therefore $\alpha F_{\alpha u} \subset F_u$. Thus, $F_u = \alpha F_{\alpha u}$.

Lemma 4.6. *Let Z be an SFS-space. Then for arbitrary $u \in G\mathcal{U}$ and for any $\alpha, \beta \in K$ ($K = \mathbb{R}$ or $K = \mathbb{C}$) with $|\alpha| = |\beta| = 1$ the set $\alpha F_{\beta u}$ is a symmetric face and $\alpha F_{\beta u} = F_{\frac{\beta}{\alpha} u}$.*

Proof. It follows from Lemma $4.5(i)$ that $\frac{\beta}{\alpha} u \in G\mathcal{U}$, i.e., $F_{\frac{\beta}{\alpha} u}$ is a symmetric face. Let us first prove the inclusion $\alpha F_{\beta u} \subset F_{\frac{\beta}{\alpha} u}$. Let $\forall f \in \alpha F_{\beta u}$. Then $f = \alpha g$, where $g \in F_{\beta u}$, hence

$\|f\| = \|\alpha g\| = |\alpha| \|g\| = 1$ and $f\left(\frac{\beta}{\alpha} u\right) = (\alpha g)\left(\frac{\beta}{\alpha} u\right) = \alpha \cdot \frac{1}{\alpha} g(\beta u) = 1$, i.e., $f \in F_{\frac{\beta}{\alpha} u}$, so inclusion

$\alpha F_{\beta u} \subset F_{\frac{\beta}{\alpha} u}$ is satisfied.

Now let us prove the inclusion $F_{\frac{\beta}{\alpha} u} \subset \alpha F_{\beta u}$. Let us rewrite it in the form $\frac{1}{\alpha} F_{\frac{\beta}{\alpha} u} \subset F_{\beta u}$. Let

$\forall f \in \frac{1}{\alpha} F_{\frac{\beta}{\alpha} u}$. Then $f = \frac{1}{\alpha} g$, where $g \in F_{\frac{\beta}{\alpha} u}$, hence $f(\beta u) = \left(\frac{1}{\alpha} g\right)(\beta u) = g\left(\frac{\beta}{\alpha} u\right) = 1$, therefore

$\frac{1}{\alpha} F_{\frac{\beta}{\alpha} u} \subset F_{\beta u}$, i.e. $F_{\frac{\beta}{\alpha} u} \subset \alpha F_{\beta u}$.

Thus $\alpha F_{\beta u} = F_{\frac{\beta}{\alpha} u}$.

Proof of the proposition. (a) The reflexivity of the relation $\leq_c$ is obvious. Let us prove its transitivity. Let $u \leq_c v$ and $v \leq_c \omega$ be satisfied for $u, v, \omega \in G\mathcal{U}$, i.e., there exist $\lambda, \mu \in \mathbb{C}$ with $|\lambda| = |\mu| = 1$ such that $\lambda u \leq v$ and $\mu v \leq \omega$. From Lemma $4.5(i)$ we obtain that $\lambda u, \mu v \in G\mathcal{U}$, hence $F_{\lambda u} \subset F_v$ $F_{\mu v} \subset F_\omega$. From the last inclusion and from Lemma $4.5(ii)$ we have $F_v = \mu F_{\mu v} \subset \mu F_\omega$, hence $F_{\lambda u} \subset F_v \subset \mu F_\omega$, i.e., $F_{\lambda u} \subset \mu F_\omega$. Let us rewrite this inclusion in the form $\frac{1}{\mu} F_{\lambda u} \subset F_\omega$. It follows from Lemma 4.6 that $\frac{1}{\mu} F_{\lambda u} = F_{\lambda \mu u}$. Then $F_{\lambda \mu u} \subset F_\omega$. Since, $|\lambda \mu| = 1$, then $u \leq_c \omega$.

(b) **Necessity.** Let $u \sim_c v$, i.e. there exist such $\alpha, \beta \in \mathbb{C}$ with $|\alpha| = |\beta| = 1$ that $\alpha u \leq v$ and $\beta v \leq u$. Then $F_{\alpha u} \subset F_v$ and $F_{\beta v} \subset F_u$. From Lemma $4.5(ii)$ we have that $F_{\alpha u} = \frac{1}{\alpha} F_u$ and $F_{\beta v} = \frac{1}{\beta} F_v$, hence, $F_u \subset \alpha F_v$ and $F_v \subset \beta F_u$. Then $F_u \subset \alpha F_v \subset \alpha \beta F_u$. Since $|\alpha \beta| = 1$, then it follows from Lemma 4.6 that $\alpha \beta F_u = F_{\frac{1}{\alpha \beta} u}$, hence, $F_u \subset F_{\frac{1}{\alpha \beta} u}$. Let $\forall f \in F_u$. Then $f\left(\frac{1}{\alpha \beta} u\right) = 1$, i.e. $\alpha \beta = 1$. Since, $\beta F_u = F_{\frac{1}{\beta} u}$, then

$F_v \subset \beta F_u = F_{\frac{1}{\beta}u} \subset F_{\alpha u} \subset F_v$, i.e. $F_v = F_{\alpha u}$. Hence we get that $F_u = F_{\frac{1}{\alpha}v} = F_{\beta v}$. Since there is a bijection $G \mathcal{U} \ni u \mapsto F_u \in S\mathfrak{F}$, then $u = \beta v$, i.e. $\gamma = \beta$.

Sufficiency. Let $u = \gamma v$. Since $u \leq u$, then $\gamma v \leq u$, i.e. $v \leq_c u$. And from inequality $u \leq \gamma v$ it follows that $F_u \subset F_{\gamma v} = \frac{1}{\gamma} F_v$, i.e. $F_{\frac{1}{\gamma}u} \subset F_v$, hence $\frac{1}{\gamma}u \leq v$, therefore $u \leq_c v$ Thus $u \sim_c v$.

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*Rezyume: Mazkur maqolada neytral **SFS** - fazo birlik sharidagi ajiriladigan (bo'linadigan) yoqlarining geometrik xossalari va geometrik tripotentlar to'plamida $\leq_r, \leq_c$ munosobatlar o'rganilgan. Aniqroq aytganda, geometrik tripotentlarning to'liq ortomodulyar panjarasining bul algebrasi bo'lishi shartlari ko'rsatilgan va $\leq_r, \leq_c$ munosobatlarning geometrik tripotentlar to'plamida tartib oldi bo'lishi isbotlangan.*

*Резюме: Настоящая статья посвящён исследованию геометрических свойств расщепленных граней единичного шара нейтрального **SFS** -пространства и изучению свойств отношений $\leq_r, \leq_c$ в множестве геометрических трипотентов. А именно, дано условие при котором полная ортомодулярная решетка трипотентов является булевой алгеброй и доказываем, что отношения $\leq_r, \leq_c$ являются предпорядками в множестве геометрических трипотентов.*

*Kalit so'zlar: Neytral **SFS** -fazo, geometrik tripotent, simmetrik yoq, ajiratiladigan yoq, ko'chli ajiratiladigan yoq, bul algebrasi, tartib oldi.*

*Ключевые слова: Нейтральное **SFS** -пространство, геометрический трипотент, симметричная грань, расщепленная грань, сильно расщепленная грань, булево алгебра, предпорядок.*

TECHNICAL SCIENCES

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ORGANIZATION OF EDUCATIONAL SYSTEM BASED ON GRAPHIC PROGRAMS

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Summary: *In the article, the role of graphic programs in the engineering sciences in the educational system, especially in technical higher education institutions, through them, we can see that the issues related to Build Art technologies, which are the demand of today, can be easily and conveniently solved.*

Key words: *Graphics programs, education, analysis and results, water transfer and water storage facilities, 3D model, engineering computer graphics*

INTRODUCTION.

The ability to analyze the spatial properties and functions of subjects is an important component of the graphic preparation of students. In the field of graphic education, a number of psychological scientists on topics such as the development of children's spatial imagination, imaginative analysis of spatial images, division into parts, assimilation of surfaces and shapes into their minds: B.F.Lomov, B.G.Ananev, M.D. Aleksandrova, Y.N. Kobanova-Meller, K.I.Veresoskaya, V.A.Klimenko, N.N.Anisimov, etc. work experiences to activate students' intellectual and cognitive activities, develop spatial thinking, imagination, imaginative observation and perception of spatial phenomena, forms, and acquisition of all graphic knowledge and skills, has been adding a significant share to the composition of creative qualities such as memory retention .

The current state of the problem under consideration. After our republic gained independence, the Law "On Education" [3], "National Personnel Training Program" [1] was adopted and put into practice in order to update and fundamentally reform the content of education. began to do. In response to this, exemplary work is being done in the field of graphic education, along with other subjects. In particular, drawing programs and textbooks of general education schools are being re-analysed and a new generation of them is being created.

However, despite this, there are still a number of problems in the field of graphic education, for the purpose of their elimination, scientific research and research are still insufficient. For example, one of the most important of these is the problem of increasing the level of theoretical knowledge in teaching students graphic literacy, and during the next quarter of a century, no research work was conducted on this topic. If we analyze the research conducted thirty years ago, L.M. Gosudarskiy paid special attention to increasing the level of students' theoretical knowledge in graphic education. He conducted scientific research on this topic. He stated that "in order for students to fully master graphic knowledge, first of all, they need to thoroughly master projection drawing, which is the theoretical basis of drawing [8]. In the field of production, the system of rectangular projections drawings are used more. That is why it is extremely necessary to teach students to read and make such drawings in depth. The rules of constructing axonometric projections and their methods of execution should be considered as methods that help to read complex drawings.

"Students will systematically use the knowledge gained from projection drawing throughout the course of drawing." In fact, L.M. Gosudarsky correctly indicated the section of projection drawing as the basis of graphic literacy. Because this section forms the theoretical basis of the drawing course. However, based on the demand of that time, he was able to recommend the use of some elements of drawing theometry. It certainly cannot meet today's requirements and goals. Because today, graphic education requires teachers to develop students' spatial thinking, inventiveness, and creative activity through projection drawing topics [11]. During the former Soviet system, it is difficult to show a researcher who did more positive work than Professor A.D. Botvinnikov in the development of the field of graphic education in general education schools.

In his scientific research, A.D. Botvinnikov gave a wide place to the content of teaching based on projection, and he also came to the conclusion that projection drawing is the basis of developing graphic literacy in students. He deeply analyzes the subjects of projection drawing and negatively assesses that the theoretical and practical knowledge contained in them are separated from each other. It proves the need for theoretical and practical knowledge to complement each other in the in-depth teaching of graphic literacy to students [15]. In this regard, he S.M. Kolotov, K.A. Yankovsky, A.I. Ostrovsky, P.Y. Galperin, B.F. Lomov, Ye. It relies on the work experiences and opinions of a number of Methodist scientists such as N. Kabonova-Meller. At the same time, developed foreign countries give examples from the work experience of America, Germany, and Romania, and show that the subjects of projection drawing in the textbooks created by them are composed of the integration of theoretical and practical knowledge. Stating that projection drawing is important in improving the effectiveness of graphic education in general education schools, he emphasizes that by studying the topics of this section, it is possible to form a number of positive qualities of students, such as activating mental activity and developing spatial thinking [4].

In fact, one can hear from many expert teachers that the section of projection drawing is the core of the drawing course. That is why the content of Olympiad assignments in drawing is mostly taken from the section of projection drawing.

It is known that in-depth study of some complex sections and topics included in the program in all subjects is carried out at the expense of optional training. Before analyzing the work carried out in the optional classes from drawing, let's dwell on the opinions and work experiences about the role of optional classes in the educational process. Scientists who have conducted scientific research in this field express the following points.

Statment of issue. Therefore, without experimenting with the help of computer modeling, first creating and testing the most suitable model for certain systems significantly reduces the costs of the experiment. Saving costs for experiments with the help of models, in turn, leads to great economic efficiency [1].

What is 3D modeling? 3D modeling is the creation of a 3D project based on a sketch or drawing. To create a 3D model of objects, special programs are used on devices [9], for example, tablets, computers. Rendering is one of the important stages in the modeling process. Modern 3-dimensional engineering computer graphics allows the creation of a 3D model that is difficult to distinguish from a real person or object to make a model of an object or a person look as realistic as possible. A professionally modeled product can be easily presented to clients, investors or partners. 3D modeling software produces three-dimensional digital effects [9]. You've seen the results of 3D modeling in movies, animations, and video games, filled with creatures and structures in this world.

3D modeling is the process of creating a 3D representation of any surface or object by manipulating polygons, edges, and vertices in a simulated 3D space. 3D modeling can be achieved

manually with specialized 3D rendering software, which allows the artist to create and deform polygonal surfaces or scan a real object into a set of data that can be used to digitally represent objects. allows.

3D modeling software. 3D modeling software allows you to create basic 3D models of characters or objects. Fully customizable programs give you the tools you need to fill your designers with precise details [9]. There are many 3D modeling software on the market. Here are some of the top rated ones:

AutoCAD has been doing 3D since before it was popular. This professional trading software has been around since 1982 and is considered the gold standard by many designers. Available on Windows and Mac operating systems.

ZBrush from Pixologic brings the technique of clay manipulation into a professional-level application. The process takes a lot of time to master, so it is not recommended for beginners in 3D design. The same developers make Sculptris, a similar but simpler free 3D modeling program that 3D designers can try first.

3DS Max from Autodesk is a video game developer and visual. Popular with effects artists. While the program can handle animation and engineering, those features require extensive training to master. 3DS Max works with Windows.

SketchUp is a 3D program for designers with experience in 3D modeling. SketchUp specializes in architectural structures and is often used to visualize architecture, interior design, urban planning, engineering, and construction. Available on Windows and MacOS operating systems.

3D modeling is used in many fields, including engineering, architecture, entertainment, film, special effects, game development, and commercial advertising. A popular example of 3D technology is its use in mainstream movies. Just think of James Cameron's 2009 film Avatar. The film helped transform 3D modeling into the 3D industry when it used many of its 3D modeling concepts to create the movie planet Pandora.

Results and analyses. There are many different ways to represent a topographic surface, such as the earth's surface, and each has its own merits and demerits. Before moving on to the next chapter, we will give a little information about these methods.

Water storage facility 2D drawing
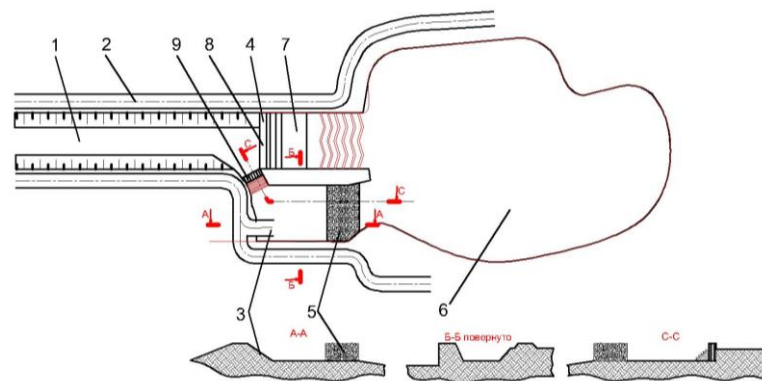
Figure 1
Water storage facility 3D drawing
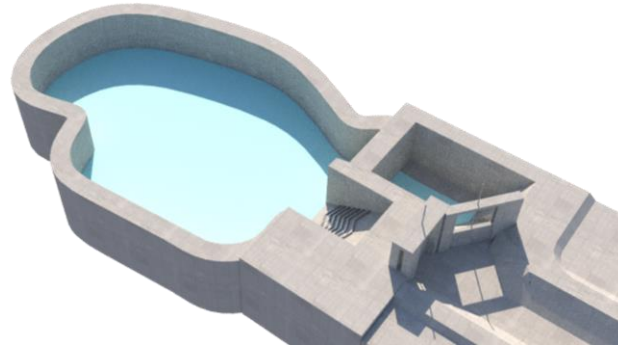
Figure 2

General information about the water storage facility 3D drawing

2D drawing of the proposed first option of the given project of the water treatment facility
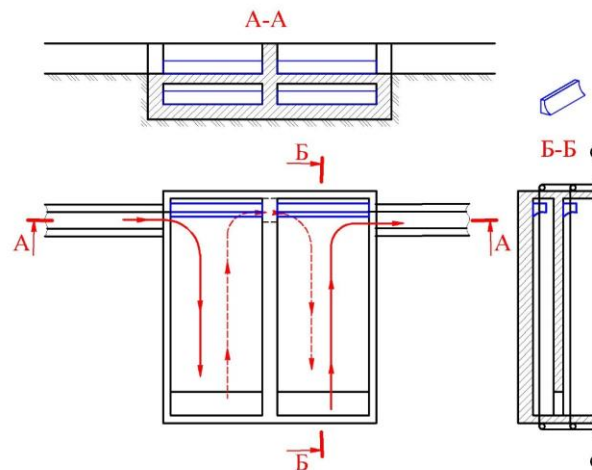
Figure 3
The water treatment facility is the second proposed version of the given project, based on the Archimedean spiral
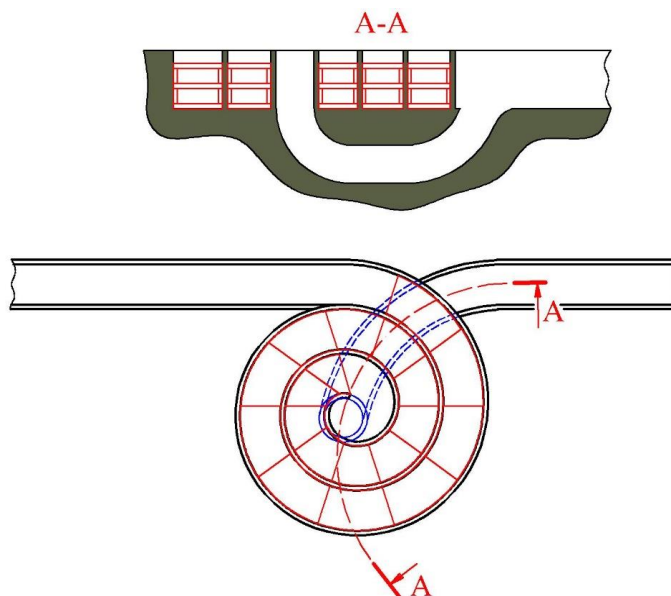
Figure 4
CONCLUSION

Students' knowledge of modeling is formed in the process of mastering the reality of the environment, drawings. In higher education, students should acquire and understand the most important three-dimensional aspects and features of the real world - two-dimensional and three-dimensional, the basic criteria of drawing and graphic software, acquire a number of skills and abilities, and follow them in practice. There are the most favorable conditions for them to acquire the necessary knowledge to express their feelings accordingly.

Increasing the teacher's responsibility in the education of students by using the means of teaching engineering computer graphics, providing them with pedagogical and psychological knowledge is one of the current socio-pedagogical problems.

They are able to use the three-dimensional modeling tool in the teaching of engineering computer graphics. Methodological developments, set of tasks, multimedia electronic guide developed on the basis of scientific analysis of research results and tested in practice are used in all higher education institutions of our republic, in the conditions of increasing demand for teaching graphic programs, they will not only help students, but also Engineering in computer graphics and will have the knowledge, skills and abilities to use three-dimensional modeling.

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Rezyute: Maqolada muhandislik fanlari bo'yicha grafik dasturlarning ta'lim tizimida, ayniqsa, texnik oliy ta'lim muassasalarida tutgan o'rni, ular orqali bugungi kun talabi bo'lgan Build Art texnologiyalari bilan bog'liq masalalarni osonlik bilan hal qilish mumkinligini ko'rishimiz mumkin. va qulay tarzda hal qilinadi.

Резюме: В статье рассматривается роль графических программ по инженерным наукам в системе образования, особенно в технических вузах, через них мы видим, что вопросы, связанные с востребованными сегодня технологиями Build Art, могут быть легко решены. и удобно решается. Умение анализировать пространственные свойства и задачи предметов является важной составляющей графической подготовки учащихся.

Kalit so'zlar: Grafik dasturlar, o'qitish, tahlil va natijalar, suv nasoslari va suv omborlari, 3D model, muhandislik kompyuter grafikasi.

Ключевые слова: Графические программы, обучение, анализ и результаты, водоперекачивающие и водохранилища, 3D-модель, инженерная компьютерная графика

UDK 621.313

ASYNCHRONOUS GENERATOR WITH AUTOMATIC REACTIVE POWER CONTROLLER

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Summary: *The article presents the results of experimental studies of an autonomous robot of an asynchronous generator with a traditional squirrel-cage rotor. The influence of the magnitude of the active and mixed load of the generator, such as the change in the output voltage, and the frequency, the method of ensuring the constancy of the voltage with the help of automatic reactive power control devices, are determined.*
Key words: *Asynchronous generator with a traditional squirrel-cage rotor, capacitor banks, autonomous operation.*

As you know, the problem of saving fuel and energy resources in the production of electricity is the most urgent. The only and natural solution to which is the widespread introduction of renewable sources. The utility model relates to the use of asynchronous generators (AG) in autonomous power plants operating on renewable energy sources, and can be widely used in small hydroelectric power plants and wind turbines, that is, the main task of an asynchronous generator is to efficiently generate electrical energy [1].

When the AG is operating in autonomous mode, to create a rotating magnetic field, reactive power is required from an external source. The simplest and cheapest way to create the reactive power necessary to excite the magnetic field is to connect capacitor banks to the terminals of the generator stator winding, as a result of which the AG self-excites.

Known work on the use of an asynchronous machine (AM) with a squirrel-cage rotor, as a generator of low power. The connection of the capacitors to the output of the stator winding is also carried out according to the triangle scheme [2].

The disadvantage of this work is that on the AG stator, in addition to the main three-phase winding, an additional three-phase winding with a smaller number of turns is placed to connect small capacitors. This leads to an increase in the dimensions and weight of the device, because the previously released capacitors had large weight and size dimensions. Also known is the work, on the use of AM with a squirrel-cage rotor, as a generator. In this case, the connection of the capacitors to the output of the stator winding is carried out according to the "star" scheme to the three phases of the winding of the additional magnetic circuit located on the AG stator [3].

The disadvantage of this work is that an additional magnetic circuit is required, made of coaxially arranged cylindrical toothed cores adjacent to each other with teeth, with grooves, in some of which there are electrically conductive rods, and in others - conductors of a three-phase winding.

The objective of the proposed utility model is to create an AG without traditional windings on the rotor, with stator excitation, which has a simple design, high operational reliability, relatively low cost, high energy performance, from among commercially available asynchronous motors with a traditional squirrel-cage (laminated) rotor, without any - or design changes, using modern small-sized capacitors [4].

As you know, despite the ease of maintenance of asynchronous generators, the main drawback preventing their widespread use in traditional power plants and renewable energy sources was the lack of small-sized and relatively low-cost capacitors necessary to create reactive power.

At present, there have been changes in the technology for the production of AC capacitors, which have significantly reduced their cost and weight and size. So, polypropylene capacitors basically have a thin polymer film with aluminum sputtering of the electrodes, that is, relatively cheap and lightweight components. The specific gravity of such capacitors is approximately equal to 0.1 kg/kVA, which is 50…100 times less than the weight of electrical machines. Therefore, at present, it is not required to place an additional three-phase winding on the AG stator, as in previous works. The problem is solved by the fact that the necessary reactive power for self-excitation of the AG is produced by using small-sized and cheap capacitors.

The claimed utility model is illustrated by drawings, where Figure-1 shows the electrical connection diagram of the AG with a load of different nature and different power when the generator is self-excited by modern small-sized capacitors [5,6].

The proposed model of the source of electrical energy consists of a primary asynchronous motor (IM) with a rated power of 7.0 kW, a rotation speed of 1500 rpm, and as an AG, a traditional squirrel-cage asynchronous machine with a shaft power of 4 kW, a rotation speed of 1500 rpm was used. min, rated voltage 380 V. Autonomous operation of the AG was carried out by connecting the capacitor bank to the generator outputs according to the triangle scheme.

This method of connecting capacitor banks makes it possible to provide self-excitation of the AG at low values of the capacitance of the capacitors in comparison with the star.

The research results were determined and analyzed experimentally on a test bench, consisting of AD-AG, installed in the laboratory of the Department of Power Engineering of Karakalpak State University [7].
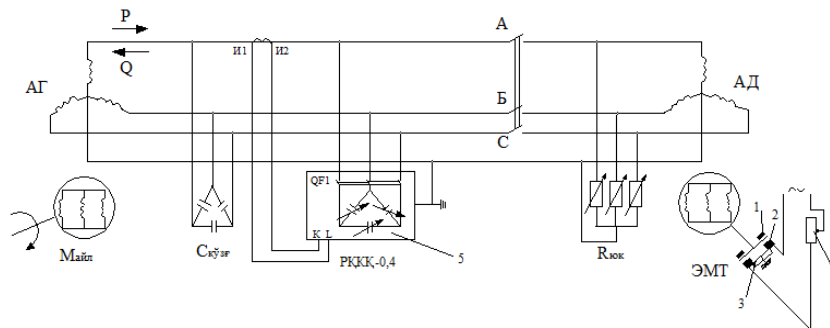
Figure -1. An automatic adjustment circuit that ensures the stability of the AG output voltage under various loads.
1- steel core. 2- coil. 3- hard drive. 4- rheostat. 5- ARPC.

Element 5, shown in the diagram, is a device for automatic adjustment of the reactive power consumed by the AG (ARPC), which ensures the stability of the output voltage of the AG at the level of the rated voltage at various loads, by automatically adjusting the capacitance of existing capacitor banks using contactors. This adjusting device was assembled at the Department of Power Engineering and applied in the experiment. The main element of the device is the PFR-12 (power factor relay) block. Initially, after starting the AG, by connecting to the output of the AG, the phase capacitance Cexc = 17 μF determined by calculation, a nominal voltage of 380 V was obtained, the frequency at the AG output was f = 50 Hz.

According to the results of the experiment, it was established that the largest value of the active load at which the output voltage and frequency of the AG remain unchanged after excitation of the AG (at Cex=17μF=const), which is P=1.2 kW (Fig. 2) [8]:
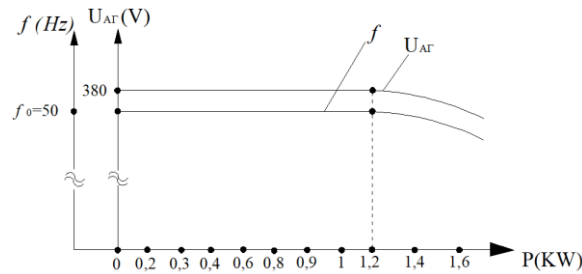
Figure-2. Graph of the dependence of the output voltage and frequency of the AG on the active load when the AG is excited by the rated voltage.

Considering that the rated power of the IM selected as the AG is 4 kW, the electric power of the AG is $P_{AG} = Pmex*\eta = 4$ kW$*0.86 = 3,44$ kW.

It can be seen from the above graph that up to 30 percent load of the AG from the nominal, the values of the output voltage and frequency remain stable, that is, equal to the nominal values of voltage and nominal frequency.

Then an ARPC was connected to the output of the AG, and an experiment was carried out to determine the effect of the active load on the output voltage and frequency. The scheme for connecting the experiment is shown in Figure-3.
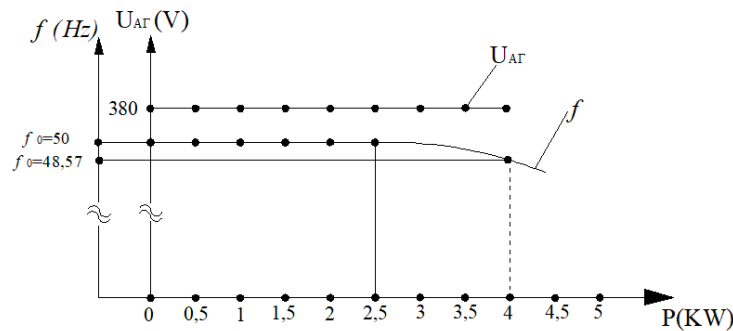
Figure-3. Graph of dependence of voltage and frequency of AG with APP on active load.

It was found from the graph that when the active load of the AG is increased to 4 kW, the output voltage remains unchanged due to ARPC at the level of the nominal value, and the output frequency is provided at the level f = 50 Hz up to a load of 2.5 kW, which shows a positive effect of ARPC on stability frequency (1,3 kW more than before), in particular, when the AG load is up to 70% of the nominal (2.5 kW / 3,44 kW), At a load of 4 kW, it was f = 48,57 Hz. From previous experience, in the absence of ARPC, frequency constancy was ensured at an AG load of up to 1,3 kW.

The next experiment was carried out on the same stand when a mixed load was connected to the output of the AG, consisting of an AM with a power of 1.5 kW, an active load equal to 2.5 kW. К нагрузка АД увеличивалась с помощью электромагнитного тормоза (ЭМТ), подключенного к его ротору.

The results of this experiment, when the AG has a mixed load representing the total power of the AG, is shown in Figure-4 [9].
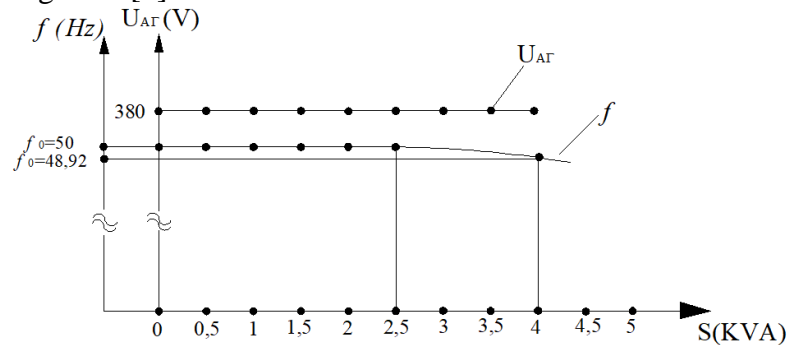
Figure-4. Graph of the voltage and frequency of the AG with ARPC on the mixed (active-inductive) load.

From the graph, you can see that with an increase in the field power of the AG to 4 kVA, the output voltage remained unchanged, and the output frequency remained f = 50 Hz at a load of up to 2.5 kVA. When the load of the AG is equal to 4 kVA, the frequency f = 48.92 Hz.

It follows from this that the decrease in the frequency of arterial hypertension with equal values of active and mixed load will be less with mixed load compared to active.

The conclusion from the above is that the use of ARPC ensures that the voltage at the AG output remains unchanged, depending on the magnitude and nature of the load, and the frequency remains constant equal to f = 50 Hz, at a load of up to 70% of the nominal [10].

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Rezyume: Maqolada qisqa tutashgan an'anaviy rotorli asinxron generatorning avtonom ishlashi bo'yicha eksperimental tadqiqotlar natijalari keltirilgan. Generatorning aktiv va aralash yuklamasi qiymati uning chiqish kuchlanish va chastotaning o'zgarishini reaktiv quvvatni avtomatik rostlash qurilmasi yordamida kuchlanish o'zgarmasligini ta'minlash usuli aniqlandi.

Резюме: В статье приведены результаты экспериментальных исследований автономной роботы асинхронного генератора с короткозамкнутым традиционным ротором. Определены влияние величины активной и смешанный нагрузки генератора и изменение выходного напряжения, и частоты способ обеспечения постоенство напряжения при помощи устройств автоматического регулирование реактивной мощности.

Kalit so'zlar: An'anaviy qisqa tutashgan rotorli asinxron generator, kondansator batareyalari, avtonom ishlash.

Ключевые слова: Асинхронные генератор с короткозамкнутым традиционным ротором, конденсаторные батарей, автономная работа.

UDC 004.056

ORGANIZATION OF A MECHANISM FOR LIMITING THE USE OF THE ORGANIZATION'S DATABASE ROLE-BASED ACCESS CONTROL MODEL

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Summary: *The article examines the basic principles of creating and operating a distributed database, client-server technologies, the fle server model, the remote data access model, the database server model, and the application server model.*
Key words: *access, database, server, Role-Based Access Control.*

I. INTRODUCTION

Role-Based Access Control is an evolution of the discretionary access control policy. Rules for using objects of system subjects are grouped taking into account their specific characteristics, that is, roles are created. In this case, the rules of this model are more flexible compared to the rules of the mandated model, which is built on the basis of a strictly defined information value grid. In the role model, the concept of "subject" is replaced by the concepts of "user" and "role". A user is a person who works with the system and performs certain service tasks. A role is an abstract concept moving in a system, which is associated with a limited, logically connected set of powers necessary to perform a certain activity. Access control using role-based policies is performed in two steps. In the first step, a set of authorizations representing a set of rights to use objects for each role is set. In the second step, each user is assigned a list of n roles that he can. In the role-based access control subsystem, users cannot transfer access rights to information to other users. This is the main difference between role-based usage restrictions and discretionary and mandated usage restrictions. In role restriction of use, the distribution of role authority (as opposed to discretionary use) depends not on the security administrator, but on the security policy adopted by the organization and the particular database management system. A role can be understood as a set of actions that a user or group of users performs at the organization level. A role definition includes a description of tasks, responsibilities, and competencies. Tasks are assigned roles by the database management system security administrator. A user's use of a role is also determined by this administrator.

II. MAIN PART

The role type of usage restriction provides control of usage at the level of abstraction and description of subjects and objects used in the organization. Adding and removing roles becomes an uncomplicated process if the access restriction subsystem is built around role-based access restrictions. Thus, role restriction allows the security administrator to work with a higher level of abstraction than traditional access control lists used for discretionary access.

Security policies based on role restriction of use are described in terms of users, roles, actions and protected objects (Figure 1).

Users of database	→	Roles	→	Function (User privilege)	→	Objects of database
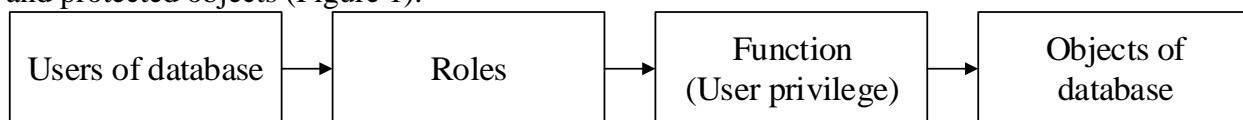
Figure 1. A mechanism for using users of information stored in the database to restrict access to roles

In order to perform an action on a protected object with role restriction, the user must have a certain role. A user must be authorized for this role by the database management system security administrator before performing this role. Thus, role restriction gives the administrator the ability to set restrictions on role authorization, role activation, and action execution.

The presentation of roles allows defining more precise and understandable rules for restricting the use of computer systems for users. In this case, role restriction is effectively used in computer systems where the scope of user powers and responsibilities is clearly defined [1].

A role means a set of rights to use computer system objects. But role restriction of access is not considered a special case of discretionary restriction of use, because the rules of role restriction of access determine the order of providing access rights to subjects of the computer system at each moment of time, depending on its working session and the roles that exist or do not exist in it. This is characteristic of the system of mandated restriction of use. At the same time, the rules of role restriction of use are compatible with the rules of mandated restriction of use. It is known that the rules of mandated restriction of use are drawn up on the basis of a strictly predetermined information importance grid (scale) [2].

The main elements of the basic model of role restriction of use are as follows:

U – set of users;

R – set of roles;

P – a set of rights to use computer system objects;

S – set of user sessions;

$PA: R \rightarrow 2^r$- a function that defines usage rights for each role;

where there exists for each such that $; p \in P \ r \in R \ p \in PA \ (r)$

$PA: R \rightarrow 2^r$- for each user, a function that defines a set of roles that can be authorized;

user: – a function specifying a user for each session activated by name; $S \rightarrow U$

roles: - a function defining a set of roles for an authorized user in a specific session; in which the roles condition is fulfilled for each at each instant of time.

$$S \rightarrow 2^R s \in S(S) \le UA(user(S))$$

During one session, the set of roles authorized by the user is modified by the user himself. There is no mechanism for activating another session by one session in role restriction. All sessions are activated by the user. Restrictions on the set of roles that a user can be authorized to, or that can be authorized during a session, are an important mechanism of the basic usage role restriction model. This mechanism is also necessary for the widespread use of role restrictions, as it ensures high compatibility with information processing technologies in computer systems.

In the basic model of role restriction of use, it is assumed that the sets U, R, P and the functions PA, UA do not change over time, or there is a single role that allows to change these sets and functions - "security administrator". In real computer systems with hundreds and thousands of concurrent users, the role structure and access rights can be very complex, which means that administration issues are a critical issue. To solve this problem, a role restriction administration model is considered, which is built on the basis of the role restriction model [3].

The basic model structure of usage role restriction is presented in Figure 2.

The role restriction administration model sees the following elements in addition to the elements used in the base role restriction model:

AR – set of administrative roles;

AP is a set of administrative rights of use

$APA: AR \rightarrow 2^{AP}$ - a function defining a set of administrative rights of use for each administrative role;

$AUA: U \rightarrow 2^{AR}$ – a function that specifies, for each user, the set of administrative roles to which he can be authorized.
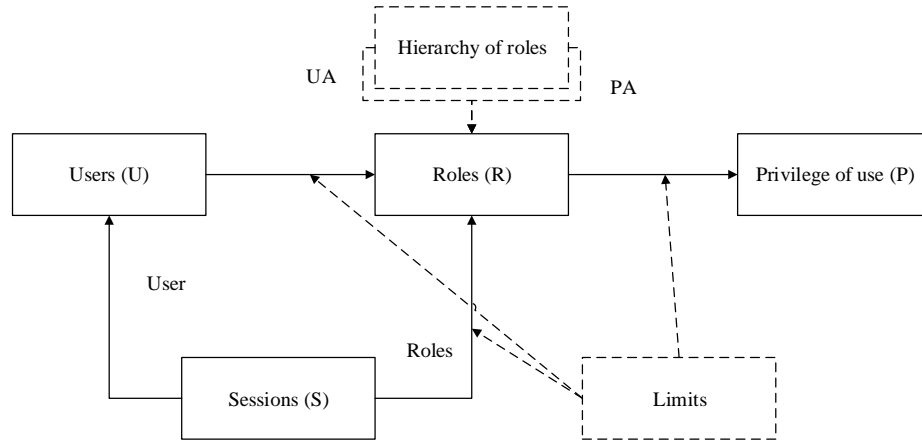
Figure 2. The structure of the base model of roll restriction of use

The structure of the usage role restriction administration model is shown in Figure 3.

AUA function values are changed when administering a set of authorized user roles. To make this change, special administrative roles are defined from the AR suite [4].

To manage the set of authorized user roles, you must define the following:

- for each administrative role of the role set, the set of authorized users that it allows to change;

- a prerequisite for each role that users match
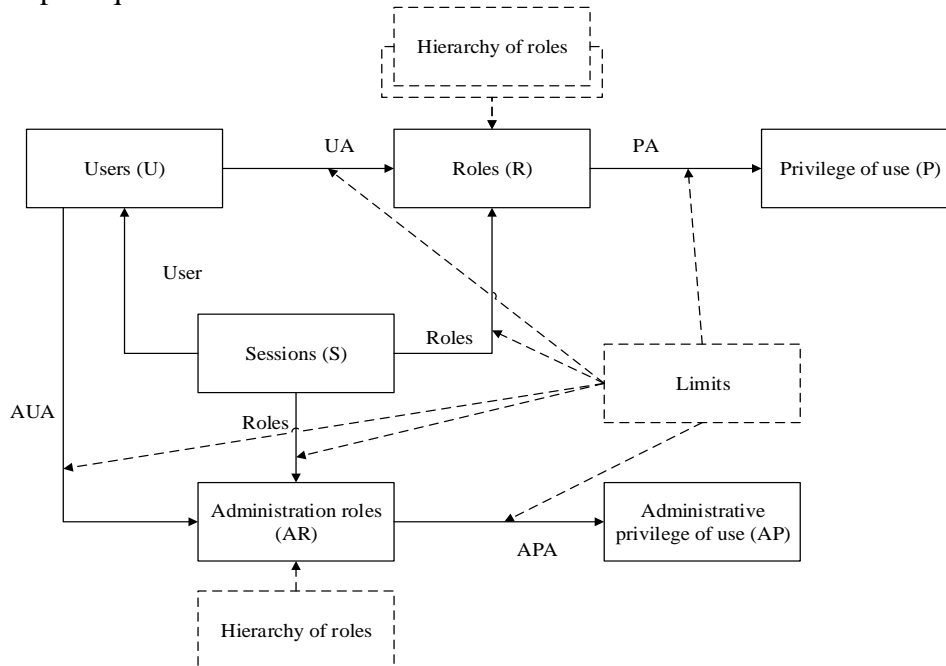
Figure 3. The structure of the model of the administration of roll restriction of use

A sample structure of the hierarchy of administrative roles is presented in Figure 3 "a" and "b".

The smallest role in the hierarchy is the employee, the largest role in the hierarchy of project production roles is the director, the smallest role is the engineer. Work is carried out on two projects in management. Within each project, the largest role is project manager, the smallest role is project engineer, and the non-comparable roles are production engineer and control engineer. The hierarchy of administrative roles consists of four roles, the largest role being security administrator [5].

The most complex issue is defining the administrative rules that allow changing the role hierarchy seen in the role restriction model. To resolve this issue, manage the set of authorized user roles and role usage rights approaches are used to determine the rules.
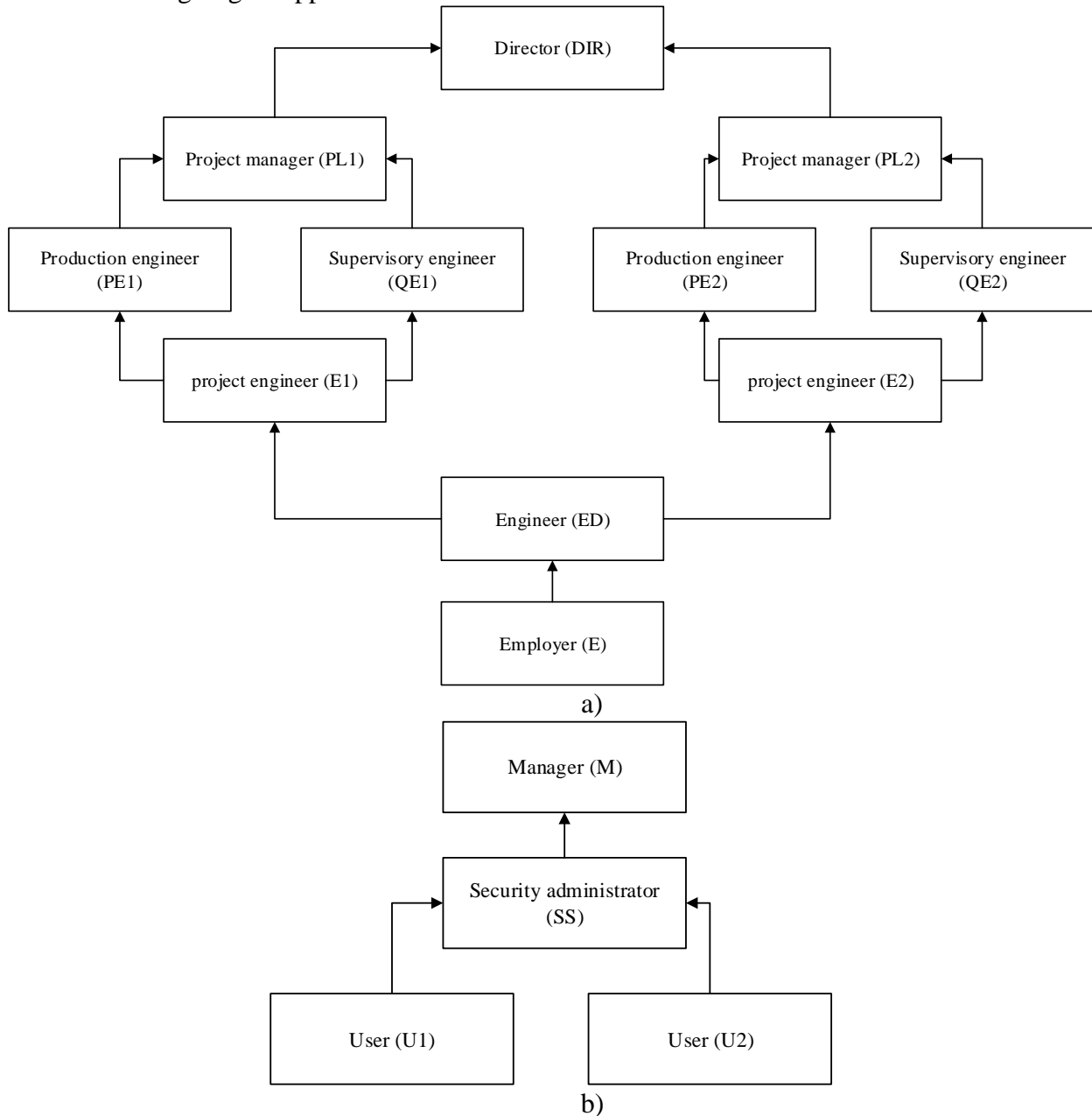
Figure 4. Model structure of the hierarchy of administrative roles

The most complex issue is defining the administrative rules that allow changing the role hierarchy seen in the role restriction model. To solve this problem, the approaches implemented in

determining the set of authorized roles of users and the rules for managing the rights to use roles are used [6].

Three hierarchies are given whose elements are:
- opportunities – set of usage rights and other opportunities;
- groups – a collection of users and other groups;
- associations – a collection of users, access rights, groups, capability sets, and other associations.

III. CONCLUSION

An Associations Hierarchy is more general and can include Capabilities and Groups Hierarchies. Defining capabilities and groups is required to ensure that the role management rules in the model are compatible with the information processing technology used in practice and to create the administrative structure of the organization. For example, a user may need some set of access rights to perform a task. Moreover, the absence of any right of use in this area may render the ownership of existing rights meaningless.

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Rezyume: Maqolada taqsimlangan ma'lumotlar bazasini yaratish va ishlatishning asosiy tamoyillari, mijoz-server texnologiyalari, fle-server modeli, ma'lumotlarga masofaviy kirish modeli, ma'lumotlar bazasi serveri modeli va amaliy server modeli ko'rib chiqiladi.

Резюме: В статье рассматриваются основные принципы создания и эксплуатации распределенной базы данных, клиент-серверные технологии, модель файлового сервера, модель удаленного доступа к данным, модель сервера баз данных и модель сервера приложений.

Kalit so'zlar: kirish, ma'lumotlar bazasi, server, rolga asoslangan kirishni boshqarish.
Ключевые слова: доступ, база данных, сервер, ролевой контроль доступа.

METHOD FOR CALCULATING THE MAIN PARAMETERS OF CONTACT HEAT EXCHANGERS BASED ON EXPERIMENTAL DATA

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Summary: This article presents the results of a comparative analysis of existing methods for calculating the main parameters of contact heat exchangers with a surface cooler in an exhaust chamber and substantiates the feasibility of using a simplified calculation technique based on a generalization of experimental data using empirical dependencies. The use of the proposed methodology made it possible to exclude from the calculations of the heat recovery chamber with a surface cooler the most time-consuming categories of calculating the heat transfer coefficient and determining the average temperature difference with a breakdown of the process in the I - d - diagram into sections. Comparison of the results of calculation of contact heat exchangers using a simplified method with the construction of the process in the I-d-diagram gave a deviation in the heat transfer coefficient of ± 3-4%, in terms of flue gas parameters no more than ± 2.5%.
Key words: contact heat exchanger, boiler unit, energy efficiency, natural gas, deep cooling, dew points, water vapor condensation, combustion products, heat transfer coefficient, excess air coefficient.

Introduction. Deep cooling (below the dew point) of the combustion products of natural gas is accompanied by the condensation of part of the water vapor from the flue gases and is provided in contact heat exchangers (CHE), which makes it possible to condense (in actually operating industrial plants) up to 60-65% of the water vapor of the exhaust gases of boiler units. We have developed and tested an experimental CHE with a surface cooler (SC) located in the outlet chamber of the CHE, which made it possible to increase the degree of water vapor condensation from 60-65% to 70-72%.

Problem statement: When calculating the CHE for the given parameters of gases at the outlet of the boiler and the accepted flow rates and water temperatures in the CHE and PO, it is necessary:

– draw up a heat balance equation;
– determine the calculated amount of heat Qp, kJ/h;
– calculate the parameters of gases in front of the surface cooler;
- build a J-d-diagram of the process, determine the temperature difference;
– calculate the heat transfer coefficient from gases to water;
- determine the dimensions of the contact chamber and fit;
– to calculate the surface of the cooler for flue gas parameters after the surface cooler.

The greatest difficulty is caused, as a rule, by the calculation of the heat transfer coefficient and the determination of the temperature difference on the J - d - diagram with a breakdown of the process into sections.

The heat transfer coefficient is usually determined by criterion equations using dimensionless criteria: Nu (Nusselt), Re (Reynolds), Pr (Prandtl), Ki (Kirpichev) and Gu (Gukhman).

Comparison of the results of the calculation of the CHE, made according to the above method, with the indicators obtained during testing of operating plants, gives a discrepancy of 8-15% in terms of the heat transfer coefficient and the performance of the CHE. In this regard, it is advisable to use a simplified calculation method based on the generalization of experimental data using empirical dependences for calculating the main parameters of the CHE with PO in the discharge

chamber. Below are the main provisions of simplified calculations using the data presented in the works of a number of authors [1-6].

1. Initial data for calculation:

V_g- gas flow rate at the inlet of the heat exchanger nm^3/h

L- mass flow rate of gases the same, kg/h

t_1- inlet gas temperature °C

d_1- moisture content of gases at the inlet g/kg

G_v- water consumption through CHE, m^3/h

t_{1v}, t_{2v}- water inlet and outlet temperature CHE, °C

G_{po}- water flow through the cooler m^3/h

t'_{po} , t''_{po}- water temperature at the outlet and outlet of the cooler, °C

$d \times \delta$ – diameter and wall thickness of surface cooler pipes, m.

2. Calculation CHE.

2.1. Set the temperature of the gases in front of the software $t_2 \approx t_p$ - 15 °C

2.2. Dew point of natural gas combustion products

$$t_p = 37,1 \lg \left[\frac{d_1}{3,77 + 0,085\alpha_{yx}}\right], \quad °C$$

α_{yx} – coefficient of excess air in the flue gases of the boiler

2.3 Moisture content of gases before the cooler

$$d_2 = \frac{[0,33(t_1 - t_2)(600 + d_1) + 435 - d_1]V_g - Q_{CHE}(600 + d_1)}{435 * V_g}, g/kg$$

$Q_{CHE} = G_v(t_{2v} - t_{1v})*C_v-$ heat output CHE, kJ/g

2.4 Estimated heat of the process, taking into account the circulating (ballast) component

$$Q_p = Q_{CHE} + Q_{ob} = C_v(t_{2v} - t_{1v})G_v + (2499 - 1,97 * t_{2v})L * \frac{d_m - d_1}{1000}, kJ/h$$

d_m – maximum moisture content of the process according to J-d - diagram, g / kg

Value (d_m - d_1) can be determined from the graph in Fig. 1
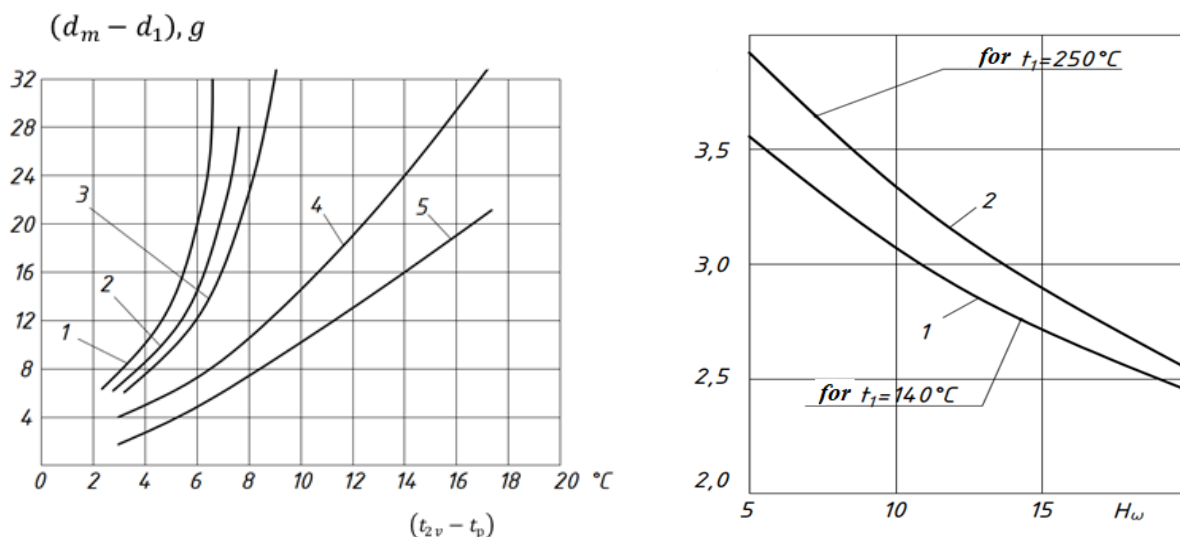
Fig 1. Dependence $(d_m - d_1)$ on gas temperature, irrigation coefficient G_1/L and

$(t''_v - t_p)$.

$G_в/L$ – irrigation coefficient

2.5 Optimal speed in the contact tip

$\Omega_{opt} \qquad = \qquad 0{,}8*\omega_{kr} \qquad\qquad$ m/s

$\omega_{kr} = f(H_w, t_1)$- in pic.1

2.6 Free section of the contact tip

$$F = \frac{V_г(t_{sr} + 273)}{273\omega_{opt}3600} \ m^2$$

$H_w = G_в/F$ – irrigation density, m^3/m^2*h optimal value $H_w \approx 12\text{-}15$

2.7 Contact tip volume

$$V_н = \frac{Q_P}{q_v}, \ m^3$$

q_v – specific heat stress packing volume (table 1) kW/m^3

Table 1. Recommended thermal stresses q_v kW/m^3

$Re_г$	Irrigation density H_w(m^3/m^2*h) at gas temperature t_1,°C			
	150 °C		250 °C	
	Hw=10-20	Hw=5-10	Hw=10-20	Hw=5-10
1000	186,1	162,8	314	209,3
3000	581,5	279,1	756	465,2
5000	814,1	325,6	930,4	581,2

$$Re_г = \frac{\omega_{opt} d_g}{v_g \varepsilon} \ - \qquad \text{Reynolds criterion}$$

d_g – hydraulic nozzle diameter, m [7]

v_g– kinematic viscosity of gases at an average temperature m^2/s [1]

ε – contact tip porosity [7]

2.8 Contact tip height

$H_н = V_н/F$, м

Heat transfer coefficient for steam condensation on horizontal pipes

$$\alpha_k = 0{,}693 \frac{A_s}{\sqrt[4]{d_н * \Delta t}}, \frac{Vt}{m^2 * K}$$

$A_s \qquad - \qquad$ according $\qquad$ to $\qquad$ the $\qquad$ table $\qquad$ 2

$d_н$ – outer diameter of cooler pipes, m $\Delta t = (t_s - t_c), \ °C$

t_s, t_c — saturation temperature and wall, $°C$

P_s, — saturation pressure, kgf/cm^2

Table 2. Parameter dependence A_S in t_s

t_s, °C	Ps kg *s/sm²	A_s*10^{-3} W/m^{1,75}* °C^{0,75}
30	0,042	10,9
50	0,123	11,3
80	0,474	11,7
100	1,01	12,2

2.10 Heat transfer coefficient from pipe walls to water

$$\alpha_1 = \frac{Nu * \gamma_v}{d_{vH}}, \qquad Nu = 0,021 * Re0.8 * Pr0.43, \qquad Re = \frac{\omega_v * d_{vH}}{V_v}$$

D_{vH} – inner diameter of cooler pipes, m

ω_v – water speed, m/s

λ_v – coefficient of thermal conductivity of water W/m *K

V_v – kinematic viscosity of water, m ^{2}/s

2.11 Heat transfer coefficient

$$K = \frac{1}{\frac{1}{\alpha_K} + \frac{\delta}{\lambda_M} + \frac{1}{\alpha_1}}, \qquad \frac{Vt}{M^2 * K}$$

δ – wall thickness of cooler pipes, m

λ_M – thermal conductivity coefficient of metal, W/m ^{2}

2.12 Heat flow from condensing steam to pipes

$$q_K = \alpha_K(t_s - t_c), \quad W/m^2$$

2.13 temperature difference

$$\Delta t = \frac{\Delta t_6 - \Delta t_M}{\ln \frac{\Delta t_b}{\Delta t_M}}, °C$$

$\Delta t_b = t_s - t_1$

$\Delta t_M = t_s - t_2$

2.14 cooler surface

$$H_{oxl} = \frac{q_K}{K * \Delta t}, \quad m^2$$

2.15 The total amount of heat transferred to the water in the cooler.

$$Q_{oxl} = q_K * H, \quad W$$

2.16 Amount of condensate

$$G_K = \frac{Q_{oxl}}{r} * 3600, \qquad kg/h$$

r – latent heat of vaporization, kJ/kg

2.17 Moisture content of gases after the cooler

$$d_{oxl} = \frac{G_{c.g} \frac{d_2}{1000} - G_K}{G_{c.g}}, \qquad kg/kg$$

$G_{c.g}$ – dry gas consumption, kg/h

d_2 – moisture content in front of the cooler, g/kg

Conclusion: The use of the proposed method allows excluding from the calculations of the heat recovery chambers with a surface cooler the most time-consuming categories of calculating the heat transfer coefficient and determining the average temperature difference with a breakdown of the process in the J - d - diagram into sections.

Result: Comparison of the results of calculation of contact heat exchangers using a simplified method with the construction of the J-d-diagram process gave a deviation in the heat transfer coefficient of ± 3-4%, in terms of flue gas parameters no more than ± 2.5%

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Rezyume: Mazkur maqolada sirtiy sovutgichli kontaktli issiqlik utilizatorining asosiy parametralarini hisoblashning mavjud usullarini taqqoslash tahlili natijalari va eksperimentlar natijalarini empirik bog'lanishlar asosida umumlashtirishga asoslangan soddalashtirilgan hisoblash usulini qullashning maqsadga muvofiqligi ko'rsatilgan. Taklif etilayotgan usulning qullanilishi sirtiy sovutgichli issiqlik utilizatorining kamerasini hisoblashdagi kup mehnat talab qiladigan toifadagi issiqlik uzatish koeffitsienti hisoblari va jarayonni I - d diagrammada uchastkalarga bo'lib o'rtacha harorat bosimini aniqlashni amalga oshirmaslikni ta'minladi. Kontaktli issiqlik utilizatorini soddalashtirilgan usulda hisoblash va jarayonni I - d diagrammada qurish bilan hisoblash natijalarini solishtirish, issiqlik uzatish koeffitsienti buyicha ±3-4%, va chiqib ketayotgan gazlar parametrlari bo'yicha ±2.5%. xatolikni ko'rsatdi.

Резюме: В статье представлены результаты сравнительного анализа существующих методов расчёта основных параметров КТУ с ПО в отводящей камере и обоснована целесообразность применения упрощённой методики расчётов, основанной на обобщении экспериментальных данных с использованием эмпирических зависимостей. Использование предлагаемой методики позволило исключить из расчетов камеры теплоутилизаторов с поверхностным охладителем наиболее трудоёмкие категории вычисления коэффициента теплопередачи и определение среднего температурного напора с разбивкой процесса в I - d – диаграмме на участки. Сравнение результатов расчёта контактных теплоутилизаторов по упрощённой методике с построением процесса в I-d-диаграмме дали отклонение по коэффициенту теплопередачи ±3-4%, по параметрам уходящих газов не более ±2.5%.

Kalit so'zlar: kontaktli issiqlik almashtirgich, qozon agregati, energiya samaradorligi, tabiiy gaz,chuqur sovitish, shudring nuqtalari, suv bug'ining kondensatsiyasi, yonish mahsulotlari, issiqlik uzatish koeffitsienti, ortiqcha havo koeffitsienti.

Ключевые слова: контактных теплоутилизатор, котельный агрегат, энергоэффективность, природный газ, глубокое охлаждение, точки росы, конденсация водяных паров, продукты сгорания, коэффициент теплопередачи, коэффициент избытка воздуха.

UDK 621.316.1

ISSUES OF THE DESIGN PROCEDURE FOR THE POWER SUPPLY SYSTEM

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Summary: The article covers the work that must be carried out in series according to the design procedure for various stages of the power supply system. Starting from the system of production, the design procedure in industrial enterprises, agriculture and urban power supply is explained on a scientific basis, and the corresponding stages of investment design are presented in the development of the level of the power supply system.
Key words: power supply system, automation of design processes, investment project, relevant stages.

Introduction

Currently, the development, expansion of industrial enterprises, cities and agriculture, the increase in the number of electricity consumers in them affect the continuity of electricity supply, quality indicators, the mode of operation of consumers of various types connected to power networks. The issue of optimal and rational implementation of power supply in the energy system is associated with the effective organization of preliminary design work.

The use of information and communication technologies in the automation of design processes is one of the pressing issues of today. In this, it is considered important to carry out a consistent sequence of design procedures.

Problem statement

The organization of the design work of the power supply system (PSS) is carried out in accordance with the technological and construction rules of design, the development of technical documentation that provides for the creation and development of PSS, as well as reconstruction and re-equipment. The calculation of electric charge and power consumption is carried out in eight stages by available methods [1-4].

First stage. Determination of investment goals, nomenclature of products (services) intended for production, purpose and capacity of the construction object, location of the investment object are determined. Industrial, urban and agricultural development and settlement schemes are studied using available materials. At this stage, it is important to get an idea from the PSS developer about the possibility of building an object in conditions of electricity supply. Energy systems are as follows: There is a need to build or expand power plants, power lines, systemic and large district substations. For energy-intensive objects, if a negative conclusion is drawn, the next stages of the investment project will become meaningless. For projects that require less energy, the question arises about the possibility of using their own power supply sources and mini power plants.

Second stage. The investor (the main subject of investment activity, which invests its own, borrowed or borrowed funds in the form of investments, ensuring their targeted use) develops a petition (declaration) of investment intentions, the stage of positive decisions taking into account previous decisions. The local administration reviews these materials and decides on the possibility of building an investment facility. In case of a positive decision, options for

placing the object, preliminary technical conditions are offered. The connection of the object to engineering networks and Communications is given.

The implementation of the project of power supply systems begins with the analysis of preliminary data and the category of reliability of the power supply. The basis for a rational solution of the complex of technical and economic issues of the design of the PSS of the enterprise is the rational determination of the expected electrical loads, while requiring a solution of questions on the power of the main reducing substation and the number of power lines supplying them and their number.

Stage three. The Investor provides the basis for investments in construction. Investment justification materials are prepared on the basis of the data obtained and the results of pre-Investment Research. The costs of PSS objects are taken into account, which in turn depends on solving issues in the previous stages on Level 6 and Level 5 (Table 1). The values of the electrical loads determine the choice of the developed PSS elements. Investment costs, non-ferrous metal consumption, power wastes, and operating costs depend on a correct estimate of expected loadings.

Stage four. Project documentation construction documentation is being developed as part of the feasibility study of construction (approved part of the project or working project). Coordination, verification and approval of project documentation is carried out. The electrical load characterizes the consumption of electricity by a group of electrical receivers in individual electrical consumers, workshops and in the enterprise as a whole. When designing, active, reactive and full power are obtained as the main downloads.

Fifth stage. Working documents are developed for construction. The accounting electrical loadings of PSS determine the following: the choice of the number and power of power transformers; the power and connection points of the compensation devices; the inspection and selection of current conducting elements according to the permissible heating condition; the calculation of voltage wastes; the design of protective equipment. The calculation load is understood as the highest value of the power of the PSS elements, the value obtained is averaged over the time interval at which the temperature of the elements reaches the set. For charge graphs whose cycle duration does not exceed three constants of the heating time of the PSS element, it can be estimated that the computational power is equal to the effective mean quadratic load.

Stage six. Implementation of an investment project - repair of an object (construction, configuration, installation).

Seventh stage. Exploitation of the object. It must solve the tasks of developing object projects, its repair, technical re-equipment, modernization and reconstruction.

Stage eight. Preparation of the project, completion - reconstruction of the object, re-profiling or preparation of a construction project for a new enterprise. In this case, the organization of the project begins with the first stage.

Ensuring construction in the manner prescribed for the design, the stages of the investment process from the first to the third are associated with pre-investment (pre-project), the fourth and fifth stages constitute the actual design [5-6].

It is convenient to indicate in Table 1 the compliance of the design stages with the determination of the parameters of electrical loads and power consumption by PSS levels, which excludes the stages of construction, operation and completion of the object.

Developing the level of the power supply system (design)
relevant stages of investment design
Table 1

Naming of stages	Levels of the power supply system					
	1	2	3	4	5	6
Stage 1. Determination of the location of the object	-	-	-	-	-	+
Stage 2. Technical conditions for connecting an object to engineering networks	-	-	-	-	+	+
Stage 3. Justification of investments in construction	-	-	-	-	+	+
Stage 4. Technical and economic justification of project documentation, development as part of the project	-	-	+	+	+	+
Stage 5. Development of working documents	+	+	+	+	+	-
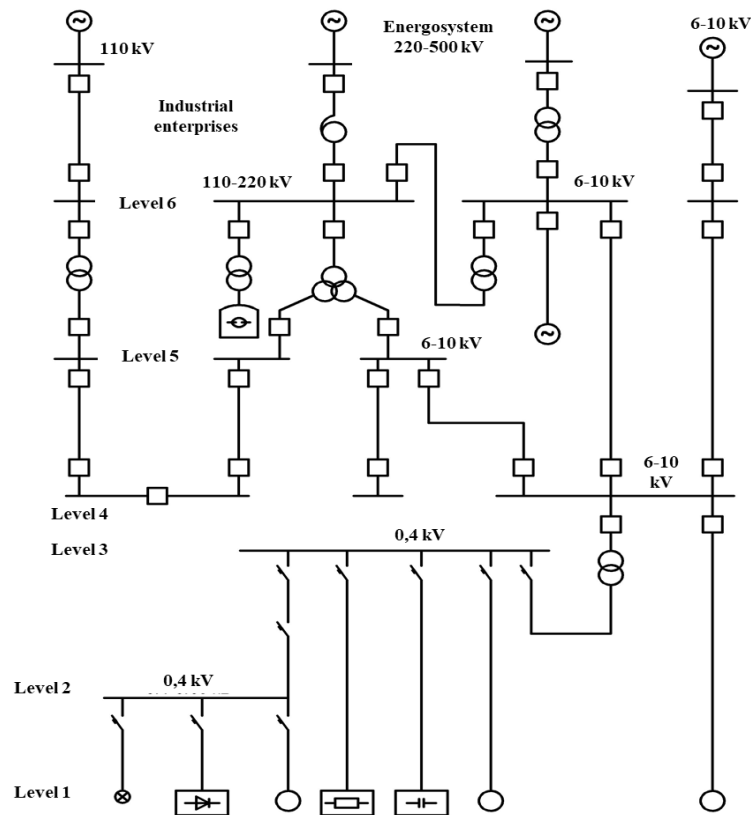
Fig. 1. Structures of systemic elements in the design process in the range from energy to consumer.

In order to consistently increase the complexity of the PSS description in the principle of hierarchy, the separation of power supply systems by degrees in the calculation of electrical loads according to the functional principle (Fig.1.):

1 – separate electric receiver, multi-motor electric device or technological, geographically connected and with one line working, other group of electric receivers that make up one product with rated power;

2 – voltage variable current up to 1000 V and 1,5 kV DC constant current distributor, control panels, power cabinets, input and distribution devices, input, trunk and assembly tires;

3 – low voltage transformer substation 6-10 / 0,4 kV or taking into account the waste of electricity in the transformer;

4 – 6-10 kV distribution substation tires or total TS load;

5 – head reducer, exhaust inlet and fog transformer substation tires;

6 – connection between the energy system and the power balance of the enterprise.

Due to the lack of sufficient information in the pre-investment stages, problems arise in determining the parameters of accounting downloads and power consumption. The use of regulatory methods for calculating electrical loads is possible only at the stage of developing working documents, when the specific composition of electrical receivers 1 and 2 PSS is known, and solutions for 3 are identified. Their design decisions at Stage 3 and above must be made without having clear knowledge of the list of electrical receivers; at the same time, there is only a description of the technological process with a certain organizational structure of production (workshop, processing units, sections, parts). At the previous stages of design, there is less information for making decisions on 4-6 – only an extended description of the technological process and volume output is known [7-10].

In this case, it is recommended to use information about analog objects available in the field: statistical methods of regression and Cluster analysis, a sensor logical approach to the analysis of the structure of the power supply system.

In the fourth stage of design, the approved feasibility study serves as the basis for the development of working documents and working drawings carried out by the electrical departments of design organizations (institutes). The main tasks include allowing the composition of working documents. The new technological task, which is then supplemented by the tasks of subcontractors who determine the specifics of the object, is carried out according to the sections of power supply, electrical equipment and electric lighting, the sequence of work of which includes the tasks.

The main principle of preparation of working documentation on the design is as follows: for each unit that requires electricity for its operation to be installed, it is necessary to create all the pictures that provide its connection (installation) in three-dimensional space, the place and method of supplying electricity. According to working drawings, the electrical parameters of the installation (voltage, power, modes), where and how it is located (including access, passages, the possibility of delivery, installation and disassembly), where and how it is powered, what and how it is protected, how its condition is controlled and control should be clear.

Working drawings serve as the basis for making an estimate called "working drawings estimate". They serve to pay directly for the equipment supplied, components, wire products and materials, as well as for the work of builders, installers, tuners.

The power supply system is created from ready-made electric motors, power transformers, circuit breakers, conductors, tires and cables. Knowledge of the construction of electrical equipment is necessary for the correct choice and further operation. The designer is required not to design a new work, but to draw conclusions on existing electrical equipment, to formulate requirements that improve the performance of power supply systems. Design is a iterative process involving a large amount of processed data, as long as it is aimed at clarifying the decisions of each repeatedly adopted project. The most effective is the systematic approach, which provides a minimum amount of preliminary data to solve a number of technologically related project tasks [10-12].

Conclusion

In place of the conclusion, it should be said that in order to automate the design processes in the power supply system, it is necessary to draw up the stages of the design level. Design levels are important in the implementation of design work in the design of the power supply. The level of digitization is associated with the correct organization of the design stage.

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Rezyume: Maqolada elektr ta'minoti tizimining turli bosqichlarini loyihalash tartibiga muvofiq ketma-ket bajarilishi kerak bo'lgan ishlar yoritilgan. Ishlab chiqarish tizimidan boshlab sanoat korxonalarida, qishloq xo'jaligida va shahar elektr ta'minotida loyihalash tartibi ilmiy asosda tushuntiriladi hamda elektr ta'minoti tizimi darajasini ishlab chiqishda investitsiya loyihalashining tegishli bosqichlari keltirilgan.

Резюме: В статье рассматриваются работы, которые должны выполняться последовательно в соответствии с процедурой проектирования для различных этапов системы электроснабжения. Начиная с производственной системы, процедура проектирования на промышленных предприятиях, в сельском хозяйстве и городском электроснабжении объясняется на научной основе, а соответствующие этапы инвестиционного проектирования представлены при разработке уровня системы электроснабжения.

Kalit so'zlar: elektr ta'minoti tizimi, loyihalash jarayonlarini avtomatlashtirish, investitsiya loyihasi, loyihalash bosqichlar.

Ключевые слова: система электроснабжения, автоматизация процессов проектирования, инвестиционный проект, соответствующие этапы.

HEATING DEVICE WITH INTERMEDIATE COOLANT

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Summary: *This article provides information on how to optimize heating devices and make good use of them. old heating devices and intermediate cooling water accounts were carefully analyzed.*
Key words: *radiators, cast-iron, corrosion, coolant, convectors*

The efficiency of heating systems and their cost are largely determined by the operating parameters of heating devices designed to transfer heat from the heat carrier to the air of heated rooms. For a long time, a fairly narrow range of heating devices has been used in our republic. In residential buildings and public buildings, sectional cast-iron radiators MS-140 were most often used, for which the popular name "battery" was firmly fixed. And since 1970, first in high-rise buildings, and then in most buildings under construction, convectors with and without a casing have taken their place. Steel panel radiators have also been used for some time, but due to rapid corrosion in open heat supply systems (for example, for Tashkent, the service life is from one to two heating seasons), their use has not become widespread. Radiators MS-140 and many models of convectors have proven themselves very well in operation, however, the high material consumption of cast-iron radiators and low thermal performance of convectors, as well as their appearance, have ceased to meet modern requirements.

The analysis carried out by the authors showed that this problem can be solved when using low-capacity heating devices with an intermediate coolant in heating systems. This is due to the fact that the large mass, i.e. the material consumption of heating devices, is mainly due to the need to preserve the mechanical strength of the system and the ability to withstand internal corrosion for a long time. Therefore, a fundamentally new solution that allows to significantly reduce the metal consumption of the heating device is its hydraulic isolation from the high-pressure network through the use of an intermediate coolant.

The implementation of this idea is carried out by introducing a heating panel   into the housing 1 (Figure), made of sheet steel, with a thickness of about

δ =0.5÷0.8 mm, a tubular coil 3, which perceives the high pressure of the external network and at the same time serves as protection of the device from internal corrosion.
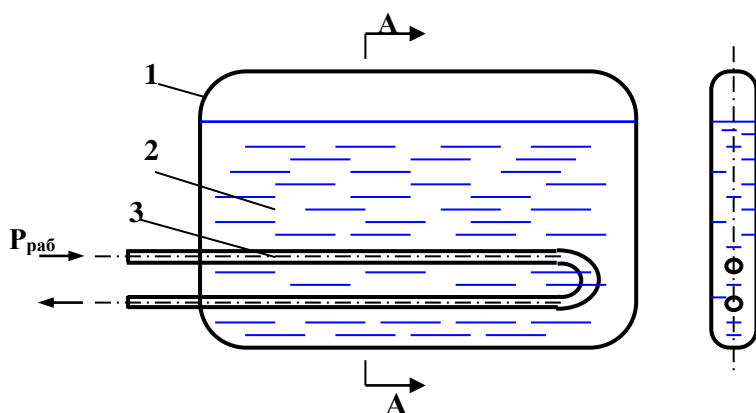
Fig. 1. Developed steel panel radiator with intermediate coolant
1.   heating panel housing;
2.   intermediate coolant;
3. tubular coil

This design of the heating device allows you to achieve high thermal stress

values of the metal of the device [2]

$$M = \frac{Q_{np}}{G_M \Delta t}, \quad \text{Вт/(кг } {}^0C)$$ (1)

where Q_{np} – heat flow of the device, W; G_M – metal weight, kg;

Δt – temperature difference between the coolant and the environment, ^{0}C.

At high values of its working pressure P_{pa6}, MPa, and the nominal heat flux density $q_{ном}$, W/m^2.

Table 1.1. shows the comparative indicators of the developed device with known heating devices.

Table 1.

Type and type of device	Stamp	P_{pa6} MPa	M W/(kg ^{0}C)	$q_{ном}$ W/m^2
Cast iron sectional radiator	M, RD	0,6 0,9	0,29-0,36	595 790
Steel panel radiator	MS	0,6	0,55-0,80	730
Convector with a casing of the "universal-20" type	RSV	1,0	0,8-1,3	357
Designed steel panel radiator	-	1,0	1,4-1,6	730

Consider the process of heat transfer in a heating device with an intermediate coolant (Fig. 2.)
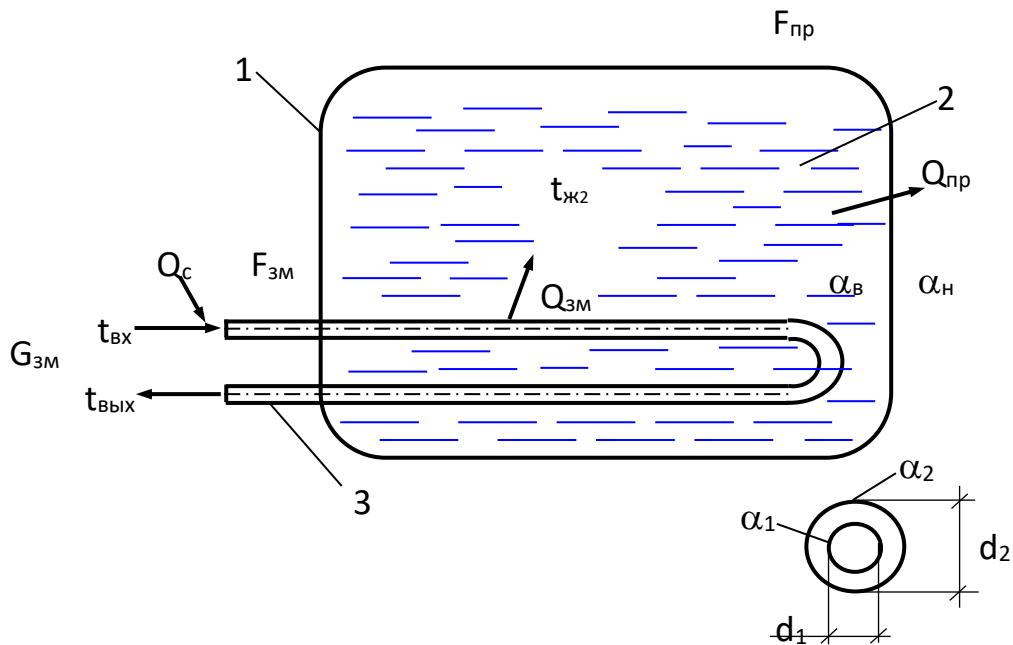
Fig. 2. Thermal model of heat transfer in a heating device with an intermediate heat carrier.

1 – heating device housing;

2 – intermediate coolant (water);
3 – coil for primary coolant circulation from the heating network.

Let's make up the heat balance equation for a heating device with an intermediate heat carrier, neglecting the heat capacity of the coil and the heating device:

$$Q_c = Q_{зм} = Q_{пр} \qquad (2)$$

Where Q_c – heat flow supplied from the mains, W;
$Q_{зм}$ – heat flow transmitted by the heating coil, W;
$Q_{пр}$ – heat flow transmitted by the heating device to the room, W.

Heat flow related to the length of the coil

$$Q_{змℓ} = k_ℓ \cdot (t_{j1} - t_{j2}) \cdot \pi \cdot ℓ, \text{ W} \qquad (3)$$

Where $t_{j_1} = \dfrac{t_{in} + t_{out}}{2}$ - average temperature of the heating coolant, ^{0}C.

$k_ℓ$ - linear heat transfer coefficient of the coil, W/m ^{0}C

$$k_ℓ = \cfrac{1}{\dfrac{1}{\alpha_1 d_1} + \dfrac{1}{2\lambda} \ln \dfrac{d_2}{d_1} + \dfrac{1}{\alpha_2 d_2}}, \text{ W/m } ^0\text{C} \qquad (4)$$

where d_1, d_2 – inner and outer diameter of the coil, м;
λ - coefficient of thermal conductivity of the coil material, W/m ^{0}C.

Considering that the wall thickness of the coil pipe is compared to the diameter, we will use simplified formulas.

To obtain such formulas , we proceed as follows

Length $\ln \dfrac{d_2}{d_1}$ put it in a row::

$$\ln \frac{d_2}{d_1} = \left(\frac{d_2}{d_1} - 1 \right) = \frac{d_2 - d_1}{d_1} = \frac{2\delta}{d_1}$$

where δ - thickness of the cylindrical wall, m.

Substituting the received value $\ln \dfrac{d_2}{d_1}$ into the equation (5), we get:

$$k_{зм} = \cfrac{1}{\dfrac{1}{\alpha_1} + \dfrac{\delta}{\lambda} + \dfrac{1}{\alpha_2}} \qquad (6)$$

Therefore, if the pipe wall is thin, then in practical calculations, you can use the formula

$$Q = k_{зм} \cdot \pi \cdot d_x \cdot ℓ \cdot (t_{j1} - t_{j2}) \qquad (7)$$

where k_{3m} taken as for a flat wall. At the same time, if $d_2/d_1 < 2$, the calculation error does not exceed 4%.

The error can be reduced if, as the calculated surface in (2.5) take the surface from which α less:

1)   if $\alpha_1 \gg \alpha_2$, that $d_x = d_2$;
2)   if $\alpha_2 \gg \alpha_1$, that $d_x = d_1$;
3)   if $\alpha_1 \approx \alpha_2$, that $d_x = (d_1 + d_2)/2$.

In our case α less from the outer surface of the coil, since there is natural convection here, and forced convection on the inner surface. Therefore, we will accept $d_x = d_2$, then we get

$$Q_{3m} = k_{3m} \cdot \pi \cdot d_2 \cdot \ell (t_{j1} - t_{j2}) = k_{3m} \cdot F_{3m} \cdot (t_{j1} - t_{j2}) \qquad (8)$$

Heat flow through the heating device

$$Q_{pr} = k_{pr} \cdot \Delta t_{pr} \cdot F_{pr}, \qquad (9)$$

where

$$k_{np} = \cfrac{1}{\cfrac{1}{\alpha_6} + \cfrac{\delta_1}{\lambda_1} + \cfrac{1}{\alpha_{_H}}} \qquad (10)$$

$$\Delta t_{pr} = t_{j2} - t_{в} \qquad (11)$$
$$F_{pr} = 2 \cdot \ell \cdot h \qquad (12)$$

Taking into account the equations (2.1), (2.6) и (2.7), we have

$$k_{3m} \cdot F_{3m} \cdot (t_{j1} - t_{j2}) = k_{pr} \cdot (t_{j2} - t_{в}) \cdot F_{pr} \qquad (13)$$

or

$$\frac{F_{_{3M}}}{F_{_{np}}} = \frac{k_{_{np}}(t_{_{ж_2}} - t_{_6})}{k_{_{3M}}(t_{_{ж_1}} - t_{_{ж_2}})} \qquad (14)$$

Formula (14) determines the ratio between the surface of the coil F_{3m} and the outer surface of the heating device F_{pr}. It can be seen that this ratio depends on the heat transfer coefficient k_{pr} and k_{3m}, and also from temperature changes $\cdot (t_{j2} - t_{в})$ and $(t_{j1} - t_{j2})$.

Let's analyze the formula (14) with standard parameters:

$T_{in} = 95\ ^0C$; $t_{out} = 70\ ^0C$; $t_{в} = 18\ ^0C$;

then

$$t_j \approx \frac{t_{in} + t_{out}}{2} = \frac{(95 + 70)}{2} = 82,5\ ^0C$$

$$t_{j_2} = t_{j_1} - 5^0 = 82,5 - 5 = 77,5\ ^0C$$

The heat transfer coefficient can be taken as that of a steel radiator $k_{pr} = 10,5 \div 11,5$ W/m$^2\ ^0$C. The heat transfer coefficient of the coil lies within $k_{3m} = 350 \div 840$ W/m$^2\ ^0$C.

Thus, substituting the found values into formula (14), we obtain that the ratio

$$\frac{F_{_{3m}}}{F_{_{pr}}} = 0,14 \div 0,342 \qquad by\ \Delta t_{_{3m}} = 5\ ^0C$$

$$\frac{F_{_{3m}}}{F_{_{pr}}} = 0,06 \div 0,15 \qquad by\ \Delta t_{_{3m}} = 10\ ^0C$$

The purpose of thermal engineering tests is to experimentally determine the nominal heat flow of the developed heating device with an intermediate coolant, i.e. to establish the dependence of the heat flow of the device on the value of the temperature pressure, the flow rate of the coolant and the number of sections of the device.

To do this , the following tasks were solved:

- development of a methodology for conducting thermal tests of a heating device;

- development and creation of a stand for the implementation of thermal engineering tests according to the developed methodology;

- conducting thermal engineering tests;

- processing of test results and comparison with literature data.

CONCLUSIONS

1. The design of a heating device with an intermediate heat carrier has been developed, which allows reducing the material consumption of the device due to hydraulic isolation with the heating system. This allows you to reduce the thickness of the device body before $\delta=0,5-0,8$ mm and thereby increase the thermal voltage of the metal of the device.

2. A theoretical study of heat transfer in a heating device with an intermediate coolant has been carried out and the optimal ratio of the coil area to the outer area of the heating device has been established, which, with an average temperature difference between the liquid in the device and the coolant in the amount of 5^0C lies within $F_{зм}/F_{pr}=0,14\div0,342$, and when 10^0C $F_{зм}/F_{pr}=0,06\div0,15$.

The recommended diameter of the coil is the smallest diameter in accordance with the permissible hydraulic resistance of the heater and the maximum speed of water in the pipes of the heating system.

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Rezyume: Ushbu maqolada isitgichlarni optimallashtirish va ulardan samarali foydalanish haqida ma'lumot berilgan. eski isitish moslamalari va sovutish suvi uchun oraliq to'lovlar diqqat bilan tahlil qilindi

Резюме: В этой статье представлена информация о том, как оптимизировать отопительные приборы и эффективно их использовать. были тщательно проанализированы старые отопительные приборы и промежуточные счета за охлаждающую воду

Kalit so'zlar: radiatorlar, quyma temir, korroziya, sovutish suvi, konvektorlar

Ключевые слова: радиаторы, чугун, коррозия, охлаждающая жидкость, конвекторы

UDC 004.056

THE CONCEPT OF PROVIDING INFORMATION SECURITY IN A DISTRIBUTED SYSTEM OF ORGANIZATIONAL DATABASE

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Summary: *The article examines the basic principles of creating and operating a distributed database, client-server technologies, the file server model, the remote data access model, the database server model, and the application server model.*
Key words: *file server, database, server, applications, distributed data, SQL, RDA.*

I. INTRODUCTION

It is known that in large automated information systems built on the basis of corporate networks, it is not always possible to organize centralized placement of all databases and MBBT in one node of the network. This has led to the emergence of distributed computing systems that are integrated with a distributed database management system.

A distributed database is a set of logically interconnected databases distributed over a computer network.

A distributed database management system is a software system that provides management of a distributed database and transparency of its distribution to users.

A distributed database can integrate databases supporting any model (hierarchical, network, relational, and object-oriented databases) within a single global schema. Such a configuration should ensure transparent access to any data, regardless of its location and format, for all applications.

II. MAIN PART

The main principles of the creation and operation of a distributed database are as follows:

- transparency of data location for users (in other words, the distributed database should appear to the user as if it were not distributed);
- isolation of users from each other (the user should not "feel", "see" the work of other users when changing, updating, deleting data);
- synchronization and harmony (non-contradiction) of the state of data at any moment in time.

The following additional principles are derived from the basic principles [1]:

- local autonomy (any computing device should not depend on any other device for its successful operation);
- absence of a central device (result of the previous paragraph);
- location-independent (as if the data is located on the user's local device);
- continuity of operation (absence of planned interruption of the system);
- independent of data fragmentation (horizontal fragmentation - different groups of records of the same table are placed on different devices or different local bases; vertical fragmentation - different frames - columns of the same table are placed on different devices);
- does not depend on data replication (repetition) (some table of the database can be represented by several copies located on different devices);

- distributed processing of requests (optimization of requests should be of a distributed nature - first global optimization, then local optimization in each of the launched devices);

- distributed management of transactions (in a distributed system, a separate transaction may require the execution of actions on different devices, the transaction is considered completed when it is completed on all participating devices);

- that it does not depend on the hardware (having different computersit is acceptable that the system can work on the devices);

- that the operating system does not depend on the time (the system should work regardless of the difference of operating systems on different computing devices);

- does not depend on the communication network (possibility of working in different communication environments);

- MBBT-independent (different MBBTs may work on different devices, in practice SQL-enabled MBBTs are used).

Distributed information systems, which are usually created on the basis of MBBT, are also characterized by the term "distributed MBBTs" and, accordingly, the term "distributed database" is used [2].

Implementation of distributed computing is done by deviating from some of the principles of creation and operation of distributed systems mentioned above. Depending on what principle is "sacrificed", several independent directions have been distinguished in distributed system technologies - "client-server" technologies, replication technologies, object binding technologies, real distributed information systems, usually a combination of all three technologies. based on From the methodological point of view, it is appropriate to discuss them separately.

One of the main principles of creation and operation of distributed systems in "client-server" technologies is the absence of a central device. Therefore, the following two main ideas underlying client-server technologies can be distinguished [3]:

- commonality of information on one or several servers for all users;

- the number of users (clients) processing common data together (parallel and simultaneously) on different computing devices.

In other words, systems based on "client-server" technologies are distributed only with respect to users. For this reason, they are often considered by most users to be a separate class of systems rather than belonging to "true" distributed systems.

In "client-server" technologies, the concepts of server and client have an important value. In a broad sense, Verver means any system, process, computer with some computing resources (memory time, processor performance, etc.) [4].

Client means any system, process, computer, user that requests some resource from the server, user of some Uesours or served by the server in a special way.

Various models of "client-server" systems have been formed in the process of passing through several stages in its development. Their implementation and, therefore, a correct understanding is based on dividing the MBBT structure into the following three components:

- presentation component - sometimes simply called the user interface, which performs the function of entering and displaying data;

- application component is a set of requests, events, rules, procedures and other computing functions that perform the tasks of an automated information system in a specific subject area;

- data access component - performing data acquisition, storage, physical update and change functions.

Based on the characteristics of implementation and distribution of these three components in the system, four models of "client-server" technologies are distinguished:
- file server model (File Server - FS);
- remote data access model (Remote Data Access - RDA);
- database server model (Data Base Server - DBS); - application server model (Application Server - AS).

The file server model is the simplest, as much as it characterizes the method of creating an information system, it characterizes the general method of interaction of components in a local network. One of the network computers is separated and considered as a file server, that is, a common place where any data is stored. The essence of FS-model can be explained by Fig. 1 [5].
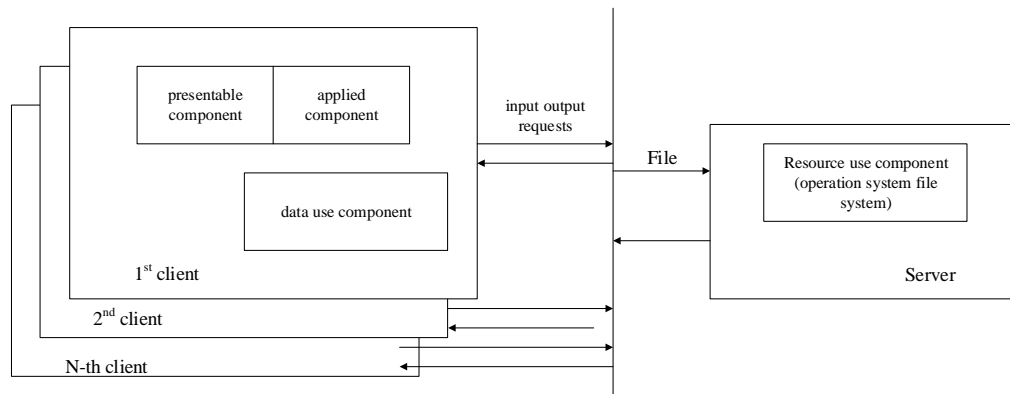
Figure 1. File server model

In the FS model, all the main components are placed on the client device. When data is accessed, MBBT, in turn, makes I/O requests to the file system. During the session, the database file is copied in whole or in part to the main memory of the client device using the functions of the operating system. In this case, the server performs a passive function.

The advantage of this model is its simplicity, the absence of high requirements for server performance (mainly, any size of disk space). It should be noted that in this case, the software components of MBBT are not distributed, that is, no part of MBBT is installed and placed on the server.

The disadvantage of this model is high network traffic, which reaches a peak value when users are using the system in bulk, for example, at the beginning of the working day. However, from the point of view of working with a common database, the lack of special mechanisms for the security of database file(s) by MBBT is a more serious drawback.

In other words, data distribution among users (parallel work with one data file) is carried out only using the file system tools of the operating system. Despite its shortcomings, the file transfer model is a natural means of extending the possibilities of personal MBBT in the direction of supporting the multi-user mode, and remains relevant in this respect [6].

The model of remote data access is based on taking into account the peculiarities of data placement and physical manipulation in external memory for relational MBBTs. In the RDA model, the data access component in MBBT is completely separated from the other two components (presentational and implementation components) and is hosted on the system server.

The data access component is implemented as an independent part of MBBT software called SQL-server and is installed on the computing device of the system server. In other words, SQL Server acts as a data engine. Figure 2 shows the scheme of the RDA model.
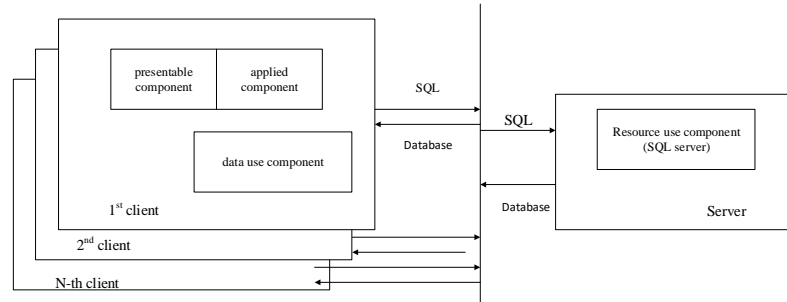
Figure 2. Remote data access model.

The database file(s) located on the system server also contains the database system directory, which includes, among other things, registered customers, their authorizations, etc. information about it will also be posted.

The software part of MBBT, which implements the interface and application functions, is installed on the client devices. The user enters the client part of the system, registers on the system server through it and starts processing data.

The application component of the system (request library, data processing procedures) is fully deployed and executed on the client device. The application component is directed to the SQL server when performing its function

Forms the necessary SQL statements. The SQL server receives and coordinates SQL statements from various clients, executes them, checks and enforces data integrity constraints, and sends the results of SQL statements to clients in the form of data sets (tables).

In this way, the communication of the client with the server goes through SQL instructions, and from the server to the client devices only the results of the operation, that is, a set of data that is significantly less than the database in terms of size, are transferred. As a result, the network load is dramatically reduced, and the server has the status of an active central function. In addition, the MBBTi kernel in the form of SQL - server provides traditional and important functions for ensuring limited integrity and security of data when working together with several users.

Another, invisible advantage of the RDA model is the unification of the communication interface of the application components of information systems with common information. Such interaction is standardized within the SQL language through a special protocol ODBC (Open Database Connectivity - transparent use of the database). This protocol plays an important role in providing multi-protocol, i.e. independence of MBBT time on client devices in distributed systems.

MBBT's multi-protocol capability – MBBT's ability to serve a variety of applications originally intended for MBBT. In other words, a special component of the MBBT core in Verver (called an ODBC driver) has the ability to receive requests, process and send results to other, "foreign" relational MBBT client devices.

This possibility significantly increases the flexibility in creating a distributed information system in the management of personal or other relational MBBT based on the local database available in some organization.

The high requirements for client computing devices are a disadvantage of the RDA model, because the data processing applications determined by the specific nature of the subject area of the information system are executed in them.

Another disadvantage is the seriousness of network traffic, that is, data sets (tables) of a fairly large volume are sent to clients from the database server at some points.

The database server model is an evolution of the PDA model. The mechanism of stored procedures is its core. In contrast to the PDA model, events, rules and procedures defined for a specific subject area of the information system, described by SQL language tools, are stored and executed on the system server together with the data [7-8].

In other words, the application component is fully deployed and executed on the system server. The database server model is shown schematically in Figure 3.
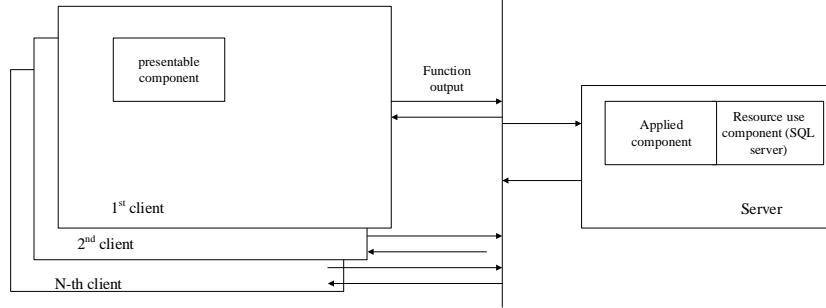
3 – picture. Database server model

Only the interface component (presentation component) is placed on the client devices of the DBS model. This leads to a significant reduction in the requirements for the client's computing device. The user sends only necessary procedures, queries and other function calls to the database through the system interface on the client device. All outgoing operations on the use of data and their processing are performed on the server and

only performance results are sent to the client (and in the RDA model, a data set is sent). This leads to a significant decrease in network traffic in the DBS model compared to the RDA model.

It should be noted that the application issues of all system users are performed simultaneously on the system server. As a result, requirements for server computing devices (disk space and main memory size, speed) increase dramatically. This is the main disadvantage of the DBS model.

In addition to reducing the network load, the active role of the network server, the ability to store and execute the mechanism of events, rules and procedures, the ability to more adequately and effectively "adjust" the distributed information system to all the nuances of the subject area, is an advantage of the DBS model. In addition, as a result of reliable provision of consistency of data status and changes, the ability to sort and work with data increases, and the collective work of users with common data is effectively coordinated. The application server model is used to distribute the server computing resource speed and memory requirements across different computing devices.
In the AS-model, the application component of the information system is transferred to an additional server specialized for the high speed of system resources.
The scheme of this model is presented in Figure 4.
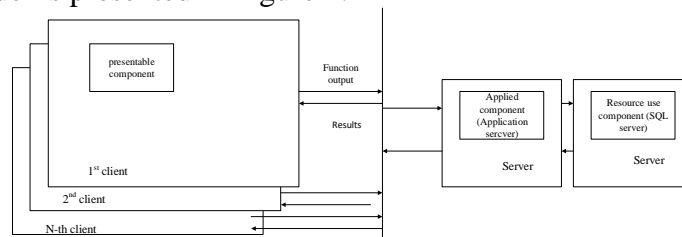
Figure 4. Application server model

Similar to the DBS model, only the interface part of the system, that is, the presentation component, is placed on the client devices. But calls to data processing functions are sent to the application server, where these functions are executed together for all users of the system. To

perform low-level data access and modification operations, the application server, as in the RDA model, addresses the SQL server, sends SQL procedure calls to it, and, as appropriate, retrieves data sets from it. It is known that a sequential set of actions performed on data with a special value (SQL - instructions) is called a transaction Geb. In this sense, the application server manages the formulation of the transactions that the SQL server executes. Therefore, the software component of MBBT installed on the application server is also called Transaction Processing Monitors (TPM) or simply transaction monitor.

III. CONCLUSION

Keeping the strengths of the AS-model and the DBS-model, the information system allows the optimal construction of the computing scheme, but increases the network traffic like the RDA-model.

In practice, mixed models are used. Simple application functions and data integrity are supported by stored procedures on the server (DBS model), while more complex subject domain functions are implemented using applications on client devices (RDA model) or application server (AS model).

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Rezyume: *Maqolada taqsimlangan ma'lumotlar bazasini yaratish va ishlatishning asosiy tamoyillari, mijoz-server texnologiyalari, fayl server modeli, ma'lumotlarga masofaviy kirish modeli, ma'lumotlar bazasi serveri modeli va amaliy server modeli ko'rib chiqiladi.*

Резюме: *В статье рассматриваются основные принципы создания и эксплуатации распределенной базы данных, клиент-серверные технологии, модель файлового сервера, модель удаленного доступа к данным, модель сервера баз данных и модель сервера приложений.*

Kalit so'zlar: *fayl serveri, ma'lumotlar bazasi, server, ilovalar, taqsimlangan ma'lumotlar, SQL, RDA.*

Ключевые слова: *файловый сервер, база данных, сервер, приложения, распределенные данные, SQL, RDA.*

BUILDING A 3D MODEL OF HYDRAULIC STRUCTURES USING BIM TECHNOLOGY

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Summary: In the article, the role of graphic programs in the engineering sciences in the educational system, especially in technical higher education institutions, through them, we can see that the issues related to Build Art technologies, which are the demand of today, can be easily and conveniently solved. The ability to analyze the spatial properties and tasks of subjects is an important component of the graphic preparation of students. In the field of graphic education, development of students' spatial imagination, imaginative analysis of spatial images, activation of mental and cognitive activities of students, development of spatial thinking and imagination, imaginative observation and acceptance of spatial phenomena, shapes, and acquisition of all graphic knowledge and skills, keeping in memory creative qualities such as staying have been adding a significant share to the creation of content.
Key words: BIM (Building Information Modeling), Graphical programs, education, analysis and results, hydrotechnical structures, 3D model, engineering computer graphics

INTRODUCTION.
Nowadays, 3D modeling is widely used in Marketing, Architecture and Design, Cinematography and other fields. 3D modeling plays an important role in the process of creating a prototype of future buildings or conducting a presentation of a product produced by a company. Thanks to the creation of 3D printing, 3D modeling has taken another step forward and has become a more demanding field in today's society. Now everyone has the opportunity to print on a 3D printer, whether it's a picture he drew or an object he copied from the Internet, a designer model or a character of our favorite superhero. Of course, not everyone understands how to work and model in 3D software. Because of this, the demand for a profession in the field of 3D modeling has increased and has been growing for 10 years [1], [2].

The current state of the problem under consideration. 3D modeling refers to the process of developing a 3D model (or a frame model in the form of a three-dimensional object) using specialized software. A 3D model is created using many points connected by lines and curved surfaces. The areas in which three-dimensional modeling is used are constantly expanding. It is as follows: games, i.e. modeling of realistic characters; medicine - creation of individual models of human body organs; engineering - development of models of vehicles, new devices and structures; cinematography covers areas such as the creation of various special effects and fictional characters. Also, 3D-modeling is used enough in the field of advertising.

Pouring matter. New possibilities of three-dimensional modeling have significantly reduced the time it takes to create cartoon characters. The software allows you to easily give movement to the object and spend a minimum of time on it. An experienced user often uses a number of three-dimensional modeling programs to create his project [6]. The joint use of the above-mentioned programs allows creating realistic game scenes and making the product look perfect [4], [5].

Results and analyses. Virtually all 3D software tools have a relatively similar interface and modeling tools, but programs differ in their specific features, as well as computational algorithms for lighting, animation creation, and image visualization.

2d drawing of the dam given
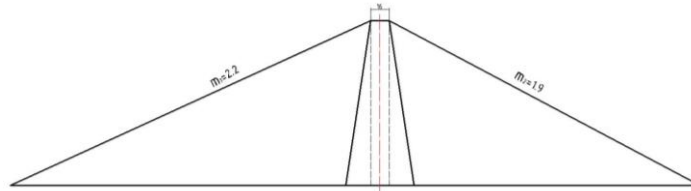
Figure 1
Export project in Midas gnt nx program based on the given drawing of the dam
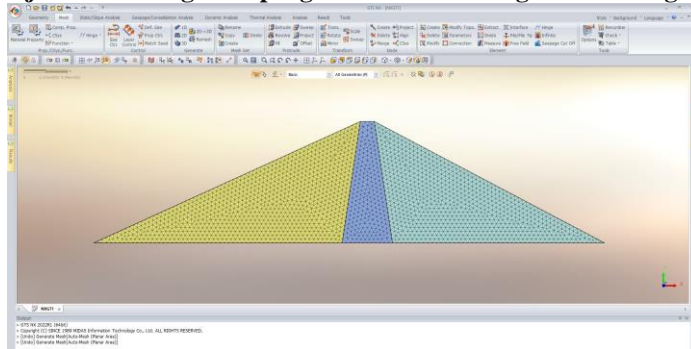
Figure 2
Shell design in Midass gts nx program based on the given drawing of the dam
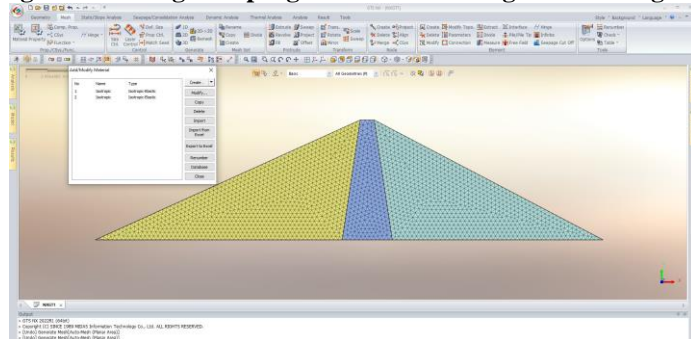
Figure 3
Finite element analysis in the Midas gts nx program based on the given drawing of the dam

Figure 3

89
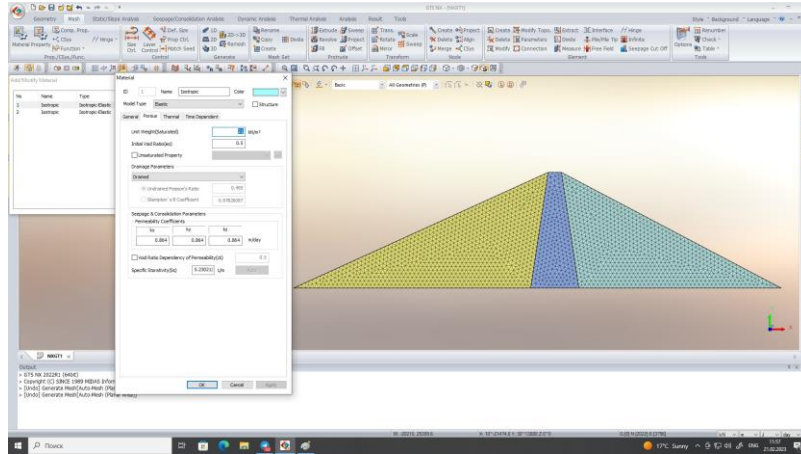
Finite element analysis in the Midas gts nx program based on the given drawing of the dam (the result)

Figure 4

There is no universally accepted answer as to which 3D software is good or bad. Each user considers the 3D software tool that is suitable for him important for this question [7]. How well the user can work with the 3D software he works with and his creative capabilities (in addition to knowing the tools, it is desirable to acquire artistic skills, color harmony, composition) [7] . Therefore, the designer decides what program to prefer. To explore the possibilities of three-dimensional modeling software in detail, it is necessary to create a 3D scene consisting of three-dimensional elements. Each of the 3D software has its advantages in a specific area [7]. A brief description of the main programs for three-dimensional modeling:

1. Autodesk 3D Studio Max is a fairly common and relatively easy-to-learn graphics package. Add-on module VRay allows to create realistic objects and interiors [7], [6].

2. Autodesk Maya is a serious graphics package that has a number of advantages compared to other programs. It includes the following: modeling using subdiv primitives, convenient work with materials, the ability to draw various effects on the modeled object, an advanced system of animations, etc. It is widely used to create realistic interiors, characters, and visual effects in the motion picture and computer game industries [4].

3. Maxon Cinema 4D is a German graphics package with a convenient interface. It has its own unique algorithm for calculating shadows for a complex scene with a small load of fast memory. The Body Paint module allows you to paint a 3D model directly on the visible screen.

4. NewTek LightWave 3D is a graphics package with very convenient animation tools and high-quality rendering. Convenient for creating three-dimensional graphics in television format.

In addition to complete programs, there are also programs called practical packages. They are focused on creating narrowly specialized functions that will help you create the perfect scene in one of the editors listed above. For example, the Curios Labs Poser program is focused on working with already prepared characters and importing them into another graphic editor.

CONCLUSION.

Students' knowledge of modeling is formed in the process of mastering the reality of the environment, drawings. In higher education, students should acquire and understand the most important three-dimensional aspects and features of the real world - two-dimensional and three-dimensional, the basic criteria of drawing and graphic software, acquire a number of skills and

abilities, and follow them in practice. , there are the most favorable conditions for them to acquire the necessary knowledge to express their feelings accordingly.

Increasing the teacher's responsibility in the education of students by using the means of teaching engineering computer graphics, providing them with pedagogical and psychological knowledge is one of the current socio-pedagogical problems.

They will be able to use the three-dimensional modeling tool in the teaching of engineering computer graphics. Methodological developments, set of tasks, multimedia electronic guide developed on the basis of scientific analysis of research results and tested in practice are used in all higher educational institutions of our republic, in the conditions of increasing demand for teaching graphic programs, they will not only help students, but also Engineering in computer graphics and will have the knowledge, skills and abilities to use three-dimensional modeling.

These processes require teachers to regularly increase their level of pedagogical literacy, that is, by reading methodological literature on modern graphic software education, watching master classes, using electronic manuals, reading relevant articles in scientific and international journals, and studying students in teaching engineering computer graphics to students. they will have the ability to use modern graphic programs in the teaching of engineering computer graphics.

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Rezyume: Maqolada grafik darsturlar orqali ta'lim tizimida xususan texnika Oliy ta'lim muassalarida muhandislik fanlarida grafik dasturlar roli ular orqali bugungi kun talabi bo'lgan Build Art texnologiylar bilan bog'liq masalalar o'z yechimini oson va qulay erishilganligini ko'rishimiz mumkun bo'ladi. Predmetlarning fazoviy xossalarini va vazifalarini tahlil qilish ko'nikma, malakalari talabalarni grafik tayyorgarligining muhim tarkibiy qismidir. Grafik ta'lim sohasida talabalarning fazoviy tasavvurini rivojlantirish, fazoviy obrazlarni hayolan tahlil qilish, talabalarning aqliy va bilish faoliyatini faollashtirish, fazoviy tafakkurini, tasavurini rivojlantirish, fazoviy hodisalarni, shakllarni hayolan kuzatish, qabul qilish hamda barcha garfik bilim va malakalarni o'zlashtirish, xotirada saqlab qolish kabi ijodiy fazilatlarni tarkib topdirishga salmoqli ulush qo'shib kelmoqda.

Резюме: В статье рассматривается роль графических программ по инженерным наукам в системе образования, особенно в технических вузах, через них мы видим, что вопросы, связанные с востребованными сегодня технологиями Build Art, могут быть легко решены. и удобно решается. Умение анализировать пространственные свойства и задачи предметов является важной составляющей графической подготовки учащихся. В области графического образования развитие пространственного воображения учащихся, образный анализ пространственных образов, активизация мыслительной и познавательной деятельности учащихся, развитие пространственного мышления и воображения, образное наблюдение и восприятие пространственных явлений, форм, усвоение всего графические знания и навыки, сохраняя в памяти творческие качества, такие как стойкость, вносят существенный вклад в создание контента.

Kalit so'zlar: BIM (Building Information Modeling), Grafik dasturlar, ta'lim, tahlil va natijalar, gidrotexnik inshootlar, 3D model, muhadislik kompyuter grafikasi

Ключевые слова: BIM (Информационное моделирование зданий), Графические программы, обучение, анализ и результаты, гидротехнические сооружения, 3D-модель, инженерная компьютерная графика

UDC 553.96 : 665.448

TECHNOLOGY FOR PRODUCING HUMIC SIMPLE SUPERPHOSPHATE BASED ON OXIDIZED LIQORICE FOOD WITH HYDROGEN PEROXIDE AND PHOSPHORITES OF KARAKALPAKSTAN

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Summary: The article presents the results of obtaining humic superphosphate by processing phosphate raw materials from the Nazarkhan deposit of Karakalpakstan with sulfuric acid and adding oxidized meal to the product of processing using hydrogen peroxide. It has been shown that the addition of oxidized meal to the acidic superphosphate mass before ammonization and drying does not lead to a decrease, as usually occurs in the production of simple superphosphate by decomposition of phosphorites with sulfuric acid, subsequent ammonization and drying, but to a significant increase in the relative content of assimilable forms of P_2O_5.

Key words: food, hydrogen peroxide, phosphorite, extractives, sulfuric acid, oxidation, strength.

Introduction. Every effort should be made to maintain and increase the content of organic matter in the soil, because it improves the structure of the soil and therefore increases the ability of plant roots to spread in the soil in search of the nutrients necessary for normal plant growth and development and achieve high yields. This is especially important for the absorption of nitrogen and phosphorus by plants and, accordingly, more efficient use of nitrogen and phosphorus fertilizers in agriculture [1].

Among all the factors considered, the greatest decrease in the effectiveness of phosphate fertilizers is associated with the chemical binding of phosphates by antagonist cations. Water-soluble salts of phosphoric acid, getting into the soil with fertilizers, after some time, as a result of chemical binding with calcium and magnesium, turn into disubstituted phosphates - dicalcium phosphate and dimagnesium phosphate, and in an acidic environment, as a result of interaction with aluminum and iron oxides, into sparingly soluble phosphates [2].

Changes in the phosphate state of the soil and the yield of crop rotation crops under the influence of phosphate and organic fertilizers were studied in a field stationary experiment. It has been shown that the introduction of organics reduced the rate of transition of easily soluble fractions to sparingly soluble ones, and thus substantiates the need for joint application of organics and phosphorus fertilizers. The best structure of the phosphate fund was found in the joint application of manure and superphosphate. The plowing of manure and green mass of lupine contributed to the increase in the yield of winter wheat and oats grains 0.20-0.60, 0.98-0.25 t/ha. The mechanism of such a beneficial effect of organic matter contributing to the mobilization of soil and newly formed phosphates is explained by the dissolving effect of low molecular weight and more complex organic carboxylic acids formed during the decomposition of soil organic matter, as well as the ability of organic matter to chelate calcium, preventing its reaction with phosphates [3.4].

Soil organic matter is necessary to stabilize agricultural production and increase the overall resilience of agroecosystems to adverse abiotic and biotic stressors. They serve as the main source of replenishment and reproduction of humus in soils, determining their potential and actual fertility. Humus soils are distinguished by better physical properties, favorable water-air, thermal and phytosanitary regimes, increased biological activity, resistance to erosion processes. The soil-absorbing complex of humus soils has sufficient capacity and buffer capacity to absorb heavy metals, pesticide residues, and biota toxins, preventing their entry into groundwater, plants, and the atmosphere [5].

According to the data [6], the more readily hydrolysable organic matter the soil contained and the wider the ratio of carbon of humic acids and fulvic acids, the higher was the supply of soil with soluble phosphates.

It should be noted that currently, a serious problem of agriculture in many countries of the world is associated with the provision of phosphate fertilizers. The production of phosphorus-containing fertilizers depends on the availability and quality of phosphorus-containing raw materials. The high cost of the latter and its shortage sets the task of involving raw materials poor in phosphorus in the production of phosphate fertilizers, as well as increasing its efficiency [7].

The need of agriculture of the Republic of Uzbekistan for phosphate fertilizers is on average 660 thousand tons of 100% P_2O_5 per year. And chemical enterprises produce 150-160 thousand tons of 100% P_2O_5 per year, which is about 23% of the total need. This means that the amount of phosphate fertilizer applied to the soil in terms of P_2O_5 is less than 4,3 times the annual norm. The reason for this circumstance is mainly the lack of high-quality phosphate raw materials.

The limited production of phosphorite concentrate in the Central Kyzyl Kum and the lack of serious prospects for its growth force, under the current conditions of soil phosphorus depletion, to look for other sources of mineral raw materials for the production of phosphate fertilizers and increase its efficiency [8.9].

There are deposits of phosphate raw materials in Karakalpakstan, the total forecast reserves of phosphorites of Karakalpakstan are estimated at 70-80 million tons. There are 7 zones of phosphorite deposits on the territory of Karakalpakstan. The content of P_2O_5 in phosphorite samples is relatively low and is in the range of 6.19-22.84%. The highest content of P_2O_5 is observed in the ore of the Khodzhakul, Borlytau and Sultanuizdag manifestations, especially in the fraction less than 3 mm. About 2.5-5.5% of phosphorus pentoxide (P_2O_5) of its total amount is bound in a citrate-soluble compound. Sultan-Uizdag phosphorites contain 16-19.9% P_2O_5, 15.5-21% CaO, 10-11% and up to 7.70% CO_2, carbonate minerals in the ore in terms of calcite reach 26-45%. The $Fe_2O_3 : Al_2O_3$ ratio is < 2. The samples from Beshtyube, Ushtagan, and Borlytau are the poorest in P_2O_5 content and range from 5.8 to 7.78%. In them, calcite reaches 55-58% by weight of the ore. In all samples, the content of sodium is two or more times higher than that of potassium; the average ratio of $F:P_2O_5$ in the samples is in the range of 0.025-0.049 [10].

With a shortage of phosphate fertilizers, these phosphorites can serve as a large reserve in terms of increasing the production of phosphate fertilizers.

Manure, peat, lignin, sapropel, brown coal and other organic substances of plant origin serve as a raw material source for obtaining organic or organomineral fertilizers.

Bare licorice meal can serve as a good raw material for obtaining humic fertilizers. It should be noted that, in Uzbekistan, more than thirty enterprises and companies with various forms of ownership are engaged in the harvesting and processing of licorice root in various regions. Licorice

grows in the north-west of Uzbekistan - Khorezm, Bukhara regions, as well as in the Republic of Karakalpakstan [11].

Licorice is a herbaceous plant of the legume family. Licorice leaves are used for medicinal infusions and decoctions, in addition, licorice hay is rich in proteins and is a good feed for livestock, but the root of the plant has the main healing properties. The chemical composition of the root includes malic, citric and succinic acids, beta-carotene, a large list of vitamins, as well as minerals necessary for the human body: potassium, calcium, iron, phosphorus, magnesium and others. The main biologically active substances of licorice root are triterpenoid compounds, mainly glycyrrhizic acid and falvonoids, the content of which is up to 25%. It should be noted that after processing the licorice root, i.e. after extraction of glycyrrhizic acid and other biologically active substances, a significant amount of meal remains, more than 80% of the feedstock (more than 100 thousand tons per year in Karakalpakstan), which is a waste product, and a liquid solution of ammonium sulfate (0.5-1%) is formed about 400 thousand tons containing a certain amount of physiological active substances [12-14].

Currently, there is no rational technology for processing licorice meal remaining after extraction of extractable substances. In licorice meal, despite various methods of extraction, after processing, a certain amount of biologically active substances remains, useful microelements for the plant, the bulk of licorice meal consists of insoluble, hardly decomposable organic substances. One of the rational ways of using meal waste is to obtain organic and organomineral fertilizers based on them. From the above, it can be seen that the bulk of licorice meal consists of insoluble, hardly decomposable organic substances. Therefore, in order to increase extractive substances, i.e. Soluble organic carboxylic acids In the works, the processes of oxidation of bare licorice meal with hydrogen peroxide were studied depending on the concentration, temperature, duration and weight ratio of the organic part of the coal to the oxidizer. In the experiments, meal was used, which, after drying to an air-dry state and grinding in a ball mill to a size of 0.25 mm, had the following composition (wt.%): moisture 5.41; ash 4.66; extractives extracted with 1% NaOH solution 5.87; extractive substances extracted by water 15.78; insoluble organics 68.28. The process of oxidation with hydrogen peroxide was carried out at a concentration of 10 to 30% and a weight ratio of meal (organic part) : H_2O_2 from 1 : 0.1 to 1 : 0.6. Under optimal conditions, the degree of meal oxidation was 65.5%. The obtained oxidation product contains 37.17% extractive substances (EE) in 1% NaOH solution , 26.57% water-soluble organic substances, 36.26% residual meal. We used this wet, thick mass of oxidized meal as the initial component of the obtained organomineral fertilizers [15, 16].

To obtain humic superphosphates, phosphorites from the Nazarkhan deposits of Karakalpakstan were used, the composition of which is given in Table 1.

Table 1.

Chemical composition of samples of phosphorites from deposits of Karakalpakstan

Types of phosphate raw materials	Content of components, wt. %								P_2O_{5dig} : P_2O_{5tot} %	CaO : P_2O_5
	P_2O_5	CaO	SiO_2 %	Fe_2O_3 %	Al_2O_3 %	F	CO_2	I.O.		
Nazarkhan	11.93	26.12	37.38	5.03	2.47	1.45	4.91	7.42	40.23	2.19

Sulfuric acid with a concentration of 92% was used to activate phosphate raw materials. Oxidized meal with hydrogen peroxide was used as an organic component.

At the first stage of the study of the process of obtaining humic simple superphosphate, the decomposition of phosphate raw materials with sulfuric acid was carried out in order to transfer the indigestible form of P_2O_5 in the raw material into a form digestible for plants. The norm of sulfuric acid was taken in the amount of 10, 20, 30, 40 and 50% of the stoichiometry for the formation of monocalcium phosphate according to the reaction:

$$CaO_{\text{ in phosphate}} + 2H_2SO_4 \rightarrow Ca(H_2PO_4)_2 \cdot H_2O$$

Phosphorus was treated with sulfuric acid for 60 min. After completion of the decomposition of phosphorus with sulfuric acid, oxidized meal was introduced into the mixture. It was taken in weight ratios of phosphorite : meal (the organic part of the oxidized meal) = 1 : (0.20 -1). The resulting mixture was then stirred for 30 minutes. and neutralized with 25% aqueous ammonia to pH 4-4.5. Drying was carried out at 80°C, and granulation by pelletization in the process of ammonization and drying. The chemical composition and strength of fertilizer granules were determined. The strength of granules with a size of 2- 3 ммwas determined using an IPG-1M granule strength meter, their average value was 2.3-2.7 MPa. Determination of all forms of P_2O_5 was carried out by the gravimetric method by precipitating the phosphate ion with a magnesia mixture in the form of magnesium ammonium phosphate, followed by calcining the precipitate at 1000-1050°C according to GOST 20851.2-75. Nitrogen was determined according to GOST 26715-85. SO_3 was determined by precipitation in the form of barium sulfate, CaO content was determined by titration with a 0.05 N solution of Trilon в in the presence of the indicator flurexone. The EV yield was determined according to the procedure given in [15]. The results of the analysis are shown in table 2.

Table 2.

The composition of humic superphosphates obtained on the basis of oxidized meal with hydrogen peroxide and phosphate raw materials of the Nazarkhan deposit

Ratio NFM: meal	Moisture %	P_2O_5 total. %	P_2O_5 dig-le citric acid. %	P_2O_5 dig-le Tril-B %	CaO total %	P_2O_{5dig}: P_2O_{5tot} %	SO_3, total %	N, total %	organic sub-ces %	HA %
1	2	3	4	5	6	7	8	9	10	11
The norm of H_2SO_4 from stoichiometry to the formation of $Ca(H_2PO_4)_2$, % 10										
1 :0	2.04	11.47	5.92	4.51	25.12	51.61	2.94	0.45	0	0
1:0.2	2.5 3	9.48	5.09	4.06	20.73	53.69	2.42	0.52	15.87	5.91
1:0.4	3.01	8.24	4.61	3.77	18.04	55.95	2.11	0.68	25.58	9.52
1:0.6	3.5 4	7.02	4.03	3.38	15.36	57.46	1.79	0.76	35.29	12.03
1:0.8	4.02	6.29	3.72	3.25	13.78	59.14	1.63	0.87	40.92	15.20
1:1	4.5 5	5.56	3.40	3.04	12.15	61.15	1.42	0.94	46.51	17.29
The norm of H_2SO_4 from stoichiometry to the formation of $Ca(H_2PO_4)_2$, % 20										
1 :0	2.28	11.06	6.67	4.96	24.22	60.31	5.84	1.01	0	0
1:0.2	2.76	9.21	5.82	4.17	20.11	63.19	4.87	1.22	15.42	5.73
1:0.4	3.26	8.04	5.28	3.84	17.56	65.67	4.26	1.36	24.95	9.27
1:0.6	3.74	6.87	4.63	3.42	15.02	67.39	3.64	1.47	34.53	12.84
1:0.8	4.25	6.17	4.27	3.23	13.48	69.21	3.28	1.54	40.11	14.91
1:1	4.75	5.46	3.88	3.01	11.93	71.06	2.92	1.63	45.58	16.94

The norm of H_2SO_4 from stoichiometry to the formation of $Ca(H_2PO_4)_2$. % 30									
1 :0	2.57	10.65	7.61	4.75	23.32	71.46	8.75	1.56	0	0
1:0.2	3.02 _	8.91	6.55	4.28	19.49	73.51	7.31	1.60	14.93	5.55
1:0.4	3.51	7.83	5.94	3.90	17.08	75.86	6.42	1.71	24.32	9.04
1:0.6	3.97	6.72	5.22	3.46	14.67	77.68	5.49	1.88	33.71	12.53
1:0.8	4.48	6.04	4.82	3.21	13.19	79.80	4.94	1.94	39.28	14.60
1:1	4.95	5.36	4.36	2.97	11.71	81.34	4.38	2.02	44.84	16.67
The norm of H_2SO_4 from stoichiometry to the formation of $Ca(H_2PO_4)_2$. % 40									
1 :0	2.76	10.28	8.17	5.23	22.55	79.47	10.75	2.05	0	0
1:0.2	3.26	8.66	7.02	4.61	18.94	81.06	9.04	2.12	14.51	5.39
1:0.4	3.76	7.65	6.39	4.19	16.73	83.53	8.02	2.71	23.92	8.89
1:0.6	4.24	6.64	5.68	3.72	14.51	85.54	6.96	2.87	33.34	12.39
1:0.8	4.75	5.95	5.22	3.41	13.06	87.73	6.23	2.93	38.71	14.39
1:1	5.26	5.26	4.68	3.09	11.52	89.97	5.50	3.06	44.07	16.38
The norm of H_2SO_4 from stoichiometry to the formation of $Ca(H_2PO_4)_2$. % 50									
1 :0	3.03	9.94	8.72	5.69	21.77	87.73	12.76	2.52	0	0
1:0.2	3.5 1	8.41	7.49	4.94	18.39	89.06	10.78	2.64	14.08	5.23
1:0.4	4.01	7.48	6.83	4.47	16.38	91.31	9.58	2.71	23.52	8.74
1:0.6	4.5 4	6.55	6.14	3.95	14.35	93.74	8.41	2.86	32.97	12.25
1:0.8	5.02	5.86	5.61	3.58	12.83	95.73	7.52	2.92	38.13	14.17
1:1	5.5 6	5.16	5.01	3.21	11.31	97.09	6.63	3.08	43.29	16.09

As can be seen from table 2. with a ratio of meal: phosphorite = 1: 0.2 and a sulfuric acid rate of 10% of the stoichiometry for the formation of monocalcium phosphate, a humic simple superphosphate is obtained having the composition (wt%): $P_2O_{5tot.}$ - 9.48; $P_2O_{5dig.}$ for citric acid - 5.09 ; $P_2O_{5dig.}$ for trilon B - 4.06; organic substances - 15.87; EV, 5.91; nitrogen, 0.52; CaO_{total} - 20.73; the relative content of $P_2O_{5dig.}$ for citric acid - 50.69. At the same ratio of coal to phosphorite. but at the rate of the last 50% of the stoichiometry for the formation of monocalcium phosphate, a fertilizer is obtained having the composition (weight. %): $P_2O_{5tot.}$ - 8.41; $P_2O_{5dig.}$ for citric acid - 7.49; $P_2O_{5dig.}$ for trilon B - 4.94; organic substances - 14.08; EV - 5.23; nitrogen, 1.022; CaO_{total} - 18.39; the relative content of $P_2O_{5dig.}$ for citric acid - 89.06. those. the assimilable form of phosphorus approximately doubles. It is also clear from the table that with an increase in the amount of oxidized meal, the relative content of the assimilable form P_2O_5 increases . For example, when the ratio of phosphorite: meal = 1: 0 and the rate of sulfuric acid is 50% of the stoichiometry for the formation of monocalcium phosphate, the relative content of the assimilable form P_2O_5 is 87.73%. at the same rate of sulfuric acid for the formation of monocalcium phosphate. but at a ratio of phosphorite : meal = 1 : 1, the relative content of the assimilable form P_2O_5 is 97.09%. Figures 1-3 show X-ray patterns of the initial phosphate raw material Nazarkhan. simple superphosphate and radiographs of humic simple superphosphate. obtained at a ratio of phosphorite : oil meal = 1 : 0.4 and a sulfuric acid rate of 30% of the stoichiometry for the formation of monocalcium phosphate . X-ray analysis was carried out on a computer-controlled XRD-6100 apparatus. Phase identification was carried out using domestic catalogs and ASTM [17-19].
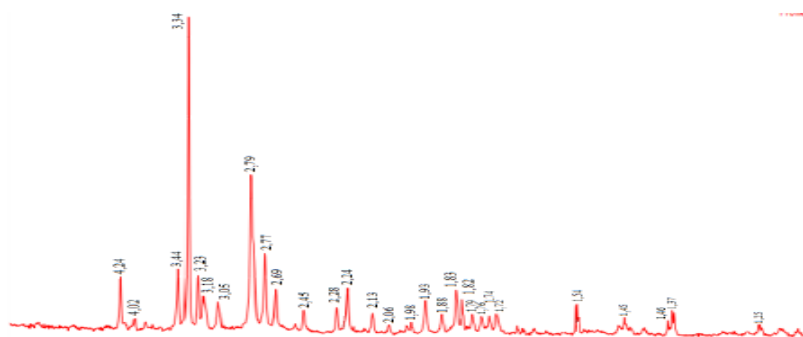
Rice. 1. X-ray pattern of Nazarkhan phosphate raw materials
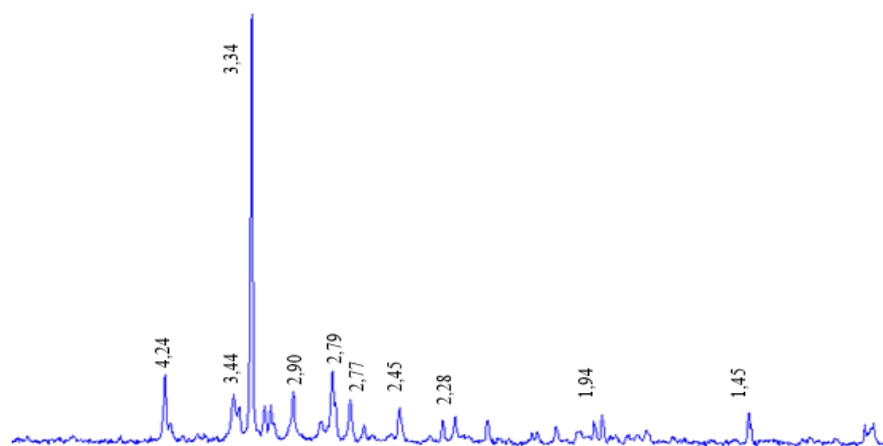
Rice. 2. X-ray pattern of simple superphosphate obtained on the basis of Nazarkhan phosphate raw materials
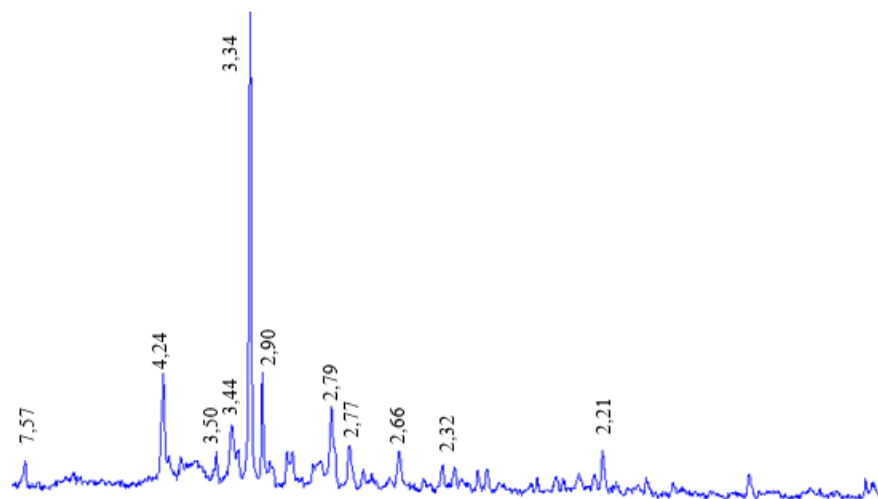
Rice. 3. X-ray pattern of humic simple superphosphate based on phosphate raw materials Nazarkhan and oxidized meal

On the X-ray diffraction pattern of Nazarkhan phosphate raw materials (Rice.1), the diffraction bands are 1.72; 1.74; 1.79; 1.83; 1.93; 2.24; 2.69; 2.77; 2.79; 3.18; 3.44 A$^{\circ}$ belong to fluorocarbonate apatite. The presence of calcite is confirmed by interplanar distances of 1.88; 2.28; 3.05 A$^{\circ}$ about . dolomite -1.37; 1.54; 4.02 A$^{\circ}$. The most intense peaks are 1.82; 1.98; 2.13; 2.45; 3.23;

3.34; 4.24 A^o indicate the presence of a large amount of silicon oxide. Bands 1.37 and 1.94 Å^o refer to calcium fluoride. a 2.06; 2.45 and 3.23 A^o can be assigned to $CaSiO_3$. On the radiograph of simple superphosphate (Rice.2). obtained by the decomposition of phosphate raw materials with sulfuric acid, diffraction maxima appear: monocalcium phosphate - 2.79 A^o ; tricalcium phosphate - 3.44 A^o. gypsum 1.45 A^o. On radiographs (Rice.3) of humic superphosphates. obtained by decomposition of phosphate raw materials at lower rates of sulfuric acid. but the addition of oxidized meal also shows diffraction peaks: monocalcium phosphate - 7.57; 2.90 A^o. ammonium sulfate 2.32 A^o.

In the production of simple superphosphate in the process of ammonization and drying of the superphosphate mass, the assimilable form of P_2O_5 decreases due to retrogradation of phosphorus during ammoniation. And the combination of oxidized meal a with phosphate raw materials in the production of phosphate fertilizers leads to a significant increase in the relative content of the assimilable form P_2O_5 . Obviously. when added to the acidic superphosphate mass of oxidized meal , organic acids, due to interaction with monocalcium phosphate and other phosphates, prevent the process of retrogradation. due to which the assimilable form of phosphorus is not reduced. on the contrary, it increases significantly during ammoniation of the superphosphate mass.

According to modern requirements of agriculture it is desirable. so that in a complex fertilizer the relative content of assimilable forms of phosphorus compounds should be at least 50%. Therefore, for the processing of Nazarkhan phosphate raw materials, we consider the optimal rate of sulfuric acid to be 30% of the stoichiometric rate for the formation of monocalcium phosphate. and the weight ratio of phosphorite to oxidized meal, 1 : 0.4. Under optimal conditions, fertilizer is obtained (wt.%): $P_2O_{5total.}$ - 7.83; $P_2O_{5dig.}$ for citric acid - 5.94; $P_2O_{5dig.}$ for Trilon B – 3.90; organic substances - 24.32; EV - 9.04; nitrogen, 1.71; CaO_{total} - 17.08; the relative content of $P_2O_{5dig.}$ for citric acid - 75.86 with a granule strength of 2.4 MPa.

Conclusion. Thus, on the one hand, the studies carried out on the production of humic simple superphosphate by adding oxidized meal to the acid superphosphate mass before ammonization and drying, on the one hand, will make it possible to significantly increase the relative content of assimilable forms of P_2O_5 on the other hand, it will reduce the rate of sulfuric acid for the decomposition of phosphate raw materials.

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Rezyume: Maqolada Qoraqalpog'istonning Nazarxon konidan olingan fosfat xomashyosini sulfat kislota bilan qayta ishlash va vodorod peroksid yordamida qayta ishlash mahsulotiga oksidlangan sho'r qo'shish orqali gumus superfosfat olish natijalari keltirilgan. Ko'rsatildiki, ammonizatsiya va quritishdan oldin kislotali superfosfat massasiga oksidlangan sho'r qo'shilishi kamayishiga olib kelmaydi, chunki odatda oddiy superfosfat ishlab chiqarishda fosforitlarni sulfat kislota bilan parchalash, keyinchalik ammonizatsiya va quritish orqali sodir bo'ladi, lekin P2O5 ning assimilyatsiya qilinadigan shakllarining nisbiy tarkibidagi sezilarli o'sish.

Резюме: В статье представлены результаты получения гуминового суперфосфата путем обработки фосфатного сырья Назарханского месторождения Каракалпакстана серной кислотой и добавления в продукт переработки окисленной муки с использованием перекиси водорода. Показано, что добавление окисленной муки в кислую суперфосфатную массу перед аммонизацией и сушкой приводит не к уменьшению, как это обычно происходит при производстве простого суперфосфата разложением фосфоритов серной кислотой, последующей аммонизацией и сушкой, а к значительное увеличение относительного содержания усвояемых форм P2O5.

Kalit so'zlar: oziq-ovqat, vodorod peroksid, fosforit, ekstraktiv moddalar, sulfat kislota, oksidlanish, kuch.

Ключевые слова: пищевые продукты, перекись водорода, фосфорит, экстрактивные вещества, серная кислота, окисление, прочность.

X-RAY ANALYSIS OF QUARTZ SANDS OF SURKHANDARYO REGION FOR IMPROVING OF GLASS COMPOSITION

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Summary: *In the article, the chemical and mineralogical composition of quartz sands in Surkhandarya region, which is the main raw material for glass materials,is analyzed by chemical and X-ray phase methods, and the results of determining their suitability for the development of glass composition are presented.*

Key words: *Surkhandarya, raw material, quartz sand, chemical, X-ray phase, quartz, clay, calcite, albite, kaolinite, mineral.*

Introduction. As it is known [1.139-260, 2.139, 3.40], the structure, phase composition, microstructure, changes in the properties of silicate and hard-flowing substances, natural and artificial minerals, local raw materials and chemical compounds under the influence of heat are determined by modern physico-chemical research. The intensity of X-rays, which is the main of these methods, changes when passing through different substances, local raw materials and objects [4.7-9]. It depends on their physical parameters and chemical structure, such as thickness, hardness, specific gravity, density.

The main components of glass are oxygen compounds. Silicon, lead, boron, sodium oxides form glass. On the basis of the $PbO-SiO_2$ system, it is easy to obtain low-temperature maturing glasses without additives and with the addition of B_2O_3, Na_2O, CaO and Al_2O_3. In particular, by adding B_2O_3 to the optimal mass composition, the melting point of solids and the temperature of glass baking can be reduced [5.3-8, 6.699-703, 7.291-299, 8.363-375].

Quartz sand obtained from the Tomdi mine was studied by chemical, X-ray phase, microscopic, electron microscopic and granulometric methods and it was found that it can be used as a quality raw material for the production of glass and glass crystal materials [9.15-21].

Main part. The following table shows the results of the analysis of the chemical composition of the quartz sands of the Surkhandarya region used in the production of glass.

Table

Chemical composition of quartz sand samples of Surkhandarya region

Name of raw materials	Amount of oxides, wt.%								k.y., mass %
	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	SO_3	Na_2O	K_2O	
Sherabad quartz sand	80,30	3,94	0,48	5,13	1,07	1,81	0,32	0,97	5,98
Jarkurgan quartz sand	67,28	9,45	2,68	6,77	1,34	0,07	1,73	1,95	8,73

The given table shows that in the chemical composition of the investigated quartz sands, the amount of SiO_2, CaO and Al_2O_3 oxides is high, and the amount of SO_3 and other oxides is low.

Figures 1-4 below show X-ray images of natural and calcined samples of Sherabad and Jarkurgan quartz sands at different temperatures.

When a sample of Sherabad quartz sand was analyzed by X-ray phase method, the diffraction maxima corresponding to the following minerals were found in its composition: β-quartz - d = 0.344; 0.322; 0.222; 0.212; 0.197; 0.181; 0.166; 0.154; 0.138; 0.137 nm, kaolinite - d = 0.420 nm, calcite - d

= 0.226 nm and albite from feldspar minerals - d = 0.244 nm, and besides these minerals, it was found that there are clay and organic inclusions.
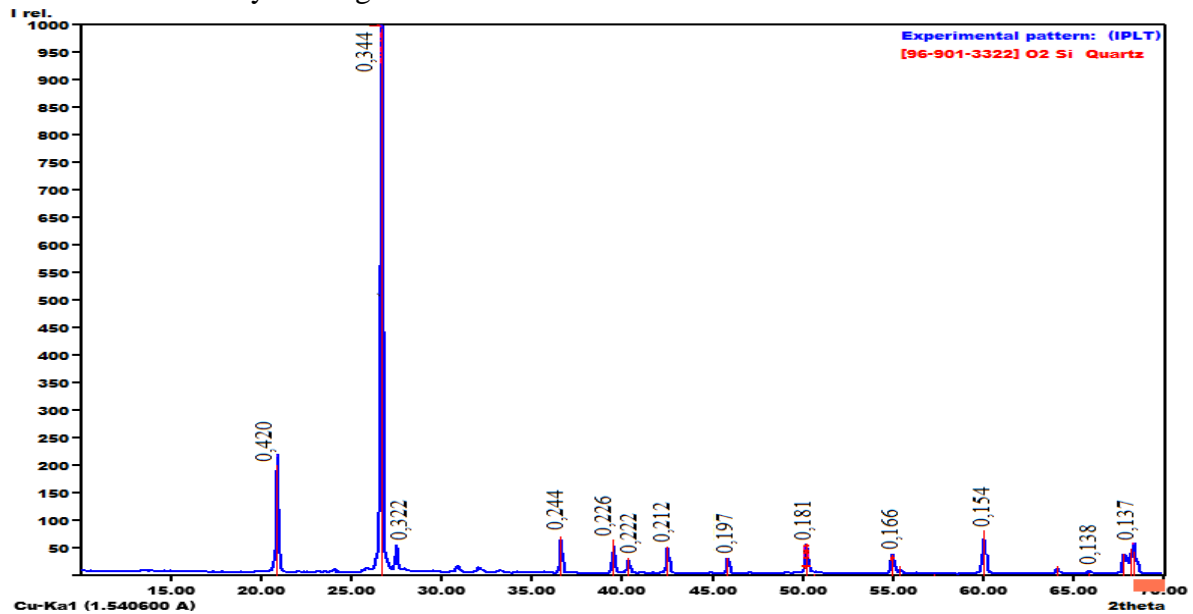
Figure 1. X-ray of a sample of Sherabad quartz sand

Figure 2 shows an X-ray image of a sample of quartz sand from Jarkurgan, and it was found that it contains quartz, albite, feldspar minerals, as well as clay and organic additives. These two deposits are similar in mineralogical composition, i.e. β-quartz - d = 0.333; 0.347; 0.328; 0.322; 0.212; 0.181; 0.166; 0.154; It is composed of 0.137 nm, kaolinite - d = 0.423 nm, albite - d = 0.208 nm, the difference was observed in the presence of a slightly larger amount of calcite mineral - d = 0.302 nm in Jarkurgan quartz sand than in Sherabad quartz sand.
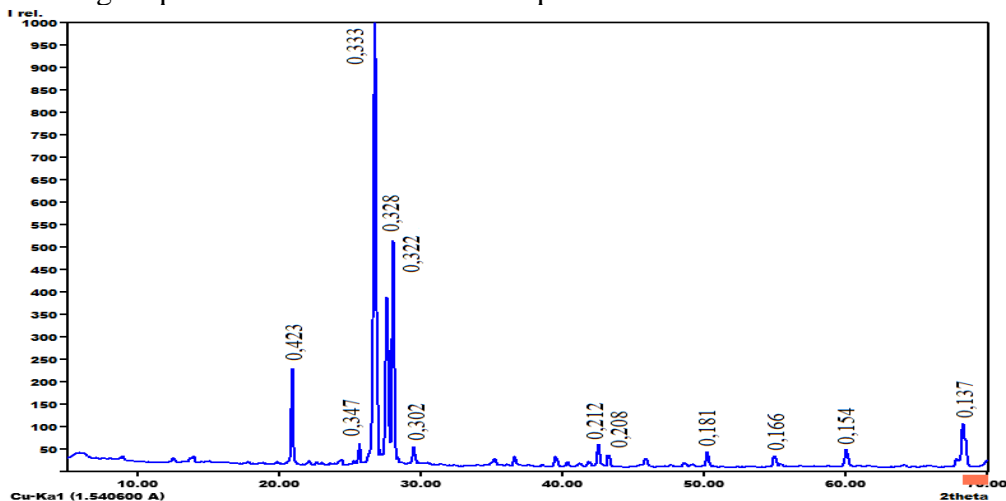
Figure 2. X-ray image of a sample of quartz sand from Jarqurgon

A sample of Sherabad quartz sand was calcined at 900°C and 1350°C in a laboratory silite sterene furnace and held for one hour. The results of X-ray phase analysis of the samples burned at 900°C and 1350°C are demonstrated in Fig. 3. The mineralogical composition of the Sherabad quartz sand sample after burning at a temperature of 900°C is as follows: β-quartz - d = 0.421; 0.332; 0.227

0.222; 0.212; 0.197; 0.181; 0.166; 0.154; 0.138 nm, α-cristobalite - d = 0.327 nm and albite - d = 0.256; 0.244 nm.

The mineralogical composition of the sample of Sherabad quartz sand after burning at a temperature of 1350°C is as follows: β-quartz - d = 0.421; 0.331; 0.247; 0.227; 0.212; 0.197; 0.181; 0.166; 0.154; 0.145; 0.138 nm, α-cristobalite - d = 0.401; 0.283; 0.312; 0.193; 0.187; 0.161 nm and albite - d = 0.244 nm.
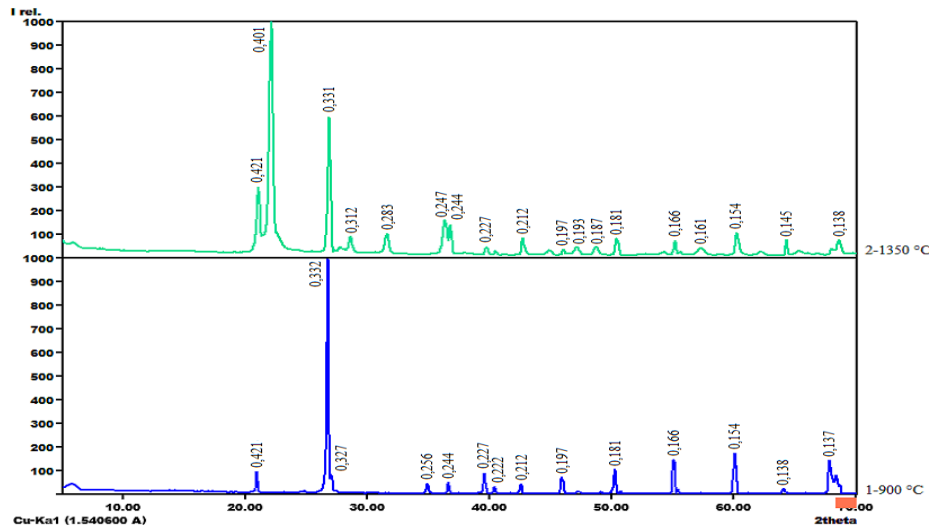
Fig. 3. X-ray images of Sherabad quartz sand sample after burning

It was found that the sample of Sherabad quartz sand contains β-quartz, α-cristobalite and albite minerals after calcination at temperatures of 900°C and 1350°C.
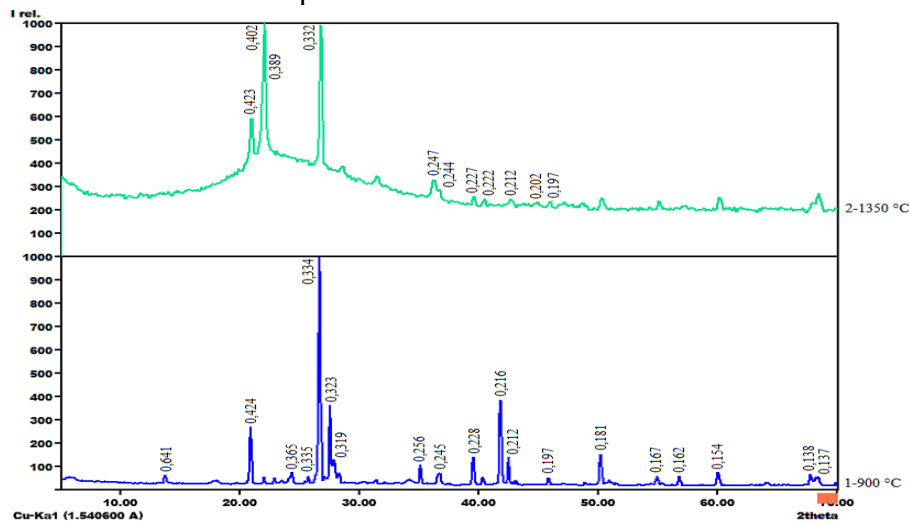
Fig. 4. X-ray images of a sample of quartz sand from Jarqurgon after burning

A sample of Jarqurgon quartz sand was also fired at 900°C and 1350°C in a laboratory silite stergen furnace and held for one hour. The results of X-ray phase analysis of samples fired at temperatures of 900°C and 1350°C are demonstrated in Fig. 4.

The mineralogical composition of the sample of quartz sand of Jarqurgon after burning at a temperature of 900°C is as follows: β-quartz - d = 0.424; 0.335; 0.334; 0.245; 0.228; 0.212; 0.197; 0.181; 0.167; 0.154; 0.138 nm, α-cristobalite - d = 0.323; 0.162 and albite - d = 0.365; 0.319; 0.256; 0.216 nm.

The composition of the sample of Jarqurgon quartz sand after burning at a temperature of 1350°C is as follows: β-quartz - d = 0.423; 0.332; 0.247; 0.227; 0.222; 0.212; 0.197 nm, α-cristobalite - d = 0.402; 0.202, albite - d = 0.389; 0.244 nm.

After calcination of a sample of Jarqurgon quartz sand at temperatures of 900°C and 1350°C, it was found that there are β-quartz, α-cristobalite and albite minerals.

Summary.

In conclusion, it can be said that according to the results of the complex research of the material and mineralogical composition of Sherabad and Jarkurgan quartz sands using chemical, silicate and X-ray phase analysis methods, it was found that these quartz sands are not relatively clean, they contain clay and organic additives in addition to silicon oxide. According to the obtained results, it was shown that these quartz sands need to be cleaned in various technological enrichment methods in order to use them in glass production. It was found that the quartz sands of these deposits can be used as the main component in the development of glass composition after enrichment.

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Rezyute: Maqolada shisha materiallarning asosiy xomashyosi bo'lgan Surxondaryo viloyatidagi kvars qumlarining kimyoviy va mineralogik tarkibi kimyoviy va rentgen fazali usullar bilan tahlil qilinib, ularni ishlab chiqarishga yaroqliligini aniqlash natijalari berilgan. shisha tarkibi taqdim etiladi.

Резюме: В статье химическим и рентгенофазовым методами проанализирован химико-минералогический состав кварцевых песков Сурхандарьинской области, являющихся основным сырьем для стекольных материалов, и приведены результаты определения их пригодности для разработки представлена стеклянная композиция.

Kalit so'zlar: Surxondaryo, xomashyo, kvars qumi, kimyoviy, rentgen fazasi, kvarts, gil, kaltsit, albit, kaolinit, mineral.

Ключевые слова: Сурхандарьинская, сырье, кварцевый песок, химический, рентгенофазовый, кварц, глина, кальцит, альбит, каолинит, минерал.

STUDY OF THE CHEMICAL-MINERALOGICAL COMPOSITION AND PROPERTIES OF THE USHSAY BENTONITE-LIKE CLAY OF KARAKALPAKSTAN FOR OBTAINING CERAMIC HEAT-INSULATING MATERIALS

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Summary: The article discusses the technology and experimental methods for obtaining heat-insulating materials based on bentonite, as well as the results of studies of their physicochemical and technological properties. The analyzes of raw materials for heat-insulating materials and the prospects for the wide use of raw materials in the territory of the Republic of Karakalpakstan are shown.

Keywords: bentonite, types of raw materials, secondary raw materials, physical and chemical properties, energy efficiency.

The current situation in the construction industry and the production of building materials obliges to take into account the consequences of the global energy crisis around the world. The use of new energy-efficient building materials in the construction of civil housing and social and industrial facilities provides a significant reduction in costs during their operation. To provide such thermal insulation materials, new scientific and technical research will be required to find new sources of large-tonnage and affordable raw materials and develop new technologies for the production of building materials on an industrial scale.

In this direction, the use of low-temperature heat-insulating materials, in particular, based on low-melting clay raw materials in the construction of the Republic of Karakalpakstan, has become more relevant due to the emerging problem of increasing the energy efficiency of the building complex. The great demand for heat-insulating materials has led to an increase in the production of ceramic heat-insulating materials, the search for and extraction of clay raw materials, the reserves of which are quite high in this region. In addition, the need for building heat-insulating materials, in particular ceramic ones, and ensuring their cost reduction is solved by developing their effective compositions with expanding the material and raw material base through the use of domestic non-traditional natural resources and replacing expensive components with secondary and man-made resources.

This paper presents the results of a study of bentonite-like clay raw materials of the Ushsay deposit of Karakalpakstan, located in the northwestern part of Uzbekistan, carried out in order to obtain a heat-insulating ceramic material and develop a technology for its production.

In connection with the intensive development of the construction industry and a number of manufacturing industries in the Republic of Karakalpakstan, the need for heat-insulating materials, in particular their ceramic varieties, is growing. However, most of the industrial enterprises of Karakalpakstan for the production of ceramic and heat-insulating materials for construction needs are deficient in high-quality raw materials, which have in their composition more significant indicators of the main layered silicate - montmorillonite, a mineral capable of swelling at high firing temperatures and thereby providing thermal insulation properties for the resulting ceramic material. Based on the study of published works and the results of an analytical review of the available data, it was found that the bowels of Karakalpakstan are rich in various types of silicate building raw materials for the development of innovative technologies for the production of heat-insulating materials [1-5].

Geological studies have previously established the suitability of clay from the Ushsai deposit as a light aggregate in the production of ceramic heat-insulating materials. In addition, the search for new sources of

raw materials, the expansion of the raw material base and the development of effective compositions of building materials for various purposes on their basis are an urgent problem for the building materials industry not only for Karakalpakstan, but also for the Republic of Uzbekistan. According to the classical technology for the production of ceramic heat-insulating materials [6-7], all the main physical-chemical, physical-mechanical and operational properties of ceramic products for construction purposes are directly dependent on their chemical, granulometric and mineralogical composition, as well as the technological characteristics of the initial raw materials .

In this regard, we have determined the chemical-mineralogical and granulometric compositions of geological samples of clay samples from the Ushsay deposit using the methods of traditional silicate chemical analysis and X-ray phase analysis.

Bentonite-like clay of the Ushsai deposit is a polymineral clay rock, which is located in the Muynak region next to the Ushsay GKZ. The geological thickness of the clay of the Ushsai deposit of Karakalpakstan ranges from 3 to 9 m. In appearance, this rock is light brownish yellow in color, in terms of chemical and mineralogical composition - montmorillonite - hydromicaceous. When interacting with a 10% solution of hydrochloric acid, the clay boils.

Table 1 shows the results of chemical analysis of some samples of clay samples from the Ushsai deposit.

Table No.1

The results of the chemical analysis of samples of bentonite-like clays of the Ushsay deposit

Sample indexes	The content of oxides in wt.% on air dry matter										*LOI,* %
	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	K_2O	Na_2O	SO_3	P_2O_5	
Ushs-1	60,10	14,85	4,75	0,79	1,62	2,01	2,92	1,56	0,98	0,26	10,16
Ushs -2	60,25	14,70	4,95	0,59	1,59	1,99	3,09	1,45	0,92	0,22	10,25
Ushs -3	60,52	14,49	4,92	0,74	1,63	2,05	3,06	1,47	0,89	0,34	9,96
Ushs -4	60,49	14,46	4,90	0,64	1,56	2,03	2,93	1,54	1,01	0,30	10,17
Ushs average	**60,34**	**14,61**	**4,88**	**0,68**	**1,60**	**2,02**	**3,00**	**1,50**	**0,95**	**0,28**	**10,14**

Note: Loss on ignition (LOI) includes: hygroscopic, constitutional, crystallized water, organic and volatile substances and oxide (II)-carbon.

As can be seen from the data in Table No. 1 According to the content of basic oxides: SiO_2, Al_2O_3, Fe_2O_3 and alkali oxides - K_2ONa_2O, and also in terms of refractoriness, the studied clay belongs to the group of low-melting raw materials, the content of coloring oxides ($Fe_2O_3+TiO_2$) belongs to the group with their high content. The value of the plasticity number of the studied samples, determined by the Atterberg method, samples of Ushsay clay is within 14±18, therefore, bentonite-like clay belongs to the plastic group of raw materials. According to the value of the coefficient of sensitivity to drying, it belongs to the insensitive group of raw materials. The requirement for clay raw materials in terms of chemical composition for obtaining ceramic granules [7] and comparative indicators of the studied clay raw materials are given in Table No. 2.

Table No.2

Comparative indicators on the requirement of the chemical composition to raw materials and studied clay

Oxides	The content of oxides in clay rocks with a degree of swelling, wt.%			Indicators of Ushsay clay samples				
	high	average	weak	Ushs-1	Ushs-2	Ushs-3	Ushs-4	Ushs average
SiO_2	50-60	60-70	>70	60,10	60,25	60,52	60,49	**60,34**
Al_2O_3	16-24	10-16	<10	14,85	14,70	14,49	14,46	**14,61**
Fe_2O_3	6-10	4-6	<4	4,75	4,95	4,92	4,90	**4,88**
Na_2O+K_2O	3-6	1,5-3	<1,5	4,48	4,54	4,53	4,47	**4,51**
CaO	1-3	3-4	>4	1,62	1,59	1,63	1,56	**1,60**

The results of comparing the chemical compositions and indicators of loss on ignition (LOI) with the necessary requirements, it can be noted that samples of this clay rock are suitable for the production of

expanded clay, characterized by a high degree of swelling. The phase composition of the investigated raw materials was determined by the X-ray method (pic.).
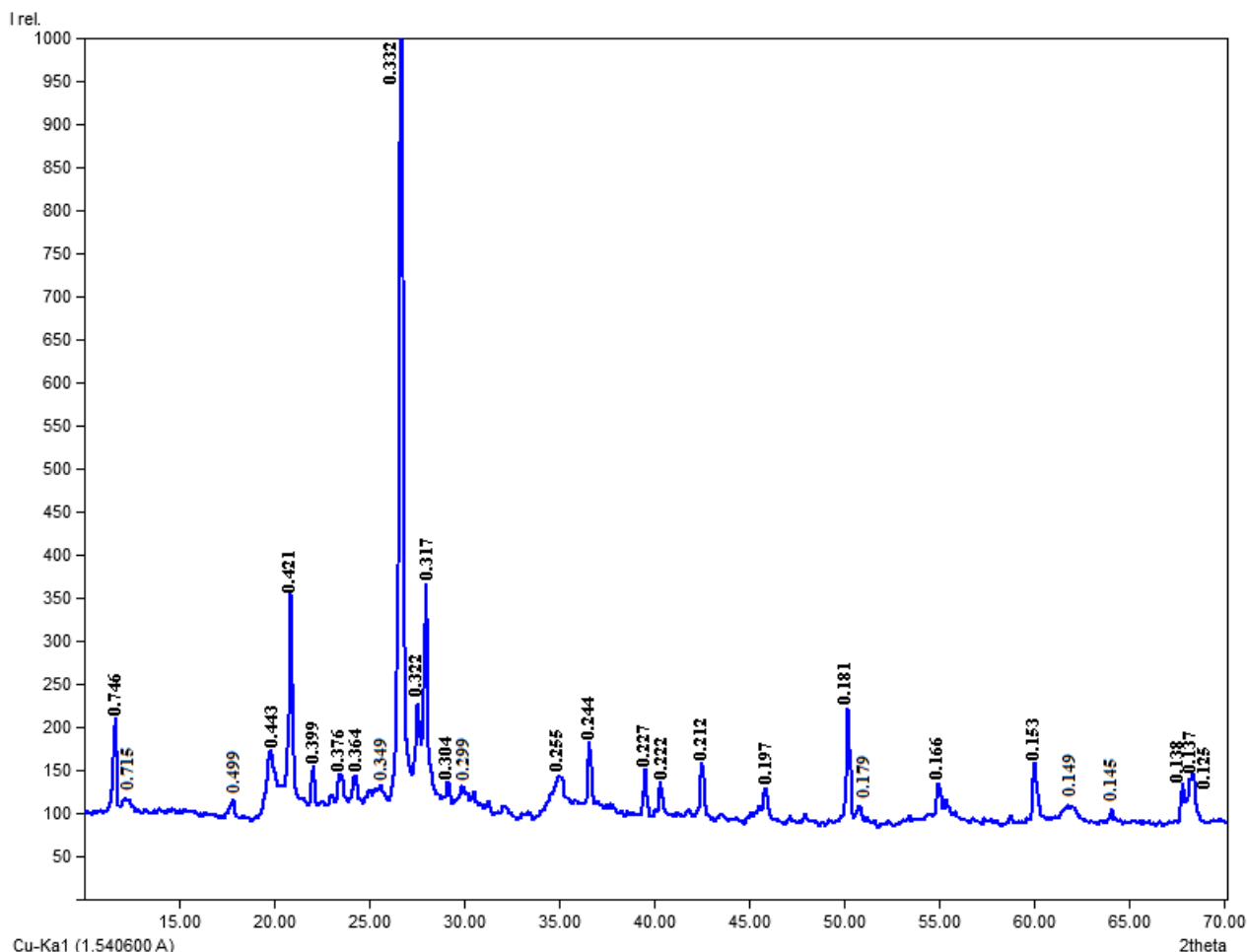
Pic. X-ray pattern of bentonite-like clay Ushsay field

To identify the phase composition of the used component and the obtained samples, X-ray phase analysis was performed on a LABX XRD-6100 SHIMADZU diffractometer using CuKα radiation. filter-Ni, wavelength 1.5418 Å, current mode and tube voltage 30 mA, 30 kW). Constant detector rotation speed 4º/min in steps of 0.02º (ω/2θ – coupling), scanning angle varied from 4 to 80°. scanning ranged from 4 to 80o. Tables and an international card file on X-ray powder patterns were used in calculations and phase identification.

Based on the obtained results of X-ray phase analysis of samples of samples of bentonite-like clay of the Ushsay deposit, the presence of the following minerals with the corresponding lines of diffraction maxima of minerals related to: quartz mineral (d=0,421; 0,332; 0,244; 0,227; 0,222; 0,212; 0,197; 0,181; 0,166; 0,153; 0,145; 0,138; 0,137); muscovite (d=0,499; 0,443; 0,399; 0,376; 0,364; 0,322; 0,299; 0,255); albite (d=0,364; 0,317; 0,294; 0,150); montmorillonite (d=0,750; 0,500; 0,448; 0,304; 0,255; 0,244) и хлорита (d=0,715; 0,443; 0,349 нм).

As part of the research, we also studied the compositions of the masses of the ternary composition with an indication of their melting points (Table No. 3).

Table No. 3

Compositions and temperatures of their melting of a ternary composition based on Ushsay clay, meal and waste from soda production

Name samples	Состав композиции, масс.%			Melting temperature T, $^{o}C_{mel.}$
	Ushsay clay	meal (waste of vegetable oil production)	soda waste	
EC-1	90	2	8	1140
EC -2	85	5	10	1115
EC -3	80	5	15	1090
EC -4	75	5	20	1065
EC -5	70	5	25	1045
EC -6	90	8	2	1120
EC -7	85	10	5	1085
EC -8	80	15	5	1040
EC -9	75	20	5	995
EC -10	70	25	5	955

As can be seen from the data in Table No. 3, with an increase in the amount of soda production waste introduced into the composition of the meal in the additional input within 5-25%, the melting point of the samples decreases from 1140 to 1045 ° C. and while keeping the content of soda production waste at 5%, the melting point of the samples still decreases from 1120 to 955 °C. Such a significant decrease in the melting temperature of samples and three-component compositions allows us to conclude that it is expedient to use Ushsay bentonite-like clay together with the indicated secondary resources in the development of compositions and the production of expanded clay granules and gravel, which is widely used in modern construction as an effective heat-insulating material.

Thus, on the basis of a study of the chemical and mineralogical composition and X-ray phase studies, it was found that the clays of the Ushsay deposit of Karakalpakstan, by introducing an additional amount of meal (waste from the production of vegetable oil) and soda production, can be used as the main clay mineral raw material for the production of expanded clay, which is used as an available ceramic thermal insulation material.

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Rezyume: *Maqolada bentonit asosida issiqliq izolyatsiyalovchi materiallar olish texnologiyasi va tajriba omuxtalari shuningdek ularning fizik-kimyoviy, hamda texnologik*

xususiyatlarini tadqiqotlar natijalari o'rganilgan. Issiqliq izolyatsiyalovchi materiallar uchun xom-ashyo taxlillari va Qoraqalpog'iston Respubikasi hududidagi xom-ashyoni keng qo'llash istiqbollari ko'rsatilgan.

Резюме: *В статье рассмотрены технология и экспериментальные методы получения теплоизоляционных материалов на основе бентонита, а также результаты исследований их физико-химических и технологических свойств. Показаны анализы сырья для теплоизоляционных материалов и перспективы широкого применения сырья на территории Республики Каракалпакстан.*

Kalit so'zlar: *bentonit, xom-ashyo turlari, ikkilamchi xom-ashyolar, fizik-kimyo hususiyatlar, energiya samaradorlik.*

Ключевые слова: *бентонит, виды сырья, вторичное сырье, физико-химические свойства, энергоэффективность.*

UDC 004.056

PRECEDENT ANALYSIS METHODS FOR RESPONSE TO INFORMATION SECURITY INCIDENTS

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Summary: This article presents an innovative approach to precedent analysis, a fundamental technique in information security incident response. By examining past incidents and their outcomes, precedent analysis enables incident response teams to draw upon historical knowledge to inform their decision-making process. However, existing methods for precedent analysis have limitations, particularly in coping with the evolving threat landscape. The proposed enhanced method and algorithm address these shortcomings by incorporating advanced techniques that account for the dynamic nature of modern cybersecurity threats.

Keywords: PDCA model, attack incidents, information security, corporate network, Case Based Reason, precedent analysis.

I. INTRODUCTION

In the rapidly evolving landscape of cybersecurity threats, effective incident response is crucial for organizations to safeguard their sensitive data and maintain operational continuity. Information security incident response teams rely on a range of techniques and methodologies to investigate and mitigate security incidents. Precedent analysis, a method used to leverage historical incidents to inform incident response decisions, plays a vital role in this process. However, the existing methods and algorithms for precedent analysis often fall short in addressing the dynamic nature of modern cybersecurity threats. In this article, we propose an enhanced precedent analysis method and algorithm that empowers incident response teams with more accurate and efficient decision-making capabilities, ultimately enhancing the overall resilience of information security measures [1-2].

II. MAIN PART

The PDCA model is used in incident management, since an attack in an organization's corporate network is a continuous (cycle) process of incident detection, reaction, investigation, and incident reporting. On the other hand, the PDCA (Plan-Do-Check-Act) model serves as a decision-making methodology used for qualitative and effective management of processes. The PDCA model is a model created as a result of the interconnection of 4 cycles. (Plan-Do-Check-Act)

1 Plan.
2 Do.
3 Check.
4 Act.
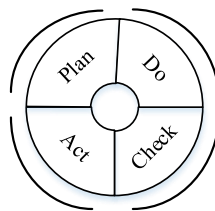
Figure 1. PDCA model (Plan-Do-Check-Act).

Precedential analysis relies on the concept of searching for a solution in information systems. Case-based reasoning (precedented) and the current situation is described as an object, for which it is necessary to find an analogue, and it is a process of inference for the incident in question, in exchange for transferring the necessary and reliable facts for the precedents. The precedent analysis method used in practice consists of the following [3].

- explanation of the problematic situation;
- actions taken to eliminate the problem;
- and in some cases - applying the result (or forecast) solution.

An alternative structure of precedent can be expressed in the form of a multidimensional parametric vector. In: Circumstantial Circumstances (VMH)

$$VMH = (a_1, a_2, \ldots a_p, R),$$

In this $a_1, a_2, \ldots a_p$ — parameters of the situation described in this use case.

R — one or more sets of solutions to the problem (diagnosis, recommendations).

Analysis based on precedents is a CBR-cycle, that is, a cycle of reasoning based on precedents, which consists of four main stages, which are as follows:

- selection of appropriate precedents from the precedent base for the situation;
- reusing the precedent to find a solution to the current problem;
- review the solution and adapt it to the current problem;
- save the accepted solution as part of a new precedent.

A simplified CBR-cycle can be used, taking into account the specific subject area specification and the problem to be solved.

Thus, the purpose of using the apparatus of precedents is to issue a ready-made solution to the incident response team of the organization to attack incidents in the corporate network of the organization [4-5].

The separation of precedents is based on the definition of a similarity function, the value of which determines whether the current situation and the precedent are similar. A point corresponding to the target function in the character space is determined and the closest precedent within the measurement range is obtained.

Similarity of precedent from a formal point of view $g = (a_{g1}, a_{g2}, \ldots a_{gp})$ and status quo $k = (a_{k1}, a_{k2}, \ldots a_{kp})$ is expressed in the form of the following function.

$$SIM(g, k) = F\left(sim(a_{g1}, a_{k1}), \ldots, sim(a_{gp}, a_{kp})\right)$$

In this $sim(a_{gi}, a_{ki})$ — g of precedent i — attribute and the current situation (event) i- local similarity of attribute k values. The function F represents the exact match from the precedent to the current situation. If there are no similar precedents in the database, this method will not find a solution for the situation. To solve this problem, a solution is found when the possibility of filling the database in the process of inference is assumed in the CBR-cycle. In order to solve this problem, the following works are carried out in the proposed improved precedent analysis method.

As mentioned above, the first step in information security incident management is incident logging. The next step is to analyze the application of the countermeasure, taking into account the classification for each incident. The following problems arise at this stage [6-7].

Incident classification is not always done correctly.

Because each incident has unique characteristics, there is no one-size-fits-all strategy for responding to specific types of incidents.

Because unprecedented incidents may occur, there is no adequate response strategy for such incidents.

The proposed improved case analysis method for responding to information security incidents is implemented by applying the concept of incident analysis to improve the incident management process. In this case, I is defined as a set of known incidents and R as a set of response strategies. In this case, the reflection of I→R is a precedent, that is, an explanation of the incident and a corresponding pair of influence strategies. That is, when registering an incident, a corresponding precedent is found. The precedent resolution is then applied to that incident. The structure of the system implementing this method is presented in Figure 1.

Incidents that are not previously known and for which there is no response strategy are defined as anomalous incidents. In other words, an anomalous incident means an incident that does not have any similarity to the incident defined by the protective measure within the classification.

A comprehensive analysis is necessary to come to the conclusion that the incident is anomalous. With this in mind, improved precedential analysis involves dividing incidents into normal and abnormal classifications [8-9].
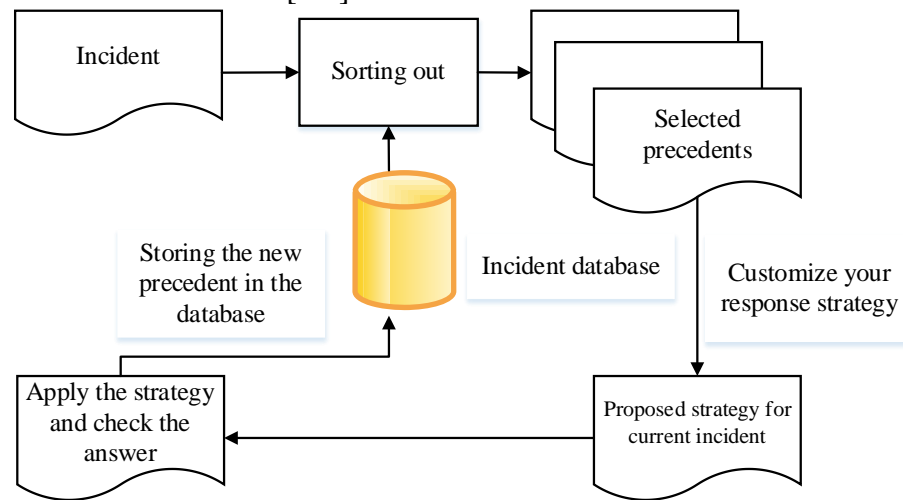
Figure 1. Structure of precedent analysis system.

$I = \{g_1, ..., g_n\}$ – a set of precedents;
$g_i = (a_1, ..., a_p, r_i)$ – the only precedent;
$K = \{k_1, ..., k_m\}$ – a set of registered incidents;
$k_j = \{a_1, ..., a_p\}$ – one incident;
$F(g_i, k_j)$ – similarity function;
$I_1 = \{g_i : F(g_i, k_j) \leq d_{lim}\}$ – a set of similar precedents.

Thus, the condition for transferring an incident to a set of precedents is expressed as follows:
$$k_j \in I \leftrightarrow |I_1| \geq b_{lim}.$$

As can be seen from the expression, the result of dividing into classes is directly dependent on the maximum value of the threshold distance d_{lim} and similarities b_{lim}.

After registration, normalization is carried out. $a_{norm} = \frac{a - a_{min}}{a_{max} - a_{min}}$.

1. Algorithm parameters initialization (making the digital device or its program ready for use): selection of a measure, i.e. determination of the distance limit d_{lim} and the threshold value analogous to b_{lim}.

The classification distance is entered as the initial value of d_{lim}:

Here, the average distance from one precedent to classification $d_{cp} = \frac{\sum_{i=1}^{n} d_{i_{cp}}}{n}$,

2. Calculation of distance between objects by measurement

$$d_{i_{cp}} = \sqrt{\sum_{i=1}^{p} (a_{gi} - a_{ki})^2}.$$

3. $d_{gk} \le d_{lim}$ identify two objects that satisfy the expression. (precedent g and incident k are similar.

4. $d_{gk} \le d_{lim}$. for each k_j Incident fulfilling the condition b is the number of precedents.

5. Incident k_j, $b \le b_{lim}$. is considered anomalous.

6. Further measures will be taken based on the result of the classification.

7. A detailed incident analysis or response strategy is implemented [10].
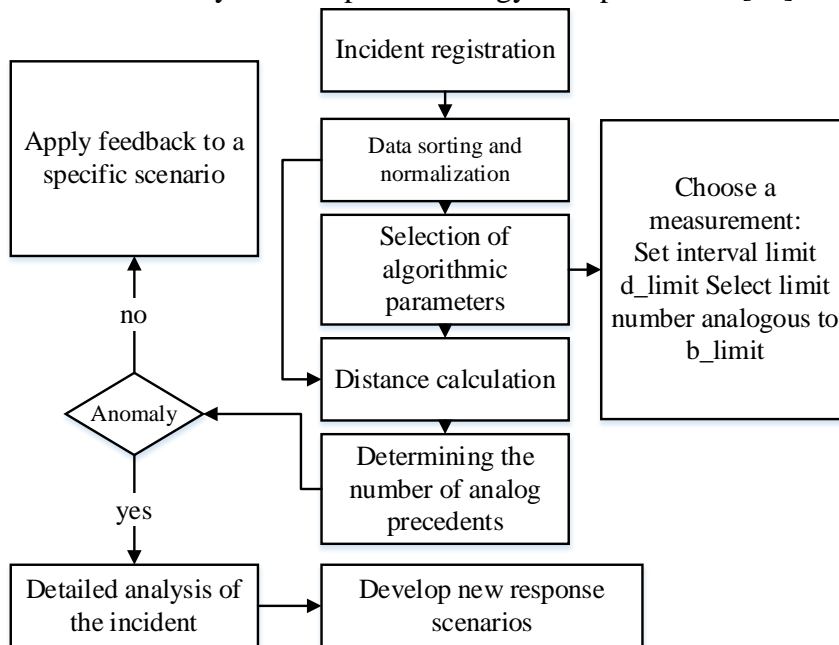
Figure 2. A scheme for introducing event analysis into the management process.

III. CONCLUSION

To study the effectiveness of the proposed method, the KddDataset99 knowledge base, which was created in 1999 and is still being filled with knowledge, is used. The k-nearest neighbors method was used as a metric classification. At this stage, since the effect of each parameter on the final result is not known, it is desirable to obtain the unit of measurement without weighting coefficients. To implement the proposed method, a text script is created. This algorithm consists of 7 steps.

The advanced precedent analysis method and algorithm presented in this paper offer significant advances in information security incident response. Using advanced techniques such as machine learning, data mining, anomaly detection, and natural language processing, the proposed

approach provides incident response teams with more accurate and efficient decision-making capabilities. By incorporating continuous learning and adaptation, the approach enables organizations to proactively mitigate emerging threats and improve the overall resilience of their information security measures.

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Rezyume: Maqolada bank ishida axborot tizimining tuzilishi, avtomatlashtirilgan bank tizimining tasnifi va avtomatlashtirilgan bank tizimini rivojlantirishning istiqbolli yo'nalishlari ko'rib chiqiladi, bank sohasida axborot xavfsizligi muammolarining axborot texnologiyalarini rivojlantirish darajasiga qarab ko'rib chiqiladi.

Резюме: В статье рассматривается структура информационной системы в банковской деятельности, классификация автоматизированной банковской системы и перспективные направлении развития автоматизированной банковской системы, перечислено эволюция проблем информационной безопасности в банковской сфере в зависимости от степени развития информационных технологии.

Kalit so'zlar: PDCA modeli, hujum hodisalari, axborot xavfsizligi, korporativ tarmoq, Case Based Reason, Case tahlili.

Ключевые слова: модель PDCA, инциденты атак, информационная безопасность, корпоративная сеть, Case Based Reason, прецедентный анализ.

A NEW METHOD OF MANUFACTURING PRODUCTS FROM NON-AUTOCLAVED FOAM CONCRETE

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Summary: *The results of theoretical and experimental studies on the development of a new method for manufacturing products from non-autoclaved foam concrete are presented in the article. It is shown that the proposed method for manufacturing constructional products from non-autoclaved foam concrete provides high physical and mechanical properties of the product and increases its operational reliability.*

Keywords: *foam concrete, non-autoclaved product, powdered sulfur, strength, frost resistance, properties, internal impregnation, cement, foaming agent, compression, bending, composition, bulk density, mineral filler.*

Currently, new innovative technologies are bursting with great force into the construction industry. The technology for the manufacturing of products from foam concrete can be attributed to the category of technologies, which gained a second life only now. The popularity of foam concrete is not accidental and is explained by the fact that it is easy to manufacture not only in large factories with expensive equipment but also directly at a construction site or in a small enterprise. The practice has long proved that if technology has become available to small and medium-sized businesses, then it will have great development [1, 2].

At present, there are only a few medium-sized enterprises and a large number of small ones in Uzbekistan. It is very difficult to estimate the exact number, but it can be assumed (based on the sales of several equipment manufacturers) that today there are about 100 small-scale production enterprises manufacturing foam concrete in Uzbekistan. This number is insufficient as most manufacturers feel the need for the products of enterprises manufacturing foam concrete products. Most likely, in the near future, the number of manufacturers of foam concrete products in the construction industry will increase several times. Most of these industries are in the stage of initial explosive development, and after mastering the basic production of blocks, they begin (or will begin) to look for options to increase productivity and introduce new developments related to the improvement of foam concrete technology [3, 4].

As is well known, in foam concrete, porization is performed by introducing foam concentrates into the mix. The binder is used in conjunction with a silica component containing silicon dioxide. The silica component (ground quartz sand, river sand, fly ash from thermal power plants, and ground granulated blast-furnace slag) reduces binder consumption and the shrinkage of foam concrete and improves its quality. Quartz sand is usually wet ground and used as a sand slurry. Grinding increases the specific surface of the silica component and increases its chemical activity. Generally, it is economically beneficial to use industrial by-products: fly ash, blast-furnace slag, and nepheline sludge for the manufacture of foam concrete. The technology for preparing foam concrete is quite simple. A foaming agent or ready-made foam is added to the cement-sand mix. After mixing the components, the mix is ready for the molding of various products from it: wall blocks, partitions, lintels, floor slabs, etc. Foam concrete can be advantageously used for pouring into molds of floor slabs, roofs, and monolithic construction. Unlike aerated concrete, a less energy-consuming non-autoclaved technology is used in the production of foam concrete [5, 6].

In addition to the ease of production, foam concrete has many other positive properties. For example, in the process of its preparation, it is easy to impart this material the required density by varying the amount of foaming agent. As a result, it is possible to obtain products with a density from 200 kg/m^3 to the most extreme values of lightweight concrete 1200-1500 kg/m^3.

Due to the sharp increase in demand for foam concrete products, interest in improving the technology for manufacturing products based on it has increased. In the Laboratory of Construction Materials of the Tashkent State Transport University, research work has been conducted for several years to develop effective technologies for molding products from non-autoclaved foam concrete; the studies make it possible to increase the strength and reliability of the manufactured materials.

A new method for the manufacture of constructional products from non-autoclaved foam concrete includes the preparation of a raw mix by mixing Portland cement, mineral aggregates and fillers, water, and foam (prepared separately) pouring the foam concrete mass into molds, curing to gain cutting strength, cutting the mass into products. At that, powdered sulfur is used as a filler in the amount of 5-7% by weight of cement, and the products are subjected to heat treatment in drying chambers at a temperature of 130^{0}C for 3 hours.

The method proposed for implementation relates to the manufacturing of products from non-autoclaved foam concrete for construction. As the results of the patent search show, there are a number of new methods for the manufacture of non-autoclaved foam concrete. In particular, there is a known method for the manufacture of products from foam concrete, that includes the preparation of a mix by joint grinding of a binder and mineral filler, mixing them with water and a pore-forming additive at an excessive pressure in the mix, which increases at the beginning of unloading into a mold, unloading the mix into a mold and molding [7]. There is also another method for manufacturing foam concrete products, including the preparation of a raw mix, its porization with a separately prepared foam, pouring the foam concrete mass into molds, curing to development of cutting strength, cutting mass into products, storing them on pallets and transporting them to a warehouse until development of grade strength [8]. The disadvantages of these manufacturing methods are the low physical, technical, and operational characteristics of the resulting foam concrete products, namely low strength and frost resistance, and a relatively low product quality category.

The closest method to the proposed one is a method for manufacturing products from non-autoclaved foam concrete, including the preparation of a raw mix by mixing Portland cement, mineral aggregates and fillers, water and separately prepared foam, pouring the foam concrete mass into molds, curing to the development of cutting strength, cutting mass into products and final surface treatment of finished products with an aluminum hydroxide sol of a concentration of (0.39 - 0.41)·10^{-4} % [9]. The disadvantages of this manufacturing method are the low strength of foam concrete and the insufficient reliability of the operational properties of the resulting products. To eliminate these shortcomings, the authors have proposed a new method for manufacturing building products from non-autoclaved foam concrete; this method provides high physical and mechanical properties of the product and high operational reliability.

This goal is achieved by the fact that the manufacture of products includes the preparation of a raw mix by mixing Portland cement, mineral aggregates and fillers, water and separately prepared foam, pouring the foam concrete mass into molds, curing to the development of cutting strength, and cutting mass into products. A distinctive feature of our development is that powdered sulfur is used as a filler, introduced in an amount of 5-7% by weight of cement, and the product is subjected to final heat treatment in drying chambers at a temperature of 130^{0}C for 3 hours.

The technical result of the proposed method is achieved when the foam concrete product is heated to 130^0C, powdered sulfur, uniformly distributed in the structure of the hardened binder, turns into a liquid state (melting point of sulfur is 113 ^{0}C) and, under gravitational forces, is gradually absorbed by the solid shell of air bubbles of foam concrete. Thus, there is an "internal impregnation" of the foam concrete product with sulfur thermoplastic throughout the entire volume. After completion of the heat treatment during the cooling process, sulfur hardens and gives higher strength to the inter-pore partitions of foam concrete due to the filling and solidification of micro-pores and micro-defects on the solid surface of air bubbles. This explains the increase in the strength of samples of non-autoclaved foam concrete when using a new method for manufacturing foam concrete products.

Using the known method, when the surface of foam concrete products is treated with aluminum hydroxide sol, the strength of only inter-pore partitions of the surface layers of foam concrete products increases. In contrast, in the proposed manufacturing method, the strengthening of the inter-pore partitions of foam concrete occurs throughout the entire volume of the product, which significantly increases its operational reliability, and the stability of indices of physical, technical, and operational properties of non-autoclaved foam concrete increases significantly. Below are several examples of specific implementations of the proposed method [10].

According to the proposed method, the product is manufactured as follows.

1. Dosing of raw materials: Portland cement PC400 D0 ... D20 and PC500 D0 ... D20 with a content of tricalcium aluminate no more than 6%, mineral aggregates and fillers, for example, quartz sand with a maximum grain size of 0.63 mm and powdered sulfur with a specific surface area of 3000 cm^2/g and water.

2. Mixing raw materials in the mixer.

3. Porization of the mix with the separately prepared foam. Substances that meet the requirements of SN 277-80 can be used as foaming agents, for example, a foaming agent based on sulfonates "Penostrom", a foaming agent based on glue rosin "Pioneer", a protein-based foaming agent "Ekopen", etc.

4. Transportation and laying the foam concrete mix into molds.

5. Curing of foam concrete to development of cutting strength.

6. Cutting of foam concrete mass into products.

7. Stacking of products on pallets and placement in a drying chamber.

8. Heat treatment of products at a temperature of 130^0C for 3 hours.

9. Transportation of products to the warehouse.

In the case study of non-autoclaved foam concrete products, standard samples were selected for testing. Experiments were conducted for foam concrete of a density D400, D500, and D600. The following materials were used as initial ones: Portland cement PC500 D0 from the Akhangaran cement plant, foaming agent - PB-Lux, quartz sand from the Maysky quarry with an average diameter of 0.16 mm, ground sulfur produced by the Shurtan Mining and Chemical Combine with a specific surface area of 3000 cm^2/g.

For comparative studies, the products from foam concrete were manufactured using the known method. The manufacture of products from non-autoclaved foam concrete according to the known method was conducted similarly to the above scheme, with the exception of items 7 and 8. For the known method, after cutting the foam concrete mass into products, the surface of the products was treated with an aluminum hydroxide sol with a particle concentration of the dispersed

phase $(0.39 - 0.41)\cdot10^{-4}$ %; the treatment was done using a construction sprayer at an aluminum hydroxide sol consumption of 2.5 l/m^2.

During the case study by the known method, check standard samples were also selected for testing. The results of testing samples made by two methods - the known one and the proposed one - are given in Table1.

Table 1.

The results of testing samples of non-autoclaved foam concrete obtained by known and proposed methods

No. of sample	Average density, kg/m³	Concentration of aluminum hydroxide sol, (10⁻⁴) %	The amount of sulfur, % by weight of cement	Compressive strength, MPa	Value of Coefficient of variation,%
Known method					
1	400	0.39	-	0.9	15.0
2	500	0.40	-	1.6	14.2
3	600	0.41	-	2.9	15.8
Proposed method					
4	400	-	5	1.8	9.8
5	500	-	6	2.9	8.5
6	600	-	7	5.2	9.6

The analysis of the results obtained shows that products from non-autoclaved medium-density foam concrete D400 ... D600, manufactured by the proposed method (samples No. 4, 5) have higher compressive strength and are characterized by significantly more stable strength properties compared to products manufactured by the known method (samples No. 1, 3).

Thus, the proposed method for manufacturing construction products from non-autoclaved foam concrete provides high physical and mechanical properties of the product and higher operational reliability.

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Rezyume: Maqolada noavtoklav ko'pikbetondan buyumlar tayyorlashning yangi usulini ishlab chiqish bo'yicha olib borilgan nazariy va eksperimental tadqiqotlarning natijalari keltirilgan. Tadqiqotlarda aniqlanishicha taklif qilinayotgan noavtoklav ko'pikbetondan buyumlar

tayyorlashning yangi usuli yuqori fizik-mexankaviy xossalar va ekspluatatsion ishonchlilikka ega bo'lgan buyumlarni tayyorlash imkoniyatlarini ta'minlab beradi.

Резюме: *В статье приведены результаты теоретических и экспериментальных исследований по разработке нового способа изготовления изделий из неавтоклавного пенобетона. Показано, что предлагаемый способ изготовления строительных изделий из неавтоклавного пенобетона обеспечивает получение изделий с высокими физико-механическими свойствами, а также повышенной эксплуатационной надёжностью.*

Kalit so'zlar: *ko'pikbeton, noavtoklav, buyum, kukunsimon oltingugurt, mustaxkamlik, muzlashga chidamlilik, xossalar, ichkaridan shimdirish, tsement, ko'pik xosil qilgich, siqilish, egilish, tarkib, to'kilma zichlik, mineral mikroto'ldirgich.*

Ключевые слова: *пенобетон, неавтоклавный, изделие, порошкообразная сера, прочность, морозостойкость, свойства, внутренняя пропитка, цемент, пенообразователь, сжатие, изгиб, состав, насыпная плотность, минеральный наполнитель.*

UDC 004.056

AN IMPROVED PRECEDENCE ANALYSIS ARCHITECTURE AND ALGORITHM FOR INFORMATION SECURITY INCIDENT RESPONSE

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Summary: The improved precedent analysis method outlined in this article leverages machine learning and data mining techniques to analyze vast amounts of incident data collected over time. The algorithm identifies patterns, trends, and correlations among incidents, enabling incident response teams to extract meaningful insights and make informed decisions based on real-world scenarios. By utilizing advanced anomaly detection algorithms, the system can identify novel attack patterns or previously unseen vulnerabilities, helping teams proactively respond to emerging threats.

Keywords: Precedent analysis, information system, response to information security incidents, information security incident monitoring systems, information security tools.

I. INTRODUCTION

In the realm of information security, incident response is a critical function that helps organizations effectively mitigate and recover from security breaches and cyberattacks. One crucial aspect of incident response is precedent analysis, which involves studying past incidents to identify patterns, trends, and insights that can inform decision-making. However, traditional methods for precedent analysis often struggle to cope with the ever-evolving nature of cybersecurity threats. In this article, we present a novel architecture and algorithm designed to enhance precedent analysis for information security incident response. By leveraging advanced technologies and adaptive techniques, this solution aims to provide incident response teams with more accurate, efficient, and proactive approaches to incident analysis and response [1-2].

II. MAIN PART

Detection of attack incidents in an organization's corporate network is not a process that occurs at a certain time and then stops or vice versa. This is a process of determining the realization of some expected and unexpected events that can happen on a regular basis and during the entire life cycle of information. Therefore, identifying an incident and responding to it is understood as a continuous process during a certain period of time. In the above paragraphs, as a result of identifying incidents of attacks in the corporate network of the organization as conflicts, methods for their identification were proposed. On the basis of these methods, it is necessary to respond to the identified incidents, that is, to react to them. The use of the PDCA model in the process of showing a reaction has been mentioned in several scientific works, and its theoretical and practical foundations have been sufficiently explained.

During the reaction to the incident and the investigation, the existing vulnerabilities in the information system, the traces of unauthorized access and attacks are clearly revealed, based on this, the possibility of protective measures is checked, the system architecture (breakdown) is determined by the state of information security and its can be determined. It also means that there is an analysis procedure and that measures are taken to prevent the consequences of the incident and reduce the probability of its return. First of all, it is necessary to identify the possible incident in time. Otherwise, it will not be possible to have an adverse effect in the short term. In addition, it is

impossible to develop countermeasures against identified incidents on the basis of a specific template. The reason is that, as mentioned in the previous paragraphs, incidents are different and the causes and consequences of their occurrence are also different [3-4].

The monitoring system and information security of incidents play an important role in the main means of incident management, and the response strategy is developed based on the analysis of the data used in these processes and the results of the analysis. A number of experts are required to analyze the data generated by the monitoring system and make decisions. This leads to an increase in the cost of these specialists. Due to the lack of financial opportunities, there are also situations where it is necessary to develop an incident management process without specialists. On the other hand, in experience, there are cases where relying on the expert's opinion at the decision-making stage reduces efficiency and, as a result, increases losses.

Thus, operational response to potential incidents is still relevant without problems. There are a number of suggestions and recommendations for solving this problem by using one of a number of identified strategies, or by recognizing that there is no suitable strategy and developing one. Case Based Reasoning refers to systems based on CBR (case-based reasoning is referred to as precedent analysis in many literatures) as means of automating the management process in finding a solution to the problem of incident response. The main goal of this is to automate the process of responding to incidents and increase the efficiency of the protection system, and this approach to responding to incidents allows an intelligent approach to the process of managing information security.

According to the software development of the precedent analysis system of the proposed improved precedent analysis method of responding to information security incidents, it will have a modular structure and consist of the following components (Fig. 1):

- records of incidents registered and prepared for processing, incident database;
- data normalization module, which changes registered incidents, precedents according to the structure of the database;
- the separation module, the function of calculating the magnitudes of similarity of incidents and precedents;
- a decision-making module, which determines the result of classification and establishes similarity in accordance with the magnitudes of one or more precedents;
- operator console, components designed to adapt the developed strategy for previously unknown conditions and correct the analysis process [5-6].
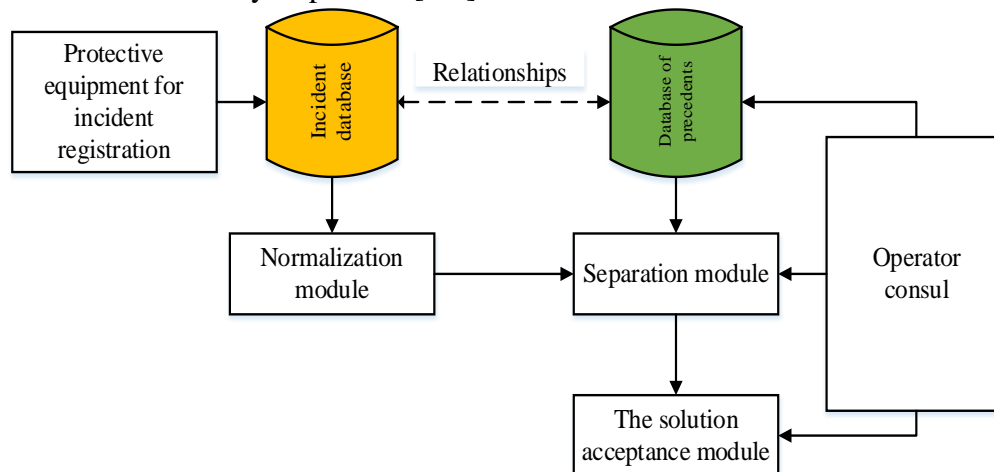
Figure 1. Architecture of precedent analysis system

Applying incident response based on precedent analysis, improving the information security incident management process, and increasing the effectiveness of incident response. In addition, such an approach solves the problem of identifying anomalous incidents, which are urgently needed to be comprehensively studied.

This solution of the algorithm allows you to get the result in an analytical form, as well as in the form of a graph or diagram. Identifying attack incidents in the organization's corporate network, preparing a primary report, evaluating them, choosing a suitable strategy for responding to them, and if there is no suitable strategy for responding, choosing a response strategy based on precedents for responding and responding, after the incident has been resolved Investigating it and developing proposals and recommendations to prevent this type of incident from happening again is a process that is carried out in a certain sequence [7-8].
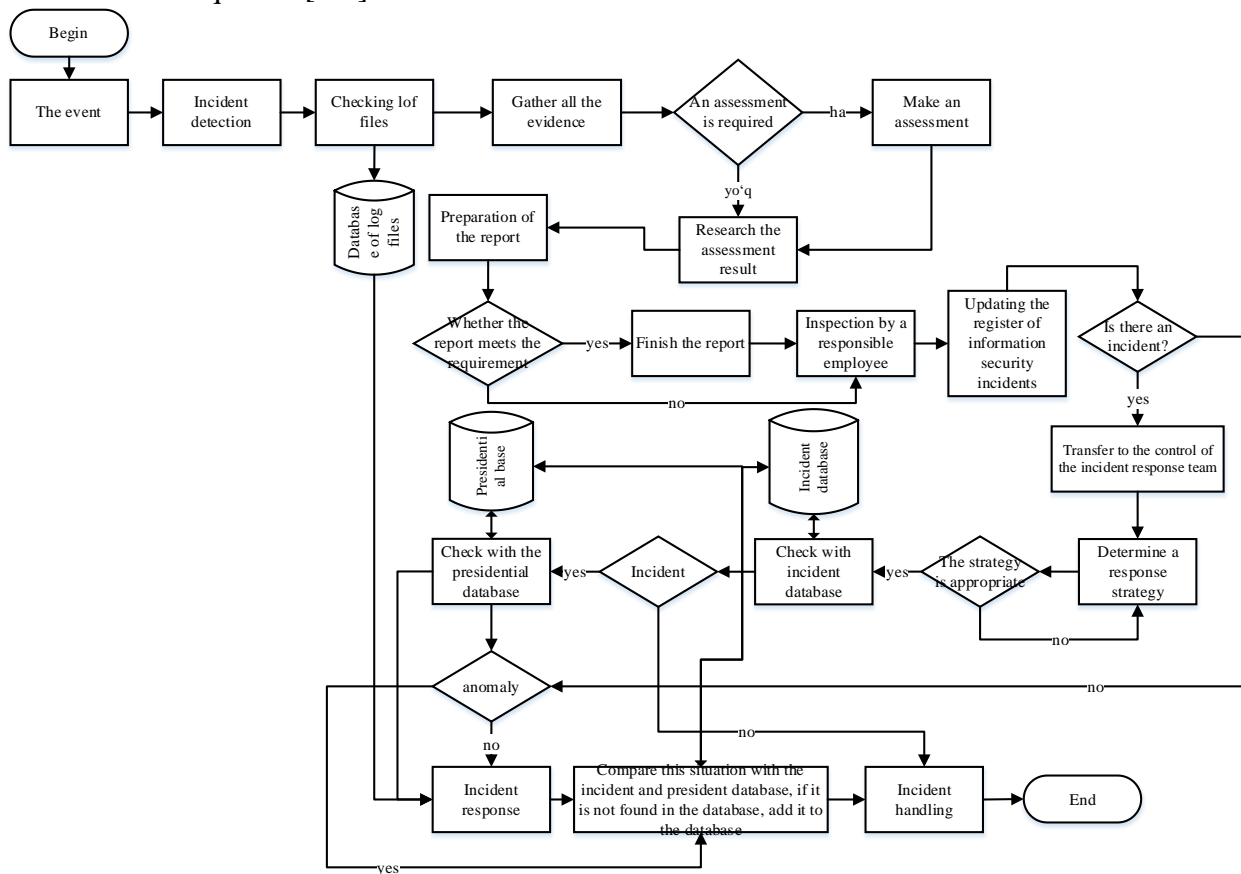
Figure 2. Block diagram of an improved precedent analysis algorithm for responding to information security incidents

Incidents classified as normal incidents are numerically different from most normal incidents, i.e., the number of similarities approaches a high value. This situation shows that they should be comprehensively analyzed and hidden reasons identified, and that the results of the incidents do not obey the general law. A null hypothesis predicts the normality of an event, where a Type 1 error rejects the null hypothesis, and a Type 2 error rejects the null hypothesis. The selection of d_{lim} and b_{lim} parameters are opposite to each other. On the one hand, an increase in the number of identified similarities increases the classification accuracy (reduces type 1 errors), but the boundary between classifications becomes less clear. Decreasing the distance between them allows more accurate classification, but increases the probability of type 2 errors [9-10].

III. CONCLUSION

With the help of the proposed method, it is possible to reuse the experience gained as a result of the improved precedent analysis, which allows to reduce the search time of the reaction scenario for similar incidents. In addition, the proposed method allows to identify similar incidents that require detailed study in problem situations, to solve the problem and to automate the process of introducing solutions to incidents based on the knowledge available in the precedent database.

In conclusion, the architecture and algorithm presented in this article represent a significant advancement in precedent analysis for information security incident response. By leveraging advanced technologies and adaptive techniques, this solution empowers incident response teams to make more accurate and informed decisions, enhancing the overall resilience of organizations' information security measures. As the cybersecurity landscape continues to evolve, adopting such innovative approaches becomes imperative to effectively combat and mitigate the ever-increasing threats faced by organizations worldwide.

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Rezyume: *Ushbu maqolada keltirilgan takomillashtirilgan pretsedent tahlil usuli vaqt o'tishi bilan to'plangan voqea ma'lumotlarining katta miqdorini tahlil qilish uchun mashinani o'rganish va ma'lumotlarni qazib olish usullaridan foydalanadi. Algoritm hodisalar o'rtasidagi naqshlarni, tendentsiyalarni va korrelyatsiyalarni aniqlaydi, bu hodisaga javob berish guruhlariga mazmunli tushunchalarni olish va real stsenariylar asosida ongli qarorlar qabul qilish imkonini beradi. Anomaliyalarni aniqlashning ilg'or algoritmlaridan foydalangan holda, tizim yangi hujum*

namunalarini yoki ilgari ko'rilmagan zaifliklarni aniqlay oladi, bu esa jamoalarga paydo bo'ladigan tahdidlarga faol javob berishga yordam beradi.

Резюме: *Усовершенствованный метод анализа прецедентов, описанный в этой статье, использует методы машинного обучения и интеллектуального анализа данных для анализа огромных объемов данных об инцидентах, собранных с течением времени. Алгоритм выявляет шаблоны, тенденции и корреляции между инцидентами, позволяя группам реагирования на инциденты извлекать ценную информацию и принимать обоснованные решения на основе реальных сценариев. Используя передовые алгоритмы обнаружения аномалий, система может выявлять новые модели атак или ранее неизвестные уязвимости, помогая командам активно реагировать на возникающие угрозы.*

Kalit so'zlar: *Pretsedent tahlili, axborot tizimi, axborot xavfsizligi hodisalariga javob, axborot xavfsizligi hodisalari monitoringi tizimlari, axborot xavfsizligi vositalari.*

Ключевые слова: Прецедентный анализ, информационная система, реагирование на инциденты информационной безопасности, системы мониторинга инцидентов информационной безопасности, средства информационной безопасности.

THERMOKINETICS OF WATER ADSORPTION IN ZEOLITE AGZSM-5

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Summary: This article presents the thermokinetics of water adsorption in AgZSM-5 zeolite at a temperature of 303 K. To measure the adsorption thermokinetics, we used a system consisting of a universal high-vacuum adsorption setup and a differential modified microcalorimeter of the Tiana-Calve DAK-1-1A type connected to it. A correlation between the adsorption-thermokinetic characteristics was found and the molecular mechanism of water adsorption in the AgZSM-5 zeolite was revealed in the entire filling area. According to the thermokinetics, it was found that the Ag+ cations are located in screened positions of the ZSM-5 zeolite crystal lattice. The adsorption of a water molecule leads to the migration of Ag+ cations from the zeolite lattice into crosshairs formed by the intersection of straight and zigzag channels and the formation of ion/molecular complexes of various multiplicity in them. From the values of adsorption thermokinetics, it was established that polar water molecules with silver cations in zeolite form a nano-ion-molecular complex in the first coordination sphere.
Keywords: adsorption, adsorption thermokinetics, adsorption heat, microcalorimeter, water.

Introduction. In the world, adsorbents are widely used in various fields of industry, construction and agriculture. Adsorbents of selective action and a wide range of applications are nanoporous molecular sieves - zeolites. The most common area of their application is the oil and gas industry. Purification and drying of natural gas from water, as well as the extraction of sulfur compounds, carbon dioxide and aromatic hydrocarbons are important for gas processing enterprises. The solution of these problems is achieved through the use of adsorption technology and the creation of new adsorbents and catalysts studied by colloid chemistry, the development of theoretical positions on the nature of active centers of dispersed substances [1–4]. Therefore, a comprehensive study of the physicochemical and especially energy characteristics of zeolites is of great theoretical and practical importance [5–8].

Zeolites are of interest because of the ability to control their texture, chemical properties and nature outside of lattice cations, which affect the adsorption and catalytic properties of crystalline materials, regulated by the structure, number and nature of the active centers they contain. However, the specifics of the structure of zeolites are still unclear, in particular, those related to the problem of the settlement of acid sites, the mechanism of adsorption of polar and nonpolar molecules, the nature and participation of defects in adsorption.

In this regard, the accumulation and systematization of the most important thermodynamic characteristics of adsorption systems, one of the components of which is zeolite, acquires great importance.

ZSM-5 catalysts are highly effective catalysts for various processes in the petrochemical and oil refining industries. Therefore, a comprehensive study of the adsorption properties of zeolites of the ZSM-5 type provides useful information about the structural characteristics and possibilities of practical application. Adsorption on these zeolites is highly dependent on the cations present in the

structure. Because of the large space between adsorption sites, zeolite is ideal for model studies of adsorption behavior.

Various physicochemical properties of ZSM-5 were investigated using various characterization methods, including BET surface area, scanning electron microscopy, infrared Fourier transform, X-ray diffraction, and so on. [9-12]

In [13-18], the adsorption characteristics of pentasil with respect to the molecules O_2, N_2, CO_2, H_2, H_2O, CH_3OH, C_8H_{10} and many others were studied. It was shown that the measured adsorption isotherms are well described by the Dubinin-Radushkevich equation. This indicates that the adsorption of CO_2 and p-xylene occurs not on the surface of the zeolite, but inside, in accordance with the mechanism of volumetric filling of micropores [15–16, 19]. The volume of micropores and the characteristic energy of adsorption were determined.

There are a large number of data on the adsorption of gases and vapors in zeolites of the ZSM type, which were obtained by various physicochemical research methods. An analysis of the literature data showed that zeolites of the ZSM-5 type are currently being intensively studied. Numerous works are devoted to the determination of their adsorption and catalytic properties. However, there is still no sufficient clarity in the study of the adsorption properties of AgZSM-5 zeolite. The study of zeolites of the AgZSM-5 type will contribute to the purposeful synthesis and use of zeolites as adsorbents and catalysts for various technological processes.

В данной работе изучены термокинетика адсорбции воды в цеолите AgZSM-5 при температуре 303 K. Состав элементарной ячейки AgZSM-5 – $Ag_{1,72}[(SiO_2)_{96,63}(AlO_2)_{1,72}]$.

In this work, we studied the thermokinetics of water adsorption in AgZSM-5 zeolite at a temperature of 303 K. The unit cell composition of AgZSM-5 is $Ag_{1,72}[(SiO_2)_{96,63}(AlO_2)_{1,72}]$.

Research methods. Isotherms and differential heats of adsorption were measured using a system consisting of a universal high-vacuum adsorption unit and a differential microcalorimeter of the Tiana-Calve type, DAK-1-1A, connected to it, which has high accuracy and stability. To determine the thermokinetics, the adsorption-calorimetric setup is connected to a recording potentiometer. The constant of the DAK-1-1 calorimeter in terms of heat flux K is 0.7 μW per 1 mm deflection of the recorder pen. The adsorption-calorimetric method used in this work makes it possible to obtain high-precision molar thermokinetic characteristics, as well as to reveal the detailed mechanisms of adsorption processes occurring on adsorbents and catalysts. Adsorption measurements and dosage of the adsorbate were carried out using a universal high-vacuum adsorption unit. The installation allows the dosage of the adsorbate both by gas-volume and volume-liquid methods. A modified DAK-1-1A microcalorimeter with high accuracy and stability was used as a calorimeter. To measure equilibrium pressures, we used a BARATRON B 627 diaphragm pressure gauge.

Results and discussion. In this work, to characterize the adsorption properties of the zeolite, we measured the thermokinetics of water adsorption in AgZSM-5 zeolite. Exchangeable cations play a major role in the adsorption of water and other small polar molecules on zeolites.

The heats of adsorption of polar molecules on zeolites of the ZSM-5 type are characterized by a stepwise decrease, indicating the stoichiometric interaction of these molecules with Ag^+ cations compensating the negative lattice charge [15–17, 20–26]. Of interest is the course of the dependence of the time of establishment of adsorption equilibrium on filling.

The time of establishment of adsorption equilibrium, depending on the amount of water adsorption in AgZSM-5 zeolite, is shown in Figure 1. The time of establishment of adsorption equilibrium until the complete formation of the molecule/cation complex in the ratio $H_2O:Ag^+$-1:1

slows down from 10.8 to 12 hours. At higher fillings, it accelerates sharply. This fact indicates the diffusion of cations in the zeolite lattice, which leads to such a sharp slowdown in the sorption process. The slowdown in the time of establishment of adsorption equilibrium in the initial region is associated with a decrease in the concentration of silver cations as a result of the migration of cations from hidden positions in the crosshairs of the main channels. Starting from filling from 2 N/M to almost 4 N/M, the adsorption process accelerates and the equilibrium is established in 2.5 hours. Further, five more water molecules are adsorbed from the beginning by a slight increase to 3.5 hours, then again by a decrease to 2 hours at an adsorption of 9 N/M.

After the formation of the $9H_2O:Ag^+$ ion-molecular complex, adsorption proceeds in the so-called silicalite part of the ZSM-5 zeolite, i.e. parts where there are no Ag+ cations. Six more water molecules are adsorbed with a constant kinetics of ~ 2 hours. Further, from 15 N/M to 17 N/M, the water adsorption process is established in ~ 1 hour. The steps in the adsorption of 9 N/M and 17 N/M on the curves of the time of establishment of adsorption equilibrium correlate with the steps on the differential heat curves at the same fillings and confirm the formation of a nanoionic-molecular complex in the first coordination sphere and the adsorption of eight water molecules in the second coordination sphere. sphere.

On the whole, the time curves for the establishment of adsorption equilibrium depending on the amount of water adsorption in AgZSM-5 zeolite are higher than in the case of CsZSM-5, LiZSM-5, NaZSM-5, and silicalite zeolites [27].
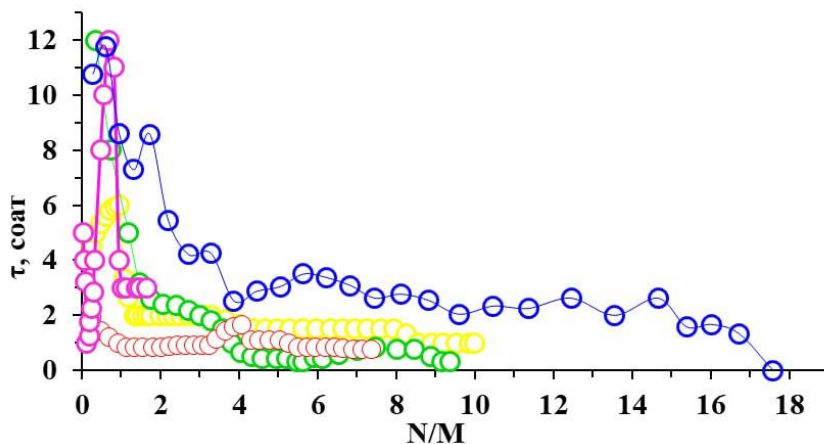
Figure 8. The time of establishment of adsorption equilibrium depending on the amount of water adsorption on zeolites: AgZSM-5, LiZSM-5, CsZSM-5, NaZSM-5 and silicalite

However, the time for establishing the adsorption equilibrium of water on the NaZSM-5 zeolite [27] linearly accelerates (Fig. 1) from the maximum value (12 hours) to 2.5 hours with adsorption of 2 N/M, then the adsorption rate increases again and with adsorption of 4 N /M stabilizes, and equilibrium is established in an average of 30 minutes. The process of water adsorption on silicalite [27] at the beginning accelerates from 5 hours to 1 hour, then slows down again, reaching a maximum (10 hours) at adsorption of 1.3 N/M. Further, the adsorption rate gradually increases and at 2 N/M it stabilizes and the equilibrium is established in 3 hours.

The time for establishing the adsorption equilibrium of water on the CsZSM-5 zeolite until the complete formation of the molecule/cation complex in the ratio $H_2O:Cs^+$ -1:1 is slowed down. In general, the adsorption process is completed in about 50 minutes. An exception is the region where a four-dimensional complex is formed, when the adsorption process slows down and the curve passes through a maximum.

Of interest is the course of the curve of the dependence of the time of establishment of adsorption equilibrium on the filling of water in the LiZSM-5 zeolite (Fig. 1). To a ratio of 1 N/M, the process of establishing equilibrium slows down (from 4 to 6 hours). At higher fillings, it accelerates sharply. This fact also points to the diffusion of cations in the zeolite lattice, which leads to such a sharp slowdown in the sorption process. Starting from filling from 2 N/M to almost 4 N/M, the adsorption process stabilizes and the equilibrium is established in 2 hours. Then four more water molecules are adsorbed with a constant kinetics of □1.5 hours. Further, from 8 N/M to 10 N/M, the water adsorption process is set in 1 hour. The steps in the adsorption of 4 N/M and 8 N/M on the curves of the time of establishment of adsorption equilibrium correlate with the steps on the curves of differential heats at the same fillings and confirm the formation of a tetrahedral ion-dipole complex in the first coordination sphere and the adsorption of four water molecules in the second coordination sphere. sphere [27].

Conclusion. The time of establishment of adsorption equilibrium depending on the amount of water adsorption in AgZSM-5 zeolite was obtained. The stepwise nature of the thermokinetics of water adsorption is revealed. It has been established that Ag^+ cations are located in screened positions of the ZSM-5 zeolite crystal lattice. Water adsorption leads to the migration of Ag^+ cations into the crosshairs formed by the intersection of straight and zigzag channels and the formation of ion/molecular complexes of various multiplicity in them. It has been determined that small polar water molecules with silver cations in zeolite form a nano-ion-molecular complex in the first coordination sphere. It was also found that eight water molecules are adsorbed in the second coordination spheres in accordance with saturation.

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Rezyume: Ushbu maqolada AgZSM-5 zeolitida 303 K haroratda suv adsorbsiyasi termokinetikasi keltirilgan. Adsorbsion termokinetikani o'lchash uchun biz universal yuqori vakuumli adsorbsion qurilma va Tiana-ning differensial o'zgartirilgan mikrokalorimetridan iborat tizimdan foydalandik. Buzoq DAK-1-1A turi unga ulangan. Adsorbsion-termokinetik xarakteristikalar o'rtasidagi bog'liqlik aniqlandi va butun to'ldirish maydonida AgZSM-5 zeolitida suv adsorbsiyasining molekulyar mexanizmi aniqlandi. Termokinetikaga ko'ra, Ag+ kationlari ZSM-5 zeolit kristall panjarasining ekranlangan joylarida joylashganligi aniqlandi. Suv molekulasining adsorbsiyasi Ag+ kationlarining zeolit panjarasidan to'g'ri va zigzag kanallarining kesishishi natijasida hosil bo'lgan ko'ndalang chiziqlarga ko'chishi va ularda turli xil ko'plikdagi ion/molekulyar komplekslarning hosil bo'lishiga olib keladi. Adsorbsion termokinetik qiymatlardan seolit tarkibidagi kumush kationlari bilan qutbli suv molekulalari birinchi koordinatsion sferada nano-ion-molekulyar kompleks hosil qilishi aniqlandi.

Резюме: В статье представлена термокинетика адсорбции воды в цеолите AgZSM-5 при температуре 303 K. Для измерения термокинетики адсорбции использовалась система, состоящая из универсальной высоковакуумной адсорбционной установки и дифференциально-модифицированного микрокалориметра фирмы Тиана- К нему подключена Calve типа ДАК-1-1А. Обнаружена корреляция между адсорбционно-термокинетическими характеристиками и выявлен молекулярный механизм адсорбции воды в цеолите AgZSM-5 по всей площади заполнения. По данным термокинетики установлено, что катионы Ag+ располагаются в экранированных позициях кристаллической решетки цеолита ZSM-5. Адсорбция молекулы воды приводит к миграции катионов Ag+ из решетки цеолита в перекрестия, образованные пересечением прямых и зигзагообразных каналов, и образованию в них ионно-молекулярных комплексов различной кратности. По значениям термокинетики адсорбции установлено, что полярные молекулы воды с катионами серебра в цеолите образуют нано-ион-молекулярный комплекс в первой координационной сфере.

Kalit so'zlar: adsorbsiya, adsorbsion termokinetik, adsorbsion issiqlik, mikrokalorimetr, suv.

Ключевые слова: адсорбция, термокинетика адсорбции, теплота адсорбции, микрокалориметр, вода.

ASSESSING OF RELIABILITY INDICATORS OF FIBER-OPTIC COMMUNICATION LINES USING STATISTICAL DATA

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Summary:. *The reliability indicators of the elements of fiber-optic communication lines (FOCL) were determined using statistical data on fragments of a transport telecommunications communication network in the operating conditions of the sharply continental climate of the Republic of Karakalpakstan.*

The processing of statistical data on FOCL damages allows to establish the average values of the performance characteristics of the quality of work. Distributions of probability indicators of reliability can be used to determine and predict the reliability indicators of designed FOCL in a given region.

Key words: *fiber-optic communication lines, reliability, statistical methods for assessing reliability, distribution laws, quantitative and complex indicators of reliability.*

Introduction. Fiber-optic communication systems (FOCS) of the Republic of Uzbekistan is the main artery for the sustainable development of all sectors of the country's economy and today it is 100% digitalized. This means that Uzbekistan has completely created a digital telecommunications infrastructure that meets international standards.

The basis for the development of FOCS is fiber-optic communication lines based on single-mode optical fibers (OF) that allow transmitting and receiving high-speed digital information streams for the required distance, and FOCL is an expensive link in the FOCS infrastructure.

The initiatives put forward by the President for the development of the digital economy, in particular, by the Decree of the President of the Republic of Uzbekistan dated October 5, 2020 "On approval of the Strategy "Digital Uzbekistan - 2030" and measures for its effective implementation" No. UP-6079, comprehensive organizational and technical measures are being implemented in the country [1]. The program provides for an increase in the number of settlements connected to the Internet, including broadband access ports, up to 2.5 million, from 78 to 95 percent, by building more than 20,000 kilometers of fiber optic lines. Particular attention is paid to the modernization of the existing telecommunications infrastructure and the construction of new FOCLs in the regions to provide the population with high-quality communication services and high-speed Internet. On fig. 1.1 shows a sharp increase in the construction length of FOCL in recent years.
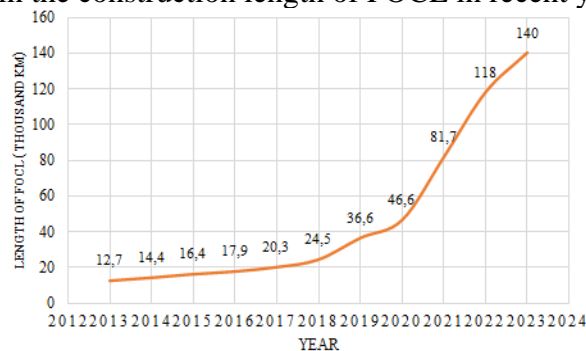
Fig 1. Total length of FOCL in Uzbekistan 2023

Construction, commissioning and ensuring the reliability of operation in the operating conditions of FOCL is an urgent task not only today, but also in the future. Reliable and uninterrupted operation of FOCS is a strategic task [2].

Literature review.

In [3-5], he explores methods for assessing the reliability of FOCL based on the analysis of field data. The authors present approaches to the collection and analysis of statistical data on failures of optical cables, connectors and other system components. The results of the analysis make it possible to identify the most common types of failures and determine the factors that affect the reliability of the system.

In [6-10], this article provides a statistical analysis of failures of fiber-optic communication lines in order to improve reliability. The authors apply the methods of mathematical statistics to analyze data on the operating time and failures of the system. The results of the analysis make it possible to determine the key causes of failures and propose measures to improve the reliability of FOCL.

The above articles represent only a small part of the research devoted to determining the reliability indicators of FOCL using statistical data. These works demonstrate a variety of methods and approaches that can be applied to analyze and improve the reliability of fiber optic communication lines.

Formulation of the problem.

Ensuring long-term uninterrupted, high-quality and reliable operation of fiber-optic communication lines on a transport telecommunications network (TTN) and a subscriber access network is possible through the creation and use of technical communication devices with an appropriate level of reliability indicators. The fail-safe operation of FOCL can be ensured, in particular, by studying the cause, nature and duration of communication failures at the stage of technical operation and at the stages - design and manufacture of components and design and construction of FOCL - in order to optimally correct the parameters of the relevant components and processes and obtain more adequate results. This requires, first of all, the processing of statistical data on FOCL damage, the determination of the laws of distribution of reliability characteristics in order to further predict these indicators at a certain confidence level.

In this paper, it is supposed, using the available statistical data on the time between failures of the TTN FOCL in a given area, to determine the distribution law of the time between failures of the transport telecommunications network of the Republic of Karakalpakstan.

Methods and Solution of the problem.

One of the statistical methods for determining the reliability of fiber optic links is the analysis of the time between failures. This method is based on the collection and analysis of data on the time periods between successive network failures. When analyzing the time between failures:

- statistics are collected on the time between failures of the various components of the fiber optic link.

- the mean time between failures is calculated by dividing the total operating time by the number of failures. This is a measure of the average uptime of network elements.

- according to the data obtained, it is possible to evaluate how often failures occur and how stable the network is during a certain period of time.

Time-to-failure analysis allows you to evaluate the stability of your fiber network, identify the least reliable components, and plan for regular maintenance and replacements to minimize downtime and ensure uninterrupted communications.

For the convenience of determining the reliability indicators, we will draw up a block diagram (Fig. 2) that characterizes the reliability of the FOCL.
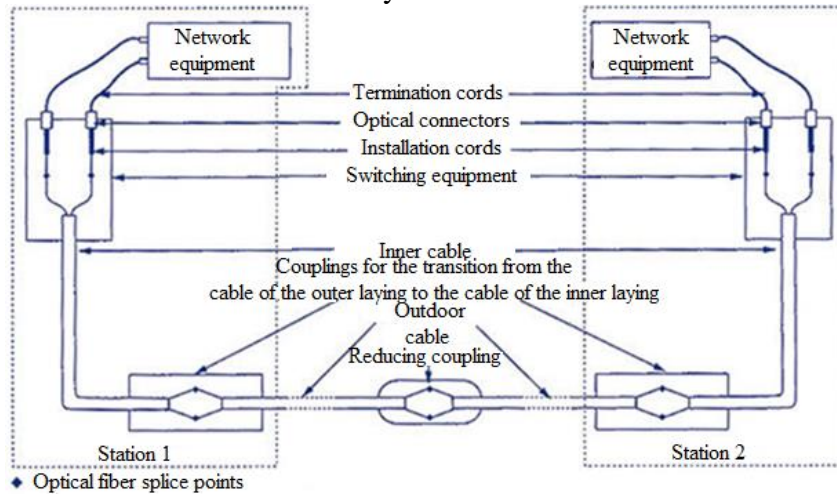
Fig. 2. Structural diagram of FOCL construction

In this diagram, we connect in series the elements that must be operable to maintain the operability of the entire FOCL. In the event that the operability of one of several elements is sufficient to maintain the operability of the system, then we will connect such elements in parallel. In our case, for the operability of the communication system, all its elements must be operable, therefore, in the equivalent reliability circuit, they are connected in series.

One of the important indicators of the reliability of technology is the time between failures T_0, that is, the time between adjacent failures.

Knowing the time of occurrence of damage to the FOCL (OK, couplings or other elements) and their duration, it is possible to determine the time between failures. After appropriate data processing, a statistical (variational) series of the distribution of the time between failures of the FOCL is obtained, which can be represented graphically in the form of frequencies or a distribution histogram. Based on the type of frequencies (or distribution histogram), an approximating function is selected that corresponds to the known theoretical distribution law.

in the table. Table 1 shows the distribution of damage to the TTN FOCL in this area for the observation period at the stage of technical operation from 2013 to 2022. On fig. 3 shows a histogram of the distribution of time between failures of FOCL.

Based on the type of the histogram and the established fact from, it is assumed that the distribution of time between failures of FOCL obeys an exponential law.

Taking into account the exponential law of the distribution of the time to failure between FOCL damages, we determine the quantitative indicators of reliability [11-12].

Table 1

Distribution of the number of damages to the FOCL TTN of the Republic of Karakalpakstan for a ten-year period

Region	Year of observation of the number of damages										Total damage
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Republic of Karakalpakstan	3	4	3	4	3	4	6	8	6	8	21
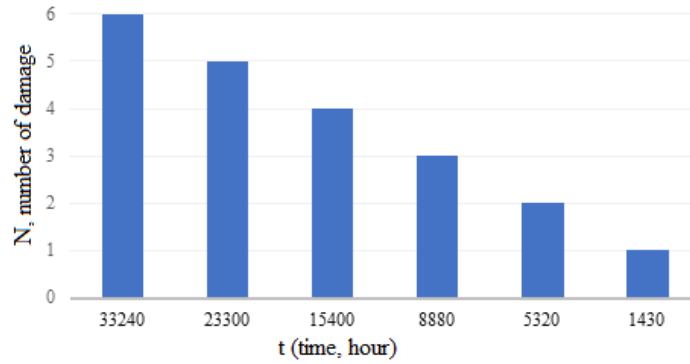
Fig. 3. Histogram of FOCL MTBF distribution in the Republic of Karakalpakstan

The average value of the failure rate λ_{av} is determined by the expression [4]:

$$\lambda_{av} = \frac{1}{T_{0av}},$$ (1)

where T_{0av} is the mean time between failures, hour.

The probability density of the time between failures $f(t)$ is determined by the expression [4]:

$$f(t) = \lambda_{av} e^{-\lambda_{av} t},$$ (2)

where λ_{av} is the average value of the failure rate for FOCL, 1/h; t - the period of time for which the reliability indicator is determined, hour.

The probability of failure-free operation of FOCL $P(t)$ is determined by the expression [4]:

$$P(t) = e^{-\lambda_{av} t}.$$ (3)

The probability of failure on the FOCL $Q(t)$ is determined by the expression [4]:

$$Q(t) = 1 - P(t).$$ (4)

Confidence limits of the average value T_{0av} must be determined by the expressions [1]:

$$\left.\begin{array}{l} T_{0av\ up} = a_1 T_{0av} \\ T_{0av\ lw} = a_2 T_{0av} \end{array}\right\},$$ (5)

where $T_{0av\ up}$, $T_{0av\ lw}$ are the upper and lower limits of the average value of the statistical characteristic of time between failures T_{0av}; a_1, a_2 are the coefficients of the upper and lower bounds, respectively, at a given confidence level. Using the statistics in Table. 1 and expressions (1) - (5) in the work, the average value of the time between failures is determined $T_{0av} = 4171\ h$, which, with a confidence probability of 0.95, can vary within $T_{0av} = (2315 \ldots 5517)$ hours, the average value of the failure rate $\lambda_{av} = 240 \cdot 10^{-6}\ 1/h$, the probability of failure-free operation $P(t)$ and the probability of failures on the FOCL $Q(t)$ (Fig. 2).

Using expression (3) and Fig. 4 it is established that ensuring, for example, the probability of failure-free operation of 0.9, will be observed when the FOCL is operating only within 360 hours.
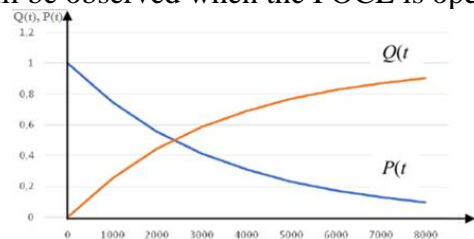
Fig. 4. Distribution of the probability of failure-free operation $P(t)$ and the probability of failure $Q(t)$ investigated FOCL

Results and Discussion.

1. In this work, using statistical data on damages, the time of their occurrence and duration on the FOCL TTN of Karakalpakstan in the Transcarpathian region, the average values of the time between failures were determined under the assumption of the exponentiality of the law of its distribution, the failure rate, as well as some probabilistic quantitative indicators of reliability.

2. Processing of statistical data on failures of underground optical cables of the FOCL of the transport telecommunications network of Karakalpakstan, which was operated, for example, in the conditions of the Transcarpathian region for a ten-year period, made it possible to establish that the time between failures of FOCL optical cables with a confidence probability of 0.95 within hours $T_{0av} = (2315 \dots 5517)$ hours average value of failure rate $\lambda_{av} = 240 \cdot 10^{-6}$ $1/h$

3. The obtained average values of operational indicators of the quality of communication networks, the distribution of probability indicators of reliability (the probability of failure-free operation and the probability of failure) can be used to determine and predict the reliability indicators of FOCL in a given region.

Conclusion. In conclusion of the article, it can be noted that the determination of the reliability indicators of fiber-optic communication lines using statistical data is an important step in ensuring stable and efficient data transmission in modern communication systems. Analysis of statistical data allows you to identify and evaluate various aspects of reliability, such as the probability of failures, time intervals between failures, duration and recovery from failures, which in turn allows telecom operators and engineers to develop more effective strategies for maintaining and managing networks.

Given the rapid development of technology and the growing requirements for bandwidth and reliability of communication networks, the analysis of statistical data is becoming an integral part of the design, construction and operation of fiber optic networks. This allows you to predict potential problems, prevent failures and improve the quality of service for end users.

However, it should be noted that the accuracy and reliability of the analysis of statistical data directly depend on the quality of the collected data and the processing methods used. Attention must be paid to both technical and methodological aspects to ensure that the results of the analysis are adequate and that the conclusions drawn are consistent with the real situation.

In the future, given the dynamic development of network technologies, we can expect an expansion of methods and tools for analyzing statistical data in order to more accurately and comprehensively understand the reliability of fiber-optic communication lines. This contributes to the creation of more reliable and efficient communication infrastructures, which ultimately has a positive effect on the development of the modern information society.

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Rezyume: Qoraqalpog'iston Respublikasining keskin kontinental iqlimi sharoitida telekommunikatsiya transport aloqa tarmog'i bug'ini tolali optik aloqa liniyasi (TOAL) elementlarining ishonchlilik ko'rsatkichlari statistik ma'lumotlardan foydalangan holda tadqiq qilindi.

TOAL ishdan chiqishi bo'yicha statistik ma'lumotlarni tahlil qilish, ish sifatining ishlash ko'rsatkichlarining o'rtacha qiymatlarini aniqlashga imkon beradi. Ishonchlilikning ehtimollik ko'rsatkichlarini taqsimlash ma'lum bir mintaqada loyihalashtirilgan TOAL ishonchlilik ko'rsatkichlarini aniqlash va bashorat qilish uchun ishlatilishi mumkin.

Резюме: Проведено определение показателей надежности элементов волоконно-оптических линий связи (ВОЛС) с использованием статистических данных на фрагментах транспортной телекоммуникационной сети связи в условиях эксплуатации резко континентальном климате Республики Каракалпакстан.

Обработка статистических данных о повреждениях ВОЛС позволить установить средние значения эксплуатационных характеристик качества работы. Распределения вероятностных показателей надежности могут использоваться для определения и прогнозирования показателей надежности проектируемых ВОЛС в данном регионе.

Kalit so'zlar: tolali optik aloqa liniyalari, ishonchlilik, ishonchlilikni baholashning statistik usullari, taqsimlanish qonuniyatlari, ishonchlilikning miqdoriy va kompleks ko'rsatkichlari.

Ключевые слова: Волоконно-оптические линии связи, надежность, статистические методы оценки надежности, законы распределения, количественные и комплексные показатели надежности.

SOCIAL SCIENCES

WAYS OF FORMING REVENUES OF LOCAL BUDGETS

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Summary: *The article discusses the methods of formation of local budget revenues. The significance and dynamics of changes in local taxes and fees in the formation of local budget revenues are also studied.*
Key words: *Local budget, tax, interest, property tax, income.*

In order to accelerate the country's socio-economic development, support entrepreneurship and create a level playing field for competition, measures are being taken to reduce the tax burden and further improve tax legislation. In this regard, ensuring socio-economic development in the regions undoubtedly requires a strong financial base of local governments. The largest and their main financial base are local budgets.

Local budgets in accordance with the law "On the Budget System" include budgets of lower (city, district) levels, which are part of the state budget of the Republic of Karakalpakstan and budgets of regions.

The structure of their revenues and expenditures, budgetary process and budgetary law are determined by law.

There are two different approaches to the scientific interpretation of the problem of territorial economy:

1. The approach to this problem from the point of view of emphasising the need for the state to support backward territories due to the presence of differences in the socio-economic development of regions.

2. To approach this problem by advocating the need for any territory to utilise even more and even more of its economic opportunities, for each territory to solve its own social problems.

Today's extremely responsible state of the economy of the Republic of Uzbekistan puts more and more new problems of socio-economic development of the regions in a deadlock. An important vital necessity is not only the desire to search for effective ways to solve global problems of modernity, but also to attract the attention of scientists-economists to the study of the entire "pragmatic" potential consisting of masterpieces of the world economic treasury, including the methodological, methodological, theoretical significance of the concept of regulation of economic processes on a global scale.

In the conditions of transformation of the market economy, the presence of its territorial element forces to compare the expected and real results of macroeconomic policy taking into account territorial aspects. Circumstances, calculated absolutely correctly from the point of view of general regularities of macroeconomic forecasting, may have a special meaning in the territorial system and be interpreted differently from the point of view of the interests of the specifically obtained territory. When comparing the general situation on the scale of the country and the economy of the territory, it is logical to emphasise that the stability of the standard of living of society as a whole in the territory should be ensured and, at the same time, the stability of the territorial system should be taken into

account. In practice, the central government of the republic solves this topical issue. For the centre, the Territory acts as a macroeconomic system and an object of macroeconomic regulation.

Any concept of social innovation faces a crisis when the overall significance does not take the form of an idea, the timing of implementation is unreliable and leads to a decline in lifestyles. Public policy goals must become meaningful and supported by society. These goals certainly include: economic growth, improvement of people's living conditions, improvement of quality of life indicators, ensuring the security of the country's economic entities and citizens.

The financial capacity of the territories will depend on the specifics of their resource potential, natural conditions, socio-economic development, economic structure and specialisation, and the balance of interregional ties. However, despite this, the territories should have equal independence in the formation and use of financial resources.

When determining the prospects of financial and budgetary development of the territories, attention should be paid to the fact that economic and social problems should be solved without the use of administrative methods, without the intervention of higher authorities, mainly at the expense of funds created and attracted in the territory. Mutual financial relations between all subjects in the territory shall be organised on the basis of the following principles:

- Ensuring the sustainability of the revenue part of the local budget of the territory on the basis of effective development of the economic potential;
- strict establishment of a system of revenue sources and rates of deductions for local budgets, as well as types of expenditures in accordance with the functions they fulfil;
- attraction and coordinated use of funds of enterprises and organisations, state enterprises located in the territory, as well as the population and foreign investors for the purpose of socio-economic development of the territory.

The main place in the structure of financial resources of the regions is occupied by the funds of local budgets, which are at the full disposal of local self-government bodies. The main revenues of local budgets are taxes and fees. As is known, the tax system in Uzbekistan is organised on the basis of the Tax Code. In accordance with it, taxes and fees paid to local budgets, their payers and the structure of privileges are given. Scientist-economist A.Islamkulov believes that in our country about 90 per cent of revenues of budgets of the budgetary system are formed at the expense of taxes. But in the distribution of these tax revenues between the budgets of the budget system, the share of tax revenues left at the disposal of local budgets is still low". The dynamics of changes in tax revenues in the revenues of the budgets of the budgetary system of the republic is presented in Figure 1 below.
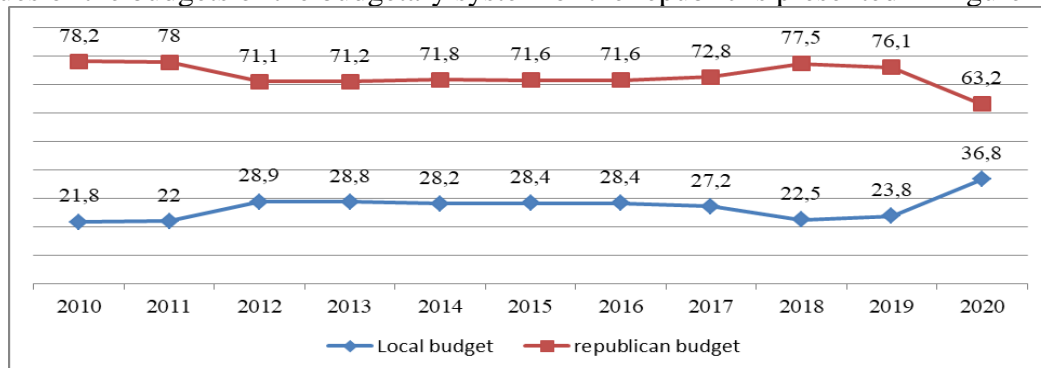
Figure 1: Dynamics of change in the share of tax revenues between the budgets of the budget system, (%)

From the analysis of Figure 1, it can be seen that in 2010-2019, the amount of tax revenues left at the disposal of local budgets averaged about 22.0-22.5 per cent. In 2020 alone, the amount of

tax revenue left at the disposal of local budgets due to the coronavirus pandemic was 36.8 per cent. Due to the fact that state-wide taxes and other revenues remain in the accounts of local budgets, in 2020, the share of the local budget in the volume of the weight of the state budget increased sharply compared to the previous year.

The property tax serves as a stable base in the structure of tax revenues of local budgets, since its receipts do not have a significant dependence on the results of economic activity and are determined by the assessment of the property of legal entities and individuals.

The analysis of the current state of problems of regional economy and practice of local budget management in the Republic of Uzbekistan allowed us to draw the following conclusions:

The implementation and development of local finance in the Republic of Uzbekistan is based on the concept of territorial economic policy;

-Territorial financial policy for solving important socio-economic problems should include forecasting of solvent demand and its territorial distribution, study of territorial financial markets, assessment of financial capabilities of territories, stimulation of development of territories' own financial potential;

-In the Republic of Uzbekistan, the differences caused by the peculiarities of socio-economic development and natural and geographical location of the territories also affect the policy of local budget management of the state, as a result of which the criteria for distribution of budgetary obligations between the links of local budgets are regulated by the state. These differences lead to some overestimation of budgetary obligations of different regions, and in some regions even to a sharp deficit in the distribution of financial capacity, which becomes relevant in the policy of management of local budgets of the state;

-the role and importance of local budgets in the budgetary system are evident through the legal, regulatory and organisational-economic bases for ensuring their activity within the framework of the current budgetary legislation.

In general, we can identify a number of aspects of the problem of territorial economy, directly related to the practice of formation and management of local budgets and determining the need for continuous improvement of their capabilities:

-improvement of the state policy on solving the problems of socio-economic development of certain territories should be based on overcoming the differences in the development of territories by stimulating their efficiency while maintaining their interest;

-a unified approach should proceed from the holistic policy of the state, cover socio-economic problems in all regions on the basis of the legislation in force and, if possible, ensure their solution;

-a differentiated approach is necessary in regions with the same natural and economic conditions by incentivising efficiency;

-based on strategic and tactical objectives of the state policy, special preferential treatment for regions in need of state support can be preserved and changed only depending on the extent to which socio-economic problems are solved;

- it is necessary to coordinate regional development programmes and regional development prospects, as well as to carry out in-depth analysis and communicate to the broad masses of the people the abrupt changes in state policy during this period.

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Rezyume: *Maqolada mahalliy budjetlar daromadlarini shakllantirish yo'llari ko'rib chiqiladi. Shuningdek mahalliy budjetlar daromadlarini shakllantirishda mahalliy soliqlar va yig'imlarning ahamiyati va o'zgarish dinamikasi o'rganilgan.*

Резюме: *В статье рассматриваются способы формирования доходов местных бюджетов. Также изучены значение и динамика изменения местных налогов и сборов в формировании доходов местных бюджетов.*

Kalit so'zlar: *Mahalliy byudjet, soliq, foiz, mol-mulk solig'i, daromad.*

Ключевые слова: *Местный бюджет, налог, проценты, налог на имущество, доход.*

TYPES OF TRANSACTION COSTS IN SMALL BUSINESS MANAGEMENT AND THEIR IMPACT ON THE COMPETITIVENESS OF ENTERPRISES

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Summary: *Abstract: This paper investigates the issue of transaction costs in the context of small businesses. Proper planning and optimisation of these costs will help to improve the financial position of the enterprise, increase its competitiveness and ensure sustainability in the long term*
Key words: *transaction costs, contract, market, small business, agreement*

The theory of transaction costs is a part of a new direction in modern economic science - neoinstitutionalism. Its creation is first associated with the names of two scientists - economists Ronald Coase and Oliver Williamson. In the theory of transaction costs as the initial indicator of analysis are economic mutual costs, exchange or transaction. The category" exchange " is interpreted very broadly and includes legal obligations, as well as short-term and long-term obligations in combination with the exchange of goods. These commitments are legal documents or a verbal agreement between the parties.

The costs and losses of similar relationships are called transaction costs.

Transaction costs are the central category of neo-institutionalism analysis. Unlike neoclassical theory considering the market as a perfect mechanism, it argued that no costs should be taken into account to realise the exchange. The original understanding of transaction costs was outlined in Ronald Coase's article "The Nature of Firm" in 1937. In this article, Coase argues for the need to pre-negotiate, control, trace contacts and eliminate disagreements with every purchase. Because of this, he first calls transaction costs the costs of "utilising the market mechanism".

He later recognised that costs are the costs required by economic agents to carry out the connections between them, whether they are in the market or within an organisation. Hence the emergence of transaction costs for payment and processing of information about the market, negotiation, decision-making, concluded contracts and the costs necessary to ensure the fulfillment and execution of contracts.

Cardinal changes occurring in economic activity lead to changes in the criteria for determining the competitive priority of a modern enterprise. Currently, the process of value creation is moving from the production sphere to the information and communication sphere, and the leading place in this is given to information.

The issue of increasing the level of competitiveness of modern enterprises is represented by the effective management of transaction costs.

The activity of modern companies takes place in conditions of continuous change of the external environment. This, in turn, requires revision of traditional organisational forms of enterprises.

In economics and related disciplines, a transaction cost is a cost in making any economic trade when participating in a market. The idea that transactions form the basis of economic thinking was introduced by the institutional economist John R. Commons in 1931, and Oliver E.

R. Commons noted that there are three types of transactions:

1. Buying and selling is a change in the subject of transactional rights and freedoms, in the realisation of which there must be consent and economic interest of the parties.

2. Managerial transaction is the key element in it, implying that people are subordinate to each other in managerial activity (the manager at the highest level has the right to make decisions);

3.Alternative transaction in it the same legal asymmetry of the parties is preserved, the managerial function is performed by the collective. Such an alternative is budgeting of the company by directors of transaction management, elaboration of decisions on resolution of disputes of economic entities by arbitration court. Managerial decisions are not made in such transactions. Through them, wealth is redistributed among economic agents. Transactions can be simple and complex. For example, buying apples in the market would be a simple transaction. Transactions with complex and high obligations are confirmed by contractual (contractual) cases.

Any transaction will consist of two parts:

(a) Transaction execution. In this stage, the buyer has to find a seller, collect information on prices, determine the quality of the goods, and find a buyer and negotiate a sale with him. The seller needs to acquire a place in the market, control the quality of his goods and collect information about price changes;

b) Execution of the contract of sale. At this stage, the buyer pays the price of the goods and owns the goods, once again assessing the quality of the goods.

Each purchase and sale requires four different indicators:

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        ┌─────────────────────────────────────┐
        │     Buying and selling indicators    │
        └─────────────────────────────────────┘
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| traders | resources and expected results of the transaction; | ownership of resources and outputs by the parties | obligations of the parties |
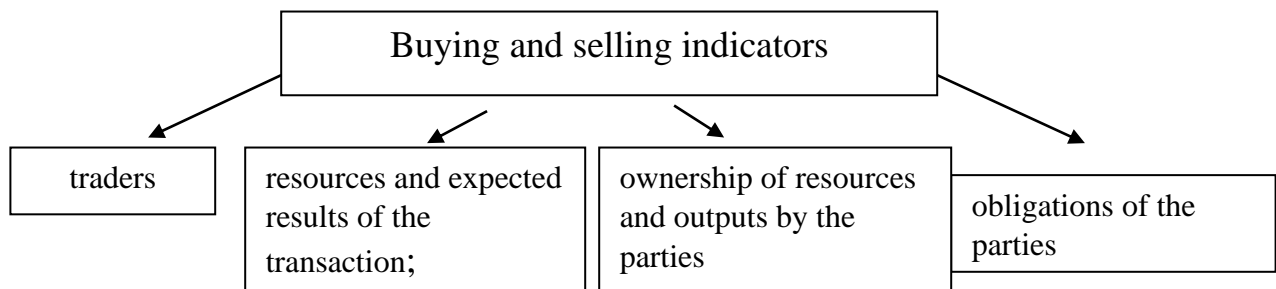
Thanks to the emergence of the theory of transaction costs, it became possible to identify the essential aspects and peculiarities of enterprise activity. This is, first of all, the need for a complex system of contracts, the duration of business contacts, the implementation of production through the "collective", the attraction of investments in certain assets, the implementation of the mechanism of administrative coordination through orders According to the theory of transaction costs, this fundamental principle dictates not only the need for enterprises, but also some aspects of their functioning, such as financial structure, forms of management, labour organisation. The development of such theories leads to the search for hybrid forms of management, to the emergence of organisations, franchises between the market and the enterprise.

Now let us consider transaction costs - in terms of the sequence of origins during the transaction period:

```
    ┌──────────────────────────────────────┐
    │   Search for and possess information  │
    └──────────────────────────────────────┘
                      │
                      ▼
    ┌──────────────────────────────────────┐
    │             Negotiation               │
    └──────────────────────────────────────┘
                      │
                      ▼
    ┌──────────────────────────────────────┐
    │       Costs requiring precision       │
    └──────────────────────────────────────┘
```
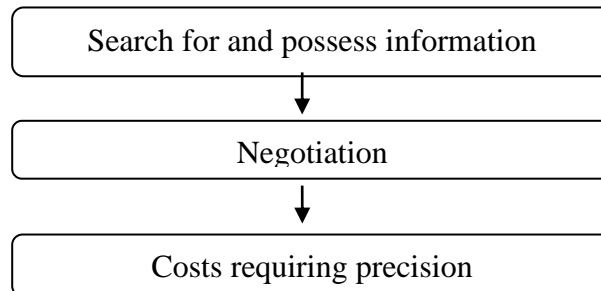
Before a transaction takes place, it is necessary to have information about consumer preferences or production factors, where to find potential buyers or sellers, and the prices that have developed during the period. The costs in such a category are made up of the time and resources required to keep track of such costs and the losses associated with comparisons and incomplete information obtained. Searches can be conducted on both sides of the market - both sellers and buyers advertise jobs on the labour market, send an application to the employment service, conduct tests and select candidates. Applicants for these jobs, in turn, turn to their mates and relatives, register with the employment service, and send CVs.

In the commodity market, producers spend a lot of money on studying consumer demand, marketing, studying advertising materials, visiting shops, standing in queues, hiring sales agents (for example, when selling real estate).

The search can be either extensional or intensive. In the first case, its goal is to first familiarise oneself with as many available options as possible, and in the second case, to explore one of them as deeply as possible. The search stops when the expected marginal benefit equates to the marginal cost of continuation. The costs of negotiation in this case are required to determine the exchange conditions of the market, to exclude large funds for the execution and conclusion of contracts. The more participants in the transaction and the more complex the subject matter, the higher the costs. Incorrectly structured, not formalised at the demand level and legally insufficiently well protected agreements are an additional source of costs.

As accuracy requirements increase, so do measurement costs. Let's depend on who measured their size (seller or customer), when (when preparing, selling or using the product) and to what extent density measurements are taken. As a result of the introduction of weight and measurement standards, mankind has been able to save a great deal of costs.

The price for the quality of the goods may be determined by either the seller or the recipient. Measurement should preferably be done once, so as not to hinder excessive control, and whoever has the ability to carry it out at minimum cost should undertake it. This requires warranty repairs, branded labelling, sorting of product lots by samples, and so on. For example, a warranty is provided when quality is comprehensively assessed and the discovery of a defect is automatic during the use of the service. Transaction costs in small business management include various costs associated with business operations and co-operation with other firms. They can have a significant impact on the competitiveness of enterprises in the Republic of Uzbekistan. Let us look at some types of transaction costs:

1. information costs: Include the costs of finding, collecting and analysing information about the market, consumers, suppliers and competitors. In Uzbekistan, the availability and quality of information may be limited, which can make it difficult to make effective decisions and adapt to market conditions.

2. Search costs: Refers to the costs of finding and attracting partners, customers, suppliers and qualified employees. Uzbekistan may have a limited number of specialised markets and poorly developed mechanisms for finding business partners, which creates additional costs for small enterprises.

3. Marginal costs: Refers to the cost of complying with rules and regulations imposed by government agencies and regulators. Uzbekistan may have a complex bureaucratic procedure, which requires additional time and cost.

4. Contracting costs: Include the costs of developing, negotiating and enforcing contracts with partners, suppliers and customers. Legal protection of business interests may be limited in

Uzbekistan, and the process of negotiating and executing contracts can be complex and require additional effort.

High transaction costs can be caused by various factors, including bureaucratic procedures, difficulties in obtaining licences and permits, high tax rates and inefficient accounting and reporting systems. All of these can create additional barriers for small businesses, which typically do not have as much financial resources as large companies.

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*Rezyume***:** *Bul maqalada kishi biznes sharayatında tranzakcion qárejetler máselesi kórip shıǵıladı. Bul qárejetlerdi tuwrı joybarlaw hám optimallastırıw kárxananıń finanslıq jaǵdayın jaqsılaydı, básekige shıdamlılıǵın asıradı hám uzaq múddette turaqlılıqtı támiyinleydi*

Резюме: *В данной статье исследуется вопрос транзакционных издержек в контексте малого бизнеса. Грамотное планирование и оптимизация этих затрат позволит улучшить финансовое положение предприятия, повысить его конкурентоспособность и обеспечить устойчивость в долгосрочной перспективе*

Kalit sózlar: tranzakciya qárejetleri, shártnama, bazar, kishi biznes, kelisim

Ключевые слова: транзакционные издержки, контракт, рынок, малый бизнес, соглашение

JOURNALISM IN KARAKALPAKSTAN SOME ISSUES OF SCIENTIFIC AND PEDAGOGICAL STUDY

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Summary: *This article depictsscientific-research works in historical and philological aspects in the field of journalism in Karakalpakstan. In the future, it is recommended to study new aspectsin this field, including journalistic and pedagogical. Also, the urgency of conducting a separate research on the problem of training journalists in Karakalpakstan on the basis of pedagogical approaches is scientifically based.*
Key words: *Karakalpak journalism, mass media, journalism education, training of qualified journalist personnel, Karakalpak press, specialization, journalistic and pedagogical approaches.*

Introduction

During the first years of independence in our country, special attention was paid to the development of the activities of the media (media), along with all spheres. In the processes of building a new legal democratic state and a free civil society, a number of systematic works are being carried out to develop modern national journalism on the basis of raising it to a new level, to ensure openness and transparency, freedom of the media. Especially increased attention to the process of training comprehensively educated, mature, highly qualified specialists in the industry.

Comprehensive work is being carried out on the training and retraining of highly qualified personnel who are able to timely inform the population of the Republic, the world community, as well as quickly and objectively react to what is happening in the conditions of increasing globalization of the world information space. PF of the president of the Republic of Uzbekistan on February 7, 2017-49-47-the strategy of actions in five priority areas of development of the Republic of Uzbekistan in 2017-2021, approved by the decree of the Cabinet of Ministers of the Republic of Uzbekistan dated February 26, 1999 "on improving the system of training and retraining of journalistic personnel", August 7, 2006 "on the state program of training and retraining of personnel in the Within the framework of their implementation, serious changes are taking place in the field of national journalism education.

Main part: materials and methods

In fact, since the media are a major part of social life in the decision-making of civil society in our country, the journalism system and the training of specialists in this field have always been the focus of attention of scientists. At the same time, it should be noted that in order to train highly qualified journalistic personnel that meet the current demand, we need, first of all, to deeply immerse the history of our national journalism and the invasions of progress in the minds of future specialists from a scientific point of view.

It is known that until the years of independence, scientific research was carried out on the history of Karakalpakstan journalism, especially on the historical aspect related to the emergence and development of the press in Karakalpakstan, a number of popular scientific works and articles were published. Including Either.Y.Dosomav, A.Panabergenov, I.Semenov, U.Suinav, T.Peyzullaeva, M.Niyazova, G.Matyakubova, G.Dosimbetav, .The works of the Yusupovs are one of the first scientific studies that provide information from the history of our national press.

During the years of independence, scientific research in the field of journalism has completely moved to a new level. The subject-content of scientific research has been enriched, thanks to which the theory of national journalism has grown and formed in all respects. Scientific analysis showed that in the years after independence, several research works were carried out in Karakalpakstan in the field of journalism, and first of all, a consistent study of the history of our national journalism was started. Including, T.Madreymov's candidacy work [2] investigated the history of the media in Karakalpakstan, especially the establishment and development of radio and television in our republic. If the dissertation covers the main development invasions of Karakalpak radio journalism and specific areas of growth in television journalism, d.Inbekbauliev's research work [3] issues of Re-Organization of Karakalpak Press between 1991 and 1994 on the basis of national independence and enrichment with new national content were discussed.

It should be noted that, on the example of the linguistic features of newspaper genres, doctor of philological Sciences (DSc) on the issues of language, culture and skills of written speech Z.Orazimbetova is conducting effective research. He conducted his research work on the formation and development of the language of the Karakalpak time press. In the doctoral dissertation on the topic "methodological features of the language of Karakalpak time press" [4] the language and style of genres of newspaper and magazine publications published in Karakalpak during the years of independence were studied and the influence of the press language on Karakalpak literary language was revealed.

We can see that T. Masharipova, who studied the theory of journalism for many years, was able to create a theoretical concept of journalism in her scientific work [5]. Journalistic works published by the scientist in the press of Karakalpakstan were studied in depth. Also, his scientific work "Integrated concept of the theory of journalism: scientific and methodological analysis (on the example of Karakalpakstan press materials)" became one of the major monographs on the theory of journalism not only in Karakalpakstan, but also in Uzbekistan.

In recent years, the increase in the process of specialization in journalism is also reflected in the science of the field. For example, the researcher J. Marziyaev's doctoral dissertation on the topic of ecojournalism [6] studied the development trends and specific features of speeches on the topic of ecology in the Karakalpak press, while the research of the young scientist K. Begniazova [7] was devoted to the study of the formation and development of Internet journalism in Karakalpakstan

In addition, M. Jumamuratova, A. Abdimuratov, Z. Qojyqbaeva, B. Paluanov, P. Allambergenova, Q. Qalekeev, H. Atajanov, among the leading scientists of the field, and a number of other researchers, in textbooks and studies, articles on the theory of Karakalpak journalism and practical issues, both creative and scientific approaches to teaching methods are explored within a specific discipline.

Results and feedback

Currently, the development of research on journalism opens a wide way for the industry to cooperate with many other branches of Science and science. This, in turn, is felt by the tendency of the science of journalism to scientific approaches in new aspects. For example, let's take the problem of journalistic education. Although this problem is partially covered by numerous articles and journalistic speeches published in our republic, it is in modern conditions that the study of requirements, conditions, new journalistic and pedagogical approaches to the training processes of Journalists has not yet been carried out. Also, the fact that most of the domestic research work analyzed in the field is philological, some are studied on a historical aspect, makes it necessary to study this problem pedagogically. Therefore, this problem is one of the most relevant topics of great

importance in the field of journalism and education. Due to the fact that the scientific researches conducted on the journalism of Karakalpakstan are based on their own goals and tasks and they could not reveal the process of formation and development of journalistic education in Karakalpakstan during the years of independence, the problem of training journalist personnel in Karakalpakstan requires to be studied as a separate object of research. The scientific works, monographs and dissertations analyzed above serve as an important source for studying the history and development features of journalistic education in Karakalpakstan based on the research object.

In general, based on the scientific basis of our thoughts and opinions, it is planned to conduct research on the problem of training journalist personnel in Karakalpakstan as a separate scientific dissertation object and to pay special attention to the following issues:

- To study the historical-pedagogical genesis and current state of training of journalists in Karakalpakstan;

- Making scientific conclusions on improving the process of training journalists with higher education;

- Analyzing the process of training scientific-pedagogical personnel in the field of journalism in Karakalpakstan;

- Development of scientific conclusions and recommendations on the effective mechanisms of training highly educated journalist specialists in modern conditions, as well as directions for developing the process of training professional journalist personnel in Karakalpakstan in the future.

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Rezyume: Ushbu maqolada Qoraqalpog'istonda jurnalistika sohasida olib borilgan tarixiy-filologik aspektlardagi ilmiy-tadqiqot ishlari tahlil qilinadi. Istiqbolda sohani yangi aspektlarda, jumladan jurnalistik-pedagogika fani nuqtai nazardan tadqiq qilish ahamiyati ochib berilib, Qoraqalpog'istonda jurnalist kadrlarni tayyorlash jarayonini rivojlantirish maqsadida ilg'or tajribalar va ilmiy pedagogik yondashuvlar asosida alohida tadqiqot ishlarini olib borish dolzarbligi asoslanadi.

Резюме: В статье анализируется исследовательская работа, проводимая в области журналистики Каракалпакстана, и в историко-филологическом аспекте. В дальнейшем рекомендуется изучать сферу в новых аспектах, в том числе журналистских и педагогических. Также научно обоснована актуальность проведения отдельного

исследования по проблеме подготовки журналистов в Каракалпакстане на основе педагогических подходов.

Kalit so'zlar: *Qoraqalpog'iston jurnalistikasi, ommaviy axborot vositalari, jurnalistik ta'lim, malakali jurnalist kadrlar tayyorlash, qoraqalpoq matbuoti, ixtisoslashuv, jurnalistik-pedagogik yondashuvlar.*

Ключевые слова: *Каракалпакская журналистика, средства массовой информации, журналистское образование, подготовка квалифицированных журналист кадров, каракалпакская пресса, специализация, журналистско-педагогические подходы.*

THE INFLUENCE OF SUFISM TEACHING ON THE COMPOSITIONS OF KARAKALPAK POETS

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Summary: The artcle deals with the history of foundation Sufism Teaching, analysis about philosophical views and studies about the influence of the Sufism Teaching to the compositions of karakalpak poets. The karakalpak classic poets such as Kunkhoja, Berdakh and Ajiniyaz developed their views, furthermore, by inspiration of the representatives of Sufism Akhmed Yassawiy, Bakhawaddin Naqshbandiy and Najmiddin Kubro.

Key words: islam, Sufism, a perfect person, Yassawiy, karakalpaks, Kunkhoja, Berdakh, Ajiniyaz.

After gaing the state independence in our society were appeared many opportunities and new approaches for creating the history of religion and moral life including study of islam religion, Sufism teaching and compositions and their great cultural and educational heritage. Academic M.Khayrullaev on his study mentioned the Sufism was dangerous theme on literature during the many years. Because its genesis and development were releated to the history of Islam teaching [1.3].

The Sufism teaching takes an important place in the history of the Eastern Muslims` moral life . It was one of wide-spread directions on the culture of Near and Middle East people. According to prominent scientist who studied Sufism teaching N.Komilov "Sufism was from one hand is religion,and on the other hand is a scinece in which has developed together with philosophy and wisdom science" [2.245]. The first researching works about the Sufism teaching were written by German, English orientalists.

The first book about general characters of Sufism teaching titled "Sufism and persian panteistic philosophy" was published in the latin language in 1821 by theologist, professor F.A.Toluk [3.24]. he, firstly, considered the Sufism as a heritage of zaroastrizm, and then he refused from his unproven point of view and then he linked the Sufism with Islam religion.

Also, there were modern western scientists as A . Shimmel and his student Karl Ernst who did a great contribuition for researching genesis and foundation history of Sufism. And there were arabian scientist Idris Shakh, Iranian Shaikh Dj. Nurbaxsha and turkish theolog scientists X.K.Yilmaz who put their contribuition on studying of Sufism and its main values.

In muslim countries studying of the Sufism teaching and its philosophy were attractive to West and Eastern orientalists and scholars. In result, were carried out researching works about Sufism history, philosophy and its literature by Russian and European scholars such as A.Dj.Arberry, A Kramer, Lyu Massinion, R.A.Nikolson, E.Bertels, M.T.Stepanyanc, A.Knısh, A.A.Xismatullin, from Uzbek scholars N.Komilov, O.Usman, R.Shodiyev, E.Karimov, I.Xaqqul, G.Navruzova, S.Olim and etc. Also were carried our researching works about the Sufism teaching and its influence to karakalpak literature by representatives of karakalpak literature as K.Mambetov, H.Hamidov, Q.Jarimbetov, M.Ataniyazova, R.Ibragimova.

The teaching of Sufism was formed in a certain historical, socio-political environment. Wars, counquering, burglaries had increased after defeating of Arabian caliphate.In the result of this had got difficulties on the life of common people. In this case religious conciousnesness, development of mystics, pursuit of Sufism of craftsmen, poets and even upper classes of society was a proof of

crisis of culture. Hopeless was increased, quiteism and mistics were widely spread and then appeared condition for development of Sufism. According to description of foundation of Sufism, Suphist scholar X.S. Karamatov " The foudation and development of Sufism in a ascetism form in VII-VIII century, and then theorotical formation of it is related to social – economical and political factors, and strengthening of religiuos social classes, also increasing battles among classes in feudal society as well [4.19]. M . Stepanyanc gives historical-philosophical analysis to the Sufism "It was (Sufism) an elite thinking product of a definitely selected people and meaningwhile, it was a "folk" religion. It was used as a social discontentent against governing system and for assuage pious people who were active on socially and spiritually. Sufism contradict mental rational thought to irrationality, at the same time it was founded as a form of religious pluralism which might assimilated rapidly into philosophy" [5.3].

There are 4 main views on the issue of foundation of the Sufism. One group scientists consider the Sufism was founded on the base of the Koran and the Shariat (the legislative complex of the Muslim religion). The second group scholars (M.Xorten, Xartman, fon Kremer) belive that origin of Sufism is to seak for Hindu teachings, more precisely from the Buddhism. The third group of researchers (E.Palmer, A.Palasios) think the Sufism was originated on the base of the Neoplatosm and Christianity. The fourth group of scientists have linked the Sufism with Zoroastrianism.

The new theory about origination of the Sufism created in the second part of XX century by the English orientalist, specialist on Islamic studies R.Nickolson and the French scientist, specialist on Islamic studies L. Massinion. These scholars consider the Sufism was not strange understanding which came into the Islam, but it was a simultaneously and naturally appeared reality on the base of the Islam. O.F. Akimushkin gives a short and fully encompassing definition about the Sufism "**Sufism**, mystical Islamic belief and practice in which Muslims seek to find the truth of divine love and knowledge through direct personal experience of God. It consists of a variety of mystical paths that are designed to ascertain the nature of humanity and of God and to facilitate the experience of the presence of divine love and wisdom in the world" [6.5].

Exceeding from above thoughts can be made solution the Sufism is mystical path in the Islam religion which religious and philosophical teaching that mixed theology with philosophy.

The Sufism teaching has a great influence on developing literature and philosophy in the Eastern muslim countries. About the issue E.E.Bertels who put a great contribution of studying the Sufism says: "It is impossible to have precesily understanding about medieval eastern muslims life unless you do not study about the Sufism literature. Some of the classic representatives of the Sufism could influence on the eastern literature till the beginning of XX century. It is supposed to pay a great attention unless to be familiarized with the Sufism literature no one can not understand them because of the prominent eastern muslim represantitives related with the Sufism definetly" [7.103].

Our people have been living by following the Muslim religion and its regulations and rules. In our society the teachings, compositions of Xoja Akhmet Yassawiy, Bahawaddin Naqshbandiy, Najmaddin Kubro, Hakim ata Sulayman Bakhrirganiy ,who were prominent representatives of Sufism, assimilated into spiriulity and wide spread. Their thoughts have been developed subsequently by classic represantives of karakalpak literature such as Kunkhoja, Berdakh, Ajiniyaz and others on their compositions by inspiration of their ideas. The Sufism teaching came into karakalpak literature in the XIX century and took a great place on it.

Kunkhoja Ibraim uli (1799-1880) is karakalpak poet. He lived and studied initialy at oldern school along of the Janadarya, in Muynak, and then studied at the Qaraqum iyshan madrasah. At the madrasah he learnt the Sufism teaching. Also he familirized with the compositions of Khoja Akhmed

Yassawiy, Sulayman Baqırǵaniy, Suwpı Allayar, Nawayı, Maqtumqulı, Bedil. According to H.Khamidov "Kunkhoja took a sample from Maktumkuli on writing his didactic poems" [8.129]. The first time Khoja Akhmet Yassawiy used the style self didactic but not only self-edifying themselves, instructing also others by challangening for faithfulness which meets in compositions of Maktumkuli and Kunkhoja. As we know, Maktumkuli is one of the representatives who came from the Yassawiy teaching school, the Sufism teaching. So, the didactive style on poems was originated in compostions of Yassawiy initially. The main ideas in the Sufism poems were taking care to each other, to be kind and faithfulness. These were based on the main ideas in compositions of Kunkhoja. For instance:

Simple soul, orphans are flower of the God,
Do not embezzle share of their,
Faithfulness is a path of the God,
Do not embezzle share of orphans [9.46].
In original, in the karakalpak language:
Mómin bende, jetim haqtıń gúlidur,
Jetim haqın nainsaplar jep qoyma,
Tuwrıshılıq haq bázirgen jolıdur
Jetimlerdiń haqıların jep qoyma[9.46]
Yassawiy:
Who take care about orphans,
Be pleased the very the God those persons,
Hey, unawered, you are the reason who can be saved by the God,
I have told it by heard of didactions the very Mustafa [10.45]
In the original language:
Yassawiy:
Ǵárib faqir etimlarni har kim sorar,
Rozi bolur ul bandadin parvardigor,
Ey bexabar, sen bir sabab ózi asrar,
Haq Mustafa pandin eshitib aydim mano [10.45]

The main idea in the Suphism is to reach the destination of the God by chastity of spiriuality human being. Kunkhoja followed the regulations of the Islam by didacting to reach the destination of the God by doing meritorious works. And ,we can see Kunkhoja was guided by views of the Sufism of Yassawiy.

Berdakh Gargabay uli (1827-1900) was one of karakalpak classic poets. The eastern philosophy, the Sufism ideas which was a outlook of the Islam,the didactions of Khoja Akhmet Yassawiy, Hazreti Hakim ata Sulayman Bakhirganiy, Soopi Allayar, all these counted above, were influenced on formation of ideology in compostions of Berdakh.

By seeing of compositions of Berdakh, he was well-awared about yassawiy, naqshbandiy, kubroviya which widely spread in the Cental Asia, and their ideas were placed in Berdakh`s compositions productively. According to him, the being and universe were created by the God (Allah). Berdakh said "the Earth, the Sky is created by the God ("jerdi, kókti xalıq áylegen qudayım") There are the words "jer","kok" used as the Earth and the Sky and the words used in the same meaning in compositions of Yassawiy. Berdakh believed the creator of the Universe is the God and about the issue in his "I seek " (orinal name "Izler edim") he mentioned that the God created fire,water, air and ground firstly. After these the God created other things, so he wrote about these:

Four things are base of the world,
Firstly, it is the God, know it!
No any lack of the world,
I seek for happiness. [11.43].
In original, in the karakalpak language:
Tórt nárse -dúnya tórkini
Áwel haq, insan bil bunı
Bul dúnyanıń joqdır mini
Baxıt bol dep izler edim [11.43].

It takes a main place to be perfect person in the Sufism teaching. The main goal is education of the perfect person who will able to seperate his life-related problems, who will able to defeat the negative habits from his psychological and physiological nature or (al-insan al kámil). The first time the understanding "al-insan al kámil" was introduced by Ibn Al Arabiy(1165-1240). We may see the ideas about perfect person almost all compositions of Berdakh, especially in "For the people"("Xalıq ushın"), "My son" ("Balam"), "Amangeldi", "The Leader Ernazar" ("Ernazar biy"), " The Forefather Aydos" ("Aydos baba"). According to the dreamt perfect person in the compostions of Berdakh is the person who devote his life for servicing to people and real braveman who can stand for the sake of his people.

Berdakh accepted as a rule of the main princple of Bahawaddin Naqshbandiy as stated "your soul should be in the God, your hands should be in labour". These kind of ideas were depicted in the Berdakh`s composition "When will you enjoy". And, noticed obviously, were guided the ideas of Najmiddin Kubro about the person is obliged to reach to be perfect person, one should keep away from spiritual foulness, not to be under their lust, aslo described in Berdakh`s compostions.

So, we can say that Berdakh took samples form the Sufism teaching whilst depicting human emotions about reaching to perfect person, to be kindly person and live faithfully.

Ajiniyaz Qosibay uli (1824-1878) is one of the prominent representatives of classic literature of karakalpaks in the XiX century. First, he started studying at rural school, later he continued his study at the Shergay madrasah where situated in Khiva. He deeply mastered the compostions of Khoja Akhmet Yassawiy,Sulayman Baqirganiy, Soopi Allayar and religious rules and the Sufism teaching as well. Ajiniyaz took as a sample of the main ideas of the Sufism teaching whilst studying many eastern religious literatures at madrasahs. These ideas mostly depicted in the lyrics of the poet. The ideas of Yassawiy take a great place in his poetry. His many peoms were about love. That`s why the poet gives his Sufism ideas in his poetry as a lyrics. The ideological contents of lyrics of Ajiniyaz were related to the Sufism teaching strongly [12.10]. Actually Ajiniyaz was not a person who gave up all pleasures of the world, just he was a successor of popularization the Sufism teaching, and he was a poet who did a challange for people to live faithfully. He showed in his compositions that one should keep away from spiritual foulness, not to be under their lust. We may see that the character of the God as the girl, and the valentine who is trying to reach spiritual purification on his compositions such as "Has left soul" ("Shiqti jan"), "One beauty" ("Bir pariy"), "One beautiful woman" ("Bir janan").

So, Ajiniyaz raised the formation of conscientious perfect person by spirituality on his mystical lyrics through studying the Sufism teaching.

In conclude, the Sufism teaching was the main source for the compositions of classsic poets of karakalpaks in the XIX century it was widely spread among the karakalpak people at that time.

Also, there is a need for researching more deeply the Sufism teaching and it`s influence on karakalpak spiritual life while restoring religious value in our state.

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Rezyume: Maqolada soʻfiylik taʼlimotining kelib chiqish tarixi, falsafiy qarashlar tahlili va tasavvuf taʼlimotining qoraqalpoq shoirlari ijodiga taʼsirini oʻrganishga bagʻishlangan. Kunxoʻja, Berdaq, Ajiniyoz kabi qoraqalpoq mumtoz shoirlari oʻz qarashlarini tasavvuf namoyandalari Ahmad Yasaviy, Bahovaddin Naqshbandiy, Najmiddin Kubrodan ilhomlanib rivojlantirdilar.

Резюме: Статья посвящена истории зарождения учения суфизма, анализу философских взглядов и исследованиям влияния учения суфизма на творчество каракалпакских поэтов. Каракалпакские поэты-классики, такие как Кунходжа, Бердах и Аджинияз, развивали свои взгляды, кроме того, вдохновляясь представителями суфизма Ахмедом Ясавием, Бахаваддином Накшбандием и Наджмиддином Кубро.

Kalit so'zlar: Islom, so'fiylik, komil inson, Yassaviy, qoraqalpoq, Kunxo'ja, Berdax, Ajiniyoz.
Ключевые слова: ислам, суфизм, совершенный человек, Ясавий, каракалпаки, Кунходжа, Бердах, Аджинияз.

VALUE REPRESENTATIONS IN THE FAMILY-SCHOOL-STUDENT SYSTEM

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Summary: The article discusses the features of the system of interaction between the school and the family. The interaction of the school with the family is a complex, relevant work both for the school as a whole and for each teacher.
Key words: family, school, institute, state, course, process, education.

Psychological science has long proved that personality development occurs not only depending on its temperament and individual characteristics of character, but also on the environment and personal experience in which it lives and which it receives. The situation when a child can defend his opinion, is ready to openly express his emotions and feelings, is open to external contacts, is a manifestation of a harmoniously developing personality. Conversely, when a child is alienated from other peers, shows aggression, anger, inadequate reactions, this may be evidence that he lives in an unfavorable environment, regardless of the type of temperament and individual personality characteristics.

In view of the fact that modern schoolchildren spend a lot of time in the walls of an educational institution, it should be emphasized the special importance of interaction between family and school. This cooperation is aimed at achieving common goals pursued by both sides. On the part of both parents and school representatives (first of all, the class teacher), there should be a clear awareness of the goals obtained as a result of such interaction.

It is desirable that both sides strive for mutual implementation of actions and mutual assistance in the direction of achieving the objectives of the educational process at an effective level. It is important for the school and the class teacher to know the traditions and life principles that are accepted in a particular student's family. Often among teachers one can hear such an opinion that children in the family are "not brought up at all", they come to school without knowing the elementary rules of politeness, and are not able to show high moral qualities. According to some teachers, education comes exclusively from the family, but, as practice shows, a child from a good family can also isolate and assimilate negative phenomena from the school environment and "bring" them to his home.

As a result, the suffering party, of course, are only children, which, in general, leads to a drop in their level of moral and spiritual, aesthetic, and in some cases – intellectual and physical development, as well as a drop in morality in general, in the whole society.

Unfortunately, the idea that the school and the family should work together has not yet been sufficiently developed. In many ways, school and family are opposed to each other as fundamentally different characteristics and spheres of human activity. So, love, kindness and other moral values should be instilled in the family, and school implies only the assimilation of knowledge and social norms, characteristics, so that a person can safely interact with other people in society. However, questions arise:

– can a teacher work without love for the child, his profession, others, showing kindness and caring for his neighbor?

– can a parent raise a child in such a way that it does not take into account the requirements of social norms at all?

There are obvious negative answers to both questions and the fact that such situations are impossible and unacceptable. It is also quite reasonable to conclude that the school and the family should combine their resources, capabilities and abilities in order to achieve truly effective cooperation, the purpose of which is not only the formation of the student's personality, but also his healthy upbringing and maintaining an emotional background at a positive level. The school and the family in such interaction should strive to ensure that children are their future, and they can have the most direct impact on the results of this future.

Let's consider the reasons that today can have a significant impact on children in the manifestation of various forms of deviations, that is, deviant behavior.

Among the main problems, the following are most often highlighted (Scheme 1.).

Scheme 1.

The reasons that lead children to deviations

Reasons for deviation:
- Mistakes of family upbringing that lead to distortion of the moral image of the individual
- Devaluation of moral values
- The influence of the immediate environment on the teenager and his dependence on the reference group
- Various forms of violence and child abuse
- Delayed emotional development
- Ignorance of social and legal norms
- Situations of prolonged social deprivation
- Low general culture in the family
- Diseases, including mental

Most of the reasons that are indicated in the above diagram still arise in families that have a certain degree of disadvantage. Often, a whole set of reasons becomes a factor provoking the occurrence of deviant behavior. In the system of factors, it is easy to trace the causal relationship, which already finds an evidence base in sociology, psychology and pedagogy. The joint efforts of the family and the educational institution are able to minimize the negative impact of the above factors, allow them to treat other participants of the educational process with a greater degree of respect.

The role of the class teacher and other teachers largely consists in providing competent advisory support and, in some cases, psychological support, that is, to come to the rescue. On the part of the family and parents, interaction mainly consists in supporting their children in their aspirations, showing tolerance, sensitivity and responsible attitude for the upbringing of the child and his not only physical, but also psychological, emotional health. Do not think that with the passage of adolescence, parents should not continue to raise their children. A young man or girl of 15-17 years old, remaining minors, still need the help of an adult, a mature person, including from a teacher. At

this age, ideals, values and ideas about the world are actively formed. In adolescence, preparations are underway for the separation of the family, and the construction of a future personal and family life. An important factor influencing the emotional state of a young man and a girl at this age is the degree of certainty of the future profession.

At this age, a person usually has a large number of claims and ambitions, which may not be quite adequate (do not correspond to reality), and therefore, there may be early disappointments. This is the essence of this period, when the personality in its maximum manifestations and aspirations of creativity and social activity, can step on some obstacles, thereby, however, there is a personal improvement, the formation of one's own "I". Receiving a negative experience of interaction or the result of activity, a person at a young age gets the opportunity to assimilate the "laws" of the world and the correlation of personal needs and opportunities with what is in the external environment.

The value attitude to the family of senior schoolchildren is a system of representations, which includes the following elements (scheme 2).

Scheme 2

Elements of the system of value representations
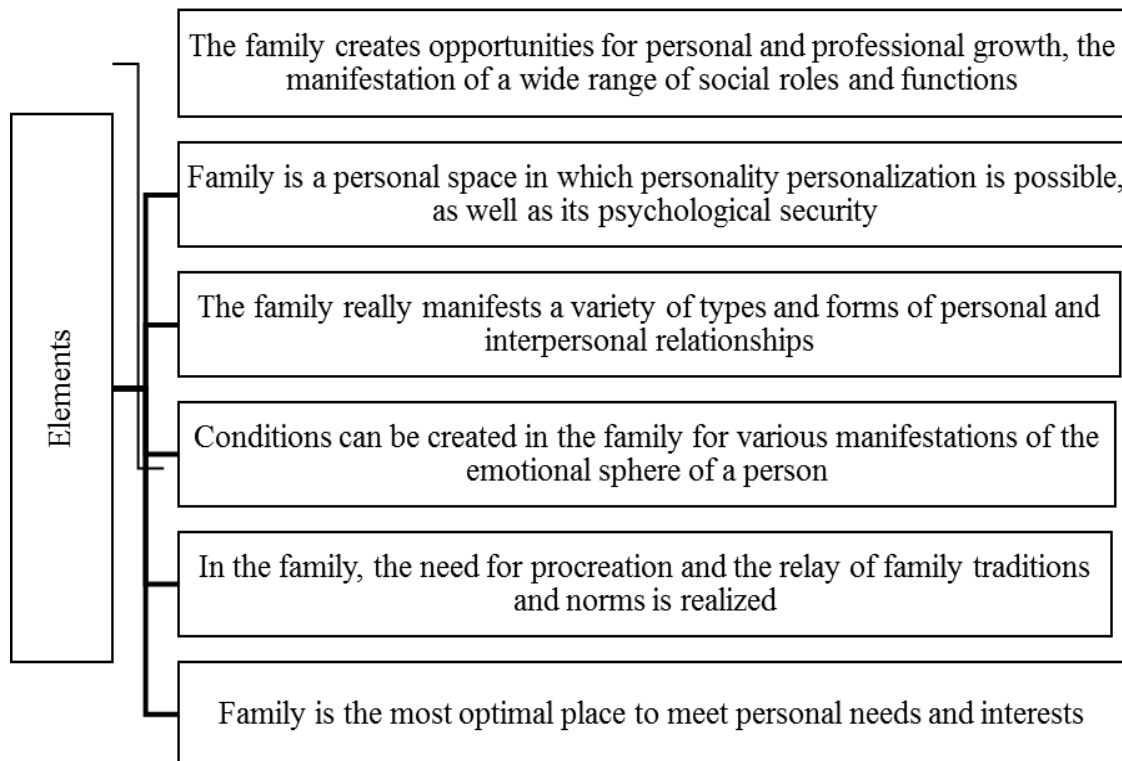
The motives of self-actualization have one of the leading meanings for a person of youthful age. The achievement of self–realization, according to many researchers, is evidence of maturity, self-sufficiency and simultaneous complexity and versatility of personality. The concept of self–realization discussed above by K. Rogers largely supports these ideas, when the researcher says that the ideal person is the one who "fully functions". Youthful maximalism is largely a consequence of such idealization, gradually fading into the background with the increase in the age of a person.

The following requirements are necessary for the formation of a value attitude to the family among high school students (scheme 3).

Scheme 3

Requirements for the formation of a value attitude to the family among high school students

Requirements

Integration of efforts of senior schoolchildren, school psychologist, reference teachers, parents and health workers to form a value attitude to the family among high school students

Correctional-developmental and psychotherapeutic work of a school psychologist on the formation of ideas and concepts of high school students about the value of the family as a social institution and its functions, about the personal-developing capabilities of the family

The experience of modeling the family and predicting the main stages of life, as well as constructive solutions to intrapersonal and interpersonal conflicts acquired by students

The successful experience of personal relationships of high school students (friendship, camaraderie, friendship, love) is a necessary prerequisite for the formation of a positive prognostic of the creation of a future family and a general positive attitude towards the family as a social institution

Social activity is a person's need to change or maintain the foundations of human life in accordance with his worldview, with his value orientations, with moral and social attitudes.

The teacher needs to work closely with parents and solve tasks together with them. At the same time, it must be remembered that the interaction of the school with the family is not a replacement of home education with public education or vice versa, but their complementarity in the creation of the child's personality. This interaction, cooperation should be manifested in all types of activities. At the same time, each family is a unit of society in which its values and traditions are accepted. Meanwhile, all families can be classified into several (scheme 4).

Scheme 4.

Settings of the personal life environment of children, adolescents, and young men

Demographic
• Family structure (large, including other relatives) or nuclear, including only parents and children
• Full or incomplete
• Childless, one-child, small or large

Socio-cultural
• Educational level of parents
• Participation of parents in the life of society

Socio-economic
• Property characteristics
• Parents' employment at work

Technical and hygienic
• level of accommodation
• Equipment of the dwelling
• Lifestyle features

Regardless of what type and type of family this or that "cell" belongs to, it is the family that is the primary institution of socialization. However, some of the changes that are taking place in the world around us today, in many ways confuse not only the youth, but also the adult generation (which will necessarily affect the process of educating the younger generation). Uncertainty about the future and preoccupation with accumulated worries and problems are certainly not the best factors contributing to the accumulation of a favorable emotional atmosphere in the family.

Characterizing the modern Karakalpak family, we can highlight its main features (scheme 5).

Scheme 5

Features of the modern Karakalpak family

The predominance of secular, civil marriages

Freedom to conclude and dissolve marriages

Equality of women and men in marriage

Mostly one- and two-child families, large families - 37%
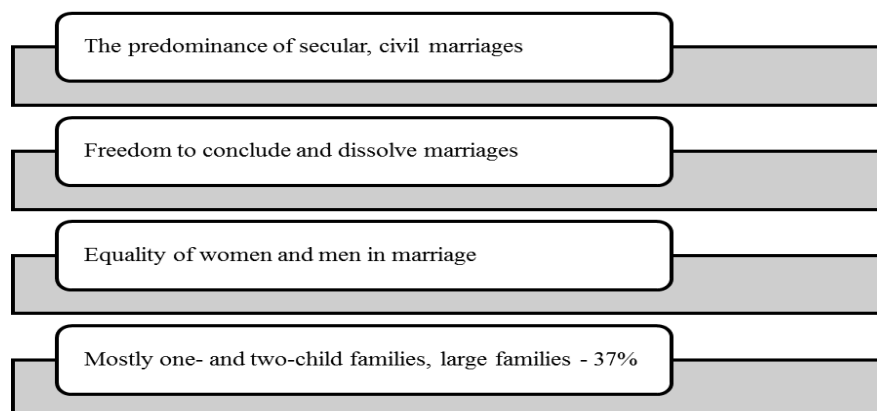
In the same type of families, there are mainly two generations: these are parents and children, other relatives do not live with this family. Of course, the disadvantage of this type of family is the loss of connection with previous generations, respectively, the younger generation does not have the opportunity to adopt any positive (or negative) experience from older relatives. There are families with 2-3 children in which relationships with elderly relatives are not maintained for various reasons.

In modern Uzbek society, the sphere of employment of parents is also changing. So, the role of a woman in the family and, in general, her position in society as a full-fledged member of it becomes very complicated. Since the current state of many families in our country remains quite deplorable, and there is a large percentage of the population belonging to the low-income, the role of material prosperity and material values remains quite large. In this regard, a woman, most often, in addition to performing her maternal functions, must also work fully, on an equal basis with men, in order to ensure a decent income for her family.

Housewives who may not work are in a more advantageous position from this position (raising children), because they can devote much more time. Modern research shows that in those families where the mother pays great attention to the upbringing of children, in particular, may not work, children show more successful results in learning. But, on the other hand, there is also a vicious circle for the woman herself: her goals and interests in life consist only in educating another person, and they themselves "lock up" on doing household chores. In turn, such a situation can lead to the fact that a mother may lose authority in front of her children as a full-fledged and full-fledged member of society. In addition, her children will form a wrong opinion about the role of women in general, compared to men.

The situation may be further aggravated by the fact that there is also a "crisis of fathers" when they do not pay due attention to the upbringing of their children, are not advisers and role models for teenage children, do not spend the proper amount of time to communicate with their children and even in some cases do not know what their teenage child is interested in who they spend their free time with, what kind of social circle he has.

The social background that is developing in Uzbek society today certainly affects how slowly the modern family adapts to the changing situation. Modern realities lead to the fact that a systemic crisis manifests itself in Uzbek families, which can be expressed in the following characteristics (scheme 6).

Scheme 6

Manifestation of the crisis of the modern Karakalpak family

- The decline in the standard of living of low-income families
- The emergence of teenage deviations and the growth of crimes
- Increase in the number of street children
- Introducing children to alcohol, drugs, prostitution
- Increased vagrancy
- The increase in the number of suicides
- The fall of the authority of parents

There is a paradoxical situation in our society, according to which the share of low-income families is growing, as well as the share of those who already had high incomes, meanwhile, their incomes have increased even more. This unambiguous definition of social stratification and differentiation of society cannot but have an impact on the younger generation. Because of the social stratification in society, hostility and even conflicts may arise among children whose families are in different financial situations.

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Резюме: *Мақолада мактаб ва оила билан ўзаро бирга ишлаш ҳақида ва бу ишларнинг оқибатида ўқувчида ўз-ўзини онгини кенгайтириб ривожланишида. Бу масала ҳозирги кунда жуда долзарб ва қийин иш саналади. Мактаб ва ҳар бир ўқитувчи учун.*

Резюме: *В статье рассматриваются особенности системы взаимодействия школы и семьи. Взаимодействие школы с семьёй сложная, актуальная работа как школы в целом, так и каждого учителя.*

Kalit so'zlar: *oila, maktab, institut, davlat, kurs, jarayon, ta'lim.*
Ключевые слова: *семья, школа, институт, государство, курс, процесс, воспитание.*

UDK 9:39 (575.1)

SOME ASPECTS OF IRANIAN HISTORY, RELIGION, CUSTOMS IN THE WORKS OF ABU RAYHAN BERUNI

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Summary: This article reflects some reflections on the history, religion, customs of the Iranians, presented in the works of Abu Rayhan Biruni, a major thinker of the early Central Asian revival. The works of Beruni give details of the flourishing of the cities of Movarounnahr, Khorasan and Iran such as Samarkand, Bukhara, Marv, Jurjon, Gurganj, Rey in the IX-XII centuries, the development of science associated with these cities and Iranians. From the works of Biruni, we can also learn information about the famous Iranian rite of Ashura and the Nowruz holiday.

Key words: Third Renaissance, works of Abu Rayhan Beruni, Ashura rite, Nowruz, calendar, Marv, Samarkand.

Introduction

Independence opened up an opportunity for our people to study their historical and scientific heritage. In particular, the laying of the foundation of the "Third Renaissance" by President Sh.M. Mirziyoyev is a significant event in the development of science in our country. In order for the "Third Renaissance" to come, for New Uzbekistan to show itself to the whole world through science, knowledge and ethics, our republic needs material and spiritual opportunities, historical experience and heritage, and most importantly, intelligent youth. "When talking about this, the lines of our beloved poet, Hero of Uzbekistan Abdulla Oripov, who left us the other day, are involuntarily recalled, "On the other side of the ocean, for the first time, the torch of Beruni's mind lit up". I believe that the "torch of reason" of the youth of Uzbekistan will surprise the peoples of the world and will not leave everyone indifferent", said the President of the Republic of Uzbekistan Sh.M. Mirziyoyev [1, 244].

During the period of the first Renaissance, Samarkand became the centre of science at the crossroads of the Great Silk Road, and scientists and merchants alike aspired to this great city. "During the times of the Samanid s and Karakhanids, they often came here for trade, scientific and industrial purposes. It is known from sources that the districts of Chopardir and Ganilifar in Samarkand were the meeting place and life of the scientists of the East. In the 70s of the XI century, the young philosopher and poet Omar Khayyam lived in the largest cultural centre of that time - the Gotfar quarter of Samarkand" [6, 101-102].

Literature analysis and methodology

The most famous works of Abu Rayhan Beruni are "Chronology, or monuments of past generations", "Geodesy", "India". They provide detailed information: the historical geography of Maverannahr, Khorasan and Iran, ancient peoples, tribes that lived in these parts, history, traditions, holidays, calendars of these peoples. Particularly valuable in this regard is the work "Chronology, or monuments of past generations."The Iranian peoples also have their place in the socio-economic and cultural development of the city of Samarkand. In the works of scientists of that time, in particular Abu Rayhan Beruni, we can find interesting materials about the language, religion, traditions, lifestyle, culture and science of the Iranian peoples. The answer to the question why the language of

the Samarkand Iranians is Turkic can be found in the works of Beruni. "It is in the desert between Khorezm and Jurjan (meaning the Karakum desert). Over a long period of time, many places prospered and fell into decline again. The inhabitants of these places moved to the coast of the Caspian Sea, they are from the clan of Alans and Oss, and now their language is Khorezmian and Badjanak languages [4, 72]. Alans and wasps are the names of closely related peoples belonging to the Iranian language. In ancient times, they led a nomadic lifestyle in Central Asia, around the southwest of the Aral Sea. Later, the Scythians were forced out to the west and northwest as part of the Sarmatian tribes. By the I century BC. they occupied the territory from the northern coast of the Aral Sea to the eastern shores of Azov. According to Beruni, some of them remained in Central Asia and lived side by side with the nomadic Turkic tribes (bajanags) around Lake Sarykamysh in the 8th century. Later they became part of the Turkmens [4, 217].

When a scientist thinks about the religion and religious traditions of the Iranian peoples, he is first of all offended by the huge division in the Islamic religion of that time, that is, the relationship between Sunnis and Shiites. "The scientist ignores the madhhabs of Islam. He appears to have defected to the Shiites while living in the palace of Qaboos ibn Washmgir, a Shiite sympathizer. But in Asar al-Baqiya, he calls them ignorant. Later, when he lived under the Sunni Mahmud Ghazni, he converted to the Sunni madhhab. Thus, for the scientist, both Shiites and Sunnis were indistinguishable" [3, 18].

Results

One of the religious rites of the Iranians in the city of Samarkand is a special mourning ceremony called "Ashura", dedicated to the memory of Sayyid Husayn, the son of Hazrat Ali and Fatima, the grandson of the Prophet Muhammad, a martyr, and Beruni also gives the following information about this ceremony: "The first day of the month of Muharram is glorified , because it's the start of the year and the start of the date. The ninth (tenth) day is called "ashura" and also "tosuo". Shia ascetics pray on this day. The tenth day is called Ashura. The advantage of this (compared to other days) is known. It was narrated from the Prophet that: "O people, hasten to do good deeds on this day, for it is a great and blessed day. God blessed the man on this day". Muslims glorified him until the murder of Husayn ibn Ali ibn Abu Talib fell on that day. Hussein and his assistants were subjected to such atrocities that they have not seen even among the wicked in all nations: killing with thirst, killing with swords, burning, hanging and driving horses over corpses. After that, this day is considered a day of misfortune. On this day, Umayyads put on new clothes and celebrate Eid al-Adha, arrange weddings and feasts [3, 386-387].

The scientist also gives very interesting information about Nowruz, the most popular holiday of the peoples of Central Asia. "Nowruz is the first day of the new year, and its Persian name implies this meaning ... Ali ibn Tusa al-Reza is one of the descendants of Caliph Ali and was one of his close associates at the beginning of Al-Mamun's Caliphate. The brother of Imam Reza, Sayyid Ibrahim ibn Musa Kozim, was sent as a representative to the district of Pulimugob (Samarkand), in 910 by order of the Caliphate... The graves of Sayyid Ibrahim himself and his wife Fatima Sultan, which is now a place of pilgrimage, are located in the Pulimugob cemetery" [7 , 59], when asked about Nowruz, he said: "Nowruz is a day glorified by the angels, because they were created on this day, and the prophets glorified him, because on this day the Sun was created, and the kings glorified him, because it is the first day of time" Beruni writes that gifting sugar to each other on Nowruz was a ritual for the Iranians, and claims that the kings of Khorasan had a ritual to dress the cavalry in spring and summer clothes during Nowruz [3, 253-255].

Discussion

From the works of Beruni, one can understand that the scientist lived in Khwarazm, Gorgan, Rai and provides important information about the inhabitants of these regions. The population of these cities was diverse in nationality and language. Yakut Hamavi left very important information about the life of Beruni in Gorgan and Khwarazm. Beruni diligently and persistently studies the history, culture and languages of different peoples: Hebrew, Greek, Persian, Arabic, Sogdian, Coptic. "...Yazdigard ibn Shahriyar is an example of this. The fire worshipers made the time of his death the beginning of history, because with his death the state was in crisis, and the Iranians mourned him and regretted the loss of their religion, and took the history from the moment of his death ... Then follows the history of the kingdom of Yazdigard ibn Shahriyar ibn Khosrav Parviz. This story is based on common Iranian years and is widely used due to its ease of use. His story is better known than that of other Iranian kings, because he ascended the throne when the kingdom was in disarray, was conquered by an illegitimate person. At the same time, he was the last of the kings of Iran, and most of the wars mentioned in the annals, and the famous case of Umar ibn al-Khattab, occurred precisely in his time, when the state finally collapsed, he fled and was killed in the house of a miller in Merv" [3, 67].

In addition to the history of the Khorezmians and Sogdians, the works of Abu Rayhan Beruni perfectly describe the history, calendars and holidays of Iranians, Arabs, Jews, Copts (Egyptians), Romans and other peoples. In Iran, the calendar consists of the following months: the month of Farvardin (the first day of this month is Navruz), Urdibihishtmoh, Khurdodmoh, Tirmoh, Murdodmoh, Shahrivarmoh, Mehrmoh, Obonmoh, Azarmoh, Daimoh, Bahmanmoh, Isfandarmuzmoh. According to Beruni, Iranians have many special holidays during these months, such as Chordod – big Nowruz, Surush Roz, Ashtoz Roz, Jashni Naylufar, Tirgan, Mehrjan, Navad Roz and Bahmanjona. The Sogdians, like the Iranians, have many holidays and certain great days in the months, namely: Romush Agam, Nikh Agam, Amskhvora, Babakhvora, Kashmin, Min Iydikhvora, Bod Amkom and others. According to Beruni, the beginnings of the year and months among the Khorezmians coincide with those of the Sogdians and are opposite to those of the Iranians: novsorji (the first day of this month is the beginning of the year, i.e. Navruz), azdokandkhvor (the day of eating rich bread), chiriuj, romruj, vakhsh angam, howard minik (pumpkin festival) and others [3, 252-282].

The scientist also provided information about the names of the kings of the states that existed in antiquity. In particular, the Sasanian kings of Iran - "Shahanshah", "Kisro"; the kings of the Khazars and nine Oguz Turks - "Khakan"; the kings of the Oguz Turks - "Khanuwta"; the kings of the Tabaristan mountains - "Ispakhbad"; the kings of Saraks - "Zoduya"; kings Nazo and Abivard - "Bahmana"; the kings of Fergana - "Ikhshid"; the kings of Usturshana - "Afshin"; the kings of Shosh - "Tudun"; the kings of Merv - "Mohuya"; the kings of Samarkand - "Tarhun"; the kings of Dihistan - "Sul"; the kings of Gorgan - "Anokhbad"; the kings of Termez - "Termizshah"; the kings of Khwarazm - "Khorezmshah"; kings of Shirvan - "Shirvanshah"; the kings of Bukhara called "Bukhar Khudot" [3, 129].

Conclusion

In general, from the works of Beruni there is no doubt that in the process of studying the ancient history of the Central Asian peoples, including Khwarazm, Merv, Bukhara, Samarkand, that is, the historical processes of three centuries before and after the Arab conquest, the history of the Turkic and Iranian peoples is a single whole. Even today, as a direct result of the initiatives of President Sh.M. Mirziyoyev, the development of friendship and cooperation with neighbouring

Afghanistan, Turkmenistan, Iran, Tajikistan, Kyrgyzstan, Kazakhstan serves as the foundation of the "Third Renaissance" in New Uzbekistan. "There is no doubt that this legendary city will open another page of success in the history of the Shanghai Cooperation Organization. This is served by the glorious historical heritage of Samarkand. For many centuries, this city has connected countries from Europe to China with strong ties, connecting North and South, East and West at a single crossroads. From time immemorial, Samarkand has been a place of "boiling" of various ideas and knowledge, and in this place the common goals of mankind have been embodied, such as a peaceful and prosperous life, the realization of one's strengths and capabilities, a happy life. Everyone who lives on this fertile land has a deep understanding that a good neighbour is part of God's gift to man, and a peaceful neighbourhood is a source of blessings. After all, where cooperation, trade, creativity, science and art, human ideas are in priority, virtues increase, peoples live happily and amicably" [2].

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Rezyume: Ushbu maqolada O'rta Osiyo ilk uyg'onish davrining yirik mutafakkiri Abu Rayhon Beruniy asarlarida keltirilgan eroniylarning tarixi, dini, urf-odatlari haqida ba'zi mulohazalar aks etgan. IX-XII asrlarda Movarounnahr, Xuroson va Eron shaharlari, jumladan, Samarqand, Buxoro, Marv, Jurjon, Gurganj, Ray kabi shaharlarning gullab yashnashi, ilm-fanning rivoji, Beruniy asarlarida ushbu shaharlar va eroniylar bilan bog'liq tafsilotlar keltirilgan. Beruniy asarlaridan eroniylarning mashhur "ashuro" marosimi, navro'z bayrami haqidagi ma'lumotlarni ham bilib olamiz.

Резюме: В этой статье отражены некоторые размышления об истории, религии, обычаях иранцев, представленные в работах Абу Райхана Беруния, крупного мыслителя раннего центральноазиатского возрождения. В работах Беруни приводятся подробности расцвет городов Мовароуннахра, Хорасана и Ирана таких как Самарканд, Бухара, Марв, Джурджон, Гургандж, Рей в IX-XII веках, развитие науки, связанные с этими городами и иранцами. Из произведений Беруни мы также можем узнать сведения о знаменитом иранском обряде Ашура и празднике Навруз.

Kalit so'zlar: Uchinchi renessans, Abu Rayhon Beruniy asarlari, "Ashurlik" marosimi, Navro'z, taqvim, Marv, Samarqand.

Ключевые слова: Третье Возрождение, произведения Абу Райхана Беруни, обряд Ашура, Навруз, календарь, Марв, Самарканд.

THE PROBLEM OF DEVELOPING VOCATIONAL QUALITIES IN THE SYSTEM OF PSYCHOLOGICAL TRAINING

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Summary: in this article, psychological problems in sports activities, mental functions of a person, the general purpose of psychological training, the search for ways to cultivate sports talents, mental characteristics of a person, general psychological training, special psychological training, psychological exercises, psychological influence , self-awareness, self-education and self-improvement, especially the characteristics of the will in the preparation of athletes for competition are considered and the opinions of scientists are analyzed.

Key words: sport, competition, psychological characteristics, will, motive and motivation, competitive activity, psychological preparation.

It is natural that the study of will requires consideration of not only general psychological approaches, but also many conceptual bases of the problem. Also, three major approaches to explaining the issue of will and volitional qualities are recognized, including such approaches as motivational approach, regulatory and free choice.

According to D.D. Barabanov, in explaining the phenomenon of will, it is necessary to pay particular attention to the contents of three important aspects. That is, choosing an action, starting an action, and controlling one's own behavior are among them[10; 119-131-b]. In addition, researchers A.V. Bykov, L.I. Bojovich, V. Wundt, T. Hobbes, K. Levin, L.S. Vygotsky, J. Based on Nutten's views, three independent lines of research on the will were formed. According to the authors, the will is an independent force determined by the power of motivation, characterized by desires and wishes [23; p. 97-100]. According to these approaches, the power of influence is manifested as the ability to move the will. L.S. Vygotsky offers a unique theory to explain volitional qualities [30; p. 56]:

- the heteronomous theory of will is - the volitional qualities of a person are controlled by "extra-will" processes. Practical proof of this theory is based on experimental research.

- theories that justify the will with involuntary complex processes of the psyche;

- the autonomous theory explaining the will - according to which the will and volitional qualities are characterized by all intellectual processes and emotional experiences. V.A. Ivannikov, unlike others, offers three important approaches to the study of will and volitional qualities [66; 65-b]:

- motivational approach - according to this approach, the will is the ability to inhibit or strengthen an action when it is urgent or necessary. The peculiarity of this approach is that it emphasizes the power of motivation. As part of the motivational approach, three independent directions were formed in a person during the day. That is, the desire, desire and influence of volitional activity, etc. Many researchers have also conducted research on the motivational approach to the study of volitional qualities. According to T.N. Shulga, who studied the issue of will in this direction, will is a reflexive ability to define desires and motivates any actions. In addition, he has the ability to perform tasks such as using the mind, responding to selected actions, and fighting against negative emotional experiences. So, according to the author, emotional experiences appear under external influences, and then are controlled by volitional qualities. Therefore, effort is not

spent on weak desires and they are forgotten by themselves after a period of time [153; 101-b]. In general, scientists such as A. V. Shaboltas, V. Wund, T. Ribault, K. Levin, H. Heckhausen, J. Newton, J. Piaget, L. Vygostky, L. Bojovich, as an advanced representative of the motivational theory related to the phenomenon of will example can be made. For example, according to A. V. Shaboltas, desire and disgust are experiences that strongly cause an action. Desire and aversion are characterized by doing something or not doing it[148; 49-b]. According to V. Wund, every living organism is born with certain innate driving forces. Movements that arise under external influences gradually approach complex reflexes. However, no matter how complex innate powers are, it is natural that they are controlled by consciousness [29; 66-b].

Consciousness always performs activities accompanied by will. According to K. Levin, paralysis of volitional qualities is carried out primarily by satisfying quasi-needs [91; p. 78]. According to the German psychologist H. Heckhausen, motivation serves the processes related to the choice of actions for a long time, and will is a psychological phenomenon that provides its starting point and the process to its end [120; 66-b]. In this case, human interests are of particular importance, and it is an internal factor that gives strength to overcome any obstacles. According to J. Peage, voluntary qualities are an operational process of creating the highest values, reproducing values and maintaining them. The task of the will is to strengthen the motivation for events and actions [60; 59-b]. In addition, the "free choice" approach to researching the problem of will is also different, and the researches of scientists such as U. James, I. Kant, and E. Meyman can be cited as examples of research in this direction. Freedom of choice is traditionally understood as the actual manifestation of free will, its practical expression. The English thinker J. Locke tried to separate the issue of free choice from the general problem of free will, researcher E.Yu.Patyaeva specially admits and scientifically approves his ideas that a person cannot be completely free from voluntary qualities, he is always subject to necessity. But freedom is "characterized by our choice to act or not to act. That is, in order to take action, it is necessary to choose an idea and decide to implement it. The choice is made on the basis of interest, and it is guided by attention [115; 52-53-b]. That's why voluntary actions feel complicated, some people are able to do it, and others prefer its opposite. According to E. Meyman, free choice is characterized by the state of consent or disagreement of a person in an activity, and it is considered to be inextricably linked with desires and wishes [102; 91-b]. Researcher S.A. Shapkin writes that a person is morally responsible for his actions. Because he must take responsibility for his goals and the fate of others.

According to the regulatory approach, the will performs functions such as goal setting, planning, an internal condition for overcoming external and internal obstacles, controlling one's own behavior, cognitive schemes, specific features of planning, modeling goals, and life strategies. Therefore, there is an inter-approach integration in the explanation of volitional qualities. When studying the issue of will, the analysis of the set of qualities characteristic of it is considered very important, through which the nature of voluntary actions is analyzed more broadly. According to A.G. Maklakova, the set of voluntary qualities includes:

1. Purposiveness is the ability to subordinate human actions to set goals. Purposefulness, which is the most important characteristic of a person, determines the content and degree of formation of other volitional qualities. Strategic and tactical targeting are also distinguished in psychology. According to R. Emmons, strategic goals are related to the ability of a person to lead certain principles and ideals throughout his life. Tactical goals are characterized by the ability to set and execute clear, realistic goals for individual actions and not be distracted from them. The quality

of expediency is considered a will characteristic of all owners of the field, through which prospective plans for the future of a person are implemented;

2. Initiative - being recognized as the ability of a person to work creatively, he performs all actions on his own initiative. Examples of this include the manifestation of successful activities, inventiveness, ingenuity, ingenuity, as well as the recognition of inner desires for new types of activities. According to I.V. Plahotnikova, the decline of initiative is characterized by concepts such as inactivity and passivity. Also, a person's lack of initiative is characterized more by waiting for guidance from other people, relying on the help of others. Therefore, each person should be able to activate himself in his work and have the ability to work on himself;

3. Independence is the ability of a person in the autonomous content, without the help of this feature, a person cannot achieve any success. According to R. F. Baumester, the quality of independence includes the ability to resist external influences and the ability to critically evaluate the advice and suggestions of others. In our opinion, every person should act on the basis of his views and beliefs in life. E.L. Milyutina states that people with the quality of independence usually see problems without the help of others and, based on them, set goals for themselves. In addition, individuals with this quality can actively defend their point of view, their goals and desires. Self-advocacy and the ability to express one's opinion, to complete the work with courage are skills characteristic of the quality of independence;

4. Endurance is a quality that helps to slow down actions, feelings and thoughts that prevent the implementation of a decision, and to constantly control them. In this matter, V. E. Fishchenko said that an experienced person always has the opportunity to choose the type of activity that suits the conditions. Often, as a person's ability to behave, he should have inner calmness, rational and balanced behavior in difficult life situations;

5. Persistence is the ability to make and implement quick and decisive decisions. To achieve a specific goal, the leading motive and the selection of adequate means are carried out. According to V. I. Selevanov, courage is a psychological attitude or special behavior, an effort to fight against fear in the face of danger. Courage, in a broad sense, is considered a set of complex qualities that allow determination, self-control, self-confidence, to go to the goal despite difficulties;

6. Endurance is a type of ability aimed at maintaining the intensity of the task being performed with auxiliary voluntary actions when there are internal obstacles affecting the activity, i.e. fatigue, bad mood, small pains;

7. Self-confidence - a self-confident person stands out from others with successful behavior. Such people are not afraid of failure, they always walk in an optimistic mood. According to L. I. Bojovich, people with low self-confidence lack qualities such as independence, courage, and perseverance. The decision-making process is somewhat difficult for them. And they respond to any danger with great fear.

8. Self-control - strong-willed people are characterized by a high level of self-control. They are people who are able to work in any situation, even if they don't want to, they can find the strength to do a task even after saying "I can't do it anymore". Speaking about self-control, I.V. Morasanov says: "A person can master self-control. For this, first of all, he should follow a strict lifestyle. That is, getting up on time, going to sleep, using social networks at the right time, eating on time and doing other things, etc. Such qualities greatly help in mastering self-control skills. These mentioned voluntary qualities are a set of qualities that ensure the ability to work successfully in any conditions, without which no activity can be carried out effectively. D.O.Matorin, while researching the topic "Formation of voluntary qualities in adolescent athletes", described goal orientation as the most

important of life goals and equated understanding and understanding of the essence of goals with a unique special ability. So, this quality gives an opportunity to pre-evaluate a situation in young athletes.

More definition of purposefulness in "Dictionary of the Russian language" by S.I. It was given in detail by Ojegov. The author says that purposefulness not only leads a person to a specific goal, but also ensures a high level of striving for it. However, long-term training is necessary to demonstrate goal orientation and willpower. In fact, purposefulness is one of the most important willpower qualities, and its development is a guarantee of success in any field.

According to D. A. Leontev, voluntary qualities are manifested as a whole system for each person, but the structure of the links of this system is not the same for different people. In addition, voluntary qualities change in different types of activity, therefore, the set of voluntary qualities is integrally connected with each other, it should be considered as a mobile, dynamic system in its research. Similar views and opinions can be found in the research of many psychological scientists. F.N. Gonobolin, researching the problem of volitional adjectives, divides them into two groups:

- the first group includes qualities such as determination, courage, self-confidence and independence;

- the second group of qualities - endurance, tolerance, discretion, discipline and organization, etc. In our opinion, the author chose to divide all the willful qualities of a person into groups, depending on the dominance of the processes of excitation and inhibition. In addition, people are active in some situations and try to limit their actions in others. The psychological issues of the study of volitional qualities are also reflected in the researches of R. Assadjioli, in which a unique approach to the classification of volitional qualities can be seen. According to the author, the following types of voluntary adjectives are distinguished:

- energy - this quality is manifested in overcoming the difficulty in achieving the goal;

- skill, control, discipline - this quality provides regulation and control of other mental functions;

- concentration - the quality of the effect and this quality is considered especially important when the tasks are unpleasant;

- persistence - quickness - agility is manifested in decision-making (T.N.shchul);

- perseverance, endurance and patience - manifests itself in extreme conditions;

- initiative, courage, determination and tendency to risk (V.A. Ivannikov);

- organization, integration, synthesis - here the will performs the task of combining tools, necessary to solve the problem, etc. Through this classification, the author draws attention to a set of qualities that have nothing to do with the process of "will". For example, the introduction of concepts such as skill, control, and discipline is a clear expression of this. It should be noted that specific studies on the issue of voluntary qualities are also noted in sports psychology textbooks. Also, among sports psychologists, it can be seen that there is a tradition of distinguishing willpower qualities according to their importance for a particular sport. General qualities are considered to be related to all types of sports, while basic qualities are considered to be related to specific sports. Common group willful qualities include self-sacrifice, self-discipline, and self-confidence. Volitional qualities in the main group include diligence, perseverance, endurance and self-control, courage, initiative and independence. V.K. Kalin preferred to take a different approach in studying volitional qualities. According to the author, volitional adjectives should be divided into basal (primary) and systematic (secondary).

Basal qualities are characterized by energy, patience, endurance and courage. Systemic qualities consist of a set of qualities such as independence, diligence, hard work, selflessness, which are acquired throughout life. Unlike other researchers, researcher G.S. Chkhartishvili writes that volitional adjectives have a horizontal and vertical structure. The horizontal structure is formed by inclinations, in their manifestation, the typological characteristics of the nervous system are considered important. And the vertical structure appears and is controlled by the mental sphere, the social sphere, and the motivational sphere. However, in some cases, psychologists make a mistake in presenting this issue. Therefore, in many textbooks until now, it has not yet been fully proven in science that good studies or high results in sports belong only to people with a strong motor and balanced nervous system. The author says that indecisiveness, weakness, and a tendency to fear are more characteristic of people with a weak nervous system. In addition, people with a low level of neuroticism have a high level of "firmness". As a rule, the degree of expression of each voluntary quality is considered to depend on the degree to which human needs are satisfied and their moral development. In general, a person looks for the results of his activities from external and internal factors. That is, if a person looks for the reasons for his achievements and shortcomings in the external environment, then such people do not take responsibility for the results of their activities. If a person looks for the results of all his actions from the internal environment, that is, from himself, then such people are considered to be responsible persons in any situation. So, in the first case, the situation and fate are recognized for the results of the activity, and in the second case, the role of the human will and the quality of responsibility inherent in it is assumed. A.E.Pasnichenko, while touching on the type of will qualities of primary importance, emphasizes that they include such qualities as energy, patience, endurance, courage, orderliness, initiative, organization and independence. S.S. Shingaev also conducted remarkable research on psychodiagnostic study of volitional qualities. According to the author, the study of the will is a rather complicated task, and first of all, it is necessary to determine the levels of its study. That is:

- instrumental level - evaluation of voluntary actions;

- at the intellectual level - assessment of qualities that ensure the performance of complex tasks;

- at the behavioral level - evaluation of qualities that serve the effectiveness of interpersonal relations and relationships with others.

In general, the role of not only the motivational sphere, but also the intellectual sphere is considered high for the stable provision of volitional qualities. Therefore, traditionally, volitional qualities are considered as a set of personal characteristics that control voluntary actions and overcome obstacles on the path of life, and are formed in the process of life experience. Volitional qualities are manifested in character, and it is a set of abilities that allow to distinguish one person from another, to evaluate their characteristic behavior.

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Rezyume: Mazkur maqolada sport faoliyatida psixologik muammolar, shaxsning psixik funkciyalari, psixologik tayyorgarlikning umumiy maqsadi, sport iste'dodlarini etishtirish yo'llarini izlash, shaxsning psixik xususiyatlari, umumiy psixologik tayyorgarlik, maxsus psixologik tayyorgarlik, psixologik mashqlar, psixologik ta'sir o'tkazish, o'z-o'zini anglash, o'z-uzini tarbiyalash va o'z-o'zini takomillashtirish, ayniqsa, sportchilarning musobaqa tayyorgarligida irodaning xususiyatlari ko'rib chiqiladi va bu bo'yicha olimlarning mulohazalari tahlil qilinadi.

Резюме: В данной статье психологические проблемы в спортивной деятельности, психические функции человека, общая цель психологической подготовки, поиск путей воспитания спортивных талантов, психические особенности личности, общепсихологическая подготовка, специальная психологическая подготовка, психологические упражнения , психологическое воздействие, самосознание, самовоспитание и самосовершенствование, особенности волевых характеристик при подготовке спортсменов к соревнованиям и анализируются мнения ученых.

Kalit so'zlar: sport, musobaqa, psixologik xususiyatlar, iroda, motiv va motivaciya, raqobat faolligi, psixologik tayyorgarlik.

Ключевые слова: спорт, соревнование, психологические особенности, воля, мотив и мотивация, соревновательная деятельность, психологическая подготовка.

MINIMUM CONSUMPTION EXPENDITURE OF THE POPULATION AND POVERTY CRITERIA

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Summary: The correct selection of measures used to determine the extent of poverty is crucial to the development of effective measures aimed at reducing it. There is much debate around the definitions of poverty, and different measures of poverty need to be compared in order to identify alternative measures. This article provides a theoretical analysis of several key dimensions used to assess poverty in world practice, highlighting their specific aspects.

Key words: income, consumption, absolute poverty, relative poverty, subjective poverty, social exclusion, unidimensional, multidimensional poverty.

INTRODUCTION. Measures of poverty provide a measure of the extent of the problem and provide information on the number of individuals or families affected by poverty. By conducting poverty measurements in all subgroups of the population, we study the living conditions, age, gender, level of education and their characteristics of poor people. The use of various indicators and scales in the study helps to understand the characteristics of poor people and to develop effective measures in the fight against poverty.

At present, poverty is a complex phenomenon that is characteristic of any society, regardless of its social and political structure and characteristics, which appears under the influence of many factors and can be studied from different perspectives. For this reason, it is necessary to analyze in detail the concept of poverty as a socio-economic phenomenon that combines several factors. Poverty has always been understood as a multidimensional problem, but it has been measured against minimum thresholds such as one-dimensional income, food, clothing and shelter. There is a growing debate that income-based measures are inadequate for understanding poverty. Multidimensional poverty is closely related to social exclusion and is explained by limited access to certain goods and services considered necessary for the basic needs of a person. Poverty is measured by a number of monetary and non-monetary variables and needs indicators. Different ways of understanding and measuring poverty represent different approaches to the same phenomenon, and combining these approaches provides a variety of rich insights into the overall picture.

Analysis of literature on the topic. In the late 19th and early 20th centuries, Charles Booth and Seebom Rowntree took the ability to meet the basic human needs of food, clothing, and housing as the starting point for defining poverty. Charles Booth defines the poverty line by calculating the minimum weekly amount of food purchases necessary for a family member to live.[1] In 1901, S. Rowntree developed a poverty line using a consumption basket consisting of goods and services necessary for family needs.[2] This level was taken as the absolute poverty line. Later, in 1963, Molly Orshansky in the United States developed poverty lines based on an absolute measure to measure income adequacy among families of different composition.[3]

The founder of the concept of relative poverty is the British sociologist Peter Townsend, who seeks to derive relative measures of poverty based on the distribution of resources in society, rather than on the basis of a strict poverty line. [4] A. Sen admits that poverty has absolute and relative dimensions, combines the elements of these two approaches and proposes a poverty line based on the perspective of abilities.[5] A. Sen proposes a multidimensional theory of poverty in assessing poverty, and understanding the nature of poverty from a multidimensional point of view has become

popular. Later, A. Atkinson, R. Hussain, J. Foster, S. Alkire, M. Santos, K. Stewart, N. Robert, M. Azim and others made a great contribution to the development of the theory of multidimensional poverty. In their work, they developed and popularized the theory of multidimensional poverty, and conducted many studies in this direction.

Research methodology. In the course of the research, various measures used to determine the level of poverty were considered, and their characteristics, importance in explaining, evaluating and reducing poverty were studied from a theoretical, scientific and methodological point of view. Also, dialectical, systematic approach, comparative analysis, comparison, and grouping methods were used in the study of poverty dimensions.

Analysis and results. There is much debate surrounding the definitions of poverty, and alternative measures of poverty need to be examined and compared in order to identify alternative measures. In world practice, three main dimensions are used to assess poverty, the concept of absolute poverty, the concept of relative poverty and the concept of subjective poverty.

Absolute poverty is characterized by the inability to meet basic human needs, including food, clean drinking water, sanitation facilities, education, health care, and housing. That is, a person is considered poor if his income and expenses are below the subsistence minimum. The absolute poverty line depends not only on income, but also on access to services. According to United Nations estimates, the percentage of the world's population living in absolute poverty fell from 80% in 1800 to 10% by 2015. Relative poverty measures, unlike absolute poverty measures, take into account people's socio-economic background. The definition of a person as poor is based on his share of income, the share of income of other people living in the same economy.[6] This idea of poverty is closely related to the concept of inequality.

Subjective poverty is a concept of poverty based on the fact that poverty can only be defined by the individual. There are many approaches to determining the level of subjective poverty: you can find out how many people consider themselves poor or how many friends they think are poor. Based on public opinion, it is possible to determine the threshold of subjective poverty, and then compare the income of the population with it. The subjective concept of poverty is based on the subjective definition of the resources necessary for a socially acceptable standard of living.

Absolute poverty measures are mostly used in developing countries, while relative poverty measures are more commonly used in developed countries. The most common way to measure poverty is based on income or consumption. If a person's consumption or income is below the minimum level necessary to meet basic needs, a person is considered poor. This minimum level is commonly known as the poverty line. The resources needed to meet basic needs vary over time and across societies. Each country uses a measure that corresponds to its level of development, social norms and values. Thus, the concept of "need" depends on the available goods and services, as well as the general living conditions of a certain society.[7] Based on the above, it can be said that "basic needs" have requirements for food and territorial and social specificity. Another example of an absolute measure is the International Poverty Line (Purchasing Power Parity (PPP)) of $1 per day used by the World Bank to define the number of poor. In October 2015, the World Bank set the International Poverty Line at $1.90 .[8] According to the World Bank's classification, anyone who currently earns less than $1.90 a day is poor.

Table 1: Comparative Analysis of Advantages and Disadvantages of Units of Analysis and Measures Used in Poverty Approaches

Definition	Measurements	Advantages	Disadvantages
Absolute poverty	Minimum consumption expenditure	Immutable permanent limits.	Not all aspects of poverty are covered.

		Comparative advantage. Ease of poverty analysis	difficulty to establish an objective minimum that is used in different groups of the population
Relative poverty.	The socio-economic environment of a person. Indicators of financial scarcity	represent the distribution of income and expenses in society. It represents not only physical needs, but also social needs.	The risk of not being able to properly distinguish between the poor and those in real financial hardship. May not take into account changes in relative income and consumption levels
Capability approach	Health, education, shelter, opportunity, connect the concept of poverty with the concept of "well-being". Focuses on freedom, choice, and human potential.	Complexity of selection and development of skill sets and measures. It is difficult to distinguish the conditions that lead to poverty.	Complexity of selection and development of skill sets and measures. It is difficult to distinguish the conditions that lead to poverty.
Social exclusion	Multidimensional poverty indicators examine the structural factors of poverty.	Focuses on the consequences of social exclusion It helps to deepen the understanding of the meanings and concepts of global poverty	The impossibility of developing a single measure. It requires an attitudinal dimension that must be grounded in a specific social context. There is no clear agreement on the units of measurement.

There is no general consensus on which resource indicators are most appropriate for measuring poverty. However, in measuring the poverty line, the income and money approach to consumption needs is the most widely used for measurement due to its "simplicity". Income data are easier to analyze and help to determine at least a certain minimum standard of living.[9] The importance of income and consumption in human life cannot be denied. However, revenue-based metrics have their advantages as well as certain disadvantages. In particular, income as one of the methods of measuring family resources does not fully cover all aspects of lifestyle. Even if income is constant, people face significant differences in family composition, location, and cost of living by age and gender. All these shortcomings are considered important factors directly determining the quality of life. Relying on income may overlook other aspects of well-being that may better reflect a family's quality of life. In theory, absolute needs should not change, but in practice this is impossible because needs vary over time and space. P. Ruggles stated that "It is very difficult to establish an "objective" minimum that is used continuously in diverse population groups for a long time".[10]

The indicator that measures the level of poverty is the share of the poor in the total population. This proportion (PR) is called the poverty rate and is calculated as follows:

Poverty level (PR) $\dfrac{p}{n}$

Here p is the number of poor people and n is the total number of poor people in the group for which the poverty rate is calculated. Often, the level of poverty is also determined in the form of H (proportion of the number of poor people).

Determining relative poverty lines usually uses indicators based on monetary variables such as income or expenditure. In both cases, a variable minimum level is defined above which people are classified as poor. If we take the selected variable as income, the level depends on the distribution of income of the population. In fact, this distribution is set at a certain percentage of the scale at the mean or median.

Townsend's proposed approach was concerned with the basic standard of living rather than the cost of living. Townsend's study in Great Britain listed not only expenses, but lifestyle

requirements, including people's ability to support family life and social activities.[11] Townsend's research advances two important ideas that lead to new ways of measuring poverty:

- firstly, the idea of the poverty line is expressed not as a fixed income level, but in relation to the social average income. This became the basis for one of the most widely used forms of the poverty indicator.

- secondly, the idea of a measure of social poverty, which is conceptually different from any measure of personal or household income. These are measures based on the percentage of people who do not have access to certain goods, services, and activities that the majority of the population enjoys.[12] Criticizing the idea of absolute poverty, Townsend argued that measures based on the satisfaction of minimum needs are irrelevant for developed societies, and instead poverty should be defined based on relative criteria[13]. According to him, the dimensions of poverty should include not only physical needs, but also social needs. A person is not only an individual organism, but also a social being who must function within the framework of various social relations in society. In absolute poverty measures, people can survive physically but not participate adequately in society[14]. Relative poverty is a classification between poor people and non-poor people. This criterion depends on the level of development of the studied society and cannot be applied to another society. For example, one country may define the poor as those with an annual income of less than $2,000, while another country may define the poor as those with an annual income of less than $4,000. A person who is considered poor in the second country does not fall into the category of poor if the criteria of the first country are used.

According to A. Sen, a critic of Townsend's idea of relative poverty, "relative poverty measures cannot accurately distinguish those who are in real material difficulty, because they ignore absolute poverty conditions". 15]

Recognizing that poverty has absolute and relative dimensions, A. Sen combines the elements of these two approaches and proposes a poverty line based on the perspective of abilities. A. Sen said that "human ability reflects the combination of alternative functions that a person can achieve and that he can choose from one set".[16] He uses the terms functions and capabilities to explain his concept. According to him, function refers to what a person can be or do as part of everyday life, while "Abilities" refer to what a person can ultimately achieve based on choices. Although A. Sen listed such skills as health and education, he did not single out any of them. People's lack of ability and freedom of choice prevents them from earning enough income, and as a result, low income becomes the main cause of poverty. A. Sen explains poverty as a lack of ability to produce or purchase the necessary resources to meet basic human needs.

A. Sen proposed his own index, which is an indicator of poverty that combines three factors: the prevalence of this phenomenon, the material insufficiency of poor people, and the degree of stratification of their income. It is calculated according to the following formula:

$$S = L\left(N + \frac{d}{P}G_p\right)$$

Here S is the Sen index, L is the poverty level,

N is the ratio of the average income difference to the poverty line, d is the average income of poor families, P is the poverty line, Gp is the Gini coefficient for poor families.

The ability concept of poverty is directly related to the idea of "social exclusion". Competence means working and participating in society on an equal basis with everyone. In turn, a socially isolated person's ability to function successfully in society is limited. The concept of social exclusion (exclusion) challenges one-sided narrow concepts that ignore the true extent and burden of

poverty. Instead, poverty is defined as a broader concept that includes multiple, complex, and interrelated dimensions.[17] M. Harrington defines social exclusion as "the poor are losing contact with the wider world" [18]. Although the concept of social exclusion attempts to capture the multidimensional nature of poverty, there is no clear agreement on what dimensions to do so. It is impossible to develop a single measure of poverty or social exclusion because it requires a relational measure that must be grounded in a specific social context.[19] Poverty depends not only on low economic income, but also on a combination of natural, social, economic and other factors, deepening the meaning and understanding of global poverty.[20] This dimension of poverty is inextricably linked with the ideas of marginalization or alienation, and the lack of sufficient income, resources and opportunities can have a negative impact on a person's full participation in society. Lack of participation leads to the marginalization of the individual and alienation from the society.

Multidimensional poverty measures developed by S. Alkire and Foster are of particular importance in determining and measuring poverty. This concept replaces absolute poverty measures based on income with multidimensional poverty measures that include multiple indicators of deprivation such as health, education and housing. encouraged the development of the industry by applying.[21] The A-F (Alkeri and Foster) methodology offers a flexible framework for measuring poverty, allowing the deprivation experienced by people to be quantified through a number of distinct criteria. A capability approach suggests a shift in focus from livelihoods to the true freedoms of the individual.[22]

The main poverty indicators are defined using the following formula proposed by James Foster, Joel Greer and Eric Thorbeck:

$$P_a = \frac{1}{H} \sum_{h=1}^{q} \left(\frac{Z_h - Y_h}{Z_h}\right)^a$$

P is the general poverty level, α is a parameter that shows what poverty indicator we are measuring;

Z_h- the poverty line h of an individual household depends on its composition;

Y_h- income level of an individual household;

q - number of poor families (households);

H is the total number of households.

Based on the Foster-Grier-Torbeck formula, the main indicators of poverty are determined as follows:

Poverty coefficient and poverty level (a =0);

poverty depth index (a =1);

poverty risk index (a = 2).

Another common method for determining poverty is the minimum consumption basket based on the minimum subsistence level. The size of the consumption basket is of great importance in determining the social policy aimed at protecting the needy population. Based on the amount and composition of the consumption basket, several indicators of the minimum amount of marriage are calculated. In practice, two types of the minimum amount of marriage are distinguished: vital (physiological) and social type.[23]

Since the recognition of poverty in Uzbekistan, significant efforts have been made to reduce it. In order to determine the value of minimum consumption expenses, a survey was conducted in 5.4 thousand households in the first stage, and in 10 thousand households in the second stage. Based on the results of the studies, on May 31, 2021, the amount of initial minimum consumer spending was announced in Uzbekistan. According to it, the minimum consumption expenditure for food and non-

food goods and services consumed daily per capita was 440 thousand soums per person per month, while for 2022 the MIX is 498 thousand soums.

The living wage officially defines the poverty line and provides for the introduction of social policy priorities that ensure the protection of the most vulnerable segments of the population. Also, the consumption basket represents the minimum set of food, non-food products and services necessary to maintain human health and ensure his vital activity. The minimum consumption basket is the lowest limit of consumption necessary to ensure normal population growth.

Conclusion. The definition and measurements of poverty affect the development of programs aimed at determining the level of poverty in the country and reducing it based on the obtained results. Measuring poverty is an objective process that seeks to understand the number and composition of the poor in society. However, all indicators of poverty have their own elements of subjectivity, and these approaches rely on different methodological assumptions. Absolute poverty measures by comparing income with the amount needed to meet basic needs such as food, clothing, and shelter, while relative poverty is the minimum standard of living a person can live by comparing it to other people in the same time and place. and subjective poverty is measured by the adequacy of resources necessary for an acceptable standard of living. When solving a complex problem like poverty, the right choice of measurements is very important to achieve the desired result. Choosing the right strategies to fight against poverty plays a key role in the effective use of limited resources in solving the problem.

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Rezyume: Kambagʻallikni koʻlamini aniqlashda qoʻllaniladigan oʻlchovlar toʻgʻri tanlash uni qisqartirishga qaratilgan samarala choralarni ishlab chiqishda xal qiluvchi ahamiyatga ega. Kambagʻallikning taʼriflari atrofida juda koʻp munozaralar mavjud va uning muqobil oʻlchovlarini aniqlash uchun kambagʻallikning turli oʻlchovlari koʻrib chiqib taqqoslash talab qilinadi. Ushbu maqolada dunyo amaliyotida kambagʻallikni baholashda foydalaniladigan bir nechta asosiy oʻlchovlar nazariy tahlil qilinib, ularning oʻziga xos jihatlari yoritilgan.

Резюме: Правильный выбор мер, используемых для определения масштабов бедности, имеет решающее значение для разработки эффективных мер, направленных на ее сокращение. Вокруг определений бедности ведется много споров, и необходимо сравнивать различные меры бедности, чтобы определить альтернативные меры. В данной статье проводится теоретический анализ нескольких ключевых измерений, используемых для оценки бедности в мировой практике, с выделением их конкретных аспектов.

Kalit soʻzlar: daromad, isteʼmol, mutlaq kambagʻallik, nisbiy kambagʻallik, subʼektiv kambagʻallik, ijtimoiy chetlanish, bir oʻlchovli, koʻp oʻlchovli kambagʻallik.

Ключевые слова: доход, потребление, абсолютная бедность, относительная бедность, субъективная бедность, социальная изоляция, одномерная, многомерная бедность.

DYNAMICS OF SOCIAL PROCESSES: SOCIAL BIFURCATION AND SOCIAL ATTRACTORS

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Summary: Nowadays, we cannot study and simplify the social processes with a traditional point of view and we cannot describe its complex aspects. The reason is that social processes do not always have order, stability, accuracy, proportionality between cause and effect, ambiguity, and predictability of the next state. In one word, linear legality in social processes does not always exist. In other words, critical situations, ambiguities, instabilities, and non-linear situations are legal in social processes. The article reveals that the dynamics of social processes are complex where social bifurcations and social attractors occur in it.

Key words: the dynamics of social processes, social bifurcation, uncertainty, non-linearity, social attractor, sustainable development.

In the 90s of the past century, a number of researchers and philosophers began to consider the complexity of social processes and to use synergetics as a methodological strategy for its research. Nowadays, we cannot study and simplify the social processes with a traditional point of view and we cannot describe its complex aspects. The reason is that social processes do not always have order, stability, accuracy, proportionality between cause and effect, ambiguity, and predictability of the next state. In one word, linear legality in social processes does not always exist. In other words, critical situations, ambiguities, instabilities, and non-linear situations are legal in social processes.

In the research of social processes, the modern postclassical paradigm has shown that it is impossible to always know the future states of social processes. For example, in the scientific works of G.Haken, I.Prigogine, V.S.Stepin, V.I.Arshinov, S.P.Kurdyumov, E.N.Knyazova, G.G.Malinetskiy, B.G.Budanov, D.I.Trubetskov, V.V.Afanaseva, M.N.Abdullaev, M.Q.Niyazimbetov [1,2,3,4] the universality of the limitation and non-linearity of knowledge was justified not only in natural processes, but also in social processes of the principle of linearity and determinism. Non-linearity is an adequate methodological principle in researching social processes. The reason is that social processes are considered to be open, self-organizing, non-equilibrium, and can be seen in such lines as complex curvature, bifurcation, crisis situations, chaos, fractality, multivariate development, multi-stability.

A social system is not always a deterministic system, but also a dynamically unstable system. Also, chaos in social processes is caused by strong fluctuations. As a result of this, the system is in a state of bifurcation, instability and non-equilibrium appear in the social system. After the bifurcation point, randomness determines the situation. It is worth noting that there are soft and hard types of bifurcations, which are currently happening in our social life.

However, the application of these concepts to social processes has not yet become a system. For example, when we apply the concepts of chaos and order to social processes, the concepts of social order and social chaos become concrete. Social order is caused by social control under the influence of the management system of society.

Self-organization is defined as self-formation, self-recovery, and self-regulation of systems of various natures. It is known that the research object of self-organizing theory is self-organizing systems.

The main characteristics of self-organizing systems are as follows:

1. Self-organizing systems are considered to be dynamic systems, and their movement is non-linear.

2. Self-organizing systems are considered open systems, due to the exchange of energy, matter and information with the external environment, an imbalance occurs in the system.

3. Self-organizing systems are considered such elements, which their organization involves cooperative processes, especially the coherence of system elements, coordinated interaction with each other. I. Prigogine describes such a situation as follows: "in equal equilibrium situations, molecules behave independently. These molecules can be composed, but do not "feel" each other. After transitioning to a non-equilibrium state, the molecules move to a state completely different from their state in the state of equal equilibrium, that is, they realize coherence" [5].

Many studies have been conducted on the non-linear nature of social processes. This means that social processes are far from the state of strict determinism, their future states are not strictly certain, in a word, it is necessary to study social processes with a non-linear principle. This method more fully responds to the research of social processes in current uncertain, unstable, non-equilibrium conditions.

Today, the countries of the world are experiencing complex, uncertain and risky conditions of a global nature. Humanity has faced a wave of threats and challenges related to the COVID-19 pandemic. To adequately respond to such a challenge, new methods and new thinking are required. In such conditions, it is necessary to base on a pragmatic view, to determine new dimensions for adaptation to new conditions.

The COVID-19 pandemic has hindered the socio-economic development of countries. Uncertainty, social turbulence in the whole system increased, not decreased. Instability in the system has reached the limits of the critical state. Revealing the methodology of explaining such social processes helps us to determine the key conditions of the system, development trends, and the possibilities of its management. Revealing such processes based on the paradigm of synergetics helps us to know the adequate content.

Bifurcation, which is considered the theoretical constructor of synergetics, helps to more fully explain the content of social processes during the pandemic through the attractor.

Events in social reality are characterized by such features as simplicity, linearity, orderliness, stability, strict determinism, and equal equilibrium. In addition, signs and characteristics such as complexity, non-linearity, uncertainty, disorder, instability, non-equilibrium, spontaneous variability, multi variation, self-organization are also appearing in the phenomena of social reality. For this reason, the principles of classical and non-classical methodology are not adequate when researching social processes.

The reason is that nowadays social processes are becoming more and more complicated. When complex systems are considered as objects of science, it is necessary to change the methodological basis of their scientific knowledge. The reason is that the methodology serves as a direction as a theory for researching objects.

Things and events in social reality are complex and require the introduction of new conceptual concepts into their scientific knowledge. The reason is that the categorical apparatus of classical methodology is not sufficient for scientific research of complex systems. Therefore, it is necessary to develop new methodological dimensions. These concepts should be described in a specific scientific language for object research. In this regard, first of all, scientific foundations of complex, non-linear, bifurcation social processes should be analyzed through non-linear thinking,

non-linear paradigm in the scientific knowledge. Secondly, the scientific analysis of the mechanisms of application of these methodological principles in research processes will be of great importance.

Indeed, the period of the pandemic is characterized by the occurrence of social bifurcation. The point of bifurcation is a critical moment in the development of social processes. The further development directions of the system will not be determined in advance. The possibilities of further development of social processes are characterized with multi-variability, or with non-linearity. For example, during the pandemic, there were uncertainties, instability and critical situations in social and economic processes. In such conditions, it was also possible for us to observe the further development of the system, giving free rein to "blind" coincidences. However, under such conditions, our state has developed measures to ease the critical situation and realize new opportunities by setting clear strategic goals and defining conscious, rational goals for the key development of the system.

Far-seeing strategic goals were set by the President and socio-economic crises were prevented. This is determined by social attractors. Social attractor gives future images of social development, it defines future goals. Also, the social attractor provides the future stable state of the system. This defined social attractor begins to attract the system from the critical point.

In this case, there may be a lot of attractor zones and areas. When the system is attracted to one of the social attractors, other attractors are closed to the system.

If we analyze the social processes during the pandemic in our country with a social attractor, we can consider the following cases:

-Strategic goals set by the President of our country;

-Unification and solidarity of the nation;

-Values of the nation such as patience, gratitude, kindness.

Such dimensions served as the basis for the system to leave the state of social bifurcation and become a social attractor.

In conclusion, it is necessary to take into account the main trends of non-linearity of social processes. The reason is that the negative internal and external factors affecting social processes in Uzbekistan can increase its non-linearity and lead to an increase in entropy in the system. Therefore, for the sustainable development of our society, it is necessary to determine the positive attractors (the goal of evolution) corresponding to the system.

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Резюме: *Xozirgi zamonda dasturiy ko'zlar -tiyraslar bilan ijtimoiylik jarayonlardi o'rganish, uni soddalashtirib, uning murakkab tomonlarin aks ettira olmaydi. Sababi ijtimoiylik jarayonlarda hardam ham tartib, barqarorlik, aniqlik, sabab va xotima orasidagi mutanosiblik, bitta ma'nolilik, keyingi xolatın bashorat qilish imkoniyati bo'lmaydi. Bir jumlada aytganda ijtimoiylik jarayonlarda chiziqli qonuniy hardam bo'llara bermaydi. Xususan, ijtimoiylik jarayonlarda kritikalıq xalatlar, aniqsizlıqlar, betayinliklar, chiziqli emas xalatlar qonuniy bo'lib turadi. Maqolada ijtimoiylik*

jarayonlar dinamikasi murakkab ekanligi, u yerda ijtimoiylik bifurkaciyalar va ijtimoiylik ottraktorlardıń yuz berib turishi ochib berilgan.

Резюме: *В настоящее время мы не можем изучать и упрощать социальные процессы с традиционной точки зрения и не можем описывать их сложные аспекты. Причина в том, что социальные процессы не всегда обладают упорядоченностью, устойчивостью, точностью, соразмерностью между причиной и следствием, неоднозначностью и предсказуемостью следующего состояния. Одним словом, линейная закономерность в социальных процессах существует не всегда. Иными словами, в социальных процессах допустимы критические ситуации, неясности, нестабильности, нелинейные ситуации. В статье показано, что динамика социальных процессов сложна там, где в ней возникают социальные бифуркации и социальные аттракторы.*

Ключевые слова: *динамика социальных процессов, социальная бифуркация, неопределенность, нелинейность, социальный аттрактор, устойчивое развитие.*

Kalit so'zlar: *ijtimoiy jarayonlar dinamikasi, ijtimoiy bifurkaciya, aniqsizlıq, nochiziqlilik, ijtimoiy ottraktor, barqaror rivojlanish.*

FOREIGN EXPERIENCE IN ASSESSING COLORAGE FOR BANK LOANS: A COMPARATIVE ANALYSIS OF APPROACHES IN THE USA, GERMANY AND THE UK

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Summary: This article is a thorough analysis of foreign experience in assessing collateral for bank loans. Focusing on examples from the US, Germany and the UK, the study reveals different approaches and strategies used in these countries. The article examines the key principles and methods of valuation, their advantages and disadvantages, as well as current challenges and prospects in the field of collateral valuation.
Key words: collateral valuation, bank loans, foreign experience, USA, Germany, Great Britain, valuation methods, valuation challenges.

Introduction. Collateral valuation plays a vital role in bank lending operations by protecting financial institutions from potential credit risks. Although the collateral valuation process is gaining more attention in emerging markets, many of them have not yet fully adapted to modern valuation methods. At this time, foreign countries with developed financial markets, such as the US, UK and Germany, have already introduced modern and sophisticated collateral valuation methods. In this article, we provide an overview of foreign experience in the field of collateral valuation, which can serve as a model for emerging markets.

Collateral valuation is a critical element in the banking lending industry, as it provides protection to financial institutions from potential credit risks. Methodologies and practices used for valuation of collateral vary considerably from country to country, depending on the level of financial sector development and legal frameworks. Foreign experience in collateral valuation can provide valuable lessons for developing countries. According to a 2022 World Bank report, approximately 40% of borrowers in developing countries have difficulty obtaining loans due to inefficient collateral scoring systems. In the same countries, the share of overdue loans averages 12%, which is three times higher than in developed countries. These findings highlight the importance of improving collateral valuation systems. At the same time, developed countries with strong banking infrastructures, such as the US, UK and Germany, have implemented sophisticated and efficient collateral assessment systems to reduce risk and improve access to credit. For example, in the US, the share of overdue loans is only 2.7%, and in Germany this figure is even lower - 1.7%. This speaks to the high efficiency of collateral assessment systems in these countries.

The importance of collateral in the banking system cannot be overestimated. As part of lending, collateral is a guarantee of reimbursement of the bank's funds in the event of default by the borrower. As such, it serves as a powerful risk management tool for banking institutions. Proper collateral valuation is key to building an efficient and stable financial system. The collateral appraisal process involves assessing the value of the assets that the borrower is willing to pledge as collateral. The assessment is carried out in order to determine their real market value and liquidity, as well as to exclude possible legal problems associated with the ownership of collateral assets.

Correct collateral assessment helps to manage risks, reduce the probability of losses from loan defaults, and also ensures the protection of the interests of all parties in the lending process. For the borrower, this is a guarantee that he will be able to get the loan he needs, and for the bank - that in case of non-payment, he will be able to return the borrowed funds by selling the collateral.

However, despite the importance of the collateral valuation process, many developing countries face problems in their valuation systems. Often these problems are associated with a lack of

standards and regulations in this area, an imperfect legal system, as well as a lack of qualified appraisers and insufficient transparency of the appraisal process.

In this article, we review foreign experience in the field of collateral valuation and discuss its applicability in the context of developing countries.

Materials and Methods. Our research data is based on analysis of the banking sector and collateral valuation systems in the US, UK and Germany. We have used publicly available sources of information such as statistical reports, academic papers, reports from international financial institutions, and reports from government agencies. Based on the collected data, a comparative analysis of collateral assessment methods was carried out.

Many scholars and researchers have studied collateral assessment systems in various countries. The main areas of their work can be divided into the following categories: study of collateral valuation methodology, study of factors affecting the valuation, and study of foreign experience. Levy and Schwartz (1999) deal with the issue of real estate valuation as collateral. The authors emphasize the importance of such aspects as market value, as well as the level of risk associated with the possibility of changes in real estate prices. They also offer a collateral valuation model that takes into account not only the current value of assets, but also the risk of impairment.

Gibler and Schwarzbach's (2004) research focuses on the impact of regulation and the legal system on the valuation of collateral. They conclude that a lack of clarity in legislation can seriously complicate the assessment process and increase risks for creditors.

A report by the International Monetary Fund (IMF, 2005) provides an overview of collateral valuation systems in developed countries. It includes an overview of the main assessment methods used in different countries, as well as their main advantages and disadvantages.

The work of Benton et al. (2007) is devoted to the study of the impact of financial crises on the valuation of collateral. The authors come to the conclusion that financial crises can significantly reduce the value of collateral assets and increase risks for creditors.

In general, the review of the literature shows that the valuation of collateral is a complex and multifaceted process that depends on many factors, including the state of the economy, the market situation, the legal system, and even global financial trends.

Duffie and Garleanu (2017) conducted a study of collateral valuation approaches in the context of financial innovation. They argue that in the era of digitalization and the use of artificial intelligence, new approaches to assessment are needed that can be more accurate and adaptive..

Tan and Stevenson (2018) researched the Australian real estate market and applied several collateral valuation methods. Their work highlights the importance of using multiple approaches to improve the accuracy of the estimate. The book by Askari and Gonzalez (2019) provides a general overview of collateral valuation methods in different countries, including an analysis of new technologies and valuation algorithms. They highlight the importance of considering local market conditions and regulatory considerations when choosing a valuation approach.

The work of Hofmann and Santos (2021) is an analysis of the application of machine learning in collateral assessment. They argue that the use of artificial intelligence can significantly improve the accuracy of the estimate and reduce the cost of this process.

Results. The analysis showed that in developed countries, various methods of collateral valuation are used, including the market approach, the value approach and the income approach. In the USA, for example, the market approach is more often used, which is based on comparing the prices of similar assets in the market. In the UK and Germany, banks often use an income approach based on the expected return on the asset.

Table 1. Comparative analysis of foreign experience in the field of collateral assessment for bank loans.[1]

Authors	Country/Region	Basic Approaches to Valuation	Features of the approach
Duffie and Garleanu	General review	Use of digital technologies	Emphasis on financial innovation and the use of AI
Tan and Stevenson	Australia	Multiple Approaches	Emphasis on the importance of using multiple methods
Askari and Gonzalez	International review	Use of technologies and algorithms	Emphasis on taking into account local market conditions and regulatory features
Hofmann and Santos	General review	Machine learning	Emphasis on the use of artificial intelligence to improve accuracy and reduce costs

Analyzing the information presented in Table 1, several important conclusions can be drawn.

First, all the countries studied have established detailed regulations and standards for valuation of collateral, confirming the importance of this process for the banking system. Note that most countries actively use the approach based on the assessment of market value.

Second, there is a difference in the degree of regulation of collateral valuation. In some countries, such as the US and the UK, the collateral valuation function is highly regulated and standardized, while in others, such as India and Australia, collateral valuation approaches can be more flexible and varied. Thirdly, foreign experience emphasizes the importance of transparency and openness in the process of valuation of collateral. This includes not only a detailed description of the valuation methodology and assumptions used, but also the mandatory certification of appraisers and their independence from credit institutions. Fourth, there are specialized institutions and organizations for valuation of collateral that provide training, certification and ongoing education of appraisers, which contributes to maintaining a high level of professionalism in the industry.

Finally, in practice, many countries have developed unique approaches and technologies for processing collateral transactions, including the use of digital technologies and automated valuation systems. Comparing the experience of the US, Germany and the UK, one can see interesting differences and similarities in approaches to valuation of collateral.

USA:

In the United States, the collateral assessment process is highly regulated at the federal level. There are clear assessment standards (Uniform Standards of Professional Appraisal Practice - USPAP) that all assessors must follow. The country actively uses automated collateral assessment systems based on the analysis of a large amount of data. This allows you to quickly and efficiently assess the value of collateral.

Germany:

In Germany, the field of collateral valuation is also highly regulated, but it is distinguished by a greater emphasis on manual valuation and expertise. In addition to assessing the market value, Germany also applies the principle of sustainable value (Beleihungswert), which provides for a more conservative assessment of the value of real estate, taking into account potential risks.

United Kingdom:

In the UK, the approach to assessing collateral is flexible. The valuation of collateral is carried out by licensed appraisers in accordance with the standards of the Royal Institution of Chartered Surveyors (RICS). The collateral valuation system in the UK is notable for its openness to innovation, and digital and automated valuation is currently on the rise.

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[1] Created by the author

In general, it can be said that in all three countries the valuation of collateral attaches great importance to reliability and accuracy, although approaches to achieving these goals may differ significantly.

Discussion.

Foreign experience in valuation of collateral emphasizes the importance of a diversified approach to the process. Different valuation methods may be applied depending on the type of collateral, its characteristics and market conditions. Based on this experience, developing countries can adapt these methods and customize them to their unique circumstances. However, institutional and regulatory considerations are also important to consider, as effective collateral valuation requires transparent and stable financial markets, reliable real estate and collateral data, and trained valuators.

Due to the significant differences in collateral valuation approaches in the US, Germany, and the UK, as well as the unique market characteristics of each of these countries, it is important to be careful when applying any of these approaches in other contexts.

However, certain conclusions and lessons can be learned:

1. Automation and digitalization: The US and UK are actively using automated valuation systems, which allows for fast and accurate collateral valuation. These aspirations may well be applied in other countries, given the global digitalization trends. At the same time, it is necessary to take into account the risks associated with automation, such as vulnerability to data manipulation and the unpredictability of artificial intelligence.

2. Balance between market and sustainable value: Germany offers an interesting approach using sustainable value in addition to market value. This may be of particular interest to countries with unstable property markets or high levels of economic uncertainty.

3. Strict regulation and professional standards: All three countries adhere to strict professional standards and regulation in the field of collateral valuation. This highlights the importance of having clear and transparent rules in this area.

Based on these findings, countries seeking to improve their collateral valuation systems can explore these different approaches and apply the relevant aspects in their own context, taking into account the specifics of their markets and economic conditions.

Conclusion.

Valuation of collateral is a complex process that requires specific skills and knowledge. Foreign experience offers valuable lessons for developing countries seeking to improve their assessment systems. In doing so, it is important to remember that each country is unique and must adapt generally accepted assessment methods to its own conditions and circumstances. Collateral valuation plays a critical role in bank lending and we can explore different approaches and strategies based on foreign experience in the US, Germany and the UK. Based on this experience, we can draw the following conclusions:

1. Technology: The use of new technologies, including automated valuation systems, can significantly improve the efficiency and accuracy of collateral valuation. However, it is important to consider the possible risks associated with this approach.

2. Valuation sustainability: Germany's approach to using sustainable value in addition to market valuation can be particularly useful in an environment of economic uncertainty and volatility in real estate markets.

3. Regulation and standards: Clear and transparent professional standards and regulation, as in the US, Germany and the UK, are key to maintaining trust and predictability in the collateral valuation industry.

In general, foreign experience offers many lessons and strategies that can be applied in other contexts. However, it is important to remember that each approach requires adaptation to the unique conditions and characteristics of a particular market. Critical analysis and understanding of foreign experience can significantly contribute to the development and improvement of the collateral assessment system in each country.

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Rezyume: Ushbu maqolada bank kreditlari bo'yicha garovni baholash bo'yicha xorijiy tajriba to'liq tahlil qilingan. AQSh, Germaniya va Buyuk Britaniyadagi misollarga e'tibor qaratib, tadqiqot ushbu mamlakatlarda qo'llaniladigan turli yondashuv va strategiyalarni ochib beradi. Maqolada baholashning asosiy tamoyillari va usullari, ularning afzalliklari va kamchiliklari, shuningdek, garovni baholash sohasidagi dolzarb muammolar va istiqbollar ko'rib chiqiladi.

Резюме: Эта статья представляет собой тщательный анализ зарубежного опыта в оценке залога для банковских кредитов. Сосредоточиваясь на примерах из США, Германии и Великобритании, исследование обнаруживает различные подходы и стратегии, применяемые в этих странах. Статья рассматривает ключевые принципы и методы оценки, их преимущества и недостатки, а также актуальные вызовы и перспективы в области оценки залога.

Kalit so'zlar: garovni baholash, bank kreditlari, xorijiy tajriba, AQSH, Germaniya, Buyuk Britaniya, baholash usullari, baholash muammolari.

Ключевые слова: оценка залога, банковские кредиты, зарубежный опыт, США, Германия, Великобритания, методы оценки, вызовы оценки.

WAYS TO ENSURE THE FINANCIAL STABILITY OF BUSINESS SUBJECTS

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Summary: Ensuring the liquidity of economic entities is a prerequisite for the expansion, technical and technological re-equipment of their production. Also, ensuring financial stability allows you to timely and fully make payments on the obligations of business entities.

The article identifies urgent problems related to ensuring the financial stability of economic entities and develops scientific proposals aimed at solving these problems.

Key words: financial stability, net profit, profitability, asset, capital, inflation, devaluation, cash, accounts receivable, investment, liabilities.

Introduction. The Development Strategy of New Uzbekistan for 2022-2026, approved by the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 No. PF-60, further development of the export potential of local industries, introduction of standards that meet foreign markets and international requirements, and popular attracting brands, increasing the share of the private sector in exports to 60%, dramatically increasing the volume of geological exploration, attracting private investors and advanced foreign companies to the industry, continuously providing the economy with electricity, and actively introducing "Green Economy" technologies to all areas of the economy, increasing energy efficiency by 20%, diversifying the activities of enterprises are recognized as necessary conditions for the sustainable development of the country's economy [1].

This, in turn, creates the need to ensure the financial stability of economic entities.

Literature review. According to S. Tolkacheva's conclusion, the financial stability of enterprises directly depends on the improvement of the cost management system, in which the diversification of production plays an important role. Therefore, it is necessary to choose complex decisions that cover diversification directions. In this case, an option based on the use of two directions can be selected at the same time, and the directions of diversification may change [2].

According to a group of economists, the underdevelopment of financial markets in developing countries and countries with economies in transition does not allow companies to increase the volume of financing costs [3].

According to B.Berkinov and Sh.Ergashkhojaeva's conclusion, transaction costs, regardless of their form, can be defined as costs of economic interaction. Transaction costs include the costs of making decisions, developing plans and organizing activities, negotiating the content and conditions of activities in cases where two or more participants enter into business relations; the costs of changing plans, revising the terms of the transaction and resolving conflicting issues if required by the changed circumstances; covers the costs of ensuring that participants adhere to the agreements reached. Transaction costs, as well as the inefficiency of joint decisions, developed plans, concluded contracts and established structures; react ineffectively to changed conditions; including any losses arising from ineffective protection of agreements. In a word, this type of costs is not directed directly to the production of economic benefits, but includes any necessary costs that ensure the successful implementation of this process [4].

According to J. Isakov's conclusion, no matter how perfect the procedure and rules for the protection means ensuring the fulfillment of obligations are, as the society progresses and relations improve, the risk of obligation execution, especially for the creditor, the serious problem of

collecting the loan amount and accrued interest from the debtor has always remained. Because in the process of lending, any person whose financial condition is highly assessed and who is deemed to have the ability to fulfill obligations, falls into a helpless situation under the influence of objective and subjective reasons in the process of using the loan funds, creates a problem for the creditor to recover not only the extra interest, but also the loan funds. Therefore, the creditor should always insist on perfecting the requirements and rules for the security, which is considered as a guarantee of the performance of the obligation [5]. According to A. Burkhanov, there are indicators indirectly describing the stability of industrial enterprises, the main of which are the following:

- inflation rate;
- rate of depreciation (devaluation) of the national currency;
- level of state budget deficit;
- level of public debt [6].

According to M. Ismailova's conclusion, leasing is the most effective way of financing the production activities of economic entities operating in the agricultural sector [7].

According to Sh.Abdullaeva's conclusion, "while collecting debt from the buyer and preventing credit risk, the factoring company performs the processes related to the export operations of the industrial firm, which functions of a commercial bank and an insurance company at the same time" [8]. According to T. Bobakulov's conclusion, "the low monetization coefficient deepens the problem of non-payment in the economy, weakens the cash flow of economic entities, hinders the stimulation of solvency, and creates a relatively negative effect on the speed of money circulation" [9].

Analysis and results. In assessing the financial stability of economic entities, indicators of profitability of assets and profitability of capital were widely used. Both indicators represent the level of net profit. The return on assets ratio represents the level of net profit relative to total assets, while the return on equity ratio represents the level of net profit relative to total capital.
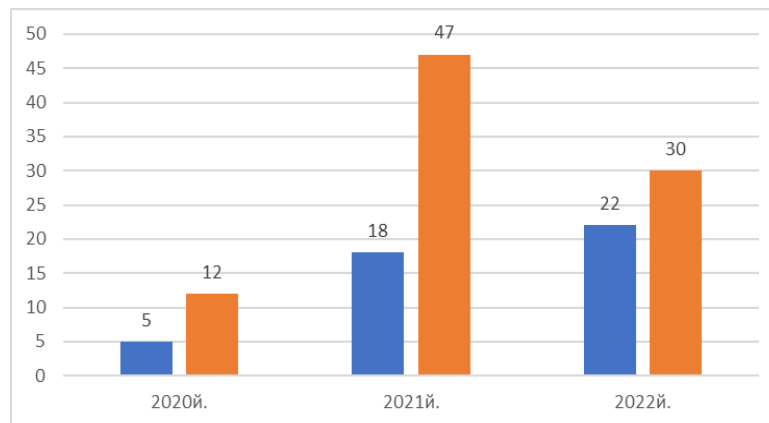
1- picture. "Profitability of assets and capital in Uzmetkombinat JSC, in percent[2]

From the data of Figure 1, it can be seen that the profitability of assets in "Uzmetkombinat" JSC had a growing trend in 2020-2022.

From the data of Figure 1, it can be seen that the profitability of capital in "Uzmetkombinat" JSC increased significantly in 2021 compared to 2020, but decreased significantly in 2022 compared to 2021. The financial stability of economic entities directly depends on the weight of the cost in the volume of income.

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[2] The figure was compiled by the author based on the financial reports of "Uzmetkombinat" JSC.

1-table

The weight of the cost in the volume of revenue from the sale of products in "Uzmetkombinat" JSC and "Uzbekkomir" JSC, in percent[3]

	2018 y.	2019 y.	2020 y.	2021 y.	2022 y.
Uzmetkombinat	75,5	78,5	81,8	82,8	70,7
Uzbekkomir	58,5	74,4	83,4	66,2	54,3

From the data of Table 1, it can be seen that the weight of the cost in the volume of revenue from the sale of products in "Uzmetkombinat" JSC was high in 2020-2022. This is a negative situation from the point of view of ensuring the financial stability of the enterprise.

From the data of Table 1, it can be seen that the weight of the cost in the revenue from the sale of products in "Uzbekkomir" JSC has a tendency to decrease in 2020-2022. This is a positive situation from the point of view of ensuring the financial stability of the enterprise.

The profitability index of assets is an important indicator describing the financial stability of the enterprise, and it is one of the important factors of ensuring its competitiveness. This is because net profit plays an important role in increasing the ability of enterprises to attract funds and expand their operations; ensuring a stable growth rate of assets plays an important role in expanding and modernizing the activities of enterprises. Admittedly, the failure to fulfill the tasks set in the localization programs does not allow reducing the level of import dependence of economic entities. In such conditions, the fact that the national currency continues to depreciate and its rate of depreciation is high does not allow to reduce the prices of industrial products. Also, the high rate of depreciation of the national currency leads to an increase in the price of imports. This has a negative impact on the investment activity of economic entities.

The low profitability of the assets of economic entities prevents them from increasing their credit solvency. This reduces their ability to replenish working capital through short-term loans from commercial banks. Also, in June 2017, the refinancing rate of the Central Bank of the Republic of Uzbekistan was sharply increased (by 5 percentage points), which led to an increase in the interest rates of commercial banks' loans. This reduced the possibilities of enterprises to use loans from commercial banks. In 2017, compared to previous years, the refinancing rate of the Central Bank, the average annual interest rate of commercial banks' loans in soums increased dramatically. This creates a negative impact on the financing of the working capital of enterprises through loans from commercial banks. In addition, the increase in the price of the borrowed funds also causes the increase in the cost of loans [10]. In our opinion, in order to ensure the financial stability of economic entities, it is necessary to implement the following measures:

1. In order to increase the level of financial stability of economic entities by ensuring the stability of cash flows, first, by forming a reasonable composition of current assets and current liabilities, it is necessary to reach the standard level of the current liquidity coefficient (1.25%); secondly, the formation of short-term investments and ensuring a high growth rate of short-term investments should not be allowed to reduce the weight of money in the volume of current assets; thirdly, it is necessary to improve the theoretical knowledge and strengthen the practical skills of the employees of the treasury department on the basis of subordinating the treasury department to the Supervisory Board of joint-stock companies and organizing continuous training of employees of the treasury department.

2. In order to reduce the weight of the cost of products in the volume of income from the sale of products, first of all, it is necessary to improve the process of forming the innovation portfolio of

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[3] The table was compiled by the author based on the financial reports of Uzmetkombinat JSC and Uzbekkomir JSC.

enterprises; secondly, it is necessary to ensure the proportionality between the growth rate of net profit and the growth rate of assets; thirdly, it is necessary to increase the possibility of financing enterprises' activities aimed at reducing costs by issuing tax credits. In the tax credit, the tax payer's liability is reduced on the basis of deferral of tax payment. The tax credit is determined as a percentage of the amount of innovation costs and is deducted from the amount of profit tax.

Tax credits encourage the innovative enterprise to pay taxes on time and in full. Because the amount of the tax credit will be returned to the enterprise and it will use this amount to finance research and development works. The tax credit increases the enterprise's interest in the development and production of new products. Because shortening this term increases the amount of tax credit. Support through tax incentives is an effective form of state support for innovative activities. The advantage of tax policy is that it covers all aspects of innovation-related activities.

To use the support through tax credits, the company must have made expenses in the field of innovation. Support through tax incentives is aimed at increasing the innovative activity of enterprises, increasing the sources of financing innovative processes from their own funds. Tax incentives reduce bureaucracy and reduce costs. Because there is no need for state evaluation of the innovative project and enterprise in support through tax incentives.

The state can also support innovative activities of enterprises through state orders. In this, first, the state orders private innovative companies to develop technologies; secondly, the strong competition between innovative active companies allows to increase the quality of state innovative developments and reduce costs.

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Rezyume: *Xoʻjalik yurituvchi subyektlarning likvidligini taʼminlash ularning ishlab chiqarishini kengaytirish, texnik va texnologik qayta jihozlashning zaruriy shartidir. Shuningdek, moliyaviy barqarorlikni taʼminlash tadbirkorlik subyektlarining majburiyatlari boʻyicha toʻlovlarni*

o'z vaqtida va to'liq amalga oshirish imkonini beradi. Maqolada xo'jalik yurituvchi subyektlarning moliyaviy barqarorligini ta'minlash bilan bog'liq dolzarb muammolar belgilab berilgan va ushbu muammolarni hal qilishga qaratilgan ilmiy takliflar ishlab chiqilgan.

Резюме: *Обеспечение ликвидности хозяйствующих субъектов является обязательным условием расширения, технического и технологического перевооружения их производства. Также обеспечение финансовой устойчивости позволяет своевременно и в полном объеме производить расчеты по обязательствам субъектов хозяйствования. В статье обозначены актуальные проблемы, связанные с обеспечением финансовой устойчивости хозяйствующих субъектов, и разработаны научные предложения, направленные на решение этих проблем.*

Kalit so'zlar: *moliyaviy barqarorlik, sof foyda, rentabellik, aktiv, kapital, inflyatsiya, devalvatsiya, pul mablag'lari, debitorlik qarzlari, investisiyalar, passivlar.*

Ключевые слова: *финансовая устойчивость, чистая прибыль, рентабельность, актив, капитал, инфляция, обесценение, денежные средства, дебиторская задолженность, инвестиции, обязательства.*

UDC: 373.2:37.09
K 18

IMPROVING THE QUALITY OF EDUCATION OF NON-STATE PRESCHOOL EDUCATIONAL INSTITUTIONS ORGANIZED IN A STATE-PRIVATE PARTNERSHIP

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Summary: *The article tells about the improvement of the types of preschool education organizations in our country, the tasks they solve in raising our children, especially the tasks of developing preschool education organizations of the new public-private partnership, as well as the problems they face in improving the quality of education. Including the comprehensive development of the child's personality by improving the quality of education in the organization, the formation of competencies in the child, the enrichment of centers that develop children with the necessary resources for quality education every day, the creation of favorable conditions for this in that environment, the widespread use of information and communication technologies, are put forward ideas of raising children's interest, their physical and psychological education, educating future generations with strong intellectual abilities and love for their country.*

Key words: public-private partnership, UNICEF, preschool education, private sector, private entrepreneur, First Step, competencies, development centers.

In contemporary world, as modern technologies are developing at a rapid pace, there are tendencies to search for the abilities, talents, passions and different individual psychological characteristics of young people.

The formation of a young generation as a person, mental development, and excellent upbringing begins with educational institutions before school. The effective organization and management of this process serves as a condition for ensuring the continuity of the educational system, because the pedagogical process conducted with young and pure souls is related to who they will become in the future, what kind of civic position they will take. Pre-school education is the most important part of education, so it is the most valuable period for a child to become a "perfect person".

At the same time, in the field of education of our country, a lot of attention is being paid to preschool educational institutions. Chains of pre-school education institutions have been expanded a lot, and at the same time, great attention has been given to the issue of public private cooperation. A special law, decrees and decisions of the President were adopted on this matter. In order to create the necessary conditions for providing children with pre-school education, the private sector has been expanded, and private business entities have been fully supported in this work.

Resolution of the President of the Republic of Uzbekistan dated 5.04.2018 No. PP-3651 "On measures to further stimulate and develop the preschool education system", Decision of the President of the Republic of Uzbekistan No. PP-3980 "On the first measures to create a legal and institutional basis for the development of public-private partnership" (October 20, 2018), Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 1009 "On the establishment of the Public-Private Partnership Development Agency under the Ministry of Finance of the Republic of Uzbekistan" (December 13, 2018), the Law of the Republic of Uzbekistan No.537 "On Public-Private Partnership" (May 10, 2019) , decision No. 259 "On improving the procedure for the

implementation of public-private partnership projects" (April 26, 2020), and other normative legal documents related to this field will be implemented in the work of preschool educational institutions under state individual cooperation.

During the implementation of the tasks defined in these documents, the tasks of improving the quality of education and upbringing of the public private cooperative preschool educational institutions have been established in the field of preschool education. Today, the development of this field of preschool education is becoming a necessity.

In accordance with the above decisions, at the end of 2022, in the Republic of Karakalpakstan, 166 (total capacity 16335 places) public-private cooperation agreements were established between the Ministry of Preschool Education and entrepreneurs, and at the same time these organizations are providing education to children [1-1].

Today, rapid development of the field of preschool education has become a vital necessity and to achieve this, it is very important to use the opportunities of public-private cooperation and to adapt it to the field of preschool education and to improve the quality of education there.

Analysis of the relevant literature on the wide use of the public-private cooperation service is being conducted by a number of scientists from the countries of the Commonwealth of Independent States, including K. A. Kasamonova, E. V. Gorchakova, P. Snelson, E. Korovin, M. Pazdnikov, V. G. Varnavsky, A. V. Klimenko, V. A. Korolev studied to some extent. In the scientific literature, scientists have presented many scientific experiments devoted to the study of issues of public-private partnership. Among them, our country's scientist U. I. Djumaniyazov defines public private partnership, based on the long-term strategic tasks and goals of the state within the framework of current laws, various economic, political, social, cultural and other risks, dangers, risk distribution as literally mutually beneficial relations with the private sector for the construction of extremely socio-economically and politically important objects for the population or for the provision of social services in this context. At the same time, the question arises as to what the quality of education is like in this public-private cooperative pre-school educational institutions.

In Appendix 1 of Resolution of the President of the Republic of Uzbekistan dated 5.04.2018 No. PP-3651 "On measures to further stimulate and develop the preschool education system" on Chapter 5 "Rights and Obligations of the Parties to the Agreement", Clause 34 of the Law "Creation of favorable conditions for ensuring high quality of education and training, identification and support of talented children" is stated [3-3]. In fact, in order to ensure the high quality of education and training in today's rapidly developing conditions, we must first of all train new personnel, improve their knowledge, and gain pedagogical skills.

When choosing personnel, we need to choose them based on their expertise, competence and experience in this field, and by creating favorable conditions for them, we can increase the quality of education to students. By using the necessary inventories, tools, handouts, brochures, to provide quality education, we can arouse interest and ability in students. In addition, through multimedia, television, computer, electronic boards, we can make daily activities interesting and quickly understandable, concise and colorful.

In the system of preschool education, the main regulatory document for providing quality education to children in public-private partnership preschool educational institutions is the "First Step" curriculum. This curriculum was developed in 2018 in cooperation with the Ministry of Preschool Education of the Republic of Uzbekistan and the International Children's Fund in Uzbekistan of the UNICEF, UN.

The uniqueness of this program is its alternative, flexibility in providing modern education to children, taking into account the needs of each child, individual differences of children, awakening their passions, developing creativity, therefore, it consists of developing variative programs based on the work experience of the coach-pedagogue. The main goal of this program is to create competences in children, that is, to form communicative, social, individual and cognitive competences. The child's competencies are determined in the following areas of child development:

● physical development and formation of a healthy lifestyle
● community-sensitivity development
● verbal, conversational, reading and writing skills
● the development of the cognitive process
● artistic development. [4-19]

Here, we can improve the quality of education by forming the above competences in children in these fields. Development centers help us for this.

Development centers mean to deliver each piece of information easily, according to the child's language and understanding, with the necessary materials and graphic tools related to the topic, and at the same time, using them in practice with their own hands and making it interesting.

● building, making, construction and mathematics center,
● a center for role-playing dances and dramatization,
● language and speech, conversation center,
● science and nature center,
● beautiful craft center.

Through these development centers, we can increase the child's abilities, form his passion for science, enrich his vocabulary, develop his logic, and improve the quality of education.

In order to make it understandable and interesting for children, we can easily instill knowledge in their minds in the form of dance, making extensive use of ICT tools. Of course, we rely on assessment measures to determine the extent to which children are mastering this knowledge. It is of great importance that "developmental maps" are provided, which are evaluated and determined in each group in order to evaluate the indicators of development of children by areas. Therefore, the coach and relevant pedagogues evaluate and determine the indicators of the children's development in each age group. This means that the coach evaluates and develops the knowledge and skills that the child needs to acquire at that age. This leads to individual work with each child, their formation as a person.

Public-private partnership in the field of preschool education in our country is one of the priority tasks of the state policy to ensure the quality of education in preschool educational institutions. Therefore, our honorable President Sh. M. Mirzieyov states: "... we need to start the quality of education from the preschool stage, the main foundation of education and upbringing..." It is a good goal for pedagogues to provide quality education to children, to provide quality education to future teachers and to form professional skills that meet the requirements of the time and have modern perspectives.

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Rezyume: *Maqolada ayni vaqtda mamlakatimizda maktabgacha ta'lim tashkilotlarining turlarining takomillashuvi, kichkintoylarimizni tarbiyalashda ularning bajarayotgan vazifalari, ayniqsa yangi davlat xususiy –sherikliktagi maktabgacha ta'lim tashkilotlarining rivojlanish borasidagi amalga oshirilayotgan vazifalar va ta'lim sifatin oshirish bilan ulardagi bo'layotgan muammolar ham so'z etilgan. Shu jumladan tashkilotda ta'lim sifatın oshirish orqali bola shaxsini atroflicha rivojlantirish, bolada kompetenciyalar hosil qilish, har kuni bolalar sifatlı ta'lim olish uchun rivojlantiruvchi markazlarni kerakli resurslar bilan boyıtıp borish, buning uchun o'sha muhitda qulayli shart-shart-sharoitlar yaratush, xabar kommunikaciya texnologiyalarinan kengnan foydalanish orqali bolalarning qiziqishini uyg'otib, ularni jismoniy, psixologik tarafdan tarbiyalash orqali kuchli intellektuallik qobiliyatga ega, Vatanini sevadigan kelajak avlodlarini tarbiyalashdek g'oyalar olg'a qo'yilgan.*

Резюме: *В статье рассказывается о совершенствовании видов организаций дошкольного образования в нашей стране, задачах, которые они решают в воспитании наших детей, особенно задачах развития организаций дошкольного образования нового государственно-частного партнерства, а также проблемах, с которыми они сталкиваются при совершенствовании качество образования. В том числе всестороннее развитие личности ребенка путем повышения качества образования в организации, формирование компетенций у ребенка, обогащение центров, развивающих детей, необходимыми ресурсами для качественного образования каждый день, создание для этого благоприятных условий в той среде, широкое использование информационных и коммуникационных технологий, выдвигаются идеи воспитания интереса детей, их физического и психологического воспитания, воспитания будущих поколений с сильными интеллектуальными способностями и любовью к своей стране.*

Kalit so'zlar: *davlat-xususiy sheriklik, UNICEF, maktabgacha ta'lim, xususiy sektor, xususiy tadbirkorlik subekti, "Ilk qadam", kompetentlik, rivojlantiruvchi markazlar.*

Ключевые слова*: государственно-частное партнерство, ЮНИСЕФ, дошкольное образование, частный сектор, частный предприниматель, «Первый шаг», компетенции, центры развития.*

BUSINESS MANAGEMENT STRUCTURE IN THE MODERN WORLD: TRENDS, CHALLENGES AND PROSPECTS

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Summary: This article explores the modern structure of business management and examines the trends, challenges and prospects for its development. The author addresses three main aspects: digitalization and automation, flexible organizational structure and the role of corporate culture in successful management. Based on data analysis and analytics, companies can optimize business processes and make informed decisions. Flexible management structures and innovative thinking of employees contribute to adapting to changing market conditions. A responsible and sustainable approach to management allows companies to successfully cope with the challenges of modern business and ensure sustainable development.
Keywords: Business management, management structure, digitalization, automation, flexible organizational structure, corporate culture, business intelligence, innovation, sustainable development.

Introduction.

Managing a business in today's world has become a complex and dynamic task driven by rapid advances in technology, international competition and changing consumer needs. In this regard, entrepreneurs and company leaders are faced with the need to adapt their management methods to succeed in such a complex environment. In this article, we will consider the modern business management structure, identify the main trends that affect its evolution, and also consider the challenges and prospects that managers face.

Trends in the structure of business management

In the context of globalization, the active process of internationalization, the rapid development of information technology and telecommunications, as well as significant socio-economic changes, there is a need to improve management methods and techniques. Companies strive to find new and more effective approaches to management, generalize practical knowledge and apply innovative solutions to deal with the challenges of modern business (Andrea Cambalikova, 2021).

Trends in the structure of business management cover several aspects that are becoming increasingly relevant in today's world. These trends determine how companies organize their activities, make decisions and interact with customers and employees. The following trends are observed in the modern world:

Digitization and automation.

Digital transformation is becoming an important component of business development. With the development of digital technologies and artificial intelligence, companies are faced with the possibility of automating routine tasks and processes. Automation allows you to reduce labor costs, reduce the risk of errors and increase the efficiency of interaction with customers.

When integrating digital technologies into an organization, there is an interaction with its organizational and managerial aspects, especially taking into account the strategy and historical experience of the company. In addition, interaction occurs with resources, business processes, values

and corporate culture, affecting the effectiveness and success of digital innovation (Calderon-Monge, E., Ribeiro-Soriano, D, 2023).

The introduction of digital platforms and tools for business management is becoming a necessity in order to quickly respond to market changes, make informed strategic decisions and improve the efficiency of business processes.

Flexible organizational structure.

Traditional hierarchical management structures based on rigid vertical chains of command face limitations in today's dynamic environment. Many companies are moving towards more flexible organizational models based on teamwork and decentralized decision making. In such a structure, employees have more autonomy and responsibility, which contributes to faster decision-making and adaptation to rapidly changing market conditions.

Increasing the role of corporate culture.

Corporate culture is becoming a key factor in successful business management. The culture of the company determines the system of values, norms of behavior and relationships between employees and management. Successful companies actively shape their corporate culture, which reflects the organization's values, goals, and strategic priorities. A properly designed and maintained corporate culture stimulates the motivation of employees, increases their loyalty and involvement in work, which ultimately increases the efficiency of the company as a whole.

This approach recognizes the diversity of roles in the formation and development of corporate culture. It takes into account both official positions and informal spheres of influence, reflecting the real dynamics of the work of organizations today. In addition, this approach allows you to clearly define the responsibility for achieving specific results in the company (Denise Lee Yohn, 2023).

Approach "Employee - consumer".

In today's world, employees are becoming more independent and demanding, and their needs and expectations are becoming ever more diverse. This leads to the need to change the approach to personnel management. Companies are increasingly focused on meeting the needs of employees and creating favorable conditions for their development and professional growth. Caring for employees as consumers of the company is becoming a key element in attracting and retaining talented employees.

Implementation of agile methodologies:

Agile management methodologies have become popular in modern companies. They allow more flexibility in product development and project management, helping to quickly adapt to changes and providing greater transparency and openness in communications between employees. Agile methodologies help to improve communication between different departments of the company and increase overall work efficiency. These trends indicate the need for continuous development and improvement of the business management structure. Companies that wisely adapt to changing conditions and take into account these trends can gain a competitive advantage and ensure successful development in today's business world.

Challenges in the modern business management structure

The challenges in the modern business management structure are diverse and require specific strategies and solutions to overcome them. Below are the main challenges that affect business management in the modern world, as well as proposed approaches for solving.

Challenges	Approaches to overcome
Competition and globalization	Proactively analyze the market and competitors, develop unique customer experiences, strategically enter international markets, and build effective international partnerships.

Crises and uncertainty	Building reserves and reserves to mitigate the effects of crises, building a flexible and responsive organizational structure, strengthening relationships with customers and partners to jointly deal with uncertainty.
Technology Development	Implementation of innovative technologies, strengthening of digital transformation, hiring of specialists with competencies in the field of technological development and cybersecurity.
Competition and globalization	Proactively analyze the market and competitors, develop unique customer experiences, strategically enter international markets, and build effective international partnerships.

Competition and globalization present significant challenges for modern companies. The struggle for market leadership requires high management efficiency and a strategic approach. Companies must actively study the market and competitors in order to identify their competitive advantages and develop unique offers for customers. Expanding into international markets and building effective international partnerships can also help strengthen a company's position.

Crises and uncertainty can seriously affect a business. Companies must be ready for rapid change and have a flexible organizational structure. Building relationships with customers and partners and building reserves and reserves to mitigate the effects of crises will help increase a company's resilience to uncertainty.

Advances in technology open up new business opportunities, but also require active adaptation and integration of new technologies. The introduction of innovative technologies and digital transformation can significantly increase the efficiency of business processes and provide a company with a competitive advantage.

Effective overcoming of these challenges requires an integrated approach that takes into account the characteristics of each challenge and the specifics of the company. The main elements of successful management in the modern business structure are strategic planning, flexible organizational structure, innovative approaches and active personnel development.

Prospects for the development of the business management structure

The prospects for the development of the business management structure indicate important directions for ensuring the efficiency and success of companies. The introduction of data integration and business intelligence will allow companies to make informed decisions based on accurate analytical data. The sustainable development of companies is becoming increasingly important, and the implementation of responsible business principles will allow considering environmental and social aspects in the management strategy. Culture-driven innovation and creativity will help companies adapt to change and create unique solutions to grow and overcome the challenges of today's business.

Data integration and analytics

In an information society where the volume of data is growing exponentially, data integration and the application of analytical methods become essential for effective business management.

Large volumes of data provide significant benefits to companies as they provide accurate and consistent business information, automated real-time transaction solutions, and enable fraud detection (Apurva Mhatre, Vantika Mahalingam, et al, 2021).

Data analytics allows you to extract valuable insights from large volumes of information, which in turn helps to predict market trends, identify customer needs and optimize business processes. Data-driven management systems allow you to make informed decisions based on facts and figures.

Sustainable development

The theme of sustainability and responsible business is increasingly relevant in today's world, where organizations are aware of their social responsibility and impact on the environment. Companies should consider environmental, social and ethical considerations when developing management strategies. Responsibility to society and the environment is becoming a key component of the corporate culture and mission of the company. Integrating sustainability principles into strategies and operations can not only strengthen a company's reputation, but also create new opportunities for innovation and development.

Innovation and creativity

Rapid advances in technology and increased competition challenge companies to be innovative and creative. The management of the company should encourage innovative thinking of employees and create conditions for the implementation of new ideas. A culture of innovation and creativity enables the company to adapt to rapidly changing market conditions, develop new products and services, improve processes and increase business efficiency. In addition, innovation can be a key factor in creating a company's competitive advantage in the marketplace.

Below is a table illustrating the main aspects of the development of the business management structure:

Development Aspects	Key Features
Data integration and analytics	- Implementation of management systems based on data analysis; - Application of business intelligence methods to predict market trends and optimize processes
Sustainable development	- Integrating the principles of sustainability and responsible business into the company's strategy; - Accounting for environmental, social and ethical aspects in decision-making
Innovation and Creativity	- Encouraging innovative thinking among employees; - Creation of conditions for the introduction of new ideas and the development of innovative products and services

The development of the business governance structure includes data integration and analytics focused on facts and figures. Companies must strive for sustainable development, taking into account environmental and social aspects, and also support a culture of innovation and creativity to adapt to changing market conditions and ensure competitiveness.

Conclusion.

The structure of business management in the modern world is a key factor in achieving success and sustainable development of the company. Today's organizations face a number of challenges related to a rapidly changing economic and technological environment, as well as increasing competition and the globalization of markets. To overcome these challenges and ensure effective management, companies must be ready to adapt and innovate.

Technology integration and digitalization play an important role in the modern business management structure. The development of information technology and business intelligence provides companies with opportunities to more accurately predict market trends, identify customer needs and optimize business processes. The use of digital platforms and the integration of data allow informed decisions based on facts and figures, which contribute to increased efficiency and responsiveness of management.

A flexible organizational structure is becoming an important aspect of modern business management. Traditional hierarchical models are giving way to command structures that promote

faster decision-making and effective interaction between employees. Teamwork allows companies to adapt faster to changing conditions, respond faster to customer requests and respond more flexibly to market challenges.

However, along with technological and structural aspects, the role of corporate culture is becoming increasingly important for successful business management. The culture of the company has a significant impact on the motivation of employees, their loyalty and interaction with customers and partners. Building a corporate culture that reflects the values, goals, and strategic priorities of an organization helps build a strong and united team capable of working towards shared success.

In the future, the development of the business management structure should actively develop data integration and analytics to ensure predictability and responsiveness in decision making. It is also worth paying special attention to the aspects of sustainable development and responsible business, introducing the principles of sustainability into all levels of management. Innovative thinking and creativity of employees should become an integral part of the corporate culture to ensure that the company is ready for constant change and stimulate the search for new solutions and approaches [5].

In general, the structure of business management in the modern world has a significant impact on the success of the company. Proper integration of technologies, flexible organizational structure and maintenance of corporate culture values are the main components of successful management in today's business environment. Only with constant development and adaptation to changing conditions will companies be able to achieve outstanding results and ensure sustainable development in a dynamic business world.

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Rezyume: Ushbu maqola biznesni boshqarishning zamonaviy tuzilmasini o'rganadi va uning rivojlanish tendentsiyalari, muammolari va istiqbollarini ko'rib chiqadi. Muallif uchta asosiy jihatni ko'rib chiqadi: raqamlashtirish va avtomatlashtirish, moslashuvchan tashkiliy tuzilma va muvaffaqiyatli boshqaruvda korporativ madaniyatning roli. Ma'lumotlar tahlili va tahliliga asoslanib, kompaniyalar biznes jarayonlarini optimallashtirishi va ongli qarorlar qabul qilishi mumkin. Moslashuvchan boshqaruv tuzilmalari va xodimlarning innovatsion fikrlashlari o'zgaruvchan bozor sharoitlariga moslashishga yordam beradi. Menejmentga mas'uliyatli va barqaror yondashuv kompaniyalarga zamonaviy biznes muammolarini muvaffaqiyatli yengish va barqaror rivojlanishni ta'minlash imkonini beradi.

Резюме: В данной статье исследуется современная структура управления бизнесом, рассматриваются тенденции, проблемы и перспективы ее развития. Автор затрагивает три основных аспекта: цифровизацию и автоматизацию, гибкую организационную

структуру и роль корпоративной культуры в успешном управлении. На основе анализа данных и аналитики компании могут оптимизировать бизнес-процессы и принимать взвешенные решения. Гибкие структуры управления и инновационное мышление сотрудников способствуют адаптации к изменяющимся рыночным условиям. Ответственный и устойчивый подход к управлению позволяет компаниям успешно справляться с вызовами современного бизнеса и обеспечивать устойчивое развитие.

Kalit so'zlar: *Biznes boshqaruvi, boshqaruv tuzilmasi, raqamlashtirish, avtomatlashtirish, moslashuvchan tashkiliy tuzilma, korporativ madaniyat, biznes razvedkasi, innovatsiyalar, barqaror rivojlanish.*

Ключевые слова: *Управление бизнесом, структура управления, цифровизация, автоматизация, гибкая организационная структура, корпоративная культура, бизнес-аналитика, инновации, устойчивое развитие.*

METHODS OF TEACHING KARAKALPAK TO OTHER LANGUAGE GROUPS

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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 (foreign) 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.*

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".

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.

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 (xorijiy) tillarda olib boriladigan ta'lim muassasalarida qoraqalpoq tilini o'qitish masalalari ko'rib chiqiladi, shuningdek, o'quvchilarning til kompetensiyalarini rivojlantirish yo'lga qo'yiladi.

Резюме: В данной статье рассматриваются вопросы преподавания каракалпакского языка в образовательных учреждениях, где обучение ведется на других (иностранных) 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.

THE ESSENCE OF THE CONCEPTS OF "NEGATIVE IDEOLOGY", "SOCIAL THREATS" AND "PSYCHOLOGICAL STABILITY"

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Summary: The article will provide a more detailed and thorough explanation of the concepts of "negative ideology", "social threats" and "psychological stability", which will describe the main features and signs of negative ideology, such as extremist, radical or discriminatory beliefs and consider various forms of negative ideology, including political, religious, nationalist and others. It will also highlight the impact of negative ideology on society and individuals, as well as ways of its spread and mechanisms of influence on the consciousness and behavior of military training cadets.

Keywords: Military training, cadet, social threats, psychological stability, negative ideology, extremism, terrorism, radicalization, cyber attacks.

INTRODUCTION.

Military training is a complex and responsible process that requires cadets not only physical fitness, but also psychological stability. In today's complex social and political situation, cadets face various social threats and stressful situations that can affect their psychological state. The disclosure of the concepts of "negative ideology", "social threats" and "psychological stability" is an important element of the article on this topic. Below is a general description of these concepts.

Negative ideology is a concept related to a system of ideas, beliefs and values that may contradict the basic principles of democracy, tolerance, respect for human rights and intercultural dialogue. Negative ideology may include extremist, radical, or discriminatory beliefs that promote violence, intolerance, or disunity in society.

Negative ideology can take various forms, including political, religious, nationalist, and others. It can stimulate and support rejection and hostility towards certain groups of people based on their racial, ethnic, religious or social affiliation. Negative ideology can also create and reinforce stereotypes, prejudices and discrimination.

It is important to note that negative ideology does not comply with the principles of a legal and democratic society, and its spread and influence can pose a threat to stability, security and harmony in society. The fight against negative ideology requires active counteraction, including the development of tolerance, education, awareness and support of mutual understanding and respect between different groups of people.

Social threats - this concept refers to various factors or situations that may pose a real danger or cause concern in society. Social threats can be associated with terrorism, extremism, radicalization, cyber attacks, conflicts between different groups or any other phenomena that violate the stability and security of society.

Terrorism is violent acts aimed at creating fear, panic and destruction of public order. Terrorist acts can be carried out by individuals, groups or organizations in order to achieve political, ideological or religious goals.

Terrorist acts may include attacks on civilians, government agencies, commercial facilities, transportation systems and other public infrastructure. They can manifest themselves in the form of explosions, gun attacks, hostage-taking, sabotage and other forms of violence. Terrorism has serious consequences for society, including the death and injury of people, destruction of infrastructure,

disruption of social stability and violation of the rights and freedoms of citizens. It can also cause psychological stress and anxiety in the population.

The fight against terrorism is one of the main tasks of State and international organizations. This includes the development of anti-terrorist strategies, strengthening security measures, coordination of intelligence and operational actions, cooperation between different countries and the exchange of information. The purpose of the fight against terrorism is to ensure the safety and protection of citizens, prevent terrorist acts and punish the perpetrators.

Extremism is an ideology or practice that calls for violence, intolerance or radical changes in society. Extremist movements can promote xenophobia, racial hatred, religious intolerance and other forms of discrimination.

Extremist groups and organizations seek to achieve their goals through the use of violence or the threat of violence. They can carry out terrorist acts, attack representatives of certain groups or public institutions, as well as use propaganda and preaching to spread their ideology. Extremism can take various forms, including political extremism, religious extremism, nationalist extremism and others. It can pose a serious threat to public safety, social stability and international security.

The fight against extremism is an important task for State and international organizations. It includes the development and implementation of anti-extremist policies and legislation, the promotion of tolerance, educational activities, security and prevention of radicalization. The main goal of the fight against extremism is to ensure the security and protection of the rights and freedoms of citizens, as well as the maintenance of a peaceful and just society.

Radicalization is the process by which individuals adopt radical beliefs and begin violent actions. Radicalization can occur in a variety of contexts, including politics, religion, and ideology.

Radicalization can be caused by various factors, including social, economic, political and cultural circumstances. Some of these factors may be associated with a sense of social inequality, lack of prospects for the future, intergroup conflicts, ideological indoctrination or experiencing traumatic events. The fight against radicalization includes preventive measures, educational work and social support to prevent radicalization, as well as legal and law enforcement measures to curb extremist actions. It is important to develop tolerance, dialogue and respect for different cultures and beliefs in order to prevent radicalization and maintain peaceful coexistence in society.

Cyberattacks are attacks on computer systems and networks in order to cause damage, gain illegal access to information or interrupt the functioning of the information infrastructure. Cyberattacks can cause significant damage to both individuals and society as a whole.

Cyberattacks can take many forms, including viruses, hacks, phishing, denial of service attacks (DDoS) and many others. They can be carried out by cybercriminals, hackers, government actors or other unauthorized persons. The targets of cyberattacks can be diverse - from financial fraud and theft of confidential information to political motives and disruption of critical infrastructure.

Cyberattacks have serious consequences. They can lead to leakage of personal information, financial losses, violation of privacy, disruption of business processes, interruption of critical systems and even threaten national security. The fight against cyber attacks requires strengthening cybersecurity and developing effective protection measures. This includes the use of modern technologies, the installation of antivirus programs and firewalls, regular software updates, data encryption, training of users in network security and improving international cooperation to curb cybercrime.

Protection against cyber attacks also requires awareness and vigilance on the part of individual users. This includes the use of complex passwords, restricting access to personal information, caution when opening attachments and links in emails, as well as feedback from organizations if suspicious activity is detected. The purpose of combating cyber attacks is to ensure the security of the information infrastructure and protect the privacy and confidentiality of users on the network.

Conflicts between different groups can be ethnic, religious, political or social conflicts that arise due to differences in views, interests or resources. These conflicts can lead to violence, disunity and disruption of public order.

Ethnic conflicts may arise due to cultural differences, territorial claims or historical differences. Religious conflicts may be caused by religious differences, the desire for dominance or religious intolerance. Political conflicts can arise as a result of disputes about power, resource allocation, or different political ideologies. Social conflicts may be related to inequality, discrimination, or competition for resources.

Conflicts between different groups can have serious consequences for society. They can lead to physical and emotional violence, separation, hatred and the destruction of social unity. Conflicts can intensify and spread through propaganda, intergroup tension and violation of human rights and freedoms. The fight against conflicts between different groups requires the use of measures to overcome misunderstandings, build dialogue and establish justice. This includes outreach, education, promotion of cultural diversity, and collaboration between groups. It is also important to develop tolerance, mutual understanding and respect for differences in society.

Harmony and peaceful coexistence between different groups are the basis for the stability and development of society. Therefore, it is important to strive to eliminate the causes of conflicts, encourage cooperation and create conditions for equality, justice and mutual respect.

Social threats can disrupt stability, security and harmony in society. They require attention and response from the State, society and individuals. The fight against social threats includes strengthening legal mechanisms, developing intercultural dialogue, ensuring security and applying social policies aimed at overcoming conflicts and creating a harmonious society.

Psychological stability – this concept refers to the ability of an individual to cope with difficulties, stress and adverse situations, while maintaining mental balance. Psychological resilience presupposes the availability of resources and strategies to adapt to changing conditions, overcome difficulties and emotional trials. It includes self-confidence, a positive attitude to life, the ability to emotional regulation and flexibility in thinking.

People with psychological resilience have skills and strategies that help them overcome obstacles and challenges. They develop determination, resourcefulness and patience in finding solutions, they are not afraid of uncertainty or difficult situations.

People with an active approach to overcoming difficulties take concrete actions to achieve their goals or change an unfavorable situation. They can analyze the problem, look for alternative ways, develop action plans and take concrete steps to solve the problem. They don't expect someone else to solve their problems, but take the initiative themselves. They can seek help and support from other people, but they do not rely solely on them, but actively cooperate and work together to overcome the problem. An active approach allows people with psychological stability to feel more in control of the situation and to influence their lives more effectively. It helps them develop confidence in their abilities and gradually overcome obstacles. It also promotes the development of determination, self-discipline and motivation to achieve goals.

Flexibility and adaptability also help to reduce stress and anxiety in difficult situations. People with psychological stability do not fixate on failures or the discrepancy between reality and their expectations. They are able to adapt to new conditions, accept changes and look for new opportunities for growth and development. Flexibility of thinking and the ability to adapt to new circumstances are important qualities in today's rapidly changing world. They allow people to solve problems more effectively, overcome difficulties and adapt to changes. Flexibility and adaptability also contribute to growth and self-development, helping people adapt to new challenges and achieve success in various areas of life.

A positive attitude helps people with psychological stability to overcome difficulties and maintain emotional well-being. They can look for and see opportunities for growth, even in difficult situations. A positive attitude also helps them stay motivated and find the strength to continue their efforts and achieve their goals. A positive attitude also contributes to the development of resilience – the ability to adapt and recover from stressful situations. An optimistic attitude allows us to look at failures as temporary and surmountable obstacles, and not as inevitable failures. This helps to reduce stress levels and increase psychological stability in general.

It is important to note that a positive attitude does not mean ignoring reality or suppressing negative emotions. People with psychological stability are able to recognize difficulties and negative emotions, but they strive to find positive solutions and focus on what they can control and change in the situation. This allows them to maintain a more adaptive and resource-based attitude to life.

Self-regulation and stress management includes skills and strategies that help reduce anxiety and stress levels. People with psychological stability can use various relaxation methods, such as deep breathing, meditation or physical activity, to reduce physiological tension. They can also use self-care practices such as eating healthy, getting enough sleep, and maintaining an active lifestyle to maintain their physical and emotional well-being. People with psychological resilience can also develop positive thinking and perspective skills, which helps them cope with stress. They can find positive aspects in a situation, pay attention to their achievements and take care of their emotional well-being.

The ability to cope with difficulties is a key component of psychological stability. People with psychological resilience develop skills and strategies that help them overcome obstacles and problems in life. The ability includes: determination, resourcefulness, patience.

Determination is the ability to make decisions and act on the basis of one's goals and values, even in conditions of uncertainty or inconvenience. Determined people have a clear idea of what they want to achieve and are persistent in achieving their goals.

Resourcefulness is the ability to think flexibly and find alternative approaches to solving problems. People with psychological stability have creative thinking and the ability to see opportunities in difficult situations. They are ready to try new approaches and adapt to changing circumstances.

Patience is the ability to remain calm and steady in the long run. People with psychological stability understand that overcoming difficulties can take time and requires perseverance. They remain motivated and do not give up before difficulties, continuing to work towards achieving their goals.

Uncertainty and difficult situations do not cause them fear or panic. Instead, they see them as a challenge and an opportunity for growth and development. They are able to accept the unknown and adapt to unexpected circumstances.

Emotional regulation is an important aspect of psychological stability. People with psychological stability have the ability to effectively manage their emotions, which allows them to maintain emotional stability and avoid excessive stress or negative emotions. Emotional regulation includes several aspects: recognition of emotions, control of the expression of emotions, adaptation of the emotional state.

Emotion recognition is a person's ability to accurately identify and understand their own emotions, as well as the emotions of other people. People with psychological stability have the skills to recognize and understand their emotions.

Emotion recognition involves the ability to determine which emotion you are experiencing at a certain point in time. It can be joy, sadness, anger, fear, surprise or another emotion. People with psychological stability can accurately recognize their emotions, even if they are complex or contradictory.

Recognizing their emotions allows them to be aware of what emotions they are experiencing at a particular time. They can distinguish exactly the emotions they are experiencing, such as joy, sadness, anger, fear, excitement, etc. This allows them to better understand their reactions to certain situations and realize how emotions affect their thinking, behavior and physical condition. Emotion recognition also allows people with psychological resilience to better understand the emotional signals that other people send. They can sense and recognize other people's emotional states, which helps them better understand and interact with others.

Emotion recognition is an important skill for emotional regulation and stress management. When people become aware of their emotions, they can take measures to regulate them and adapt to different situations. This allows them to cope better with difficulties, improve communication with others and maintain mental balance. The development of emotion recognition skills can be achieved through practice and awareness of one's emotions. Techniques such as meditation, journaling, or counseling with a psychologist can be useful for developing these skills.

Controlling the expression of emotions includes not only the ability to express emotions adequately, but also the ability to restrain or modulate their emotional expressions, depending on the circumstances. This allows them to manage their behavior to avoid unwanted consequences or conflicts. For example, in some situations, it may be necessary to restrain the expression of anger or frustration in order to maintain a peaceful relationship or productive interaction. In other cases, it may be necessary to express your joy or delight in accordance with the context and expectations of the people around you.

Controlling the expression of emotions is of great importance for interpersonal relationships and social adaptation. People who can control their emotional reactions can better establish and maintain harmonious relationships with other people. They are also able to function effectively in society, taking into account the norms and expectations associated with emotional expressions. The control of emotion expression can be developed through mindfulness and practice. This includes self-observation, awareness of one's emotions and reactions, and the use of emotion regulation strategies such as breathing exercises, relaxation, or reassessment of the situation. It is also useful to develop emotional intelligence and communication skills in order to interact effectively with other people.

Emotional state adaptation – these are people with psychological stability who are able to adapt their emotional state to the requirements of the situation. They can apply emotion regulation strategies such as reassessing the situation, refocusing attention, using positive thoughts and complacency to cope with stressful situations and maintain emotional balance.

Reassessment of the situation is a strategy in which people rethink the situation, see it in a new light and change their emotional attitude to it. For example, they may look for positive aspects in a difficult situation or try to find new opportunities or lessons from it.

Refocusing attention is a strategy in which people direct their attention to other aspects or activities in order to distract themselves from stressful situations or negative emotions. For example, they can do their favorite hobby, physical activity or socializing with loved ones.

Using positive thoughts and complacency are strategies that help people change their thinking and mood. They may use affirmations or affirmations aimed at supporting positive thoughts and confidence. They may also use self-soothing techniques such as deep breathing, meditation, or visualization to reduce stress and anxiety levels.

Adaptation of the emotional state allows people with psychological stability to effectively cope with stressful situations and maintain emotional balance. They can regulate their emotions to reduce the negative effects of stress on their physical and mental health. The development of emotional state adaptation skills can be achieved through practice and awareness of one's emotions. Regular use of emotion regulation strategies, such as reassessing the situation, refocusing attention and using positive thoughts, can help strengthen the adaptation of the emotional state. It is also useful to develop mindfulness skills to be more in the present moment and respond better to emotional challenges.

Stress management – these are people with psychological stability who have stress management skills and are able to effectively cope with negative emotions associated with stressful situations. They may use relaxation strategies such as deep breathing, meditation, or physical activity to reduce physiological activation and relieve accumulated stress.

Relaxation strategies play an important role in stress management. Deep breathing, meditation, progressive muscle relaxation and other relaxation techniques can help reduce physiological activation, relax muscles and relieve stress-related tension. These strategies help restore balance and promote psychological relaxation.

Physical activity is also an effective stress management strategy. Regular exercise promotes the release of endorphins - hormones of joy and well-being. They help to relieve tension, improve mood and increase energy levels. Physical activity can also be a way to distract from stressful thoughts and focus on the physical process. In addition, maintaining social connections and communicating with loved ones can be an important factor in stress management. Conversations, support and understanding from other people can help relieve emotional stress and find solutions to overcome stressful situations.

Stress management also includes effective time planning and organization, prioritization, and the ability to delegate tasks. This helps to reduce the feeling of overload and control the level of stress associated with high workload and expectations. The development of stress management skills can be achieved through practice and awareness of one's own needs and reactions to stress. Regular application of relaxation strategies, physical activity, communication and planning will help to develop and strengthen stress management skills. It is also useful to develop self-management skills, such as setting boundaries, the ability to say "no" and finding a balance between work and personal life.

Emotional regulation is an important aspect of psychological stability, as it allows people to effectively manage their emotions, adapt to changing situations and maintain emotional stability. This contributes to better mental well-being and increases the ability to function effectively in various spheres of life.

Sustainable people believe in their own capabilities and resources. They have a positive attitude towards themselves and their abilities. They are aware of their strengths and know how to use them in their actions and decisions. Self-confidence helps them to accept challenges and set ambitious goals for themselves, as well as find motivation and determination to achieve them.

An optimistic attitude to life means maintaining a positive perspective even in difficult situations. Sustainable people see obstacles as temporary and surmountable challenges, not as inevitable failures. They find positive aspects in any situation and are able to treat failures as opportunities for growth and development. Optimism allows them to maintain energy and motivation in difficult situations, as well as influence their environment, creating a positive and supportive mood.

Self-confidence and an optimistic attitude towards life contribute to psychological stability, as they help people cope with challenges and difficulties more effectively. They create the basis for building resilience, self-efficacy and a positive mental state. In addition, self-confidence and an optimistic attitude to life can affect the quality of interpersonal relationships, productivity and success in various areas of life.

Flexibility of thinking is an important aspect of psychological stability. People with psychological stability have the ability to think flexibly and adaptively. They are able to adapt to changing circumstances, change their approaches and strategies, look for alternative solutions and revise their beliefs and values, if necessary. Flexibility of thinking allows stable people to quickly adapt to new situations and requirements. They do not get stuck in rigid attitudes or limited frames of thinking, but are ready to consider various options and perspectives. They are ready to change their positions and ideas based on new information and experience. This allows them to better adapt to changes and find optimal solutions in various situations.

Flexible thinking also promotes creative thinking and innovation. People with psychological stability are ready to look for new approaches, ideas and solutions that may be non-standard or unexpected. They are not afraid to explore new opportunities and experiment with different strategies. This allows them to be more adaptive and effective in the changing world around them.

Flexibility of thinking is also associated with the ability to take risks and learn from your mistakes. People with psychological stability are not afraid to take a step into the unknown and take meaningful risks in pursuit of achieving their goals. They see failures and mistakes as opportunities for learning and growth, and use their experience to improve their actions and strategies. Flexibility of thinking is a key component of psychological stability, because it allows you to effectively adapt to changes, overcome obstacles and look for new ways to achieve goals. It promotes the development of creative and adaptive thinking, which is important in today's rapidly changing world.

Psychological stability plays an important role in countering negative ideology and social threats. People with high psychological stability have a better ability to distract from negative influences, maintain their values and beliefs, and resist the negative influence of ideological manipulation. They may also be more motivated and able to actively participate in overcoming social threats and strive to create a stable and secure society.

CONCLUSION

In conclusion, analyzing the essence of the concepts of "negative ideology", "social threats" and "psychological stability", the following conclusions can be drawn. "Negative ideology" is a system of negatively colored beliefs and values that can have a destructive effect on society and individuals. "Social threats" refer to various factors that can cause negative changes in the social structure and generate conflicts, both intra-social and international. "Psychological stability" is the

ability of a person to cope with life difficulties, stress and negative influences while maintaining mental balance. It is formed through the interaction of internal and external resources, including personal qualities, social support and adaptive strategies.

Understanding these concepts is essential for creating a healthy socio-cultural environment. Confronting "negative ideology" and "social threats" requires awareness and collective efforts to maintain stability and harmony in society. At the same time, the development of "psychological stability" in individuals contributes to their ability to adapt to changes, overcome difficulties and actively participate in creating a favorable environment.

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Rezyume: *Ushbu maqolada "salbiy mafkura", "ijtimoiy tahdidlar" va "psixologik barqarorlik" tushunchalari batafsil tushuntiriladi, unda ekstremistik, radikal yoki kamsituvchi e'tiqodlar kabi salbiy mafkuraning asosiy xususiyatlari va belgilari tavsiflanadi va salbiy mafkuraning turli shakllari, shu jumladan siyosiy, diniy, millatchilik va boshqalar ko'rib chiqiladi. Shuningdek, salbiy mafkuraning jamiyat va shaxslarga ta'siri, shuningdek uning tarqalish yo'llari va harbiy ta'lim kursantlarining ongiga va xatti-harakatlariga ta'sir qilish mexanizmlari yoritiladi.*

Резюме: *В данной статье будет проведено более подробное и обстоятельное объяснение понятий «негативная идеология», «социальные угрозы» и «психологическая устойчивость», где будут описаны основные черты и признаки негативной идеологии, такие как экстремистские, радикальные или дискриминационные убеждения и рассмотрены различные формы негативной идеологии, включая политическую, религиозную, националистическую и другие. Также будет освещено влияние негативной идеологии на общество и индивидуумов, а также пути ее распространения и механизмы воздействия на сознание, и поведение курсантов военного обучения.*

Kalit so'zlar: *Harbiy tayyorgarlik, kursant, ijtimoiy tahdidlar, psixologik barqarorlik, salbiy mafkura, ekstremizm, terrorizm, radikallashuv, kiberhujumlar.*

Ключевые слова: *Военная подготовка, курсант, социальные угрозы, психологическая устойчивость, негативная идеология, экстремизм, терроризм, радикализация, кибератаки.*

CONSIDERING LEARNERS' LEVELS OF KNOWLEDGE IN TEACHING KARAKALPAK LANGUAGE IN FOREIGN LANGUAGE CLASSES

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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 (foreign) 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.

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.

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Rezyume: Ushbu maqolada ta'lim boshqa (xorijiy) tillarda olib boriladigan ta'lim muassasalarida qoraqalpoq tilini o'qitish masalalari ko'rib chiqiladi, shuningdek, o'quvchilarning til kompetensiyalarini rivojlantirish yo'lga qo'yiladi.

Резюме: В данной статье рассматриваются вопросы преподавания каракалпакского языка в образовательных учреждениях, где обучение ведется на других (иностранных) 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.

PRINCIPLES AND METHODS OF ORGANIZATION OF AGROCLUSTERS

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Summary: *Based on the analysis of the need to organize the activities of agricultural clusters, the article defines its principles and methods.*
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. In particular, in most countries, by using a cluster approach in the development of agriculture, the competitiveness of the products produced by agroclusters is being increased at the national and global level. 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. 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, 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.

According to the analysis of world practice, the agroclusters established in the regions of Louisiana, Oklahoma, and Washington states of the USA are the largest agroclusters in the world. In particular, the state of California is known worldwide for its wine production cluster. The United States is characterized by the management practices aimed at the production of high-tech products in the development of agroclusters. Similar agrocluster management practices are typical for EU countries such as Great Britain, Germany, France, Italy, Netherlands, Switzerland, Denmark, and Bulgaria. Also, in recent years, China, Japan, Singapore and other South-East Asian countries have implemented reforms aimed at transitioning to the practice of the USA and European countries in the management of agroclusters.

According to the analysis, the organization of agroclusters allows effective use of the agricultural development potential in the country. Taking into account the features of socio-economic development of our country, it was concluded that priority should be given to the activity of agroclusters in increasing the efficiency of using the agricultural development potential. In the economic literature, it is important to know the principles of its organization when choosing the methods of effective management of agroclusters. The principles of organizing the activity of

agroclusters in agriculture, shown in Figure 1, differ from each

Geographical

Innovative

Socio-technological cluster

Voluntary

Priority of economic interests

Public-private partnership

"Core" cluster
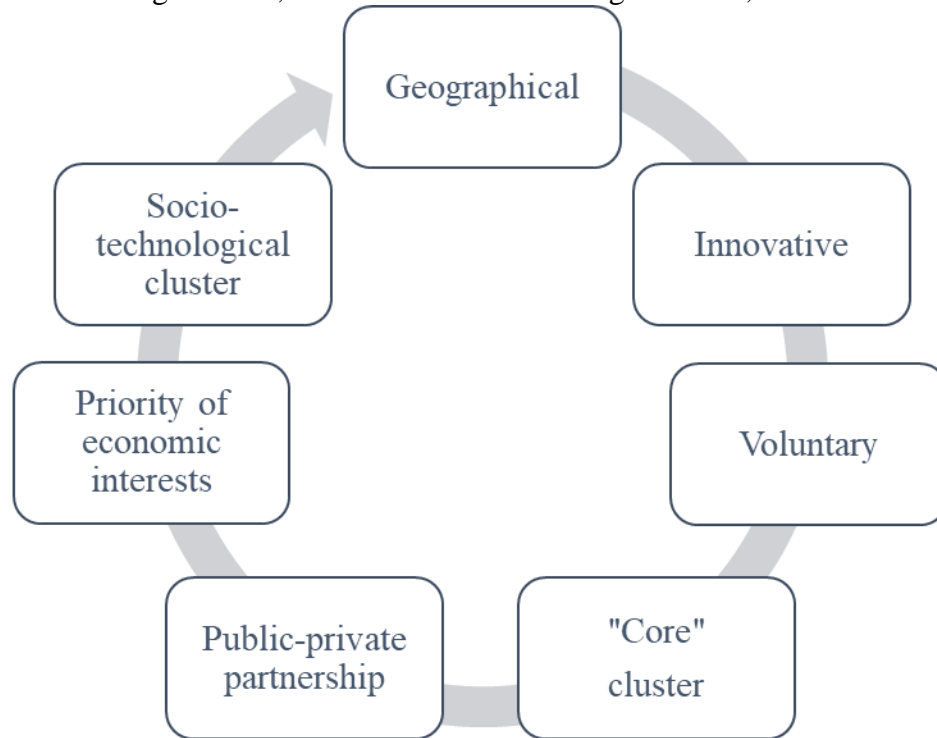
other.

Figure 1. Principles of organization of agroclusters

Most countries make extensive use of the geographical principle when organizing the activities of agroclusters. This principle is characterized by the fact that it is aimed at increasing the efficiency of using the agricultural development potential of the region. Based on this principle, the organization of agroclusters appears as a component of regional policy. Also, the geographical principle is formed on the basis of scientific theories aimed at the development of regional clusters. In organizing and managing the activities of this type of clusters, priority is given to the following: technological development of production processes; increase the innovative activity of the regional winter economy; elimination of related problems related to transportation, storage and packaging of produced products through the development of infrastructure, including logistics services.

The innovative principle in the organization of agroclusters is explained by the growing development of the fifth generation innovative management model in the world's innovative development. At the same time, the practice of management of agricultural entities that are part of the agrocluster is characterized by specialization in innovative management, establishment of cooperation between them in terms of mutual transfer and adoption of innovations. This principle is based on the achievement of competitive advantage by prioritizing innovative activity in the activity of agroclusters. Innovations are also widely used in making management decisions in agroclusters organized on the basis of innovation. Agroclusters organized on the basis of this principle are common in the practice of developed and rapidly developing countries.

At this point, it is appropriate to pay attention to the data of the global innovation index of the International Intellectual Property Organization. According to the analysis, these countries, which have management practices aimed at the production of high-tech products in the development of agroclusters, occupy a leading position in the world in the adoption and transmission of innovations in various sectors of the national economy, including agriculture. In particular, in the "Global

Innovation Index-2021" evaluation system, countries such as the USA, Hong Kong (China), Israel, and Singapore are countries that actively participate in the adoption of innovations in various sectors of the economy, and their transfer at the national and international levels (see Table 1). This situation indicates that the activity of agrocluster in these countries is formed based on the innovative principle.

Table 1

The world's leading countries in the absorption and transfer of innovations

Countries	Global innovation index - 2020			Global innovation index – 2021			The place in the world in terms of innovative activity	
	Adoption of innovations	Transfer of innovations	Total	Adoption of innovations	Transfer of innovations	Total	2020	2021
USA	3	6	9	6	7	13	2	1
Hong Kong (China)	7	5	12	7	4	11	1	2
Israel	6	2	8	6	4	10	3	3
Singapore	5	1	6	6	4	10	7	4
China	3	5	8	3	6	9	5	5
Republic of Korea	3	2	5	5	4	9	10	6
Luxembourg	6	2	8	6	2	8	4	7
Switzerland	2	4	6	2	4	6	9	8
Japan	3	3	6	2	4	6	8	9

Voluntariness is another principle of organizing the activities of agroclusters. This principle is manifested in the formation of high-level integration associations, deep cooperation between agricultural entities in the activity of agrocluster. It is envisaged that agricultural entities voluntarily join agrocluster activities in order to achieve high economic efficiency.

The "Core" cluster principle is also called "Central" cluster in some economic studies. In this case, an agrocluster is formed by a firm (enterprise, organization) engaged in agricultural activities, which has a high potential in agriculture and has a strong competitive index compared to other agricultural entities, by uniting weaker agricultural entities into one center. The economic interests of the central (core) enterprise in the management of the activity of the agrocluster organized on the basis of this principle are characterized by priority over other structural participants.

The principle of public-private partnership is one of the principles that is widely used today not only in the agrocluster, but also in various sectors of the economy. This principle is reflected in the creation of appropriate conditions by the state for the development of agrocluster activities. In this, it is required to introduce incentives for the development of activities of small, medium and large agricultural entities that are part of the agrocluster, including joining the activities of the agrocluster. At the same time, in recent years, the state has prioritized measures such as financial support of agroclusters, including the introduction of tax incentives, attracting foreign investments under state guarantees, and allocating subsidies. These benefits are widely used to improve the efficiency of agrocluster management.

The principle of the priority of economic interests is manifested in the organization of the production and sale of products with high added value for domestic and foreign consumer markets among the participants of the agrocluster. In order to achieve this goal, management aimed at the formation of an integrated system will be established among the participants of the agrocluster on the basis of strictly defined obligations on the cultivation, production and processing of agricultural products.

The socio-technological cluster principle is widely used in the organization of modern agrocluster activities. This principle creates a sufficient basis for the development of innovative management in agrocluster activities. In this, priority is given to the mechanism of introduction of scientific achievements to the activity of agrocluster.

The socio-technological principle of the organization of agroclusters allows to reduce the cost of products, as a result of the mutual integration of science and educational services in the social sphere with the real sector of the economy. This makes it possible to solve priority tasks, such as providing the population with cheap and high-quality food products, ensuring national food security, and saturating the domestic consumer market, which are part of the state social policy. For this reason, this principle is evaluated as a socio-technological principle in the economic literature.

At this point, it is worth noting that reforms aimed at the development of smart agriculture are being implemented in our country today. Taking into account this situation, it was concluded that the effectiveness of the reforms implemented by using socio-technological and innovative agrocluster principles in the organization of agroclusters in our country will be achieved.

Based on the need to organize agrocluster activities and the study of its principles, the following scientific conclusions were drawn on the specific features of its management:

- the efficiency of using the country's agricultural development potential will increase through the organization of agrocluster activities;

- the management of agrocluster activities will be directed to the production of competitive products;

- in increasing the efficiency of management of agrocluster activities, they are based on socio-technological and innovative principles of organizing their activities;

- making management decisions on the development of agrocluster activities should be of equal interest to all its participants;

- mutual cooperation relations between the agricultural entities that are part of the agrocluster should fully correspond to the interests of the single integrated association;

- increasing the level of global competitiveness will be achieved by taking appropriate measures for the full use of privileges and opportunities created by the state in the management of agrocluster activities.

In general, in the following years, the socio-economic problems, which have been waiting for their solution for many years, will be effectively solved by developing the activities of agroclusters in the development of our country's agriculture. Together with this, it will be possible to take a place among the world's leading agro-industrial countries due to the full use of the agricultural development potential of our country.

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Rezyume: Maqolada qishloq xoʻjaligi klasterlari faoliyatini tashkil etish zaruriyatini tahlil qilish asosida uning tamoyillari va usullari belgilab berilgan.

Резюме: На основе анализа необходимости организации деятельности агрокластеров в статье определены ее принципы и методы.

Kalit so'zlar: klaster, agroklaster, 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.

THE IMPORTANCE OF BENCHMARKING IN THE DIVERSIFICATION OF AGRICULTURAL PRODUCTION

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Summary: *The article discusses the need to apply benchmarking in the development and implementation of a program for diversifying the activities of agricultural production entities. The method of using the benchmarking process for diversifying agricultural production and estimating its economic efficiency is proposed.*

Key words: *agricultural production, efficiency, production diversification, diversification program, benchmarking, economic efficiency of benchmarking.*

The ability of any enterprise to compete in a certain market segment depends on the competitiveness of its products and the organizational and economic mechanisms of the enterprise. Because, in the conditions of a certain competitive environment and resource supply, if the competitiveness of the enterprise or its products is not at the required level, first of all, measures related to increasing production potential and its full use are developed and implemented.

The desired level of competitiveness of an agricultural enterprise can be achieved through an organizational and economic system that can ensure an increase in the volume, quality and assortment of products. In the conditions of strong competition and volatility of the market situation, enterprises achieve an increase in the volume of production and, accordingly, their income by diversifying their activities or products. In this case, the choice of the optimal strategy for diversification of production largely depends on the level of supply of the product market [1].

To the process of diversification based on economic researchə:

- increase product range and develop new areas of activity;
- ways of developing the enterprise by mastering new fields of activity;
- the process of entering current or new markets with new products and delivering them to consumers;
- forms of adaptation of the enterprise to market demand and competitive conditions;
- we can see that it is defined as alternative forms of enterprise specialization.

So, diversification can be viewed as a process that provides or creates conditions for innovations in organizational, financial, research and other activities, as well as cost savings, along with the methods of production of new types of products and their movement on the market.

In the increasingly competitive market, the success of agricultural enterprises is determined by the effectiveness of their marketing activities and marketing programs.

Applying the marketing concept to increase the competitiveness of agricultural enterprises in the domestic and international market, to identify new ways to improve the quality and efficiency of their products, to compare them with the products or activities of advanced farms of other sectors, and to implement the benchmarking process to effectively apply innovations increase is important.

The name of the benchmarking method comes from the English word, "bench" means level, height and "mark" means a sign. This combination of words is interpreted in different ways: "baseline", "height", "standard comparison", etc.

It can be noted that the essence of benchmarking is, firstly, to compare one's own indicators with the indicators of advanced farms or competitors, and secondly, as a technology for studying and implementing successful best practices of others.

For the first time, benchmarking was used as a method of assessing business performance in 1972 by the Strategic Planning Institute in Cambridge (USA). This method serves to identify the company's strengths and weaknesses that need improvement, to implement promising marketing ideas by comparing existing products, services or business practices [2].

In general, the benchmarking institute appears as a system of relations that regulates interactions between economic entities in order to study and implement best practices.

Research shows that the use of benchmarking reduces the cost of products and services, the repetition of errors by an average of 20-60%, the quality of products by 10-20%, and the speed of production up to 100%.

Based on this, the organization and implementation of benchmarking processes in the activities of agricultural enterprises, and the development of the methodology for the formation of the enterprise data base become relevant.

In practice, marketing specialists of enterprises make extensive use of the marketing information system in making marketing decisions, and refer to the services of individuals who can provide accurate information in a timely manner, information technologies and methods.

Based on the analysis of modern studies on benchmarking, the application of benchmarking in production activities can be carried out in the following sequence:

1) Determination of the object of benchmarking in product diversification;

2) Choosing the optimal methods of collecting information on a new product or type of activity and collecting information;

3) To select economic indicators of a new type of activity or product being developed and compare them with the best examples;

4) Determining specific goals and objectives for diversification of enterprise activities;

5) Development and implementation of a plan of measures to achieve these goals;

6) Monitoring the implementation of the action plan [3];

7) Amendments to the goals and objectives of diversification.

The main goal of searching for effective marketing tools and using them is to ensure that all structural departments of the agricultural enterprise operate in strict interrelation as a single mechanism. The interrelationship of these structural divisions is manifested as the interrelationship of organizational and economic processes of the enterprise, and their effectiveness is constantly influenced by internal and external environmental factors. Such factors can have both positive and negative effects on the effectiveness of marketing policy.

The following types of benchmarking are widely used in practice:
- internal benchmarking
- benchmarking of the enterprise and its internal structures;
- benchmarking of competitors;
- benchmarking of network enterprises that do not compete directly.

At first glance, the application of benchmarking in agriculture can be imagined in the form of a company that widely introduces effective methods of growing, processing, or organizing this activity in an agrarian sector farm in the period of a planned economy. However, in those times, the non-existence of factors such as market relations and competitive environment led to blind

"exchange of experience", and as a result, the quality and profitability of the produced products were not ensured to reach the required level.

In the market conditions, benchmarking is considered as an alternative method of strategic planning of the activities of agricultural entities, and the main purpose of its application is not the results achieved in their activities, but the cultivation of a product or activity of farms with the same or very close natural-climate and agricultural production conditions. based on the implementation of the best results of the implementation of the type [4].

Therefore, the application of benchmarking in agricultural production can be imagined as a set of activities consisting of the following four stages:

- analysis of existing production and business processes in own farm;
- analysis of business processes in other model farms;
- compare the obtained results;
- development and implementation of measures to reduce the negative difference in relation to indicators determining the efficiency of the production process of exemplary agricultural entities.

Based on the above, a general model of the benchmarking process was developed to compare diversified products or activities in agricultural enterprises with the activities of similar enterprises or advanced enterprises of other sectors (Fig. 1).

It is necessary to select qualitative and quantitative criteria of the indicators used in benchmarking and to ensure their comparison. Due to the large number of criteria, their scope is strictly limited in the analysis and evaluation for a specific purpose. Also, systematic grouping of relative quantitative and qualitative indicators, which have an indirect, if not direct, influence on the benchmarking process and are convenient for analysis and evaluation is also required.

Agricultural product benchmarking includes the following two important steps:

- selection of the most competitive product for market analysis and comparison;
- definition of a set of comparable indicators for consumption (quality) and economic characteristics (price).

So, in benchmarking, two factors - quality and price - are decisive factors, and only their features that are of interest to consumers are important.

The effective implementation of the diversification program will depend on how effectively benchmarking is used in the practical activities of the enterprise. However, not all of the benchmarking factors can be quantified, which complicates the calculation of their aggregate value. Therefore, it is necessary to use modern methods of development of indicators suitable for existing conditions [5].

A systematic approach should be followed in determining the economic effectiveness of applying benchmarking methods. It should reflect the following principles:

a) evaluation of the effectiveness of the benchmarking event is carried out according to the conditions of use of the final product;

b) calculation of economic efficiency is carried out for the entire cycle of development and implementation of the benchmarking event, for the period of each such event;

c) bringing the economic standards and other established indicators used in calculations to a single accounting year, taking into account the economic disparity of costs and results obtained in different time periods;

g) application of uniform efficiency standards in calculations.

For example, when implementing product diversification, indicators such as profitability, cost, variable costs per unit of product, profit margin, and resource capacity can be used in benchmarking.

In this work, we propose to calculate the index of the use of product benchmarking when evaluating the effectiveness of the use of benchmarking in the diversification of agricultural production:

$$I_b = \prod_{i=1}^{n} \frac{P_{ni}}{P_i}$$

where: Ri is the actual value of the i-th indicator of the agricultural product; Pni is the sample value of the i-th indicator; n – number of indicators.

Its maximum value is equal to 1 in our example, and the closer this index is to 1, the more effective and promising the adoption of a new product is.

In summary, the economic value of benchmarking in diversification activities is determined by increased profitability, business scale, and expansion for capital reinvestment. Benchmarking can be used simultaneously in the activities of entities that grow agricultural products, process them, provide agro-services and other types of activities. Its effective implementation depends on reliable marketing data sources and databases and methods of their evaluation.

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Rezyume: *Maqolada qishloq xo'jaligi ishlab chiqarishi sub'ektlari faoliyatini diversifikatsiya qilish dasturini ishlab chiqish va amalga oshirishda benchmarkingni qo'llash zarurligi muhokama qilinadi. Qishloq xo'jaligi ishlab chiqarishini diversifikatsiya qilish va uning iqtisodiy samaradorligini baholash uchun benchmarking jarayonidan foydalanish usuli taklif etiladi.*

Резюме: *В статье рассматривается необходимость применения бенчмаркинга при разработке и реализации программы диверсификации деятельности субъектов сельскохозяйственного производства. Предложен метод использования процесса бенчмаркинга для диверсификации сельскохозяйственного производства и оценки его экономической эффективности.*

Kalit so'zlar: *qishloq xo'jaligi ishlab chiqarishi, samaradorlik, ishlab chiqarishni diversifikatsiya qilish, diversifikatsiya dasturi, benchmarking, benchmarkingning iqtisodiy samaradorligi.*

Ключевые слова: *сельскохозяйственное производство, эффективность, диверсификация производства, программа диверсификации, бенчмаркинг, экономическая эффективность бенчмаркинга.*

THEORETICAL FOUNDATIONS OF AGROCLUSTER MANAGEMENT

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Summary: The article analyzes scientific views on the management of agroclusters and identifies the features of its development. In particular, an improved definition of the economic category of an agrocluster has been developed.
Keywords: cluster, agrocluster, management, cluster management, competitiveness, global competitiveness, specialization, integration, food security, agriculture

Increasing competition in the world market is becoming more and more important for the implementation of reforms aimed at sustainable development of the national economy of countries. In particular, providing the population of the country with quality and affordable food products, achieving national food security is one of the main goals of the socio-economic policy of any country. According to the results of studies carried out by experts of the United Nations (UN) Food and Agriculture Organization (FAO), today more than 38.2 million people in the world are undernourished. If reforms are not developed and put into practice, it is predicted that their number may exceed 80.0 million in the coming years. This situation reinforces the need to implement modern methods of agricultural management in the practice of any country.

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 world practice, countries with agro-cluster management practices have been achieving effective results compared to other countries in terms of increasing production efficiency in agriculture, including strengthening the position of countries in global competition by introducing innovative projects in the field. Together with this, we will be able to observe that in the practice of the countries that are members of the World Trade Organization or are becoming members of it, they have switched to the agrocluster approach in increasing the efficiency of agriculture.

In the economic literature, scientific research on the role of cluster management in the national economy, its importance in the formation of various inter-sectoral complexes, including the expansion of the possibilities of innovative development of agriculture based on agro-cluster management, has been carried out since the 70-80s of the XX century [1]. In 1990-2000, the rapid changes in global economic relations in the world, the increase in the desire of countries for innovative development, led to the increasing specialization of agrocluster management practices in the agriculture of advanced and rapidly developing countries [2]. As a result, agrocluster management began to be evaluated in the economic literature as an innovative management method that allows to achieve high efficiency by deepening the integrated relations in the innovative management of agriculture.

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 the competitiveness of agriculture, ensure national food security, and ensure the sustainable development of the sector [3].

Taking into account the above, it can be concluded that the transition to agro-cluster management practice 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 efficiency of introduction of 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 interrelated and related elements, their gathering at one point (or place)[4]. 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 process of research, these scientists analyzed the activities of various enterprises located in the same region, established mutual economic relations, i.e. organized 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 [6]. This prompted the formation of a cluster approach in the economic literature.

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. [7]

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.

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 [8].

Another local economist Q. In his research, Mamadaliev 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 Ch. According to Muradov, it means that the characteristics characteristic of agroclusters are manifested in agrocluster management.
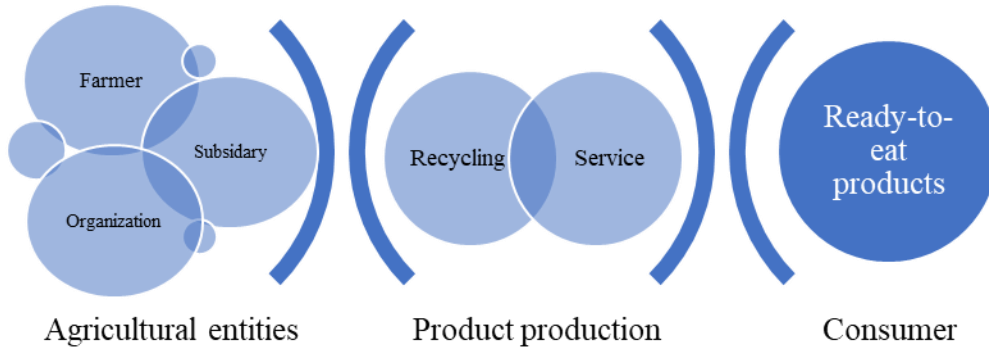
Figure 1. Technological chain of agrocluster activity management

Based on the systematic analysis of the scientific views related to the field of agrocluster management in the economic literature, it was concluded that the management of agriculture based on the cluster approach is manifested by the formation of a technological chain in the order presented
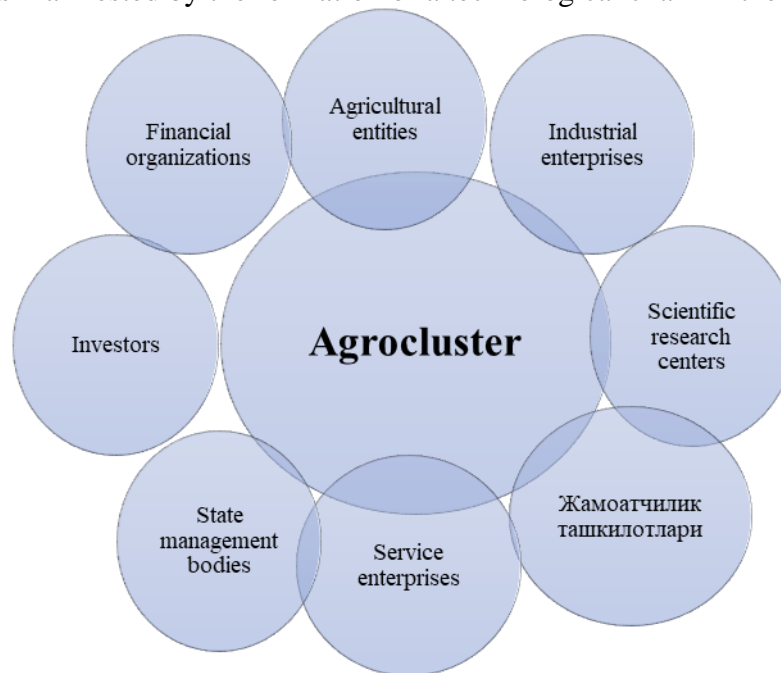
in Figure 1.

Figure 2. Structural structure of modern agroclusters in agriculture

The technological chain of the management 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 product, until it reaches the consumer. At this point, it is worth noting that this technological chain, incorporating the product production cycle in the activity of the agrocluster, has the characteristic of constant repetition [9].

It was concluded that the organization of agroclusters in agriculture increases the competitiveness of the sector at the global level, expands the possibility of ensuring national food security, and ensures the efficiency of innovative development.

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.

Based on the analysis of the scientific-theoretical views aimed at the organization and management of agroclusters in the economic literature, an author's tariff was developed for it. In our opinion, agroclusters are agricultural production and processing industries, scientific research institutes, financial organizations, state management bodies, public organizations, agricultural and industrial service enterprises, local and foreign investors is a form of regional joint economic management consisting of a complex of various enterprises and organizations for the production of a certain type of product. Agrocluster management of agriculture is reflected in the adoption of decisions on economic activity based on the common interests of the constituent enterprises that are members of it. At the same time, agrocluster management expands the possibilities of increasing the level of innovative activity in agriculture.

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 agroklasterlarni boshqarish bo'yicha ilmiy qarashlar tahlil qilingan va uning rivojlanish xususiyatlari aniqlangan. Xususan, agroklasterning iqtisodiy toifasining takomillashtirilgan ta'rifi ishlab chiqildi.

Резюме: В статье анализируются научные взгляды на управление агрокластерами и выявляются особенности его развития. В частности, разработано уточненное определение экономической категории агрокластера.

Kalit so'zlar: klaster, agroklaster, 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.

HUMANITIES SCIENCES

PRIORITIES IN THE FIGHT AGAINST CORRUPTION IN THE ADMINISTRATION OF JUSTICE

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Summary: *This article is devoted to the problem of corruption, which threatens the stability of the nation and the security of citizens in all spheres of state and public life, the implementation of the priority of the rule of law, and the administration of justice. Also organizational and legal measures aimed at combating corruption in the administration of justice in our country have been analyzed.*

Key words: *justice and legitimacy, ensuring justice, security of citizens, digital technologies, judicial system, digitalization, interactive electronic services, e-appeal to court, "protection", "implementation". organizational-legal measures.*

There are long-standing, ugly vices in society that are a great negative obstacle to the sustainable development of society as a whole, not just a particular sphere. The crime of corruption is a vice that destroys the state and society in its various forms. We know from history that many countries have faced a crisis because of this disease.

The damage caused by corruption is the same for all countries of the world, and this disease has a negative and devastating effect on the ongoing reforms in various spheres of the state, especially social, political, economic, especially in the areas of governance and justice, as well as on the image and investment attractiveness of the country in the international arena.

Here it should be said separately that disturbing comments about this disease are often heard from the highest tribunes of the world. The statement of UN Secretary General António Guterres that «...the world community suffers from $2.6 trillion in corruption every year» [1] demonstrates the relevance and importance of the issue in the international arena.

To date, Uzbekistan has implemented comprehensive reforms to combat this terrible crime. This can be seen in the conceptually important legal and regulatory documents adopted in the sphere in recent years, as well as in the administrative reforms aimed at preventing corruption.

At the moment, if we pay attention to the most important conceptual legal documents of our country, the Strategy of Action for 2017-2021 to improve the effectiveness of the fight against corruption, adopted on the initiative of the President, and the measures provided in it, as a logical continuation of the measures «Development of New Uzbekistan for 2022-2026», strategic documents and specific measures, goals and objectives defined in them have marginal importance.

In these long-term strategic documents, the activities of public administration bodies are supposed to be transformed on the basis of the principle of «directing them to the service of citizens», the introduction of a modern system of governance, fairly serving and eliminating bureaucracy, improving modern mechanisms of communication. with the people, as well as ensuring the rule of law in society and the judiciary.In the priority of further reforming the system is one of a number of important goals and objectives, such as improving organizational [2].

More than 70 normative legal documents aimed at the elimination of corruption factors in all spheres of state and social construction serve as a solid basis in the implementation of these reforms.

As proof of our opinion, on January 3, 2017, the Law of the Republic of Uzbekistan «On Countering Corruption» was adopted at the initiative of our president.

In order to implement the tasks defined by this law, Presidential Decree No. PF-6013 of 29.06.2020 [3] was adopted, and in order to implement state policy to prevent and combat corruption, the Agency for combating corruption in our country was created, especially to eliminate the vices of corruption. [4].

The establishment of this Agency is an example of the implementation in the country of relevant articles of the UN Convention against Corruption, ratified by Uzbekistan, as well as the «Jakarta principles» in international anti-corruption practice. It is correct to say that the rise of the fight against corruption to an entirely new qualitative level in the new period of Uzbekistan's development is a product of the political will of our country's leader, Shavkat Mirziyoyev.

It should be emphasized here that in our president's address to parliament, in our society, «corruption in its various forms is an obstacle to our development. If we do not prevent this evil scourge, it will not be possible to create a real business and investment environment, and, in general, no sector of society will develop. [5], and during this statement of the head of state, he pointed to shortcomings in the prevention of corruption offenses in public administration and in the judicial system, in the regulation of justice ethics. ensuring the independence of the judiciary will be under strict control of the President [6] , without exaggeration. In fact, these opinions clearly testified to the head of state's firm stance on the cardinal reforms undertaken in this area.

Instead, we should say that the fate of reforms in all spheres of national development, raising the rule of law and justice in society to the highest level, forming a spirit of strict intolerance to all forms of corruption in the modern service of public administration and the justice system, and most importantly, unconditionally ensure the interests of the people. Therefore, during the New Development period of Uzbekistan, the national legal framework of our country is being systematically improved in accordance with international legal norms of combating corruption.

In order to determine the legal framework for interstate cooperation in this area, the International Convention against Corruption was adopted on October 31, 2003 by UN General Assembly Decision No. 58/4, and our country became a party to the Convention. and several international instruments. All this means that our country is determined to fight this disease at the state level. Not only the citizens of our country, but also the international community perceives this as serious political will. Moreover, in his speech at the 75th session of the UN General Assembly, the head of our country made a special emphasis on the fight against corruption, on the fact that in Uzbekistan this work has reached a new level, important legal documents were adopted, and it was noted that an independent structure to combat corruption was established, which has shown the whole world how important this path is for our country [7].

We all know that in recent years the mechanisms for ensuring openness and transparency in the activities of all public authorities have been fundamentally improved.

In particular, the widespread use of modern digital and online technologies in the work of the courts increases the accountability of the courts to the public, and for this purpose, the «E-XSUD» provides for the reception of applications in electronic form, the establishment of online monitoring of compliance with procedural deadlines, as well as the automatic distribution of cases without human intervention [8] was created information system. It should be noted that on September 3, 2020 the President adopted a decree «On measures to digitalize the activities of the judiciary. In addition, a videoconferencing system was launched in the courts, and in order to create convenience for the population and save money, court hearings are held online through this system.

Decree No. 07.12.2020 NPF-6127 of 07.12.2020 «On measures to ensure the true independence of judges and to increase the efficiency of preventing corruption in the judicial system» signed by the head of our state on December 7, 2020 laid the foundation for a new stage of reforms in the system. In this place, new legal opportunities have been created to further increase the trust of citizens and business entities in the judiciary by selecting and appointing suitable personnel with sufficient knowledge and life experience in the judicial system, as well as by ensuring the openness and transparency of the activities of judges [9].

At the same time, according to this Decree, since February 1, 2021, in order to prevent corruption in the judicial system, to ensure publicity and transparency of the Supreme Council of Judges and the judicial system, the examination process for the selection of judicial candidates will be published for the first time online via the Internet, the site is going to.

A psychological test has also been developed, an electronic program that helps to assess the suitability of candidate judges and judges by their psychological portrait. It is worth noting that specific criteria [11], in particular the rating program, have been put into practice, which ensure an open and transparent evaluation of the judge's work through electronic rating [12].

In a referendum held in our country on April 30, 2023, the new Constitution was adopted by 90.21% of the citizens who voted «for». In its new version, the Constitution created a political and legal framework for the strategy of the New Uzbekistan and identified priority areas for further development of the state and society at a historically important stage in the development of national statehood [10].

Chapter XXIII of the new edition of the Constitution of the Republic of Uzbekistan. Article 130 of the Constitution of the Republic of Uzbekistan states that «Justice in the Republic of Uzbekistan shall be administered only by the courts. The judicial power in the Republic of Uzbekistan shall operate independently from the legislative and executive authorities, political parties and other bodies of state power.» «...The Supreme Council of the Judiciary is an independent body of the judiciary, which ensures the formation of the judicial corps and the observance of the constitutional principle of the independence of the judiciary», in article 136: «Judges are independent and subject solely to the Constitution and the law. No interference in the work of judges in administering justice shall be permitted and such interference shall entail liability in accordance with the law. Judges shall not be responsible for certain cases. Judges shall be inviolable...».

In short, over the past six years, mechanisms of modern legal framework aimed at combating corruption offenses, elimination of causes and conditions conducive to their commission have been developed and are yielding results in practice. Most importantly, citizens have the opportunity to report corruption offenses directly to public authorities through the Presidential and People's receptions. In order to stop corruption the mechanisms of openness and transparency in the activities of all government bodies have been radically improved, the responsibility and personal liability of public administration officials and justice officials to the people have been increased.

The main thing today is that everyone is against corruption, it must be eradicated, and the country cannot develop with it. Now the only task is to unite all actions and fight the evil together.

This undoubtedly serves to increase the confidence of our people in the courts in our country, which is most important for the direct application of the rules set forth in the amended Constitution of our country.

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Rezyume: Mazkur makola davlat va jamiyat hayotining barcha sohalarida, adolat va konun ustuvorligining amal kilishiga,odil sudlovni ta'minlashga,millatning barkarorligi va fukarolarning xavfsizigiga tahdid solayotgan korruptsiya muammosiga bag'ishlanadi. Shuningdek mamlakatiizda odil sudlovni ta'minlashda korruptsiyaga qarshi kurashishga qaratilgan tashkiliy-xukukiy chora-tadbirlar tahlil qilingan.

Резюме: Данная статья посвящена проблеме коррупции, которая угрожает стабильности нации и безопасности граждан во всех сферах государственной и общественной жизни, осуществлению приоритета законности, и обеспечению правосудия. Также были проанализированы организационно-правовые меры, направленные на противодействие коррупции при отправлении правосудия в нашей стране.

Kalit so'zlar: adolat va konun ustuvorlig, odil sudlovni ta'minlash, fukarolarning xavfsizig, raqamli texnologiya, sud tizimi, raqamlashtirish, interaktiv elektron xizmatlar, sudga elektron murojaat qilish, «himoya qilish», «amalda tatbiq etish». tashkiliy-xukukiy chora-tadbirlar.

Ключевые слова: правосудие и законность, обеспечение правосудия, безопасность граждан, цифровые технологии, судебная система, цифровизация, интерактивные электронные сервисы, электронное обращение в суд, «защита», «реализация». организационно-правовые меры.

THE ETYMOLOGICAL ANALYSIS OF LOANWORDS WITHIN THE CONTEXT OF THE MODERN ENGLISH LANGUAGE

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Summary: *The article studies the origins of borrowed words in the contemporary English language. The aim is to investigate borrowed words, analyze their etymology, and categorize them based on their source and the historical events in England.*
Key words: *borrowing; etymology; English language; vocabulary;*

The vocabulary of the English language has been enriched throughout its history. One of the ways to expand the vocabulary of a language is borrowing from other languages. According to the origin, the vocabulary of the language can be divided into native words and borrowed ones. Borrowing is "an element of a foreign language (word, phrase, morpheme, phoneme) transferred from one language to another as a result of linguistic contacts, as well as the process of transition of elements of one language into another" [5, p. 178]. Words taken from other languages were modified orthographically and semantically according to the standards of the English language.

Over the centuries, the British Isles have been repeatedly conquered by other tribes and peoples. Thus, from the 8th century BC, Britain was inhabited by Britons, Celtic tribes belonging to the ancient Indo-European tribes, which from 55 BC were attacked by the Romans, and then were captured by the Roman Empire. The Latin language of the Romans influenced the language of the Celts. Roman rule in Britain ended only by the beginning of the 5th century AD [7].

In the middle of the 5th century, Britain was again invaded. This time, the Germanic tribes of the Angles, Saxons, Jutes and Frisians occupied most of the territory of Britain, inhabited by the Celtic tribes of the Britons, Gaels and Cymry. The invaders spoke their own language - Anglo-Saxon (Anglo-Sax.), which is also called Old English. The Anglo-Saxons gave the English language such words as *naked* - from the Anglo-Saxon. *nacod*; *to ring* - from Anglo-Saxon. *hringan; town* - from the Anglo-Saxon. *tún* [4; 14]. The Latin words of the Celtic population of Britain penetrated the Anglo-Saxon language. For example:

Scope of use	Language		
	English	**Anglo-Saxon**	**Latin**
Product Names	butter cheese	butere cyse	būtyrum cāseus
Trade terms	inch pound	ynce pund	uncia pondō
Plants	cole plant	cāul, cāwel plante	caulis planta

As can be seen from the examples given in Table 1, borrowed words, regardless of the scope of use, have undergone certain spelling changes, but their semantic meaning has remained the same. However, most of the borrowings have changed both orthographically and semantically: *mill* - from Anglo-Saxon. *myln* - from lat. *molina; street* - from the Anglo-Saxon. *strēt* - from lat. *strata*; [8].

At the end of the 6th century, Christianity began to spread in Britain. Latin, which had a large number of Greek (Greek) borrowings, became the language of the English Catholic Church. There appeared such words as bishop (bishop, ship's priest) - from the Anglo-Saxon. *bisceop* - from lat. *episcopus* - from the Greek. *episcopos; monk* - from the Anglo-Saxon. *munec* - from lat. *monachus* - from the Greek. *monachōs; priest* - from the Anglo-Saxon. *preost* - from lat. *presbyter* - from the Greek *Presbyterōs;* [6; 8; 15].

A significant contribution to the lexical composition of the English language was made by the Old Norse language (other Scandinavian). Since the 8th century, the Scandinavian tribes living on the territory of the modern countries of Sweden, Denmark and Norway, raided the countries located on the coasts of the North and Baltic Seas. The Scandinavians belonged to the same group of peoples as the Anglo-Saxons, and their languages were similar. The influence of Old Norse on English cannot be overestimated. The relative closeness of these languages facilitated mutual understanding between people and borrowing words. There are about 900 words of Old Norse origin in the English language [4]. These include words such as *bloom* - from the Anglo-Saxon. *blōma* - from other Scandinavian. *blómi; sister* - from the Anglo-Saxon. *sweostor* - from other Scandinavian. *Systir;* [1; 10].

The words of Old Norse origin listed above have Danish and Swedish equivalents:

Languages		
English	**Danish**	**Swedish**
bloom	blome	blomma
sister	söster	syster

Table 2 shows that these words, with the same semantic meaning, differ somewhat in orthography, which confirms the influence of the Old Norse language on English, Danish and Swedish.

When the Normans from the northern coast of France invaded England in 1066, the majority of the English people spoke Anglo-Saxon or Old English, with about 30,000 words. The language of the Normans was a mixture of Latin and French. It was different from the French spoken in the center of France. Gradually, the Old English language began to be replenished with the vocabulary of the central dialect of the French language. It took three centuries for the languages spoken in England to merge into Middle English, which became the ancestor of modern English. During this period, words such as *to aid* (help, assist) entered the English language - from Middle English. *aiden* (to help) - from Old French. *aider* (to help) - from lat. *adiutare* (help, assist); *beast* (beast, animal, rude person) - from Middle English. *beste* (beast, cattle) - from Old French *beste* (animal) - from lat. *bestia* (animal, beast [1; 15]. In these examples, when borrowing from one language to another, the spelling of the words and their meaning changed. However, there are a number of words whose semantic meaning was the same in these languages, but the spelling has changed. A few of these words are presented in the following Table 3:

Languages			
English	**Middle English**	**Old French**	**Latin**
autumn	autumpne	autompne	autumnus
foreign	foraine	forain	foraneus
honest	honest	honeste	honestus
invite	invyte	inviter	invitare

In the 15th-16th centuries, during the Renaissance in England, as in all European countries, interest in science, art and culture of the ancient civilizations of Greece and Rome increased significantly. In this regard, a significant number of Latin and Greek borrowings entered the English

language. These were mostly abstract words, as well as words related to science and art. For example, *to elect* (choose, select) - from lat. *legere* (choose); *moderate* (moderate, restrained) - from lat. *moderari* (regulate, order); *philosophy* (philosophical basis, attitude to life) - from the Middle English. *philosophie* (basic approach to life) - from lat. *philosophia* (love of knowledge) - from the Greek. *philosophia*, where *"phileō"* means *"I love"* and "sophia" means "wisdom" [2; 11; 14].

The Renaissance was a period of intense cultural contacts between the main European states, so words from other European languages entered the English language. The most significant of these were words from the French language, known as "Parisian borrowings". Some of these words, however, have their roots in other languages. For example: *ballet* (a troupe of professional dancers, ballet) - from fr. *ballet* (ballet, dance); *machine* (machine, machine tool, engine) - from fr. *machine* (machine, mechanism) - from lat. *machina* (structure) - from the Greek. *mēchanē* (device, device); *scene* (scene, scene, landscape) - from fr. *scéne* (stage, stage, theater) - from lat. *scena* (scene, scenery) - from the Greek. *skēnē* (tent, tent, stage) [ibid.].

During this period, the Italian language also contributed to the replenishment of the vocabulary of the English language. Words such as *bravo* began to be used; from it. *bravo* (brave, bravo! Well done!); violin (violin, violinist) - from it. *violino* . Some Italian words have their roots in Latin or Greek, and have entered English from French. For example, carnival (carnival, fair-type mass entertainment) - from fr. carnaval (carnival) - from it. *carnevale* (carnival, holiday) - from lat. *carnelevale*; [2; 15].

In the 16th-17th centuries, in connection with the pan-European recognition of the high development of Dutch painting, words relating to art were borrowed from Dutch into the English language. For example, *easel* (easel, book stand) - from Dutch *ezel* (easel); *to etch* (engrave, etch on metal) - from Dutch *etsen* (engrave, etch); *landscape* - from Dutch *landschap* (landscape, province, land).

Among Dutch borrowings there are many terms related to navigation and shipbuilding: *buoy* (rescue buoy, float) - from Dutch. *boei* (buoy, buoy); *dock* (dock, shipyard, port pool) - from Dutch *dokke* (dock, harbor); *yacht* (yacht) - from Dutch *jacht* (hunt, chase, yacht) [6; 8; 13].

As a result of the constant contact of England with European countries, the vocabulary of the English language was replenished with words from other languages:

- Spanish (Spanish): *armada* (armada, navy) - from Spanish. *armada* (fleet, squadron, armada) [1];

- Portuguese (port.): *dodo* (dodo (extinct bird)), stupid person) - from the port. *doudo* (clumsy bird, stupid) [4];

- Russian (Russian): *mammoth* (an extinct genus of mammals from the elephant family) [3; 14];

- German (German): *poodle* (dog breed) - *pudel* (poodle) [1].

European languages such as Hungarian and Polish also added to the vocabulary of the English language, albeit with a small number of words: *haiduk* (rebel) - from Hung. *hajdú; tokay* (grape sort, wine) - from Hung. *Tokay* (city in Hungary); *mazurka* (mazurka dance) - from Polish, which arose from the name of the inhabitants of the historical region of Poland *Masuria - Masurians; polka* (polka dance) - from Polish. [6; 8; 15].

Many words entered the English language from non-European countries. First of all, these were Arabic words. For example, *emir* (title of the Muslim sovereign prince) - from the Arab. *amír* (emir, commander); *harem* (the female half of the house in the countries of the Muslim East) - from the Arab. *haram* (harem, literally sacred, inviolable) [9; 14].

Words of Persian origin began to enter the English language in the Middle Ages, mainly through French. At the same time, some words got into the French language through Greek and Latin. These are such borrowings as *chess* - from fr. échec (predicament, chess) – from Persian. *sháh* (king); *paradise* (paradise, ornamental garden) - from fr. *paradis* (paradise, paradise) - from lat. *paradises* (paradise) - from the Greek. *paradeisos* (garden, park) - from Persian. *pairidaéza* (fenced area); [ibid.].

Since the 17th century, as a result of the colonization of non-European lands by England and the creation of industrial and trading companies in China, Japan and India, the English language has been enriched with new words from the following languages:

- Chinese: *ginseng* (ginseng, root of life) - *jên-shên* (Far Eastern plant);

- Japanese: *geisha (a woman trained in music, dance, the ability to conduct a tea ceremony and small talk, literally a person of art);*

- Indian languages: *bungalow* (one-story summer house with a veranda) - from Bengali *bangalah* (the word is derived from the name of the province of Bengal in India); [9; 13; 15].

The words of the tribes of North American Indians also entered the English language, since from the beginning of the 17th century to the 80s of the 18th century North America was an English colony. Borrowed words reflected the life of the Indians and the peculiarities of the nature of their country. For example, *moccasin(s)*– shoes sewn from pieces of leather – from the Algonquian language of the Indians *makisin* (moccasin); *opossum* (possum, marsupial rat) - from the Aztec language of the Indians *opasom* (four-footed animal); [7; 14].

From the middle of the 18th century, England made attempts to capture South and Central Africa, and by the end of the 19th century, she managed to take over the richest colonies of the African continent. This served to replenish the English language with a number of words from the languages of the indigenous population of Africa. These include words such as:

- *baobab* (tree)) - the word appeared in the West African state of Senegal;

- *chimpanzee* (monkey) - from *tsimpanzee*; the word originated on the Gulf of Guinea coast; [7; 15].

Words of Australian origin entered the English language in the 18th century due to the colonization of Australia by England. For example:

- *boomerang* (the oldest throwing weapon) - a returning boomerang is common among Australian aborigines;

– *kangaroo* (marsupial) – the name of this animal was heard by the English traveler-explorer James Cook from the natives of Australia in 1770; [3; 11; 13].

Throughout the history of England, the English language has absorbed a large number of words from different languages of the world. The process of replenishing the vocabulary of the English language continues now. There are words from the field of modern innovative technologies related to the cultural and domestic aspects of people's lives, politics and sports. Among them are the words:

1) borrowed from other languages:

- *latte* (coffee latte) - from it. *caffé latte* (a drink made from milk and espresso coffee, lit. coffee with milk);

- *sputnik* (artificial satellite of the Earth) - from Russian. Sputnik;

2) formed on the basis of previously borrowed words:

- *muppet* (fool, a person acting thoughtlessly). The word was formed from the words "*marionette*" and "*puppet*" by the American puppeteer Jim Henson in the 1950s and is pronounced

jokingly, in a friendly way. The word "*marionette*" (puppet) comes from it. *marionetta* (puppet, controlled puppet, set in motion by the puppeteer with the help of threads);

3) arising on the basis of already existing words in the English language (English): *blog* (blog, Internet diary) - from English. *web log* (online magazine);

4) previously borrowed and given a new meaning: *avatar* (personification, real incarnation, avatar) - from Skt. *avatāra* (descent) has taken on a new meaning on the Internet – "graphic representation of the user, main photo, avatar" [9; 13].

Thus, having considered the origin of borrowed words in English, having studied their semantics and historical path, we can conclude that there is a variety of borrowings, a large number of languages and significant historical processes that contributed to the penetration of words from other languages into the vocabulary of the English language. The study identified borrowed words reflecting the main historical processes in England: the capture of Britain by the Roman Empire, the Germanic tribes, the attacks of the Scandinavian tribes, the conquest of England by the Normans, the influence of the Renaissance, constant contacts with many countries, the colonization of other lands by England. The systematization of borrowed words carried out showed that the etymological structure of the English vocabulary consists of native English words of Indo-European and Anglo-Saxon origin and borrowings. The process of borrowing new words, which enriched the English language, continues to this day.

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Rezyume: *Maqolada zamonaviy ingliz tilidagi o'zlashtirilgan so'zlarning kelib chiqishi o'rganiladi. Maqsad - o'zlashtirilgan so'zlarni, ularning etimologiyasini tahlil qilish va ularni manbalari va Angliyadagi tarixiy voqealarga asoslanib tasniflashdir.*

Резюме: *В статье исследуется происхождение заимствованных слов в современном английском языке. Цель - исследовать заимствованные слова, проанализировать их этимологию и классифицировать их на основе их источника и исторических событий в Англии.*

Kalit so'zlar: o'zlashtirilgan so'zlar; etimologiya; Ingliz tili; so'z boyli

Ключевые слова: заимствование; этимология; Английский язык; словарный состав;

PHYSICAL EDUCATION AND MENTAL HEALTH.

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Summary: *This scientific article explores the relationship between physical education (PE) and mental health. It encompasses the benefits of regular exercise on psychological health, including stress reduction , improved mood and higher self-esteem. The annotation also touches upon the integration of mindfulness and relaxation techniques in physical education, as well as the use of movement -based interventions in treating mental health conditions such as anxiety and depression. Ultimately, this topic underscores the importance of a holistic approach to wellness, with physical education serving as a gateway for overall health and happiness.*

Key words: *physical activities, exercises, mental health, well-being, anxiety, depression, stress, self-esteem, cognitive function.*

INTRODUCTION

In today's fast-paced society, mental health problems are becoming more and more prevalent. From depression to anxiety, to stress, people are experiencing a range of mental health issues that affect theirdialy lives. While there are many ways to address these problems, one emerging solution is physical education.

METHODS

Physical education can improve cognitive function and academic performance. Engaging in physical activity can improve attention, memory, and overall cognitive function. This may lead to improved academic performance and may be especially important for students who are struggling with attention and focus. Below we will consider some useful and effective methods.

1.Aerobic Exercise: According to research, drinking moderate amounts of alcohol can change the structure of the brain. Aerobic exercise is a simple way to improve mental health because it increases blood flow to the brain, regulates mood, and helps reduce anxiety. For students, this could mean incorporating jogging, cycling, or other aerobic activities into physical education.

2.Breathing Exercises and Mindfulness: In addition to physical activity, mindfulness practices such as deep breathing and meditation have been found to improve mental health outcomes. These techniques can help reduce stress, anxiety and depression and promote relaxation. Incorporating these exercises into physical education classes could help students develop mental resilience and emotional regulation.

3.Weight lifting and resistance training :These exercises can help to improve mood and reduce symptoms of depression by increasing the release of endorphins in the brain.

4.Outdoor activities: Spending time in nature and engaging in activities such as hiking or gardening has been shown to improve mental health outcomes by reducing stress and promoting relaxation.

5.Team sports: Participating in team sports can improve social connections and reduce symptoms of depression and anxiety.

Aerobic exercises, outdoor activities, weightlifting and resistance training, and team sports have various useful sides for mental health includes followings:

1.Reduce stress levels:Aerobic exercises, outdoor activities, weightlifting and resistancetraining help reduce stress levels by releasing endorphins, which improve mood and reduce stress hormones like cortisol.

2. Boost self-confidence:Engaging in physical activities,like weightlifting and team sports can help boost self-confidence by improving physical fitness, strength,and abilities.

3. Improve cognitive functions:Aerobic exercises have been shown to improve cognitive function by increasing blood flow to the brain, boosting memory and reducing the risk of age-related cognitive decline.

4.Enhance mood: Being physically active, especially outdoors can improve mood by increasing exposure to sunlight which increases vitamin D production and reducing symptoms of depression and anxiety.

According to Johnston and her team there is notable relationship between team sports participation and reduced depression levels. There is also a relationship between physical activity and improved quality of sleep . Team sports are described as when individuals sharing a common goal participate as a team while competing against an opposing team. Participating in team sports could be one way to reduce stress and depression. Johnson conducted research on 327 college students enrolled in team sports and dance classes. One group participated in team sports, the other participated in aerobic dance. All took part in a 90-minute physical education class. They also filled out four different questionnaires pertaining to depression, stress and sleep quality. After all of this was complete, both groups experienced an increase in depression and stress.

The researchers attributed this to finishing the questionnaires during finals week. However, depression did increase over the course of the study and sleep quality increased. Johnson's study revealed some coping strategies for students to implement into their daily lifetstyle to help reduce feelings of depression (2020). One more essential topic Balley brought up in his research was not all children enjoy such activities, even when presented in an attractive way for students. For example, many adolescent girls acquire a progressive disillusionment with certain aspects of physical education and sport and often completely disengage from participation as they move through secondary schooling.(Balley,2006). Physical activity and sport have long term implications for both physical health and psychological well-being. According to Easterlin and her team, participation in team sports is associated with better adult mental health outcomes among individuals exposed to adverse childhood experiences.(2019).

Additionally, Greenleaf and her team(2009) found similar results about the relationship of high school sport participation to psychological well-being. They researched 260 females for one semester. The females were asked to respond to questionnaires assessing their current body image, physical competence and activity levels (Greenleaf,2009).The females participated in sports in high school and reported moderately positive body image and physical competence. Being involved in sports, developed these females body image of themselves(Greenleaf, 2009). When girls develop positive body image , feelings of physical competence and perceptions of instrumentality through high school sport, these factors relate positively to their continued involvement in physical activity and their psychological well-being(Greenleaf,2009, p722).

CONCLUSIONS AND SUGGESTIONS

In general, regular physical activity can have a positive impact on mental health: Many studies have found that engaging in regular physical activity can lead to reduced symptoms of anxiety and depression, improved mood and increased levels of self-esteem and confidence. Physical education classes can provide opportunities for physical activity: In schools, physical education classes offer structured and supervised opportunities for students to engage in physical activity on a regular basis. This can be particularly important for students who may not have easy access to other opportunities for physical activity outside of school. Physical education classes should prioritize

enjoyment and participation: In order to maximize the mental health benefits of physical education, it is important that classes are designed to be enjoyable and inclusive. This can mean offering a variety of activites, avoiding overly-competitive environments and providing options for students of different abilities and interests.

Teachers and coaches should be mindful of the mental health of their students: While physical activity can be a powerful tool for promoting mental health, it is important for teachers and coaches to be aware of the potential for students to experience stress, anxiety or other mental health challenges related to their participation in physical education. Providing supportive and understanding environments can help to mitigate these risks. In conclusion, the evidence suggests that physical education can play an important role in promoting positive mental health outcomes for students. By prioritizing enjoyment, accessibility and a focus on holistic well-being, physical classes can be an important component of a comprehensive approach to supporting student mental health.

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Rezyume: Ushbu ilmiy maqola jismoniy tarbiya (PE) va ruhiy salomatlik o'rtasidagi munosabatlarni o'rganadi. Bu psixologik salomatlik uchun muntazam mashqlarning afzalliklarini o'z ichiga oladi, jumladan stressni kamaytirish, yaxshi kayfiyat va o'zini o'zi qadrlash. Izoh, shuningdek, jismoniy tarbiyada ong va dam olish usullarini integratsiyalashuviga, shuningdek, tashvish va ruhiy tushkunlik kabi ruhiy salomatlik holatlarini davolashda harakatga asoslangan aralashuvlardan foydalanishga ham to'xtalib o'tadi. Oxir oqibat, ushbu mavzu sog'lomlikka yaxlit yondashuv muhimligini ta'kidlaydi, jismoniy tarbiya umumiy salomatlik va baxt uchun darvoza bo'lib xizmat qiladi.

Резюме: В данной научной статье исследуется взаимосвязь между физическим воспитанием (ФВ) и психическим здоровьем. Он включает в себя преимущества регулярных упражнений для психологического здоровья, включая снижение стресса, улучшение настроения и повышение самооценки. В аннотации также затрагивается интеграция техник осознанности и релаксации в физическое воспитание, а также использование двигательных вмешательств при лечении психических расстройств, таких как тревога и депрессия. В конечном счете, эта тема подчеркивает важность целостного подхода к здоровью, когда физическое воспитание служит воротами к общему здоровью и счастью.

Kalit so'zlar: jismoniy faoliyat, mashqlar, ruhiy salomatlik, farovonlik, tashvish, depressiya, stress, o'z-o'zini hurmat qilish, kognitiv funktsiya.

Ключевые слова: физическая активность, упражнения, психическое здоровье, самочувствие, тревога, депрессия, стресс, самооценка, когнитивная функция.

THE NOUN AND VERB METAPHORS IN KARAKALPAK FOLK AITYS

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Summary: *The article analyzes the linguapoetic features of noun and verb metaphors used in the language of Karakalpak folk aitys. Their possibilities of creating an artistic image were learned.*
Key words: *Karakalpak folk aitys, metaphors, noun and verb metaphors, poetic speech, linguapoetics, linguapoetic analysis, artistic image.*

INTRODUCTION

Metaphors occupy a special place among the artistic tools. This is because, depending on the association in the metaphor, the differences in naming, figurative depiction, expressiveness can clearly, quietly, concisely and effectively convey feelings and moods in the poem lines. The compactness of the metaphor, the interpretation of various meanings from the semantic point of view, is very suitable for the lyrical text.

Connecting the sign corresponding to one of two objects or phenomena with the second object in a figurative sense, based on some aspect of similarity is called a metaphor. In this case, it is similar to the simile. However, in a simile, the subject, action and the second word indicating its similitude are said simultaneously, but in metaphor it is understood only that it is equalize to the second, i.e., the object. That's why imagery is stronger in metaphors [4, 78-79].

Metaphors are one of the most important tropes in folk aitys, they create a clear, impressive image of the participants in the aitys with the help of a word used in a variable meaning or a word combination that creates a variable meaning, express emotional and expressive value, and increase the artistry of the lines. In this article, we tried to analyze the metaphors used in Karakalpak folk aitys from the linguapoetic point of view.

MATERIALS AND METHODS

E. Allanazarov, a scientist on metaphors in Karakalpak linguistics, defended his candidate's thesis on the topic "The stylistic use of metaphors in the Karakalpak language". In this work, T. Jumamuratov's works were taken as the object of study, and the stylistic services, expression and usage differences of the metaphors used in it were studied [3]. In addition to this, A. Bekbergenov's book contains brief information on metaphors [4].

Classification, comparison, description, as well as semantic-stylistic, lingupoetic analysis methods were used in revealing the research topic.

RESULTS

Metaphors used in Karakalpak folk aitys can be divided into simple and extended [3, 93] metaphors according to their structure. Simple metaphors are made up of words that mean one lexical meaning (simple, derivative, compound, pair). For example:

Hawada *sharshı* dodalanǵan,   There is a kerchief in the air,
Bul ne bolar, Xojamjan? (6, 310)   What could it be, Khojamzhan?

This example is taken from riddles and *sharshı* (kerchief) is a metaphor. Clouds in the sky are hidden under this word. The fact that the kerchief is light and flutters in the air on windy days is the reason for the realization of this metaphor.

Máhállige máhálim bar,   There is time for the timely,
Biymáhálge ne máhál bar?   What is the place for the untimely?
Bir máhálden ótsem de,   Even I've passed one time,

Ele de senlik máhálim bar. (6, 282)   Still I've your time.

Here *máhálli, biymáhál* are metaphors. *Máhálli* means a guest who comes during the day, and *biymáhál* means a guest who comes untimely.

Óziń *saqallıdan* kelip,   You're as if bearded,
Jolbarısqa shabayın deyseń. (6, 283)   Going to attack to tiger.

In this example, bearded and tiger metaphors are used. In this case, the word bearded has the meaning of a goat, and in the metaphor of a tiger, the speaker is referring to himself. That is, the goat's attack to a tiger despite of being a small domestic animal, not knowing his state – It is intended that a person who has little experience in debate invite a wordsmith who has been engaged in debate for many years to a debate.

Saǵan jetermeken *sáwbetim-sazım,*   Will my feeling reach to you,
Sáhárde ıshqıńda shaǵlasam seniń. (6, 369) If I pray for your heart in the morning.

In this case, *sáwbetim-sazım* is a metaphor, in a pair form. It explains his deep love for his beloved, his tender feelings, as well as his feeling. If the metaphor was not used in these couplets, the artistic level would have decreased and the emotionality would not have been fully conveyed. The wordsmith used two things that were relevant to him at the same time and expressed his opinion in this artistic way in order to explain broad concepts.

Simple metaphors are considered the most important tool in folk aitys, which consecutive and clear meaning create the content of the aitys, increase its artistic level, and highlight the word-finding skills of those participating in the word competition.

Extended metaphors are formed by connecting two or more words. For example:

Sırtım aq dep lap urasań,   You boast saying you're white
Awzı búrmeli qaltasań,   You're a bag with a folded mouth**.**
Siltegende kespeytuǵın,   That doesn't cut when you hit it,
Qalayıdan soqqan baltasań. (6, 318)   You're an ax made of tin.

In these lines, two extended metaphors with similar meanings are used, and figuratively similar subjects are also chosen appropriately. The first given metaphor of *awzı búrmeli qaltasań (*a bag with a folded mouth) was used to express the meaning of the metaphor that came after it more clearly. In last line, *qalayıdan soqqan baltasań* (a tin ax) is a metaphor, and usually household tools like an ax are made of hard metal. And, as tin is a white soluble soft metal like silver, a chemical element [9, 108], it is well chosen for content of the metaphor. Therefore, it figuratively explains that the second side is not suitable for aitys and doesn't have experience.

Kún bolmasa, kewildi kir basadı,   If there is no sun, soul will be dirty,
Ay bolmasa, adamzat adasadı,   If there is no moon, humanity will go astray,
Adamnıń hár qaysısı qulıplı sandıq,   Each person is a locked chest,
Qulıptı gilt bolmasa kim ashadı? (6, 306). Who opens the lock if there is no key?

Here, *adamnıń hár qaysısı qulıplı sandıq is an* extended metaphor. A person's feelings and thoughts are known only to him. To other people around, only his appearance is visible, but his thoughts in him are not visible. If the chest is open, we can easily see what's inside it, but we can't see what's in the locked chest until we get the key and open. This situation is the result of figurative thinking, and it is taken as a basis for a metaphor.

Taz da qudaydıń bendesi,   Bald is also a servant of God,
Saw da qudaydıń bendesi,   Healthy is also a servant of God,
Taz benen sawdı ayırǵan,   He who separated the healthy from Bald,
Ol qudaydıń shermendesi. (6, 281).   Is a disgrace to God.

The metaphor in these lines is used to influence people. It was stated that all people are equal and that they should have higher virtues like humanness and humanism. It is natural for a person who hears these lines to think involuntarily. It motivates the people to adopt good qualities in themselves, to see people as equals.

In folk aityses, the metaphors are expressed mainly from the noun and verb.

The noun metaphors in Karakalpak folk aitys:

Qız degeniń qızıl gúl,	A girl is a red flower,
Jigit degeniń bir búlbúl.	A boy is a nightingale.
Aldıńızǵa kelippiz,	We came to you,
Hárne qılsań óziń bil! (6, 320)	You know whatever you do!

Calling a girl as a flower and a boy as a nightingale is a tradition rooted in the poetry of Eastern peoples. We can see that this tradition is preserved in Karakalpak folk aitys. Because the words "flower" and "nightingale" are similar to each other in terms of form and meaning, they provide a harmony in the poem lines. In addition, they are used together as a metaphorical couple.

The nightingale, which loves the beautiful bud, waits for its opening and waits faithfully. And the flower opens when the eyes of the nightingale are closed and falls asleep, and it upsets the lover nightingale. Annoyed by this, the nightingale sings a thousand different songs with sadness. All the songs of the nightingale are about flowers, about love and loyalty [12, 162].

The nightingale can be used in figurative sense as "skillful orator, pleasant musician" in addition to the meaning of sweetheart:

Esittik qız ekenin naǵız ilgir,	We heard that the girl is real adroit,
Talay jigit jeńilgen, oylap bilgil,	Many guys were defeated, think about it,
Solardıń biri bolıp sen keterseń,	Maybe you become one of them,
Bolsań da tulpar tuyaq, tiliń búlbúl. (6, 344).	Even if you are horse's hoof, and orator.

Here *tiliń búlbúl* is used in the sense of a master of words. Because Aitys is a contest of words, it is often equated to a gallop of horses. The metaphor of the horse's hoof, which is previous, is used in this connection.

Berdimurat haqtıń qulı,	Berdimurat is a trickster of truth,
Sahrada ósken búlbúli. (6, 233).	A nightingale that grows in the Sahara.

In these lines, the nightingale expresses a poet, in the meaning of a musician. The reason is that Berdak Gargabai uli was both poet and a bakhchi (singer).

The antonymic form of flower and nightingale metaphors is met:

Qız degeniń bir qızıl sheńgel,	A girl is a red alhagi,
Jigit degeniń bir góne shapan,	A boy is an old cape,
Iledi de, jırta beredi. (6, 276).	It will be hang and torn.

In this case, the girl is equaled to a red alhagi, and the boy to an old cape. In this case, the reason why the girl is equaled to a red alhagi is related to the fact that she does not accept the feelings of the boy for his lover. Since alhagi is a wild thorny plant [10, 526] that produces flowers and tubers in the spring, the girl's "thorny" words and actions make the guy dream of a thousand different passionate dreams and suffer. And the sad situation of the young man is expressed only through the use of word combination "an old cape". The verb words in the last lines made this (the situation of the boy) very clear.

Ísqıradı *bir jılan,*	A snake hisses,
Ol jılannıń awzında,	In the snake's mouth,
Way-way saladı *on qulan,*	Ten deer moan,

Ah, dáriyǵ-ay, *aqıl bolsańız,*   Oh, dear, if you are smart,
Bul sózimdi tap, qudam? (6, 308).   Find this word, my dear?

These lines are taken from riddles, the meaning of one snake – means a mouth, ten deer – ten fingers, if you are smart – if you are knowledgeable, if you are resourceful, and serve as a metaphor. The snake and deer zoonyms, along with providing the art, have a positive effect on the coherence of the lines of aitys.

Sol jigitińiz *suwqabaq bolsa,*   If that guy of yours like water pumpkin,
Qolıma alsam, moynına arqan salsam,   And will I take him by hand, put a rope around his neck,
Awıldan-awılǵa súyretip barsam (6, 293). And will I drag him from village to village

The *suwqabaq* (water pumpkin) in this example is used in a metaphorical sense, and it means that the young man is not strong enough to argue. The reason is that the water pumpkin is empty, it is a vessel for carrying water. In the past, girls used to tie his neck with a rope, hang it on his shoulders and carry water. These are the reasons why the word water gourd is used metaphorically. An inexperienced guy's work is like an empty water gourd.

Tawǵa shıqqan *qaraǵay,*   The pine tree that climbed the mountain,
Ósken eken putaqsız,   Grew without branches,
Záwlim biyik ala aspanda,   High in the sky,
Adam kúshi jetkisiz. (6, 311).   Human strength is beyond reach.

Here, the pine tree is used in figurative meaning for the purpose of expressing the hair of women. The reason is that pine is a tree that stays greens in winter and summer and grows tall [8, 126], so it is compared to the long beautiful hair of girls.

Sóz sózden ashılar,   Word opens from word,
Awızdan *dúrler* shashılar,   Pearls come out of mouth,
Jaqsı adam sóz sóylese,   When kind person speaks,
Adamnıń zeyni ashılar. (6, 320)   Makes person have good mood.

In this example, *dúrler* (pearls) are used as a metaphor to explain the meaning of words. Pearl – a precious gemstone, hinji. In the variable meaning, it gives the meanings of the most productive, the best, the worthest [8, 91] of something. Our people pay great attention to words, to speak beautifully and gracefully, and they know the power and worth of words. Therefore, the words were equaled to the most expensive, precious stones – the pearl .

It is natural that there are many noun metaphors. This is because tropes are often used interchangeably in place of image, mostly characters. Zoonyms serve to exaggerate some of the feelings of the main character. The artistic thinking of each people is related to its history, worldview, living conditions, and religious beliefs [12, 160].

The verb methaphors in Karakalpak folk aityses:

Sasqalaqlap sózińnen *búklenerseń,*   If you hesitate from your words,
Shontıqlıqtan sózime tiklenerseń,   If you stare at my words cause of lack words,
Bilemen Sırda áwliye kóp ekenin,   I know that there are many saints in Syr,
Ne payda, qádir tutıp kútpegen soń? (6, 347)   What's the use, when you can't wait?

Here, *búklenerseń*, it is used as a metaphor. In the aitys, it is used to figuratively express the defects and disadvantages of the opposing side.

Sáhárde ıshqıńda *shaǵlasam* seniń,   In the morning, when I dream of you,
Tıńlamasań, bar ma menıń ilajım,   If you don't listen, what I do?
Shayır *shaǵlap tursa* baǵıńda seniń. (6, 369)   If Poet sings in your garden.

Here, *shaǵlasam* is a verb metaphor and is used to express the love of a young man to a girl in an artistic way. The main meaning of the word shaǵlaw is to be happy, enjoy, grateful, excited, happy, playfully laugh, great [10, 493]. And, in the poem rows, the resin equaled himself to the nightingale singing in the garden. Therefore, we can see that the word "*shaǵlaw*" is used in the sense of "singing" like a nightingale.

Jolawshı, óz ayǵırıń ózińizge,   Passenger, your stallion to yourself,
Baytalım turaǵoysın ózimizge,   May my fillystay with us,
Ayaǵın *dumanlatıp,* eliktirgen (6, 361)   Making dust marching the legs.

In these lines, *dumanlatıp* is a verb word that has become a metaphor, and the word dumanlatıw explains the meaning of "pressing the fog, covering the fog" [8, 86]. Here, the dust that it appears as a result of a horse's gallop is similar to fog.

Verbal metaphors have viewpoint of expressiveness, mainly intensity of the situation [1, 30].

Ul tap deseń, ul *taptım,*   When you said to find son, I found him.
Qız tap deseń, qız *taptım,*   When you said to find daughter, I found her.
Appaq qızdıń aǵası-aw,   White girl's brother
Qayerimnen min taptıń? (6, 328)   What defect you found on me?

In this example, the verb *taptım* (I found) was used in the sense of "I gave birth" and was used as a metaphor.

-Barlıq apat ekewimizge jetipti,   - All the disasters happened to both of us,
Sizge túsken qurtlar jalqaw ma deymen?   Are the worms that got you lazy?
Shúdigarlap, mala baspay ketipti. (6, 300)   Plowed and left without trowel.

The verb words in these lines are presented figuratively and create a comedic effect. *Shúdigarlaw, mala basıw* is carried out with the help of a tractor. *Shúdigarlaw* means plowing, plowing the land [10, 230], *mala basıw*– toweling the plowed ground [9, 265], that is, crushing and leveling a large piece of land. These actions are used figuratively and humorously to depict the face and appearance of a person in the aitys lines. Therefore, the roughness of a person's face is similar to the appearance of an untrodden, unsmoothed ground.

In verbal metaphors, expressiveness is used to show the debater's (aitys teller) positive or negative relationship to events, to attract the listener to the described object, and also to arouse his own feelings in them.

The effectiveness of verbal metaphors in the poems is that they illuminate the depicted action and situation in the mind, give additional pleasure to the listener, and leave a deep mark in his memory [12, 183].

CONCLUSION

Thus, in Karakalpak folk aitys, the wonderful examples of metaphors closely related to the theme, imbued with the era and human spirit were created. They create their own character, style according to the differences of the use of words and the creating skills of the debaters. Metaphor, which is the most ancient method of artistic depicting tools, expresses thoughts for folk aitys and fulfills an important functional role from the artistic and aesthetic point of view.

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Rezyume: Maqolada qoraqalpoq xalq aytishlari tilida qoʻllanilgan ot va feʼl metaforalarning lingvopoetik xususiyatlari tahlil qilingan. Ularning badiiy obraz yasash imkoniyatlari oʻrganilgan.

Резюме: В статье анализируются лингвопоэтические особенности именных и глагольных метафор, используемых в языке каракалпакских народных айтысов. Были изучены их возможности создания художественного образа.

Kalit soʻzlar: qoraqalpoq xalq aytishlari, metaforalar, ot va feʼl metaforalar, poetik nutq, lingvopoetika, lingvopoetik tahlil, badiiy obraz.

Ключевые слова: каракалпакский народный айтыс, метафоры, именные и глагольные метафоры, поэтическая речь, лингвопоэтика, лингвопоэтический анализ, художественный образ.

METHODS OF TEACHING FINE ARTS AND HISTORICAL SCIENCES BASED ON AN INTEGRATED APPROACH

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Summary: The article discusses the teaching methods of the examples of fine arts with the connection of history and the ways and approaches of teaching students of any kinds of art, such as historical pictures, miniatures and unique pictures. These ways help students to understand our history.
Key words: fine art, history, integration, lesson, relation to a work of art, historical space, relation of time and image

In recent years, as in other social spheres, various problems regarding the preparation of visual arts teachers for effective organization of lessons have been highlighted. The professional activity of a fine arts teacher, if his pedagogical work is permanent, is supported by his personal experience in the practice of drawing, painting, graphics, sculpture, design, decorative and applied art, his ability to show students the process of artistic embodiment in a certain material using various materials. The image is formed based on traditional and modern visual methods.

Currently, the training of teachers of fine arts is carried out in pedagogical universities. Future teachers focus on drawing in visual arts classes. In fact, it is necessary to teach to understand the work of art first. Today, the interesting organization of visual art lessons depends on ensuring its connection with other subjects, for example, to explain examples of visual art, it is necessary to integrate them into the science of history. For this, the following must be done during the lesson:

- development of interest in studying visual arts;
- systematic control of visual activity of schoolchildren;
- increasing students' confidence in their own strength and creativity;
- explain the consistent complication of visual activity;
- teaching the language of visual, folk, decorative design, mastering artistic tools, teaching the expression of plastic art;
-purposeful, systematic use of stories or conversations in art history teaching;
- the child's attention, work of thoughts, emotional and aesthetic sensitivity;
- targeted selection of works of art for reading;
-use of technical means of teaching, especially video and audio equipment, and use of special visual aids in fine arts classes;
- providing details of historical architectural works connected to the past;
- creative, improvisational and problematic introductory tasks;
- use of various historical and artistic materials and methods of working with them;
- introducing the game elements and the structure of the game art teaching lesson, using the elements of the competition;
- application of the project method of teaching in the classroom;
- Such as the systematic development of pedagogically appropriate relations between the departments of "Fine Art" and history.

In order to increase the effectiveness of education, the knowledge of historical information, when the children themselves participate in the supervision of visual arts classes, and there are mutual elements, increases their artistic and creative activity. This includes supervising children.

This gives them the opportunity to see the results of their activities and their comrades, to see achievements and shortcomings, to find their way. Some teachers organize visual arts classes based on entertainment only, especially in a form that does not disturb the child.

In order to understand the examples of fine art, it is necessary to know the history of art, its specific signs and symbols, as well as any example of fine art has its own history. Or, in order to understand some unique historical paintings, it is necessary to know well the entire history or the period when the painting was created. In this sense, it is necessary to teach this subject in connection with the subject of history in order to deeply understand the examples of fine art and their uniqueness. [1.68.]

The Uzbek people are proud of their ancient visual, applied, architectural arts and culture. Because, in the territory of Uzbekistan, even before AD, the types of painting, sculpture, and architecture were highly developed, and their examples are Varakhsha, Afrosiob, Kalchaën, Tuproq kala, Bolalik tepa, Ayrtom, Dalvarzin tepa, Fayoz tepa, Koykyrilan kala, Ajina tepa, Teshik kala and found in a number of other places.

It should also be noted that these works were created in the 4th-1st centuries BC, and their age corresponds to 5-6 thousand years. It is no exaggeration to say that the artistry of these works is not inferior to the works of contemporary artists and sculptors. It is impossible to create works of such a high artistic level without the advanced experience accumulated at that time, schools of fine arts.

It is known that art develops only on the basis of the traditions of several generations formed over many years, the knowledge passed on by the master to the student. This indicates that it has developed in the form of professional artistic education, even if it is not necessarily in the direction of general artistic education. The reasons for interruptions in the development of art in the territory of Uzbekistan in certain periods go back to the conquests of Iskanadar Zulkainar, Mongols, Arabs and Russians. A clear proof of this is the flourishing of the miniature type of fine art during the period when Amir Temur established an independent state.

During the time of Amir Temur, miniatures and book graphics developed so quickly that it influenced the art not only of the East, but also of European countries. As a result, along with Samarkand, Bukhara, Khirot miniature schools, Baghdad, Tabriz, Shiraz, Azerbaijan, Hind, Isfahan, Turkish miniature schools were formed and developed.[4,159.]

It should be remembered that teaching, first of all, is a visual art that develops the student's mind, introduces him to organized work. However, it would be a mistake to ignore the feelings of a young student and he is not interested, why he needs constant attention. Experience shows the need to gradually and consistently complicate the learning process. At the same time, it is necessary to educate.

Creative abilities of schoolchildren are manifested and formed when there is an objective need, opportunities are created for this, when this need and opportunity is realized by the child and is perceived by him as a need.

In the process of artistic and creative activity, it is also important for schoolchildren to overcome certain difficulties, which gives them a sense of satisfaction, confidence in their own strength, creative abilities.

The biggest challenges for children are learning composition, feeling the color of the shape, proportions, volume and colors in the picture. To overcome these difficulties, visual, design and

decoration work is necessary in the execution of some actions. To ensure their consistent complexity, each of them is given a visual art lesson, a leading educational task, and lesson-to-lesson tasks.

The main thing is the system of pedagogical conditions developed by us. The complexity of the educational material should be implemented taking into account the age's opportunities for the formation of skills and competencies in visual arts at each stage of education.

The implementation of this condition allows the effectiveness of art education - the development of the basics of visual literacy by schoolchildren and their artistic and creative activities. [3.88.]

Another means of artistic expression should be observed. Using a simple transfer tip with school children. Many examples for this can be copied from the works of famous artists.

Purposeful, regular use of stories or conversations about the history of art activates the child's attention, thinking, emotional and aesthetic sensitivity.

The purposeful selection of works of art for reading by schoolchildren is determined by the following principles:
- artistic-aesthetic value of works of visual art;
- variety of visual art types and genres,
- traditional types of folk art, technologies of artistic processing of materials in folk art;
- the unity of aesthetic perception and artistic practice of schoolchildren in accordance with educational goals for each class.

A distinctive feature of modern changes in society is characterized by rapid development of business relations between people, various forms and methods of production organization, expansion of economic relations and their geography, improvement of mass media, advertising, general computerization, etc.

Considering that the modern world is visualized in an accelerated development, a person receives 85% of the information about the world through sight (according to J. Gibson's research), children should be taught in art classes at school. Artistic culture of schoolchildren. From the point of view of artistic pedagogy, the process of forming artistic culture includes the following: educating the audience's aesthetic taste;
development of universal cultural values and traditional art; to develop the ability to see the world in all its diversity: to cultivate the ability to appreciate and understand the beauty of nature, art and the environment; to use cultural values, artistic knowledge in their lives and to form the ability to consciously distinguish the true values of art from surrounding objects.[8,256]

Therefore, the whole process of teaching art, including visual arts, at school should be aimed not at the formation of individual graphic skills and practical skills of working in a certain type of activity, but at the development of the emotional and emotional sphere. Children should be involved as much as possible in the process of self-development, self-improvement and improvement of the culture of their people, revealing their inner readiness for active creative expression in art.

This is the reason for the active introduction of humanitarian technologies integrated into the practice of general education schools. [5,230.]

Teaching visual arts with the integration of history is a complex structural process that includes the following activities: teaching children to look at any events from different points of view; develop the ability to apply knowledge in various fields in solving a specific creative task; formation of students' ability to independently conduct creative research; to develop the desire to actively express themselves in any situation.

In the dictionaries translated from Latin, the definition of integration is interpreted as "restoring wholeness, filling, uniting any parts, elements", which helps to orderly coordinate structures and functions and integrate them. In science, the term "integration" is used in the social sphere, art, society, including the rapprochement and connection of sciences with the process of differentiation. Integrated principles, dialectical relations, integration of science and practice are built; and manifest as the law of their growing needs and activities.

Repetitive processes, according to scientists, help to develop the need to find unusual forms of work, change the content of activities, conduct extensive research on improving the personality of the teacher. A systematic understanding of integration is given in the researches of M. Azimov, V. Afanasev, V. Barulin, P. Kapitsa, B. Kedrov, K. Krasnoyarov, M. Terentiy, P. Fedoseev, B. Yusov and others. [2.78.]

The theoretical analysis of modern scientific-pedagogical research on the problem of introducing schoolchildren to object-spatial activity and aesthetic education of schoolchildren in a real environment showed that no special research was conducted to determine the pedagogical conditions of this direction in the field of children's art education. The types and forms of work in the field under consideration were mainly related to the practical nature of work and attention to specific activities in the research of scientists and teachers.

 Among them, the following directions can be distinguished: aesthetic education of children in the process of studying decorative-practical art and the environment.[9,245.]

The study of the theory and practice of modern art education and training, in general, is based on the development of the problem of holistic study of art and subject-spatial development, in particular, the real reasons and importance of the chosen research direction: the minimum amount of understanding of the work, the study time allocated to art at school (1 hour per week) requires a radical revision of the process of organizing and conducting visual arts classes;

2) the need to master culture and art based on regional and universal values requires the development of a new generation of visual art programs aimed at solving these problems;

3) separating the subjects of the artistic-aesthetic cycle from real life requires a practical revision of educational programs. Formation of students' ideas and skills on the importance of art for real life and the application of acquired knowledge in any practical activity;

4) the need for time in the education of creatively active individuals requires the need to improve pedagogical humanitarian technologies to organize and conduct visual arts classes and create a special science-spatial learning environment;

5) in understanding art, being able to relate it to history can be a means of developing the ability to understand any work of fine art [7,70.]

Unveiling the potential of humanities technologies for the comprehensive development of visual arts in a modern general education school is carried out through this interdisciplinary integration. Especially, since every phenomenon is related to time, it has its own history, in this sense, it is correct to understand the examples of fine art, to be truly impressed, to look at them as just colors, painted portraits, not as a person or time, destiny and spirit, as a vision of existence. In such circumstances, history increases the value, charm, and importance of a work of visual art.

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Rezyume: Maqolada tasviriy san'at namunalarini tarix bilan bog'liq holda o'qitish metodikasi hamda tarixiy rasmlar, miniatyuralar, noyob suratlar kabi san'atning har qanday turlarini o'quvchilarga o'rgatish yo'llari va yondashuvlari haqida so'z boradi. Bu usullar o'quvchilarga tariximizni tushunishga yordam beradi.

Резюме: В статье рассматриваются методы обучения на примерах изобразительного искусства с привязкой к истории, а также способы и подходы обучения школьников любым видам искусства, таким как исторические картины, миниатюры и уникальные картины. Эти способы помогают учащимся понять нашу историю.

Kalit so'zlar: tasviriy san'at, tarix, integratsiya, dars, san'at asariga munosabat, tarixiy makon, vaqt va tasvir munosabati

Ключевые слова: изобразительное искусство, история, интеграция, урок, отношение к художественному произведению, историческое пространство, отношение времени и образа.

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THE INTERNATIONAL NATURE OF COMPUTER TERMS IN ENGLISH LANGUAGE

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Summary: *This article is dedicated to the investigation of the international nature of computer terms in English language*
Key words: *system,term,specific,terminology,language,technical,level.*

Scientists often refer to Greek and Latin words. But in practice, there are many commonly used inter-language terms. It is possible to summarize these different opinions on the word, and give them the following definition. It is a language that is entirely or partially compatible with one another in the languages of the Greek and Latin languages, common in many languages of the world, in the languages of the fraternal and in different systems [1,28]

Some linguists give an idea of interrelations and say that there is little difference between these words and the acquired words.

In general, in the scientific and technical terminology, international terminology is widely used and widely used in our language. In particular, antenna (visual) - antenna [visual] - franc. antenna - lot. antenna - column, dor (on board), model (visual) - model [visual] - franc. model - lot. modulus - measurements) are commonly used in the speech language (speech), it is unlikely that the more commonly used languages are. If the terminology loses its character and becomes a common word, then a determinant event occurs. Such a state-of-the-art case can be found in terminology practice.

The use of acquired terms in computer terms can be divided into the following groups:

1)Terms that describe the concept of a specific computer industry: applet - application, viber - complete erasure of information, web design - decoration of web - clicks, type of offensive attack, parenting - highly effective and resourceful computer, trolling - computerized and so on.

2) Inter-industry terminology used in scientifically-technical and computer applications such as appcomcomputer, code, tunnel, design, generic computer, and so on.

It has been noted that the English language terminology of computer terminology appeared in the form of hybrid or hybrid terms with the participation of international terminology. For example: hypertext, hypermux, cybercrime, cybercriminals, superkalite, computing, web design, web page, web-linking, web-computer, cross-program, modem-application.

The international terms of computer science are an essential ingredient of English as it translates into English and provides an etymological study and analysis of the lexical computer components of international English terms. Accordingly, the terms of internationally-accepted computer-based terminology can be subdivided into the following etiologically:

• Internationalized terms derived from Latin: trunk (high speed communication line) [<lot. magistralis - head, main]; computer (feature, fuzzy computer, or quantity mark) [<lot. attributum - added, supplied, added], mkomputerritsa (two-dimensional array of objects and data) [<lot. mater, matrix - a]; gateway (1. external or other network communication station, 2. functional device or software that connects the various architectural computer networks) [<goll. sluis<fr.ecluse<lot. exclusa - barrier, obstacle, avoidance]; processor (functional device that provides specific execution

of specific commands) [<lot. processus - shift]; channel (signal or data computing means or path) [<lot. canalis - pipe; waterway]; adapter (an electronic circuitry that allows you to configure devices with different data transmission methods, an interface that allows two or more discrepancies to work together and exchange information) [<lot. add-on Add-on - add-on attachment <add-on, computed, connected, added] From 1907, this term implements the concept of electrical engineering;

• The terms of the internationally accepted Italian language: банк [< фр. banque< итал. banco – саррофпештахтаси, курсиси.

• internationally accepted terms that come from the Arabic language (French, Italian): cipher [<fr.chiffre - number, last <- zero, nothing empty]; masquerade masque <ital. mascheraarab. masharaqilmoq.

• German-speaking internationally accepted terms: Hertz (Hz) (1,000 BH) (1,000 BH), a Frequency Measurement Unit (1000 Mhz), derived from GenrichGerts in 1883 [Hertz Heinrich Rudolf Hertz.

Such a state-of-the-art computer terminology can be highly compact: Computer network; digital coding; encryption algorithm; cloning of information systems; computer information; computer network; green computer; compact disc; apparkomputer support; geterogenic network; consumer electronics; hybrid display; Hypercomputer protocol of computing.

Computer skills are also composed of the names of places to apply. At the same time, these terms of international character are widely used in the scientific and technical field. They are interpreted according to their semantics:

The following are the internationally accepted terms: Al-Jemal Algorithm, Werner Cryptosystem, Vijner Quadric Component, Gabidullin Cryptosystem, Gopp Code, Kaziski Method, Encryption Cryptosystem, Lempel-Ziv Coding, MacelisCryptotomy, Nidderayter Cryptosystem, Feytel Cipher, Hoffmann Method Code of Rid Muller, Normal Form of Boys Coded, Cardan Grid, Gold Array, Faradey Effect, Farm Law, Einstein Code, Naykvist Frequency, Naykvist Theorem, Rid Salomon Code, Such as the Merkel Tree, the Fexner Law, the Bouz-Chadhuri-Hochengem Code;

Internationally accepted terms of place names: Manchester Coding, Silicon Valley, Cambridge Ring, and so on.

Apparently, when used in terms of computer terms, there are significant changes in their semantics, applications, and implications. Individuality in its meanings, in general, is replaced by simplicity. Ultimately, it teaches a common name for science and technology.

The internationally-expressed terms in the computer industry are primarily used as terminology in the form of consolidation terms. The first step in this is a computer-based horse identifying its next component. For example: Hoffman's code, Cardano's lattice, Feystel's code, Merkl's puzzles, Vernam's cryptosystem and others. The person in them and the subject matter of individualism remain. Therefore, the term is written with capital letters. According to the structure, such elements of the term come in simple and dual form. For example, the Cryptographic System, Erlang's formula, Golda sequence, Lempl-Ziv, Rid-Muller, Boys-Kodd. The term elements in the form of these pairs are written using the hyphen.

It is noteworthy that most of the international terminology used in scientifically-technical terminology, in particular in the field of computer science, is mastered by the English language through the Russian language (intermediate language).

Generally speaking, speaking from another language is caused by social necessity. In this case, a new word or phrase that comes into being is not available in the mother tongue. Particular terms in the field of computer science include computer, computer, convergence, converter, content,

browser, web design, web server, web service, dorvey, dorgen, driver, and special abbreviations, including letters, marks and numbers: CAS , RAM, C #, S ++, SOM +, i18n, I / O, 4G.

There is a concept of «adaptation» and «assimilation» in the theory of vocabulary, and today the computer terms themselves gradually pass through these processes. Most of these professions are adapting to the phonetic structure of the English language. This adaptation process is being accomplished by adapting the English language to the pronunciation norms, obtaining various grammatical formulas. A compliment may also be adapted to the vocabulary process.

As mentioned above, the majority of computer terms are Russian, German, French, Italian and other languages. Adaptation from the phonetic aspect to the structure of the native language is a holcom computer in Western European languages.

We would like to recommend the introduction of computer terminology from Western European languages in the context of international terminological units that meet the current English language. For example, hypermedia, hypertext, hypercube, we think that these terms can be used in any language without hypermedia, hypermedia, hypersubjects (hypermedia, hypermata, hyperkin) in the verbal language (in the current English language). In our opinion, translation into this context will facilitate the process of acquisition and understanding international terms.

In the future, we hope that specialists will develop new grammar rules on the basis of international terminology graphics. In this case, it is quite possible that the alphabet will come up with many terms that will have two variants.

During the formation of the English computer terminological systems, the number of foreign and acquired terms has grown significantly. In particular, the impact of the introduction of computer terminology is crucial. In particular, this can be observed in the terminology practice. So far, experts have been able to see computer terminology units incorporated into sectoral dictionaries based on terminology. Computer-based terminology, used independently in the composition of the terminology or combination of vocabulary terminology, serves to express the concept of the field.

The sources of computerized terminology were studied in English language and their indicator of computers were determined.

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Rezyume: *Ushbu maqola ingliz tilidagi kompyuter atamalarining xalqaro tabiatini o'rganishga bag'ishlangan.*

Резюме: *Данная статья посвящена исследованию интернациональной природы компьютерных терминов в английском языке.*

Kalit so'zlar:*tizim, atama, o'ziga xoslik, terminologiya, til, texnik, daraja.*

Ключевые слова: *система, термин, специфика, терминология, язык, технический, уровень.*

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SOLUTION OF ENVIRONMENTAL PROBLEMS FROM THE POINT OF VIEW OF SOCIAL PHILOSOPHY (ON THE SAMPLE OF THE ARAL REGION)

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Summary: In the article the author pays attention to the concept of modern philosophical science. Ecology, being one of the general sciences, along with general systems theory and globalists, also includes problems related to the study of the philosophical tasks of all natural sciences, as well as social and humanitarian disciplines. Ecological philosophy has become a field of philosophical knowledge that explores the philosophical problems of the interaction of living organisms and systems with each other and with their environment.
Key words: Aral Sea, ecology, culture, environmental awareness.

The progressive development of science and technology in the modern world creates a number of global problems. Among them, a special place is occupied by the attitude of mankind to the environment. One of the important problems is the tragedy of the Aral Sea. Being one of the most global catastrophes, the Aral tragedy creates a number of environmental problems. In connection with this problem, a number of Central Asian countries and Uzbekistan are experiencing negative consequences. The Republic of Uzbekistan and the world community are actively involved in the struggle to save the Aral Sea basin and improve the ecological state of the territories. But the most important thing is active agitation for improving the living conditions of the local population.

It is known that the subject and basic concepts of modern philosophical science are considered in three aspects of the existence of science: science as the generation of new knowledge, as a social institution, as a special sphere of culture. In this sense, such problems as the natural sciences and culture, natural science and the development of technology, natural science and the social life of society, etc. Ecology, being one of the general sciences, along with general systems theory and globalists, also includes problems related to the study of the philosophical tasks of all natural sciences, as well as social and humanitarian disciplines. The problems of the unity of the world, the relationship between man and nature, ecological consciousness and ecological culture have long been in the center of attention of philosophers, since ancient times.

As the researchers note, "philosophical thinking, embracing both the world of nature and the world of man, contributed to the practical development of reality. The degree of rational coverage of the natural world in ancient Greece was the highest. In other regions of the world, there were more elements of the religious and mythological worldview, but this does not mean that philosophy had fewer opportunities to influence social life. Thanks to these features, the praxeological and axiological moments in philosophy were more pronounced; here the relationship of philosophical ideas with the formation of cultural norms and values was closer, which is still observed" [1, p.450].

In addition, the so-called ecological philosophy has become a field of philosophical knowledge that explores the philosophical problems of the interaction of living organisms and systems with each other and their environment. It is known that environmental issues have become the main worldview setting of modern culture.

So, for instance, it is of interest to consider the issues of ecology at the level of biological philosophy, which "can be represented as a complex, integrative, biologically oriented interdisciplinary branch of knowledge that reveals the worldview-methodological, epistemological,

ontological and axiological problems of being. The conceptual core of biological philosophy is the concept of life, which in our time acquires the status of a poly semantic philosophical category and the fundamental principle of understanding the essence of the world and human existence in it. The foundations of the modern approach to the study of problems of environmental consciousness were laid by N. N. Moiseev [8], M. M. Novoselov [9] and others. There are many works that consider specific problems of solving environmental problems [6] at the management level.

Each region, each country strives to fulfill the necessary set of tasks for the use of natural resources, including human resources, but taking into account the needs of protecting the environment.

One of the most difficult obstacles is low environmental literacy, which manifests itself in ignorance of the characteristics of the environment, both immediate and planetary, as well as low environmental culture. Love for nature, which is understood as love for all living things and is expressed in certain actions, and also settles in the mind in the form of values and stereotypes based on them, should be cultivated in the minds of people all their lives, through the education system, the mass media, art, literature and etc. It is clear that "the problem of the ecological crisis is primarily a social and political issue" [7, p. 5].

So far, unfortunately, at numerous international conferences, forums, meetings, as well as in the media, when discussing global environmental issues (climate warming, "depletion" of the ozone layer, degradation of the biosphere), rhetoric mainly prevails. Both politicians, and businessmen, and even scientists occupying high and responsible positions in the international and national official hierarchy, are in the grip of the stereotype of the "anthropogenic" factor. In general, methods of solving environmental issues, the strategy of environmental safety and ways to ensure the so-called "sustainable" development of civilization remain uncertain, despite the adoption in the last decade of well-known international agreements (the Vienna Convention on the Ozone Layer of 1985, the Montreal Protocol of 1987, the Framework Convention on Climate 1992, the Agreement on the reduction of electricity production by burning organic fuel 1997). The main reason, in our opinion, is the insufficient philosophical validity of the main provisions on which responsible economic and political decisions are made. In this regard, philosophers face some important issues related to global problems, and the lack of a systematic approach to this problem is the main obstacle that does not allow a fresh look at the causes of environmental degradation and the position of man in it. Among them, as has been already noted, the most important is the humanization of public consciousness. The nature of research in this direction in different countries is determined by the needs of development. Environmental violation in our republic, reduction of forests, pastures, land suitable for agriculture, and in some places even their complete unsuitability, atmospheric pollution in large cities, shallowing of the Syrdarya and Amudarya rivers, environmental problems of the Aral Sea, soils, violation or reduction of biodiversity reinforce the need for urgent action to resolve environmental problems.

Within the framework of the year of ecology, various events are being carried out, electronic resources are being created in specific areas, and educational work is being carried out among the population. The "Plan of comprehensive measures to improve the environmental situation in the Aral Sea region" was approved, as well as a number of programs. The fulfillment of the assigned tasks is controlled by the relevant state bodies. The Aral Sea tragedy remains one of the largest environmental humanitarian disasters in the world the history of mankind. Based on this, in order to preserve the Aral Sea, on September 12, 2000, the first President of Uzbekistan I.A. Karimov, speaking at the UN rostrum, once again mentioned the tragedy of the Aral Sea as "worldwide" and

proposed to create a special committee on the Aral Sea at the UN. From the first years of independence, the countries of Central Asia and Kazakhstan decided to jointly solve regional problems. Our coastal states have decided to work together to solve environmental problems. As a result, an international fund was created. Activities are underway to provide about 40,216 regions with drinking water, providing the population necessary medicines, medical care, and created about 40 million jobs [3].

For the purpose of environmental education and the formation of an ecological culture of the population of the Republic of Karakalpakstan, International scientific and practical conferences were held, the Ecological Party of Uzbekistan organized multiple Forums to address issues of regional environmental security, but, above all, global. Preserving the sea as the backbone of the Aral means preventing an ecological revolution. The protection of our nature, its protection, the proper use of natural resources and the development of ecological culture and consciousness in society is not only the work of nature protection authorities, but is also the duty of a citizen of our country.

Thus, conducting a wide front of scientific research on global environmental problems, including from a socio-philosophical point of view, is important, since it can lead to the creation of new technologies that allow controlling and influencing natural processes in the right direction. And this is a necessary condition for the sustainable development of civilization.

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Rezyume: Maqolada muallif zamonaviy falsafa fanining kontseptsiyasiga e'tibor beradi. Ekologiya umumiy fanlardan biri bo'lib, umumiy tizimlar nazariyasi va global tadqiqotlar bilan bir qatorda barcha tabiiy fanlarning falsafiy vazifalarini, shuningdek, ijtimoiy va gumanitar fanlarni o'rganish bilan bog'liq muammolarni ham o'z ichiga oladi. Ekologik falsafa falsafiy bilimlar sohasiga aylandi, u tirik organizmlar va tizimlarning bir-biri bilan va ularni atrof-muhit bilan o'zaro ta'sirining falsafiy muammolarini o'rganadi.

Резюме: В статье автор уделяет внимание концепции современной философской науки. Экология, являясь одной из общих наук, наряду с общей теорией систем и глобалистикой, также заключает в себе проблемы, связанные с исследованием философских задач всех естественнонаучных, а также общественно-гуманитарных дисциплин. Экофилософия стала областью философского знания, исследующей философские проблемы взаимодействия живых организмов и систем между собой и средой своего обитания.

Kalit so'zlar: Orol dengizi, ekologiya, madaniyat, ekologik savodxonlik.

Ключевые слова: Аральское море, экология, культура, экологическая грамотность.

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THE IMPORTANCE OF MEDIA IN ELECTIONS AND MEDIA CULTURE OF THE PUBLIC

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Summary: The article stated the importance of media in elections and the community's media culture and media literacy, the role of media in Democratic voters, media tasks, medinaing in elections should be uncensored, and an equal field of opportunity during elections.
Key words: Media, democracy, election, discussion, freedom of speech, media literacy, pluralism, censorship, fourth estate.

Introduction. The media are essential to democracy, and a democratic election is impossible without media. A free and fair election is not only about the freedom to vote and the knowledge of how to cast a vote, but also about a participatory process where voters engage in public debate and have adequate information about parties, policies, candidates and the election process itself in order to make informed choices. Furthermore, media acts as a crucial watchdog to democratic elections, safeguarding the transparency of the process. Indeed, a democratic election with no media freedom, or stifled media freedom, would be a contradiction.

The media have traditionally been understood to refer to the printed press as well as radio and television broadcasters. In recent years however, the definition has become broader, encompassing new media including online journalism, and social media. Citizen journalism is widely gaining traction, including in countries where traditional media is either controlled or strictly regulated.

Method. The media play an indispensable role in the proper functioning of a democracy. Discussion of the media's functions within electoral contexts, often focuses on their "watchdog" role: by unfettered scrutiny and discussion of the successes and failures of candidates, governments, and electoral management bodies, the media can inform the public of how effectively they have performed and help to hold them to account. Yet the media also have other roles in enabling full public participation in elections:

- by educating voters on how to exercise their democratic rights;
- by reporting on the development of an election campaign;
- by providing a platform for the political parties and candidates to communicate their message to the electorate;
- by providing a platform for the public to communicate their concerns, opinions, and needs, to the parties/candidates, the EMB, the government, and to other voters, and to interact on these issues;
- by allowing the parties and candidates to debate with each other;
- by reporting results and monitoring vote counting;
- by scrutinizing the electoral process itself, including electoral management, in order to evaluate the fairness of the process, its efficiency, and its probity;
- by providing information that, as far as possible, avoids inflammatory language, helping to prevent election-related violence.

The media are not the sole source of information for voters, but in a world dominated by mass communications, it is increasingly the media that determine the political agenda, even in less technologically developed countries. A report by the Cairo Institute for Human Rights Studies put it this way.

The media plays a major role in keeping the citizenry abreast of current events and raising awareness of various issues in any society. It also has an extremely significant impact on the public's views and way of thinking. The media is the primary means through which public opinion is shaped and at times manipulated. If this is the media's role then in normal course of events, it becomes even more vital in exceptional periods, one of which is electoral junctures, when the media becomes a primary player. Elections constitute a basic challenge to the media, putting its impartiality and objectivity to the test. The task of the media, especially national media outlets, is not and should not be to function as a mouthpiece for any government body or particular candidate. Its basic role is to enlighten and educate the public and act as a neutral, objective platform for the free debate of all points of view. [1]

In today's politics and society at large, media is essential to the safeguarding transparency of democratic processes. This is often called its 'watchdog' role. Transparency is required on many levels including for access to information; accountability and legitimacy of individuals, institutions and processes themselves; and for rightful participation and public debate.

Media acts as a mechanism for the prevention and investigation of allegations of violations or malpractice. This watchdog role extends from accountability of officials and their actions while 'in office' to entire processes. For example, media presence at voting and counting centres is critical to preventing electoral fraud, given that full measures protecting freedom of speech are guaranteed, and that media are free to act independently and with impartiality.

An election cannot be deemed democratic unless the public is fully able to participate and is unhindered in exercising choice. As such, media are vital in ensuring that there is a public, i.e. transparent, platform for debate and participation in the discussion. Candidates are to represent the public. Transparency of an election helps ensures that this indeed is so. Furthermore, transparency of individual processes (such as voting, counting, registering, candidate nomination, campaigning and so forth) further protects and enables public participation in these processes.

Candidates and Parties have an explicit right to provide the electorate information regarding their attributes, political agendas, and proposed plans. Besides meeting directly with members of the electorate, candidates and parties accomplish this task through campaigns via media. It is paramount to democratic electoral processes therefore, that all candidates and parties are provided equal access to media for this endeavour.

To create a level playing field is the first role. This entails equal access to state broadcasters and other state resources:

An uneven playing field is less evident to outside observers than is electoral fraud or repression, but it can have a devastating impact on democratic competition. [2]

Another key role of media in campaigning is balanced reporting, ensuring that candidates receive fair coverage. This is one reason why robust media monitoring is so important toward ensuring fair and free elections. Media professionalism and media literacy are also fundamental to this achievement.

The single guiding principle underlying the role of the media in elections is that without media freedom and pluralism, democracy is not possible. This has been underlined in the decisions of numerous international tribunals. It has also been stated very clearly in the recent past by the

United Nations Special Rapporteur on Freedom of Expression, who went on to elaborate a series of steps that governments should take to guarantee freedom of media during elections.

There are a number of different dimensions to media freedom that are of relevance in elections:

- Freedom from censorship.
- Freedom from arbitrary attack or interference.
- Free access to necessary information.
- A pluralism of voices in the media.

The last of these is especially important. It is often interpreted to mean that the media should be owned by a variety of different interests, resulting in a "market-place of ideas". This is important, but it is only one aspect. For countries emerging from authoritarian rule, usually characterized by tight state control over the media, ensuring pluralism within the publicly funded media may be equally important. This is because often it is only a government-controlled national broadcaster that has the capacity to reach all sections of the electorate.

In order to ensure that the publicly funded media are not, in practice, government-controlled, a clear regulatory intervention may be required. This is the central paradox of the management of media in elections - the frequent need to establish a fairly complex regulatory system in order to enable the media to operate freely and without interference.

Discussion. In many countries, free elections are themselves a new phenomenon. For large parts of Asia and Africa that were once under colonial rule, free and sovereign elections are a development of the second half of the twentieth century, while for those countries in the former Communist bloc they are even more recent than that. Even the countries of Western Europe and Latin America only fully democratized in the years shortly before or after the Second World War with the extension of the franchise to women. The United States only finally ended limitations on the franchise in the 1960s. Latin America's democratic tradition was blighted by a history of military dictatorship, particularly from the 1960s to the 1980s, a development that was echoed in many countries of Africa and Asia. Some countries, particularly in Europe and North America, had a vigorous free press even when the franchise was limited. Others developed independent media only as they were struggling to install a system of elected government.

Europe, North America, and Latin America evolved a theory of the media as a "Fourth Estate", offering a check on the activities of governments. This approach has increasingly been incorporated into international law, although the practice has fallen short of the ideal. Generally, an independent press evolved in parallel with the more general development of political freedoms.

Until relatively recently, the printed press was the sole mass medium. It had a limited reach, simply because functional literacy only extended to a minority. Thus the development of broadcasting was potentially revolutionary in communicating political ideas to a mass audience. Yet in many instances, the very potential of radio and television was frightening to those responsible for administering broadcasting.

Times have changed. Received wisdom is that contemporary elections are dominated by television, a development that can be traced back to around 1960 - the date of the historic first television debate between United States presidential candidates. But this view is only partly accurate. The majority of the world's population do not watch television - they do not have electricity or they could not afford the set. Nor is this only a phenomenon of dictatorships - the world's largest democracy, after all, is India. For such countries, radio remains the most important medium.

But even in countries where television dominates political debate, this has been a fairly recent phenomenon. In many Western European countries, commercial broadcasting was only legalized in the 1980s, and television coverage of elections remains highly regulated as a legacy of the long years of state control of broadcasting.

Conclusion. What remains to be seen is the long-term impact of the most recent developments in media technology. The Internet has already transformed the way in which elections are reported. It has effectively ended, for example, the practice of "news blackouts" or "reflection periods", since it operates largely beyond the reach of regulators. But if the majority of the world's population still does not have television sets, still fewer have personal computers. The precise impact on election coverage remains to be seen.

Potentially even more significant is the future role of mobile telephony as a news medium. In many parts of the world, access to telephones has skipped a technological generation. Many relatively poor people who have no land line own a mobile telephone. Text messages have already been used in political campaigning and for distributing news. The next stage, which is already developing fast, is the use of "Podcasting", broadcasting audio and video files.

Countries with recent histories of authoritarian rule will often have in common that the publicly-funded media operate under tight government control. Elsewhere, in most of Western Europe for example, there is a strong history of public broadcasting being independent of government and enhancing media pluralism. But in countries with a weak culture of political pluralism, state journalists will not usually be bold or independent. This may require a greater degree of intervention from the regulatory body to ensure that they discharge their public service functions properly.

Some of the more practical questions may be more difficult to address in a new democracy than in a well-established one. For example, how do you decide how much free broadcasting time to give each party when there was no previous democratic election as a means of gauging their popular support? But even this difficulty - or difference - should not be overstated. Many advanced democracies - the Netherlands, Denmark, and Norway, for example - take little or no notice of previous election results when they allocate broadcasting time. They do it on the basis of equality between the parties. So for administrators from new democracies planning a regulatory system, there is a wealth of existing examples to choose from.

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Rezyume: Maqolada medianing saylovlarda ahamiyati va jamiyatning media madaniyati va media savodxonligi, medianing demokratik saylovlardagi o'rni, uning vazifalari, saylovlarda medianing tsenzurasiz bo'lishi va saylovlar paytida teng imkoniyatlar bo'lishi kerakligi aytilgan.

Резюме: *В статье говорилось о важности медиа на выборах, медиакультуре и медиаграмотности общества, роли СМИ в демократическом голосовании избирателей, задачах СМИ, СМИ не должны подвергаться цензуре на выборах, а также равных возможностях во время выборов.*

Kalit so'zlar: *Media, demokratiya, saylov, munozara, so'z erkinligi, media savodxonligi, plyuralizm, tsenzura, to'rtinchi mulk.*

Ключевые слова: *Медиа, демократия, выборы, дискуссия, свобода слова, медиаграмотность, плюрализм, цензура, четвертая власть.*

MEASURE OF RESTRAINT IN THE FORM OF DETENTION IN CRIMINAL PROCEEDINGS

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Summary: *The concept and essence of the detention precaution, which is one of the precautions in criminal proceedings. Grounds for the stay of detention precautions. The stay and extension of the detention precaution is summarized on the legal grounds for its abolition.*
Key words: *a precaution, arrest, inquiry, preliminary investigation.*

In addition to the provisions of Article 236 of the Code of Criminal Procedure of the Republic of Uzbekistan, the investigator, investigator, prosecutor and court, when choosing a measure of restraint for the accused, take into account the following circumstances: state of health, marital status. (the presence of minor children or parents of retirement age) other circumstances Other circumstances include: the possibility of living or working, state awards, criminal records.

The decision of the inquirer, the prosecutor, the decision of the court to suspend the measure of restraint is the legal basis for the suspension or cancellation of the said measure of restraint.

According to Article 27 of the Constitution of the Republic of Uzbekistan, such actions as arrest and detention are a preventive measure related to the restriction of a person's right to freedom and privacy.

The purpose of a measure of restraint in the form of detention is to isolate the accused from society, that is, to prevent him from committing another crime, concealing evidence, hiding from the court. Detention must be reasonable and lawful.

On the basis of the Decree of the President of the Republic of Uzbekistan dated August 8, 2005 "On the transfer to the courts of the right to authorize detention", the transfer of a preventive measure in the form of detention from the prosecutor's office to the courts of January 1, 2008 created an opportunity for a fair protection of human rights and freedoms in our society . The Decree of the President of the Republic of Uzbekistan dated August 11, 2020 "On measures to further strengthen guarantees for the protection of human rights and freedoms in judicial and search activities" states that the participation of a defense lawyer is mandatory when considering the suspension of a measure of restraint in the form of deprivation of liberty.

Deprivation of liberty as a preventive measure can be applied to intentional crimes punishable by imprisonment for more than three years under the Criminal Code of the Republic of Uzbekistan, as well as to crimes committed through negligence and punishable by imprisonment for more than five years. His rights and freedoms in the event of choosing a measure of restraint in the form of detention are based on the principles of the Constitution of the Republic of Uzbekistan on guarantees of individual rights and the principles of respect for the dignity of the individual, a fair trial, the presumption of innocence, as well as "Human Rights" guaranteeing human rights in the international level. it is necessary to take into account the "universal declaration", the covenant on "civil and political rights" and other legal documents that guarantee that a person is under the protection of the court.

A measure of restraint in the form of detention may be justified and lawful in the presence of the following circumstances: if a person participates in the case as an accused; if the crime committed is punishable by imprisonment; received information about the identity of the accused; if

the court deems necessary the prosecutor's request for detention; the ruling of the court must comply with the norms of the criminal procedural legislation.

According to Article 242 of the Criminal Procedure Code of the Republic of Uzbekistan, in some cases, for crimes committed intentionally, for crimes committed through negligence, a defendant accused of crimes for a period of not more than five years is hiding from the court, and the identity of the detained suspect is not established, during the period serving a sentence for a crime, imprisonment may be imposed as a measure of restraint. The immunity of deputies and judges should be taken into account when imposing preventive measures in the form of deprivation of liberty for certain categories of persons.

Article 9 of the International Covenant on Civil and Political Rights provides that any person arrested and detained must be brought before a court and detained for a short time, and the lawfulness and justification of the detention must be verified by the court.

The authorization of extensions of detention by a court is a special form of administration of justice. The transfer of the preliminary conclusion to the courts produced the following results:

- With the transfer of the right to a sanction to the courts, it began to be applied during the inquiry and preliminary investigation. When considering the issue of detention in court, together with the prosecution, the accused, the defendant and his defense are also present.

- The Code of Criminal Procedure has been brought into line with international treaties ratified by Uzbekistan and the norms of the Constitution of the Republic of Uzbekistan.

- Violations of human rights and freedoms and unjustified detention of innocent persons have been prevented, the authority of the defense has increased..

- The court considers the issue of detention in a closed court session, and the court decision on detention or non-detention comes into force and is subject to execution from the moment it is made. The decision of the judge is sent to the suspect, the accused, the defense counsel to be sent to the prosecutor for execution. If the detainees commit the crimes provided for by parts four and five of Article 15 of the Criminal Code of the Russian Federation, they may be kept in separate cells of the pre-trial detention center by order of the prosecutor. This does not apply to minors, the elderly and the seriously ill on the written prescription of a doctor.

- When investigating crimes, the term of imprisonment is up to three months. This period:

- Extension for five months at the request of the prosecutor of the Republic of Karakalpakstan, regions, Tashkent city

- - An extension for seven months is considered by the court at the request of the Prosecutor General of the Republic of Uzbekistan.

Extension of the term of imprisonment is not allowed.

In conclusion, among the reforms being carried out in our country, reforms in the field of judicial law will contribute to the provision of justice and giving it legitimacy. Continuous changes in the field of law lead to compliance with the norms of the Constitution of the Republic of Uzbekistan and international conventions ratified by Uzbekistan in ensuring the rights and freedoms of the individual. In this part, the collection of unfounded evidence of unlawful decisions was prevented by transferring to the court a measure of restraint in the form of imprisonment. The fact that the court takes a measure of restraint on the basis of a dispute between the parties indicates the priority of human rights..

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Rezyume: jinoyat protsessida ehtiyot choralaridan biri bo'lgan qamoqqa olish ehtiyot chorasining tushunchasi va mohiyati. Qamoqda saqlash ehtiyot choralarini qo'llash uchun asoslar. Qamoqqa olish ehtiyot chorasini qoldirish va uzaytirish uni bekor qilishning qonuniy asoslari bilan umumlashtiriladi.

Резюме: понятие и сущность меры пресечения содержания под стражей, являющейся одной из мер пресечения в уголовном судопроизводстве. Основания для отсрочки мер пресечения. Приостановление и продление меры пресечения под стражу резюмируются на правовых основаниях ее отмены.

Kalit so'zlar: ehtiyot chorasi, hibsga olish, surishtiruv, dastlabki tergov.

Ключевые слова: мера предосторожности, арест, дознание, предварительное следствие.

EMOTIONAL PHRASEOLOGISMS IN KARAKALPAK FOLK SONGS

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Summary: In the article, the problems of learning and classification of idioms in the Karakalpak linguistics, emotional idioms used in the language of Karakalpak folk poems (songs), and their integration into semantic field were discussed. Examples were taken and analyzed from the folk songs (poems) given in Volume V of Karakalpak Folklore 20 volumes.
Key words: phraseologism, folk poems (songs), classification, emotional idioms, semantic field, semantic field of joy, semantic field of anger, semantic field of suffer, semantic field of amaze.

Introduction

One of the distinctive aspects of language of each nation is phraseologism. Because idioms differ from other language units by their imagery, impact, strength of emotional-expressive meaning, and their development in a ready and compact form in the language.

Phraseologisms explaining imagery have a special place among linguistic units. They are word combination with variable meaning, and phraseological units have the same importance as individual words in a vocabulary of the language. The reason is that, all the words in its composition are equal to one word. "The wide use of phraseologisms in literary work shows the national uniqueness itself. Phraseologisms can be said to be the history of our people's past and present. In them, the true rays of the people's thinking, their lifestyle and customs are clearly visible". [13, 12] Therefore, the culture of the people is reflected in linguistic units, the firstly in phraseologisms.

Main part

The culture, world view, and the way of life of any people are reflected in linguistic units, and the language of folklore works has a special place in this. Because in the folklore of the people, thousands of information, passed from generation to generation, have been gathered. It gives us valuable information by separating the phraseologisms and analyzing them in relation to the relationship between language and culture. "The phraseology of the language of folklore works has many characteristic features and peculiarities, their discussion from a scientific point of view, special research reveals the rich data and possibilities of the phraseology of the Karakalpak language" [15, 188].

Phraseologisms in the Karakalpak language, their types, and problems of classification were mentioned in the works of E. Berdimuratov [5], J. Eshbaevs [7]. Phraseological dictionaries of the Karakalpak language were published [6; 7; 9; 10; 11].

The phraseologisms in the Karakalpak language were learned in all aspects in the works of G. Ainazarova [2; 3], B. Yusupova [14;15] A. Pirniyazova [12], Zh. Tangirbergenov [13], G. Allambergenova [4].

Phraseologisms occupy a special place in the lexical composition of each language. The phraseological phrases are one of the main symbols that show the nation's spiritual world, life style, and culture. The people's customs and traditions, worldview found their expression in it.

"The main task of lingucultural studies related to phraseology is to study and describe the communication mechanisms between phraseology, which are units of the natural language, and the cultural semantics of the language of "culture" [1,115]. That is, although phraseologism is a unit that is used in the language in a ready form, it has been formed in a direct relation with the life of the

people and the lifestyle for centuries, then becomes permanent in a language. The life experience, knowledge, as well as, landscape, flora and fauna, climate, etc, at the same time, social life, lifestyle, traditions are directly related to people's world view, and they are reflected in linguistic units, as well as in phraseology. Therefore, rather than classifying or analyzing phraseologisms in the language of Karakalpak folk poems (songs) according to thematic groups, structure or the relation to parts of speech, studying them in a new direction, i.e. from a linguistic and cultural aspect, gives us valuable information. Because folk songs, especially traditional songs, are written in order to fulfill the customs and traditions of the people and are directly related to them, the national color is clearly visible in them.

In Karakalpak linguistics, emotional lexicon, including phraseologisms depicting human emotions and mental state, has not been fully studied from a theoretical point of view. However, this was briefly mentioned in the some studies [12; 14; 15]. The study of such phraseologisms in the Karakalpak language helps to determine national psychology and its peculiarities. In the language of folk songs, this group of phraseologisms is often used. They can be connected to various kinds of semantic fields from the semantic point of view.

Traditional methods were used in the classification of phraseologisms in the Karakalpak language. "...Recent studies prove that dividing phraseologisms into such groups is not a relevant and important parameter. More attention should be paid to the meaning of the interpretation of phraseologisms. Recently, attention has been paid to the supporting words in phraseological units and researching the meaning of their interpretation" [12, 67].

A. Pirniyazova, who extensively studied the phraseological system of the Karakalpak language and its stylistic possibilities, divides the phraseological units that describe the inner world and feelings of a person into the following groups: 1) idioms that express joy, happiness; 2) idioms meaning surprise, get confused; 3) idioms expressing feelings such as suffering, sadness, and upset; 4) idioms that express fear [12, 74].

We have decided to combine the emotional phraseologisms used in the language of folk songs into the following semantic fields:

The semantic field of anger. There is a number of phraseological units that express the emotion of anger in the language of folk songs. For example: Jaman jolda shofyor *kúyip pisedi* (On a bad road, the driver got angry) ("Mashina", p. 266). *Ashıw kelse* ızalanıp kók shıǵar (when gets angry green hardly gets out) (Estelik albom qosıqları, p. 154). *Ashıwı kelse* bir kúni, Alıp keter iyesi (when he gets angry one day, takes away the owner) («Joqlaw», p. 201). *Tóbe shashı tik turıp* tórge qashar (he gets furious and runs away to top room) («Házil-dálkek qosıqları», p. 342).

Among the given examples, the phraseology of the *Tóbe shashı tik turiw* is somewhat different from the others both in terms of its external form and in terms of its sharpness of meaning. Compared to the previous phraseology, it is felt that the state of anger in a person has reached its highest peak.

The semantic field of happiness. A person feels happy for all kinds of reasons. Depicting such an emotional situation not by simple words, but by phraseology increases the worth of the literary work and has a strong impact on the reader. Such phraseological units can be exaggerated in the language of folk songs. For example: *Zeyin ashıp* esitiler xosh hawaz (Nice voice is listened making enjoyed) («Peyzaj», p. 271). *Zeynimdi ashqan* sáwer yardan ayrıldım (I lost my sweetheart who made me happy) («Joqlaw», p. 210). *Quwanıshıń sıymay qoynıńa* (Got very happy) («Tolǵaw», p. 382). Terbengen tereńnen, *Quwanıshqa bólengen* (Deeply moved, filled with joy) («Bet ashar», p. 42). Xatıńızdı alıwdan-aq, *Jıllı shıray endi* bizge (After receiving your letter, we had a grateful

face)(«Sálem xat», p. 135). Kelin keldi degende, *Kókke jeter tóbesi* (when she is said to have bride, became happy) («Bet ashar», p. 50). Iyilip sálem bergen soń, *Kókke jetti tóbesi* (After she greeted bowing, he got excited) («Bet ashar», p. 54).

The idioms in these given examples reflect every kind of spiritual condition of a person. Among the examples, the phraseology of *tóbesi kókke jetiw* is different from others in terms of form and meaning. Among the above-mentioned phraseology related to the semantic field of the anger, we have noted that the phraseology of *tóbe shashı tik turıw* is somewhat different from the others. In order to explain the meaning of great joy, the phraseology of *tóbesi kókke jetiw* that the word "*tóbe*" is used. In our language, the word "*tóbe*" is used as a synonym for the word "head". The word "head" has a number of variable meanings, such as greatness, priority, or the highest peak of something. T*óbesi kókke jetiw* is a phraseology used to express extreme joy, the highest level of joy.

The semantic field of suffer. There are also many phraseologisms in the language that express the emotion of suffering in a person. In the language of folk songs, especially the phraseological units "*ah urıw (sigh')*" and "*ǵam basıw (grief)*" are used productively. For example, Men *ah urmay* kim *ah ursın* jeńgejan (Who should sigh if I don't sigh', isister-in-law) ("Sálem", p. 142). *Ah uraman* yarım keler waqtında (I'll sigh when my sweety comes ("Sálem", p. 142). *Ah urıp* hár dámdá kórdim (I sighed every time) ("Báyit", p. 166). *Ǵam jemeńiz* yar-yaraw (Don't worry yar-yar) ("Háwjar", p. 121). Balam yalǵız deyip hasla *ǵam jeme* (Don't grief to having single son) ("Saǵınısh", p. 164). Atań menen eneńdi, *Ǵam basıp tur* yar-yar (Your father and mother-in-laws are having grief yar-yar) ("Háwjar", p. 124). Ketetuǵın qızlardı, Ǵam basıp tur yar-yar (The girls who are getting married are having grief) ("Háwjar", p. 128).

The semantic field of surprise. Also, in the language of folk songs, the idioms are used that express emotional state. For example, Onı bilmey *hayran boldı* sińlisi (the sister was *surprised* not to know him) («Muń qosıqları», p. 180). Jas basımnan meni *hayran ettiler* (They *surprised* me from my youth) ("Kettim ármanlı", p. 193). Jaqsılıqqa jaqsılıq, *Tań qaldırar* is emes (Goodness for goodness, it's not *surprising)* («Estelik albom qosıqları», p. 154). Kórgenlerdiń *aqılı hayran* kórindi (The people who saw it were *amazed*) ("Mehitaban kórindi", p. 286).

Conclusion

Above all, in the Karakalpak folk songs, the phraseologisms are more often in comparison to other units. Emotional phraseological units are especially productive, and as a result of learning them, we came to the following conclusions:

1. The emotional phraseology in the Karakalpak language has not been specifically studied, but it was briefly mentioned in other studies.

2. The emotional phraseological units used in the Karakalpak folk song language were combined and classified into several semantic fields, such as anger, joy, suffer, surprise.

3. Some emotional phraseology used in the Karakalpak folk song language is rarely used in the modern Karakalpak literary language, and some of them are out of use.

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Rezyume: *Maqolada qoraqalpoq tilshunosligidagi frazeologizmlarni oʻrganish va tasniflash, qoraqalpoq xalq qoʻshiqlari tilida qoʻllanilgan emotsional iboralar, ularning semantik maydonga integratsiyalashuvi masalalari muhokama qilindi. Qoraqalpoq xalq ogʻzaki ijodi 20 jildning V jildida berilgan xalq qoʻshiqlaridan misollar olindi va tahlil qilindi.*

Резюме: *В статье рассмотрены проблемы изучения и классификации фразеологизмов в каракалпакском языкознании, эмоциональных фразеологизмов, используемых в языке каракалпакских народных песен, и их интеграции в семантическое поле. Были взяты и проанализированы примеры из народных песен (стихотворений), приведенных в V томе «Каракалпакского фольклора» 20 томов.*

Kalit soʻzlar: *frazeologizm, xalq qoʻshiqlari, tasnifi, emotsional iboralar, semantik maydon, shodlik semantik maydoni, gʻazab semantik maydoni, iztirob semantik maydoni, hayrat semantik maydoni.*

Ключевые слова: *фразеологизм, народные песни, классификация, эмоциональные обороты, смысловое поле, смысловое поле радости, смысловое поле гнева, смысловое поле страдания, смысловое поле изумления.*

PSYCHOLOGICAL BASIS OF ASSESSING COMMUNICATIVE COMPETENCE OF LEARNERS

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Summary: This article is devoted to the investigation of psychological basis of assessing communicative competence of foreign language learners. The analysis of psychological basis of assessment is related to the study of teaching requirements and rules. As a result, when assessing students' outcomes, it is necessary to take into consideration learners' needs and interest, age characteristics, personal-psychological, communicative characteristics of educational objectives.

Key words: foreign language teaching, learners' needs and interest, age characteristics, personal-psychological, communicative characteristics of educational objectives.

The assessment or control work is usually carried out in order to determine the factor of speech of students in a foreign language in the learning process should provide the basis for the students' interest in a foreign language to increase further, shortly to study it, to work on themselves. In order to achieve this goal, control must also be well developed psychologically. The psychological characteristics of control, in our opinion, are manifested in the fact that it is in the control process and even, in the entire learning process, with its own assessment and, through management characteristics.

Although psychologically the preparation for assessment, the process of its conduct and the analysis of the results are important in the teaching process, it is observed that this issue is not an object of scientific research. Only in some fundamental sources we have come across different considerations on some aspects of the issue, namely the question of the test, which is a way of control, and its psychological characteristics.

Through control work, it is possible to determine the mental state of each student, and with the help of its results, an opportunity is created to determine a way to work with students in the educational process.

Famous psychologist in foreign language teaching I.A.Zimnyaya as well as T.A.Stejko stated: "assessment / control is not indifferent to the educational subject. This means that the forms and intensity of control indicate that the age of the learner, personal psychological characteristics, including the formation of the cognitive process, personal aspirations, communicative characteristics, emotions, control of the will of the subject, attention-sharing characteristics, competence in relation to foreign language should be in the main attention" [8: 4-9].

Any assessment, it can be said, control can negatively affect the psychology of students and, as a result, even undermine their health. Because control is an aggressive concept by nature [5: 19]. Some shy, reluctant students cannot fully demonstrate their knowledge, skills and abilities during control work. As a result, even a student with sufficient knowledge in science will not be able to get an assessment of his knowledge, and this situation will seriously affect students. Therefore, teachers should not ignore the individual characteristics of each student.

It is important for the teacher to know the individual characteristics of language learners so that they can control the process of formation of knowledge and skills. Namely, G.G.Gorodilova insisted:" it is necessary to determine the language skills, abilities of students, that is, in what way, when and under what conditions they successfully acquire speech skills and qualifications " [2: 107].

An assessment or score with the results of control work is in a psychologically decisive position. According to I.A.Shadrikova, the effect of the assessment, the value and orientation of its activities are determined by the following conditions: (a) the relationship of the appraiser; (B) the total orientation of the assessment to a particular action or person; (C) the relevance of the area being evaluated for the individual; (g) levels of human capabilities; (d) validity [6: 45-48].

A.Konysheva says: "the assessment activity of the teacher is extremely important in the socio-psychological formation of the student. Therefore, the assessment should be adequate, truthful and objective" [3: 10].

It is necessary to note that in addition to this opinion, some educators do not treat the same as those who are trained. However, E.A.Solovceva noted:" the content of the teacher's assessment becomes the basis for the emergence of the trust of learners towards the teacher, the creation of an atmosphere of benevolence, a psychological microclimate in a lesson that is considered important in teaching the implementation of communication in a foreign language and achieving the practical goal of teaching" [7: 68].

Famous psychologist A.A.Leontev noted that tests are the most appropriate tool when solving private problems of language learning process. Tests insist on the objective determination of the level of knowledge of language learners and the prevention of sub-objectivity and inconvenience that occurs in this process [5: 63].

Experienced teachers explain to students each grade or score set in order to prevent any conflicts that may arise during the evaluation process. Knowing why he received this assessment, the student seeks to carefully prepare for further control work, comparing his answer with that of others. Under these conditions, the teacher performs a stimulating function of control.

For control work, students are prepared throughout the academic year or semester. Because, in the current rating system, control work is drawn up in accordance with the school year or semester. But it is necessary to insist that some students are indifferent to study throughout the semester and begin to prepare only on the eve of the transfer of final supervision. This is due to the fact that such students rely only on their memories. In this, the student tests himself to be the owner of a "good" or "bad" memory.

Teachers of higher educational institutions should have excellent knowledge of human memory and its basic laws. Through this, it is necessary for students to help them manage their memory and mental activities, including organizing work to prepare for exercise, control work, by trusting their memory. The teacher should explain to students that memory and other psychic processes, such as perception, thinking, attention, are important in the acquisition of a foreign language. Therefore, the teacher should also be able to take into account the age and psychological characteristics of each student. In particular, some students can assimilate new material by imitating the teacher, others by applying the same material in different situations, and others by perceiving the text. Most students understand good memory as just keeping in mind. And in fact, a good memory is a quick and long-term memory, a knowledge and, most importantly, a re-expression by remembering it in the required situation.

With the advent of gender linguistics in the world of science, it is assumed that he will also study issues related to it. As an example, the question of control that interests us is also among them. Experts believe that control over female and male speech has its own aspects. For Example, E.F.Chabristova insisted that women perform written tests designed to determine speaking skills better than men. Men, on the other hand, perform tasks that require booming questions with socio-political problems, as well as the use of technical weapons, audio and video materials [1: 193].

Control work is usually prepared not only by students, but also by teachers. Even if the teachers are not as deeply trained as the students, they must complete the tasks that have taken control. Any teacher with professional qualifications will also be able to evoke a perfect idea of himself in students through the method of teaching science throughout the semester. This will prevent the teacher from having sentences that are not in the circle during the final control and will lead to an increase in the reputation of the specialist. Control work serves as a mirror of the teacher's pedagogical skills, professional knowledge and competence throughout the academic year or semester.

From our own experience, it is known that the consent of students to the grade received indicates that control is carried out successfully. To achieve such a result, in our opinion, any control should be carried out on the basis of specific goals, which are predetermined. The achievement of any goal is determined by the fact that it shows accurate results. Control also sets a specific goal for itself in accordance with the objectives of the teaching. The study of the students' training in any subject should be divided by the purpose of the supervision. The purpose of control includes checking the content of the training, that is, the factor of speech. This is manifested in questions and assignments. Ultimately, the assimilation of educational material is carried out on the basis of logical consistency and leads to the further development of speech factors of students.

One of the features of control, which performs a managerial function on the psychological side, is its orientation to facilitate the relationship between the teacher and students. Until recently, the teacher's relationship with the student, teacher$\rightarrow$ O was accepted as a student. It is now observed that the dialogue is replaced by a drawing based on an equal partnership relationship (s-teacher-s-student). Currently, the S teacher holds the S educational activities carried out according to the student's drawing the student envisages a sober, meticulous attitude towards the student as an interlocutor.

Psychology is one of the main disciplines in the organization, implementation of foreign language education, control of knowledge, skills and qualifications of language learners. In the process of training, the features of the psychic processes of language learners (such as attention, perception, memory, thinking, imagination), their personal qualities (introvert, extravert, hard work, motivation, etc.) are important to consider.

Therefore, when controlling the speech skills of students, it is necessary to take into account the interests, age characteristics, personal-psychological, communicative characteristics of educational objectives.

All forms, types and methods of control should provide the basis for a further increase in students' interest in a foreign language, interest in further study of science, and the level of knowledge, professional skills of the teacher in speech psychology and pedagogical psychology play an important role in controlling student speech factors.

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Rezyume: Ushbu maqola chet tilini o'rganuvchilarning kommunikativ kompetentsiyasini baholashning psixologik asoslarini o'rganishga bag'ishlangan. Baholashning psixologik asoslarini tahlil qilish o'qitish talablari va qoidalarini o'rganish bilan bog'liq. Natijada, talabalar bilish darajasini baholashda o'quvchilarning ehtiyojlari va qiziqishlari, yosh xususiyatlari, ta'lim maqsadlarining shaxsiy-psixologik, kommunikativ xususiyatlarini hisobga olish kerak.

Резюме: Данная статья посвящена исследованию психологических основ оценки коммуникативной компетентности изучающих иностранный язык. Анализ психологических основ оценивания связан с изучением требований и правил преподавания. При оценке результатов учащихся необходимо учитывать потребности и интересы учащихся, возрастные особенности, личностно-психологические, коммуникативные характеристики образовательных целей.

Kalit so'zlar: chet tillarini o'qitish, o'quvchilarning ehtiyojlari va qiziqishlari, yosh xususiyatlari, ta'lim maqsadlarining shaxsiy-psixologik, kommunikativ xususiyatlari.

Ключевые слова: преподавание иностранного языка, потребности и интересы учащихся, возрастные особенности, личностно-психологические, коммуникативные характеристики образовательных целей.

POTENTIAL FOR HOTEL SERVICES IN THE REPUBLIC OF KARAKALPAKSTAN

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Summary: *It is difficult to imagine tourism potential without hotel services. It is one of the sectors supporting the development of the tourism industry, which has its place in the global economy. Especially in the post-pandemic period, the travel process has increased significantly. In the course of the study, the hotel services of the Republic of Karakalpakstan have been analyzed and proposals for the development of the industry have been made.*
Key words: *tourism, hotel, potencial, tourist, service.*

Tourism, including hotels, was among the sectors affected by the pandemic, as were many others. The quarantine, the inability of tourists to leave their countries and the cancellation of travel caused many problems. It must be said that this situation was a time-out for many hotels, but there was enough time to come up with new ideas and implement new projects to improve their business.

If we look at post-pandemic tourism management, global tourism revenues will reach $1 trillion in 2022 and will increase by 50% by 2021.[1] The tourism industry accounts for 10% of global gross domestic product, indicating that "1 in 11 people in the world work in this industry" (Atalay E., Phongthiengtham S., Tannens., Soteba10).

Hotel service is one of the most important factors in tourism. Because it is the place where every traveller spends the night after leaving home. In recent years, the Republic of Karakalpakstan has carried out a number of works to develop the hospitality sector. In particular, the post-pandemic period has been a season of preparation for welcoming guests for many years to come.

The statistics confirm this. According to this figures, 11 new hotels will be built in our country under quarantine in 2021. (See Table 1)

To develop tourism in the Republic of Karakalpakstan, first of all, it is necessary to determine the potential of hotel services in the region. Before that, it is appropriate to analyze the region's statistical indicators on tourism in recent years.

Table 1
Volume of hotel services in the Republic of Karakalpakstan

№	Years	Tourism services, billion soums	Amount of tourists	Number of tourism organisations	Number of hotels	Number of tourist facilities	Number of employees in the tourism sector
1.	2006	3,0	3200	10	2	30	15
2.	2007	3,5	3900	13	3	36	21
3.	2008	4,1	4500	19	5	44	26
4.	2009	4,2	4700	26	7	60	35

5.	2010	4,9	5000	30	8	64	40
6.	2011	5,0	5300	33	8	79	43
7.	2012	5,0	5700	36	8	86	45
8.	2013	6,0	6300	39	9	89	47
9.	2014	7,0	7800	46	10	93	50
10.	2015	10,0	10000	56	11	98	55
11.	2016	12,0	25600	62	18	112	72
12.	2017	13,0	28900	68	29	136	120
13.	2018	291,8	429000	75	36	159	142
14.	2019	300,0	651400	83	48	297	200
15.	2020	27,0	43000	95	63	306	260
16.	2021	219,5	308000	110	84	313	340
17.	2022	227,6	350000	135	130	320	390

Source: prepared on the basis of information from the Ministry of Tourism and Cultural Heritage of the Republic of Karakalpakstan..

According to statistics, there were only 3,200 foreign tourists in the republic in 2006. One may wonder whether this figure is realistic. After all, the peoples of Central Asia, including the Karakalpaks, have long been noted for their hospitality. Of course, the fact that they received 3,200 visitors in one year makes you wonder. That is just the number of tourists staying at the hotel. Many friends and relatives from near and far abroad and the former Soviet Union come every year at that time and still do. But it is clear that a hospitable country will not send its guest from home, not only to a hotel, but even to a friend's house. Therefore, overnight stays of tourists in private homes should be taken into account when calculating the statistics.

There was also one hotel a year built and commissioned between 2006 and 2015, and between 2016 and 2021, 10 hotels a year were commissioned to serve tourists, which is a sign of the development of the industry.

In this respect, the work being done to support the industry certainly plays an important role. Because since 2018, the visa-free regime for tourists from more than 100 countries has served to develop both hotel services and tourism.

The distance between tourist sites in our country is very different from the fortresses of Samarkand, Bukhara and Khiva. Based on the size of the area, the distance between historical monuments is on average 30-50 km from hotels, and the construction of hotels next to tourist sites or the creation of guesthouses in rural areas will lead to the development of this industry as well as an increase in the income of local residents.

Since 2017, Karakalpak State University has been organizing the undergraduate programs "Tourism" and "Guide-escort and translation service" and recruiting personnel for work in this area. Hotel services, being a tourism industry, require personnel that require certain competencies. Therefore, it is desirable to train staff in hotel management and business areas.

Modern international online platforms also play a major role in the development of hotel services. The Booking.com platform is translated into 43 languages and has more than 28 million registered accommodations, of which more than 6.2 million houses, flats and hotels can be booked. Since 2018, hotels in Karakalpakstan have cooperated with and used the Booking.com booking platform. (Atamuratova, 2020).

For example, Booking.com lists only 15 hotels in Nukus. [2] Others find it difficult to get information from abroad. Because every tourist makes a travel plan before the trip, which takes into account the cost of hotel accommodation, restaurant services and other services used during the trip. Therefore, the incoming tourist first of all uses the services of the Internet site.

As a result of the above study, we consider it necessary to implement the following measures to improve the capacity of hotel services in the Republic of Karakalpakstan:

- To provide the first factor in the development of the hospitality industry with qualified specialists, organise a Bachelor's degree in Hospitality Management and Business at Karakalpak State University;

- In order to generate additional income for people living in rural areas near tourist sites, organise seminars and trainings on setting up tourist services from model houses in these locations as guest houses;

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Rezyume: Turizm salohiyatini mehmonxona xizmatlarisiz tasavvur qilish qiyin. Bu jahon iqtisodiyotida o'z o'rniga ega bo'lgan turizm industriyasini rivojlantirishni qo'llab-quvvatlovchi tarmoqlardan biridir. Ayniqsa, pandemiyadan keyingi davrda sayohat jarayoni sezilarli darajada oshdi. O'rganish davomida Qoraqalpog'iston Respublikasi mehmonxona xizmatlari tahlil qilinib, sohani rivojlantirish bo'yicha takliflar kiritildi.

Резюме: Трудно представить туристический потенциал без гостиничных услуг. Это один из секторов, поддерживающих развитие индустрии туризма, которая занимает свое место в мировой экономике. Особенно в пост пандемический период процесс путешествий значительно увеличился. В ходе исследования были проанализированы гостиничные услуги Республики Каракалпакстан и внесены предложения по развитию отрасли.

Kalit so'zlar: turizm, mehmonxona, potentsial, turistik, xizmat ko'rsatish.
Ключевые слова: туризм, гостиница, потенциал, турист, сервис.

THE CULTURAL SIGNIFICANCE OF PHRASEOLOGICAL UNITS

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Summary: *This article is devoted to phraseological units, which are the most culturally unique and nationally significant linguistic units in the English and Karakalpak languages. The research objective is to identify linguocultural peculiarities of phraseological units. It analyses the origin of phraseology, linguists, who contributed to this branch of linguistics. Furthermore, the study uses comparative analysis to present awesome examples that show the national culture of the languages.*

Key words: *linguoculturology, phraseology, phraseological units, idioms, culture, custom, traditions, cultural values.*

INTRODUCTION. Language and culture have been interdependent components of one system for many millennia. Furthermore, people from other cultures see and interpret their surroundings in line with their preconceptions, symbols, and norms. As a result, linguoculturology emerged as a field of linguistics. Along with the commonly recognized definition, the following efforts to characterize linguoculturology as a science have been discovered. V.A. Maslova defines linguoculturology as "a branch of linguistics that emerged at the junction of linguistics and cultural studies" as "a humanitarian discipline that studies the material and spiritual culture embodied in a living national language and manifested in linguistic processor" or as an "integrative field of knowledge that absorbs the results of research in cultural science and linguistics, ethnolinguistics and cultural anthropology" [3.196].

Linguoculturology is a humanistic field that examines material and spiritual culture as it is embedded in a live national language and exhibited in linguistic processes. It enables people to establish and explain how one of language's core duties - being a vehicle for the formation, development, storage, and transmission of culture - is carried out. Its purpose is to investigate how language expresses, stores, and communicates culture.

Nationality is represented in language through numerous techniques and features of language. The most significant of these techniques are phraseological units. Because all languages in the world have their unique phraseological units. They are a linguistic cultural system built on old metaphors and traditional wisdom, representing the spiritual state of ancestors and generations.

A number of scientific researches related to the theory of phraseological units have been carried out in world linguistics and these researches are still ongoing. Therefore, The works of Peter Howard, A. P. Cowie, , Ch. Bally, O. Jesperson, A. V. Kunin, I. S. Stepanova, A. V. Urazmetova, A. A. Potebnya, F. F. Fortunatov, A. A. Shakhmatov, Sh. Bally, V. V. Vinogradov, and V. L. Arkhangelsky on the theory of phraseologisms are of great importance. In the system of different languages, E. F. Artsenteva made a comparative analysis of phraseological units representing human nature; I. Stepanova examined the differences in Russian and English phraseological units related to the names of flowers. In Turkic linguistics - S. Kengesbaev, Sh. Rakhmatullaev, S. N. Muratov, G. Kh. Akhunzyanov, B. Yuldoshev, A. Mamatov, in Karakalpak linguistics - Ye. Berdimuratov, T. S. Naurizbaeva, J. Yeshbaev, G. Oynazarova, Sh. Abdinazimov, G. Karlibaeva and other scientists conducted researches on phraseologisms. Even so, phraseological units used in fiction works of Karakalpak language have not been studied fully from the linguistic and cultural point of view until today. Therefore, In studying phraseological units comparatively, linguistic and cultural features are one of the most necessary issues. V.N.Teliya emphasizes that phraseological units "… are associated

with cultural and national standards, stereotypes, myths and so on and when being used in speech they reflect the mindset characteristic for a certain linguacultural community" [5.288].

S.G.Ter-Minasova states that phraseological units play a key role in the formation of language and culture. Idioms, proverbs, and sayings demonstrate a nation's way of life as well as its geographical location, the history and traditions of a community united by single culture" [6.624].

Idioms, according to V.A. Maslova, are important in defining national and cultural features. They are the spirit of every national language; they communicate the language's character as well as the people's distinctiveness. Phraseological units are asked to analyze, judge, and transmit our subjective attitude toward the world around us, not only to describe it [3.208]. Idioms influence an individual's and a community's viewpoint.

The semantic structure of phraseological units is primarily determined by extralinguistic factors. Linguocultural phraseology includes the study of links between phraseological units and cultural signals, the study of the value system in the form of etalons, patterns, and symbols, and the national cultural distinctiveness of phraseological units. The phraseological components are regarded as the most "culture relevant," as they represent people's culture, customs, traditions and behavioral patterns. Furthermore, phraseological units are typically derived from national proverbs, stereotypes, and cultural traditions. Phraseological units make up a significant portion of linguistics.

Both English and Karakalpak languages are rich in phraseological units that depict people's daily lives. The names of objects of national culture (household products, food, clothes) are frequently included in the formation of such phraseological units:

- *Nan pispew*- ineffectiveness, not managing to do something;
- *Nan tabıw*- to earn money;
- *Nan awız tiyiw*- to eat a little bread. This phrasal verb was originated from Karakalpak tradition. If Karakalpak people bake some bread and meet relatives or neighbours on the way home, they offer to eat bread and say this phrase. In fact, there are multitude of phraseological units with the word "bread", since it is the most common kind of food in every Central Asian family. However, phraseological units with bread component are also found in English.

- *Bread and butter*- a person's livelihood or main source of income. The expression is said to have originated in the Middle Ages, as buttered bread has been served as a main course since then. Peasants in Europe and England could only afford this one course as their entire meal and ate it with soup. The genesis is consistent with this myth, in which individuals began working in order to earn their bread and butter. It was regarded the fundamental, after which one may buy other stuff for themselves and their families.

- *Take one's hat off to*- to express one's admiration. Taking one's hat off in the presence of someone was a signal of respect for centuries, but it wasn't until the mid-nineteenth century that the term became metaphorical in the sense of appreciation or respect without a physical hat of any kind in sight.

I take off my hat to Mr. White as he was of great assistance to me when I was in trouble.

- **burn a hole in one's pocket**- to stimulate someone to spend money quickly

My money is burning a hole in my pocket and I will probably spend it quickly.

- **have (someone) in one's pocket**- to have control over someone

The large union has the city mayor in their pocket.

- **line one's own pockets**- to make money for oneself in a dishonest way

The local politician was lining his own pockets and lost the next election.

- **out of pocket** - the direct expenses that one spends for business or personal use

My out-of-pocket expenses for my recent business trip were very low. The money that I spent on my business trip was all out of pocket.

In English language, we can see some idioms with word "pocket". The origin of these idioms dates back to the 18th century. At that time, the pocket was an integral component of a woman's attire, because it signified a person's status. The pockets of the elite were made of rich textiles, whereas those of the common people were usually made of linen. It is worth mentioning that the pocket was not an item of clothing at the time.

In Karakalpak phraseology, idioms with "pocket" component also exist. Like English language, most of their meanings are related to money. For example:

Qaltası kótermew- to be unable to afford;

Qaltasında iyt úriw- not to have money.

CONCLUSION. Phraseology contains historical facts, social and political features, traditions, customs, and cultural values, all of which form comparable topic areas in languages: environment, economic and social life, thoughts, personality traits, ethics, and so on. As actual cultural symbols of the civilizations, phraseological units are founded on psychological and linguistic components that range between unique and universal. They are more or less expressive, circulating with varying degrees of frequency in the current language. Finally, it is important to note that phraseological units are both culture and nation relevant linguistic means.

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Rezyume: Ushbu maqola ingliz va qoraqalpoq tillarida madaniy jihatdan eng noyob va milliy ahamiyatga ega bo'lgan frazeologik birliklarga bag'ishlangan. Tadqiqot maqsadi frazeologik birliklarning lingvomadaniy xususiyatlarini aniqlashdan iborat. Unda frazeologizmlarning kelib chiqishi, tilshunoslikning ushbu sohasiga hissa qo'shgan tilshunos olimlarning ishlari tahlil qilinadi. Bundan tashqari, tadqiqot qiyosiy tahlildan foydalanib, tillarning milliy madaniyatini ko'rsatadigan ajoyib misollarni taqdim etadi.

Резюме: Данная статья посвящена фразеологизмам, которые являются наиболее культурно уникальными и национально значимыми языковыми единицами в английском и каракалпакском языках. Цель исследования - выявить лингвокультурные особенности фразеологизмов. Анализируется происхождение фразеологии, лингвисты, внесшие свой вклад в эту отрасль языкознания. Кроме того, в исследовании используется сравнительный анализ, чтобы представить удивительные примеры, которые показывают национальную культуру языков.

Kalit so'zlar: lingvomadaniyat, frazeologiya, frazeologik birliklar, idiomalar, madaniyat, urf-odatlar, madaniy qadriyatlar.

Ключевые слова: лингвокультурология, фразеология, фразеологизмы, идиомы, культура, обычай, традиции, культурные ценности.

WAYS TO DEVELOP SPEED IN THE VOLLEYBALL PLAYERS

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Summary: This article focuses on the effectiveness of developing the speed of movement in in volleyball players through non-standard relay game exercises conducted in the form of competitions.

Keywords: students of a higher educational institution, Research, volleyball, rapidity, movement, sports, achievement, technical and tactical training.

In order to achieve high results in modern volleyball competitions, the body of athletes must be prepared for large-scale and very heavy loads. [1] At the same time, in the process of multi-year sports training, the training exercises used by the athlete, regardless of the stage of this training period, should be in accordance with his functional and physical capabilities in terms of load. Otherwise, if a large amount of exercise is given too much, the participants will experience signs of stress. If you continue to use such exercises, not only can you achieve useful sports results, but it is also possible that the participants will develop complications in the body [2].

It is recommended to use physical, technical, and tactical exercises in moderation from the initial stage of training in a particular sport to avoid such unpleasant consequences at a high level of sportsmanship, ie in qualified, older athletes. It is advisable to increase the volume and intensity of training loads from month to month, from year to year, not as a "ladder", but as a "wave". Therefore, the fact that every coach, organize their professional and pedagogical activities on a scientific basis is one of the key aspects of the problem of training talented young athletes [3].

The problems of development of technical and tactical elements in sports games by leading specialists of the Republic of Uzbekistan experienced foreign teachers, many scientists have been solved in many scientific and methodological literature. L.R. Hayrapetyans (2006), AAPulatov (2012), Sh.Kh.Isroilov (2014), Z.B.Boltaev (2019), including foreign scientists VMZatsiorskiy (1995), LPMatvyev (1997), VN Sokolov (1999) , David Lavallee, John Kremer (2004), Edmunds J., Ntoumani N (2006), V.Ya.Ignatova, AV Ignatiev A.A.Ignatev (2015), Yu.D.Zheleznyak (2018) conducted scientific research. At the same time, there is insufficient evidence that exercises based on certain movement characteristics and movement games affect children's physical and functional fitness. [4]

The aim of the study: was to study the effectiveness of developing the speed of movement in volleyball players using non-standard relay game exercises in the form of competitions.

In the process of analyzing the literature, the general and special laws of the organization of in-class and out-of-class sports activities, methods of special functional features were studied. Preliminary and basic pedagogical observations were made to address the objectives of the study. The initial observation was organized in two phases. In the first stage, different speed qualities were identified for students with different physical fitness. In the second phase, the research groups were given a comprehensive selection of learning problems in each lesson, giving students the knowledge they needed to engage independently in physical education classes and classes. The content of the volleyball training of the students of the Uzbekistan-Finland Pedagogical Institute, the necessary knowledge, skills and abilities to improve dexterity, and other indicators were analyzed. Based on these studies, the initial preparation groups identified the initial data on the basic speed qualities of the students. The generalization and analysis of the obtained information allowed to formulate the

methodology of pedagogical experience more objectively. During the same period, research objectives were identified, methods were selected, and tested.

The issue of progressive formation of sports skills and achievement of high sports results emphasizes the need to organize the process of physical training on a scientific basis. This issue has been repeatedly proven not only from a scientific-theoretical point of view but also from a practical point of view by experts-scientists and trainers. At the same time, not enough attention is paid to the problems of developing physical qualities from the initial stage of preparation. Observations have shown that the issues of forming physical qualities in accordance with the specific characteristics of sports are being implemented blindly.. There are cases when the exercises aimed at developing these qualities are applied superficially. In addition, most of the exercises used in the training are standard, stereotyped. Exercises do not always take into account the physical and functional capabilities of the participants. In this regard, didactic principles and laws of application of loads are not followed, especially in the development of strength qualities (absolute strength, explosive force, strength endurance). In particular, the use of weights and weight training in strength training exercises either exceeds the norm or does not reach the norm. One of the main reasons for this is that young coaches use superficial exercises that assess the physical and functional fitness of the participants in the competition in this sport, or they are admitted to the club without any competition. The second reason is that developmental loads with or without weights during the initial and subsequent sessions are not comparable to the physical and functional capabilities of the trainee. In other words, downloads and user access are not routinely monitored. The third reason is that these young trainers exceed the standard of most standard and specialized weight training in their training.

The method of using non-standard, game or relay exercises to develop weights and strength without them is almost non-existent in pedagogical activities, although it is not introduced under control, although it is psycho physiologically known that the power given in the form of game-relay exercise arouses children's emotional feelings, lifts the mood, activates their motivational feelings. As a result, the load of such exercises prevents the development of symptoms of fatigue and stress in the body prematurely. The effect of the downloads is positive. The mentioned scientific-theoretical factors allow choosing a theme of this final qualifying work.

The aim of the study was to study the effect of traditional (standard) and non-traditional (non-standard game-relay) strength training on the quality of volleyball players divided into control and experimental groups using pedagogical research. The control group worked on the basis of the training program used in practice. The following non-standard game-relay strength exercises were used in the experimental group:

1. The arms are bent and written on the floor (ground), the legs are leaning on a gymnastic bench, the body is in a horizontal position with 6 active signals. The one who does the most exercises is the winner.

2. The 6 participants are divided into two teams and one person from each team is pulled to the equal on the horizontal bar, then the next two people, and so on. The team with the most draws is the winner.

3. (2) In the order of the exercise, only the arms are bent on the bar.

4. Two teams of 3 people line up at a distance of 10 meters from each other. At the signal, the team members take 4 steps forward, lean on their hands, take a horizontal position and bend their arms once, then return to their seats, then take 4 more steps and bend their arms twice. . The more times a participant arrives at the destination, the more times he or she bends his or her hands and

writes. The exercise continues until the last participant remains. Whichever team is the only one to continue the exercise to the maximum will be the winner?

5. The game involves two teams. Team 1 participants sit less and carry Team 2 participants on their shoulders. When the alarm goes off, they sit down. The total maximum number of seating is. Then the participants take turns and start practicing the game. Again, the total maximum number of seating is. The team with the highest total number of seats is the winner.

6. This game exercise is similar to Exercise 5. Team 1 participants place Team 2 participants on their shoulders, and when a signal is given, Team 1 participants bend their legs 30 ° from the knees to maintain this position for a maximum period of time. It is the time of the participant who has maintained this position to the maximum. Then the team members change and the exercise is repeated. The team that keeps its legs bent at 30 ° is the winner (the total time of all participants is different).

7. (5) Exercise is performed, only the order of the game - which team will sit the maximum number of times in 30 seconds. The total number of seated participants per 30 seconds is taken into account. The team that sits multiple times in 30 seconds is the winner.

8. Team 1 participants carry Team 2 participants on their shoulders. At the signal, the participants of the 1st team go up and down the gymnastic bench in a row. The number of ascents and descents of each participant is taken into account. Then the participants will be exchanged. The number of ups and downs will be taken into account. The team with the highest total number of ups and downs was declared the winner.

9. Exercises 1-8 are repeated for participants with a 5 kg sand-filled belt around their waists.

Exercises 1-4 mentioned above are performed in the first exercise, exercises 5-6 in the second exercise, and exercises 7-8 in the third exercise. Exercises 1-4 will be performed in the first session, 5-6 in the second, and 7-8 in the third exercise, with a 5 kg sandbag tied around the waist during the next training week. In this way, the exchange of exercises is carried out by the experimental group for 6 months. 6 months is the duration of the pedagogical experience.

The final effectiveness of this set of exercises is assessed using the following tests:

1. Pulling on a horizontal bar;
2. Folding hands in Bruce;
3. Bending and writing arms in a horizontal position;
4. Sit with a load of 25 kg on your shoulders.

The weight of the trainee is taken into account when performing these tests. The experimental group consisted of 6 young volleyball players weighing 40-45 kg. and 147-153 cm in height. The minimum and maximum values of the results, as well as their arithmetic mean are evaluated. Knowing the qualities of strength from a scientific and theoretical point of view and applying them in the practice of training young volleyball players is one of the key issues of the training process. The results of the pedagogical study showed that the quality of strength in young volleyball players belonging to the control and experimental groups involved was almost equally weak (Table 1).

Table 1

Individual indicators of the level of strength quality development of volleyball players.
Control group - 6 Experimental group - 6.

T/R	Inspectors	1	2	3	4
Control group					
1.	Asrorov Otamurod	4	6	7	5
2.	Mamrasulov Firdavs	7	7	8	4
3.	Maxmatqulov Raxim	6	7	6	6
4.	Quchqorov Sardor	5	5	7	5

5.	Xazratkulov Muxammadjon	3	4	6	4
6.	Azamov Jasurbek	5	6	9	6
		6,0	**6,8**	**9,5**	**5,0**
	Experimental group				
1.	Abdufatayev Toxirjon	4	6	11	4
2.	Qo`ysinov Shahzod	6	7	9	4
3.	Meliboyev Qamariddin	7	8	10	6
4.	Hakimov Zarif	5	6	8	5
5.	Isayev Abbos	5	4	7	4
6.	Mamanazarov Muslimbek	6	6	7	6
		5,5	**6,2**	**8,7**	**4,5**

Note:
1. - Pulling on a horizontal bar;
2. - Bending and writing in Bruce;
3. - Bending and writing of horizontal lying control arms;
4. - Sit with a load of 25 kg to the shoulders.

For example, in the control group, the results of shooting on a horizontal bar were the minimum and maximum on March 3-7. Bruce arm bending-writing 4-7 times, horizontal working arm bending-writing 6-9 times, 25 kg. Sitting with the load on the shoulder was 4-6 times.

In the experimental group, the results were almost the same. In particular, the mentioned indicators are 4-7, respectively; 4-8; It was around 7-11 and 4-6 times.

It can be seen that despite the small number of participants in both groups, the spread of all the indicators obtained is relatively large. This situation shows that the quality of strength of self-employed people, on the one hand, shows their weakness, and on the other hand, they are far from the same training in terms of strength. For comparison, according to L.S.Dvorkin's results, weightlifters of the same age should have a barbell pull more than 7 times, while R.A. Roman's results should be more than 10 times. In Brussels, handwriting should be up to 16 times.

Table 2

Development of strength quality in volleyball players level (X).

Tests	Controlgroup	Experimentalgroup
Turnstileshooting	6,0	5,5
Twisting hands in brushwood-writing	6,8	6,2
Bending-writing hands in a horizontal lying position	9,5	8,7
25 kg put the load on the shoulder sitting-standing	5,0	4,5

If we look at the arithmetic mean of the individual indicators obtained in the course of our study, we can see that the quality of power is weaker in practitioners.

The results of the study showed that before the start of the experiment on the horizontal bar was 6.4 times. In Brussels, the arm flexion and extension exercise was 7.4 times and the horizontal arm flexion exercise was 8.6 times. After 6 months of traditional training, the pull-ups on the horizontal bar increased by 7.2 times, the bending of the arms on the barbell by 8.6 times, and the bending of the arms in the horizontal position by 10.2 times. Apparently, the strength of the muscles that bend and stretch the arms has only increased dramatically in half a

Table 3

Changes in hand strength in control and experimental groups under the influence of various meaningful exercises

T/R	Tests	Guruh	Beforeexperience	After experience
1.	Turnstileshooting	CG	6,4	7,2
		EG	6,2	12,6

2.	Twisting hands in brushwood-writing	CG	7,4	8,6
		EG	7,8	15,8
3.	Bending-writing hands in a horizontal position	CG	8,6	10,2
		EG	9,0	18,2

It is well-known that volleyball is very important for children, especially for stretching the arm muscles. In this regard, the test exercises performed on the bruise and in the horizontal position are the objective criteria for assessing the strength of these muscles. In the control group, these test scores focused on poorly developed muscle strength. Test results performed on the beam and in the horizontal position over a period of 6 months showed an increase of only 1.2 and 1.6 times, respectively, indicating that this type of strength training exercise was rarely used in traditional training.

The playful non-standard strength exercises used in the experimental group prove to be very effective. Thus, the results obtained before the experiment in this group were almost no different from those in the control group (see Table 9). However, after 6 months of experimentation, the pull-ups on the horizontal bar increased by 6.4 times, the bending of the arms on the barbell increased by 8.0 times, and the bending of the arms in the horizontal position increased by 9.2 times. This demonstrates the effectiveness of the experimental exercises used. The "25 kg sit-up" test, which measures the strength of the leg muscles, showed that the results of non-standard strength exercises used in the form of games were effective (diagram).

Increased leg strength in 6-month training sessions in control and experimental groups
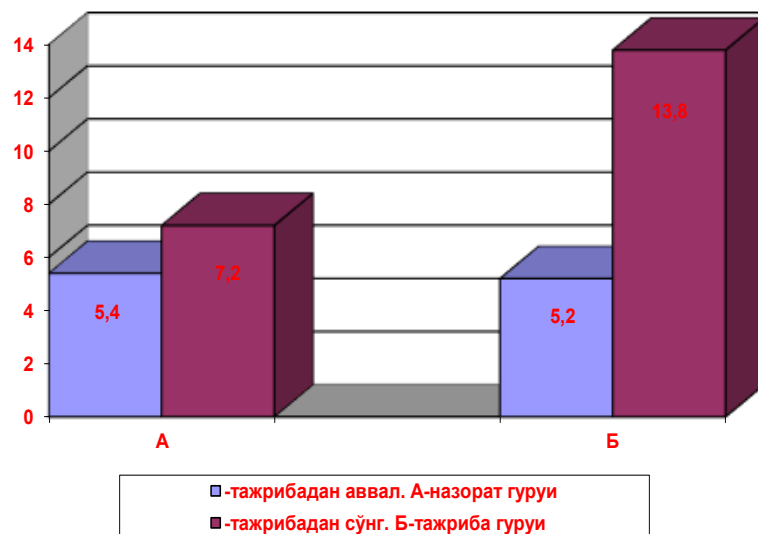
In particular, if the leg strength in the control group was 15 times higher than in the sit-down test by putting 5,4 kg of load on the shoulder before the experiment, then in the experiment group this indicator was almost indistinguishable, even the trick was less (5,2 times).

After 6 months of training, this indicator increased in the control group up to 7.2 times, in the experimental group up to 13.8 times. Consequently, the matchless exercises non-strength, which were used in the experimental group for 6 months, demonstrated their effectiveness.

The results obtained and their comparative analysis showed that based on the scientific and theoretical aspects (without weights) and found that matchless non-standard exercises performed

with weights are extremely effective in developing arm-leg strength. Such classes, conducted for 6 months, significantly increased the level of curiosity and activity in children who were involved in the experience.

The results of our 6-month pedagogical experiment on the development of strength qualities in young volleyball players showed that non-standard game-oriented exercises form these qualities more effectively than traditional standard exercises. If the arm and leg muscles in the control and experimental groups were almost indistinguishable before the start of the study, after the end of the pedagogical study it was observed that these qualities were relatively progressive in young volleyball players engaged in non-standard, game exercises.

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Rezyume: Ushbu maqolada voleybolchilar o'rtasida musobaqalar shaklida o'tkaziladigan nostandart o'yin mashqlari-estafetalar orqali harakat tezligini rivojlantirish samaradorligiga e'tibor qaratiladi.

Резюме: В данной статье речь пойдет об эффективности развития быстроты движений у волейболистов посредством нестандартных игровых упражнений-эстафет, проводимых в форме соревнований.

Kalit so'zlar: Oliy o'quv yurti talabalari, ilmiy tadqiqot, voleybol, tezlik, harakat, sport, yutuq, texnika-taktik tayyorgarlik.

Ключевые слова: студенты высшего учебного заведения, исследование, волейбол, быстрота, движение, спорт, достижение, технико-тактическая подготовка.

THE POSITION OF A JOURNALIST IN THE STRUGGLE FOR TRUTH

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Summary: The article is devoted to a new understanding of the artistic heritage of the national poet of Uzbekistan and Karakalpakstan Tleubergen Kurpbatullaevich Jumamuratov from the point of view of the modern stage of civilization development. It gives a general idea about the poet's literary activity. The importance of his work is determined in the spiritual-ethical and literary-artistic plan. Special attention is paid to the uniqueness of his activity as a master of publicistic direction, innovator of new forms and literary genres.
Keywords: journalism, idea, topic, democracy, genre, satire.

INTRODUCTION. There is no doubt that spiritual people who have a wide world of thinking, strong beliefs, deep sensitivity, are highly cultured, and can build their lives according to the laws of goodness and beauty, contribute to the development of society by cultivating remarkable concepts and feelings with their creativity. Studying T. Jumamuratov's works of art, we see that he is full of dreams about a just and humane society. It is possible to see how much the life experience instilled journalistic pathos into his poetry has concentrated the power of words.

Literary scholar, professor Q. Sultanov: "No matter how deep one scientist, one linguist, one literary scholar claims to know the Karakalpak language, he cannot know it as well as T. Jumamuratov. It is necessary to define it differently. - there is a clear meaning in the scientific critical opinion. [1-68-70]

«Jaqsiliqtin karamatli isi bar,
 A'dilliktin qudiretli kushi bar! »
(Translation:
"You have a good gift,
There is a mighty power of justice!")

The mentioned comment is the main dimension of the poet's works written in various genres. The reason is that the oral value in the traditions of human behavior in a sophisticated society is goodness and justice. Goodness is an attitude of justice, it means to be treated fairly, that is, it is the source of goodness.

This fact is reflected in the works of the poet.

For example,

«Tan' qalarliq qiyal jetpes karamat,
 Ken' aspannin' jaynap turgan aq kuni.
 Onda bolmas ten'sizlik, ya alag'at,
 Jer jahange birdey sepken jaqtini».[2-112]
(Translation:
"What an amazing gift this is,
A bright white day of a wide sky.
There is no inequality, or suspicion,
The light that spread all over the world." [2-112])

At the same time, the relationship to justice in this creative society has a broader meaning and comes to the philosophical conclusion that the creation itself is based on the criterion of equality for all:

«Dunya basta hamme ushin qurildi,
Jasliq taxtim qashiqlasa buring'i.
Barliq jannin' huquqi ten' biz benen,
Kelgenlerge bosatamiz orindi».[2-123]
(Translation:
"In the beginning the world was created for all,
If my throne of youth disappears.
The rights of all living beings are equal to us,
We will give our place to those who came.")

The most important tasks related to the construction and management of the country are defined in the country on a legal basis. According to the Constitution, the Oliy Majlis, the President, the Council of Ministers, local state authorities, judicial authorities in the Republic of Uzbekistan create state power.

State authorities provide propaganda based on high spirituality in the society, widely introduce national and universal values, create ideas of uniting people for good. Literature, of course, is one of the miraculous supports of the state for these purposes.

The aspiring artist offers a model of justice by expressing an attitude of appreciation of the facts of life, feeding on the progressive ideas of his time.

«Adillik- daraq, adil bolsan darag'isan jurtinnin'»,
«O'zin emes jurt o'lsheydi bahandi,[264]
(Translation:
"Justice is a tree, if you are just, you are a tree of your country."
"Not you, but the country will measure your price,)
or
«O'zim Sharyarman dep shawqimdi salma,
 To'bende koz tigip sinap tur xalqin»[2-266]
(Translation:
"Don't say, 'I'll get tired by doing it myself,'"
Your people are observing you with their eyes fixed on you")

the lines of T. Jumamuratov's pieces of work remind that the will of the population must be reckoned with public opinion.

The difficulty of being the leader of the country and being responsible for the fate of the country is proven in the following lines.:

«Basshi kelip kelip ketedi xalq qaladi,
Jaqsi basshi sirtinan maqtaladi.
Aradan ketsede ol, o'tsede ol,
Adamlar jureginde saqlanadi.

Basshi bolsan elinin' ag'asi bol,
Bir jag'inan xizmetker balasi bol»[2-180]
(Translation:
"The leader comes and goes, the people remain,
A good leader is praised.
Even if he leaves us,
he is kept in the hearts of people.

If you are a leader, be the best of your people,
On the one hand, be a child of service.")

That is, in the great creative example of goodness, we can know that the dreams of democratic renewal are the will of the people, and we can rejoice that the realization of these dreams has become the goal of our age today.

The content of the poet's work "Suwg'a ketken adam" (The man who fell into the water) is based on a very simple plot. One horseman, looking at the "flowing river", saw a man who was "sinking" and saved him.

"Iyesi barliq dunyanin'
A'sfendiyar xan eken
Xan ozin qutqariwshig'a
Kereginshe alaber,
G'aziynemnen malimnan
Buginnen baslap sende ulken toresen"
(Translation:
He was the Lord of all the world
Asfendiyar Khan
Said to the rescuer of him
take as much as
you need from my treasure,
From today
you are also a senior leader)
It promises a lot of wealth and position.
And the farmer answers as follows,
Bayliqqa joq jarisim
Hamalga bolmas tarisim
Qutqariw-isi hammenin'
Adamshiliq ari ushin. [2-273]
(Translation:
I am not jealous of wealth
I have no interest in Hamal
Rescue is everyone's duty
That's what humanity is.)
Ergim kelmes qumartip
Miynetten qol qabartip
Xaliq penen dawran surgenim
Xanlig'imnan min' artiq. [2-273]
(Translation:
I don't want to follow, having fun
It is a thousand times better for me
* to spend time with the people*
* with my hands tired from work*
* than to be a Khan.)*
Then the khan taunts the horseman by saying "you are ignorant, horseman".

Horseman responses:
Nadan desen nadanman
Biraq mende adamman
Senin menen dos bolsam
Hamme ushin jamanman.

Elge qadrin qalmag'an
Xanliq - baxit bolmag'an
"Qutqardi" dep til qatpa
Ulken siyliq sol mag'an. [2-273]
(Translation:
If you call me ignorant, I am ignorant
But I am also human
if I am your friend
I'm bad for everyone.

You have no value left
Being a khan is never happiness
Don't be embarrassed to say "saved"
so that's a big reward for me.)
Life experience and human qualities are hidden in this answer.
Jaslayimnan adebiyatqa ermegim
Qisilsamda ardi qoldan bermedim
Bazbirewler hamel menen ursa da
Haqiyqatliq joldan tayip kormedim. [2-148]
(Translation:
I have been interested in literature since I was young
Even though it was difficult, I did not give up
Even though some of them gave me a position,
I did not give up on the path of Truth.)
From the above quoted lines of T. Jumamuratov, we can see that the poet did not shy away from anyone in the fight for the truth, and treated both the official and the ordinary citizen equally from the point of view of humanity.

The principle of democracy, which is widely implemented in our country, is primarily focused on humanity, justice, legal knowledge and moral integrity of a person.

The lack of these features is the main concern of the progressive thinking of every era. T. Jumamuratov did not get tired of sharply criticizing those who are obstacles to the development of society. In his work "Tiriyek jutqan jayin" ("A shark that swallows a needle"), he points out that the position is the trust of the people and a great responsibility, the regretful end of the "one-month shark" which was filled with ego trouble, and he also calls for awareness, pointing out the consequences of misunderstanding of responsibility:

"Aqmaqqa hamal –
Murnina batpan samal.
"Saq bol" degendey,
Hamalparasliq − kesel,

Tiriyek jegendey:
Kem-kemnen ma'siredi,
Qoddaslap esiredi.
Jaman degen attan da qashpas,
O'tirik mag'lumattan da qashpas.
Shalqiydi bilingenshe,
 Sag'aqtan ilingenshe"[2-275].
A necessary condition of democracy is freedom, clear thinking.

However, freedom is not disobedience. Democracy means full obedience to the laws that are equal and necessary for everyone, living based on discipline.

We say that it is impossible to have unlimited, absolute freedom in either physical or social aspects of human life. The reason is that the guarantee of freedom is the decision and action of the human existence according to the law, within the framework of moral-aesthetic attitude.

CONCLUSION. In general, T. Zhumamuratov's satire is of great importance as a satirist who covered global problems. He paid special attention to his activities as a master of journalistic direction, an innovator of new forms and literary genres.

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Rezyume: Ushbu maqolada Oʻzbekiston va Qoraqalpogʻiston xalq shoiri Tleybergen Qurpbatullaevich Jumamuratov ijodiy merosiga tsivilizatsiya taraqqiyotining hozirgi bosqichi nuqtai nazaridan yangicha tushuncha berilgan. Uning publitsistik yoʻnalish ustasi, yangi shakl va adabiy janrlar novatori sifatidagi faoliyatining oʻziga xosligiga alohida eʼtibor qaratilgan.

Резюме: В статье рассматривается новые осмысления творческого наследия народного поэта Узбекистана и Каракалпакстана Тлеубергена Курпбатуллаевича Жумамуратова с точки зрения современного этапа развития цивилизации. Особое внимание уделяется своеобразию его деятельности как мастера публицистического направления, новатора новых форм и литературных жанров.

Kalit soʻzlar: jurnalistika, gʻoya, mavzu, demokratiya, janr, satira
Ключевые слова: журналистика, идея, тема, демократия, жанр, сатира.

THE EFFECTIVENESS OF TEACHING SPEED TRAINING TO YOUNG VOLLEYBALL PLAYERS

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Summary: This article focuses on the effectiveness of volleyball players in developing speed as a result of running 30 and 60 meters.

Keywords: Volleyball, sports, occupation, physical quality, rapidity, exercise, development, preparation.

We know that the physical qualities of a person are formed since birth. However, the extent to which these qualities are formed in his childhood, his ability to master simple or complex movements, depends not only on the environment in which he grows up but also on the means by which a child develops certain qualities. [1]

At the same time, the role of each physical quality in the performance of this action will vary depending on the type, direction, also purpose of the action. However, the integral importance of these physical qualities in different occupations or sports has its own share. In any case, it is often the case that researchers believe that the predominance of certain physical qualities in all movement activities is immediately apparent.

Achieving high results in contemporary sports practice relies on the capacity of the athlete to maintain high quality and productive performance over a long time. [2]

The duration of competitions in various sports is determined by the rules of international competitions. The longer an athlete is able to maintain or increase his or her performance in terms of quality and efficiency during these competitions, the more likely he or she is to "laugh" at success. In other words, the degree to which the quality and efficiency of workability are maintained for a greater or lesser period of time is determined by how well the types of general and specific endurance qualities have developed.

The problems of development of technical and tactical elements in sports games by leading specialists of the Republic of Uzbekistan experienced foreign teachers, many scientists have been solved in many scientific and methodological literature. L.R. Hayrapetyans (2006), A.A.Pulatov (2012), Sh.X.Isroilov (2014), Z.B. Boltaev (2019), including foreign scientists VMZatsiorskiy (1995), LPMatvyev (1997), VN Sokolov (1999), David Lavallee, John Kremer (2004), Edmunds J., Ntoumani N (2006), V.Ya. Ignatova, AV Ignatiev A.A.Ignatev (2015), Yu.D.Zheleznyak (2018) conducted scientific research.

The aim of research: to study the effectiveness of speed development in volleyball players.

Speed attributes are the ability to exhibit high or very high voltages while maintaining the amplitude of motion in a short period of time. [3] Speed is seen as a special ability in determining speed, and they are closely related. In the experiment, a 30- to 60-meter run test was used to determine the qualities of speed. The results obtained in the experimental and control groups in the 30.60-meter run were as follows.

During volleyball training, the maximum speed training is used in a relatively small amount and lasts for 3-7 minutes.

Exercises for students take about 5-13 seconds. Exercises are performed at a high speed, rest is recommended after the race.

In order to achieve positive results in the training of agility, various instantaneous signals, short distances, and other speed-improving exercises are used. At the same time, the cyclic load lasts for 10 seconds, and this load reaches 10 seconds when the anaerobic energy sources in the body, mainly creatine phosphate glycogen, work at high speed in the body.

In the course of the study, the load norms for teaching speed exercises to their students were determined (Table 1).

Repetition of speed exercises and rest

T/R	Yugurish masofalari	Repetition and rest									
		1	rests/d	2	rests/d	3	rests/d	4	rests/d	5	Rest s/d
1	Running 30 meters low start (class 1-2) 30	1	25	2	30	3	40	-	-	-	-
2	Running 30 meters low start (class 3-4) 30	1	30	2	35	3	40	4	50	-	-
3	Running from a low start of 60 meters (1-2 classes) 26	1	1-3	2	2-3	3	2-3	-	-	-	-
4	Running from a low start of 60 meters (grades 3-4) 26	1	1-4	2	2-4	3	2-5	4	3-5	-	-

In the 30 m low start, each exercise was followed by exercise technique, results, and external signs of fatigue, and the rest between repetitions were prolonged with each repetition. When the students moved to the fourth after the third repetition, severe shortness of breath due to external signs of fatigue, technical errors occurred and the result decreased, and the students, in this case, had the fourth. A runner was spotted as he advanced to fifth. Thus, 3 repetitions for students and 4 repetitions for students were determined as optimal criteria for the development of speed qualities. Excessive exercise exhausts the body, and continuing to do so leads to the development of speed endurance qualities.

Performance of speed exercises in students aged 5-13 seconds, repeated 2-3 times, rest in the interval between repetitions 20-40 seconds, duration of exercises in students 3-4 grades 6-10 seconds, 4 times repeated, resting in the repetition interval 30-50 seconds.

In choosing the exercises, we used exercises that were not technically complicated, that could fully focus the students' attention on the speed of the exercise (running at a maximum speed of 30-60 meters), as well as sudden signals.

For students, running 60 distances was standardized to develop speed-endurance qualities, with the number of repetitions set to 2-3, and the rest set to 1.5-3.0 minutes between repetitions. After the 3 rd performance, the respiratory rate changed, there was shortness of breath, left and right deviations were felt in the elements of the technique, and on this basis, norm was set.

Indicators of the development of speed qualities of primary school students (running from a low start to 30.60 meters, seconds) before and after the experiment was recorded in Tables 2-3. Table 2.

Table 2
Coaches Z.Boltayev, Sh.Tokhtapulatov and R.Tokhtapulatov experimental rapid training of volleyball students of the elementary training group (running from a low start to 30.60 meters, seconds)

№	Tests	Gender	n	Expriment group X±m	Control group X±m	t	P	n	Expriment group X±m	Control group X±m	t	P
1.	Running 30 m distance (seconds)	B	12	7,101±0,06	7,021±0,10	0,80	<0,05	14	6,901±0,15	6,803±0,15	0,5	<0,05
		G	18	7,201±0,10	7,103±0,14	0,59	<0,05	16	7,202±0,32	7,010±0,15	0,56	<0,05
2.	Running 60 m distance (seconds)	B	12	13,1±0,1	13,2±0,1	0,71	>0,1	14	13,1±0,15	13,8±0,15	0,72	>0,1
		G	18	13,2±0,2	13,3±0,3	0,71	>0,1	16	13,2±0,32	13,1±0,15	0,56	>0,1

Table 3
Coaches Z.Boltayev, Sh.Tukhtapulatov and R.Tukhtapulatov experimental quick training of elementary school volleyball students (running from a low start to 30.60 meters, seconds

№	Tests	Gender	n	Expriment group X±m	Control group X±m	t	P	n	Exprime nt group X±m	Control group X±m	t	P
1.	Running 30 m distance (seconds)	B	12	7,0±0,08	5,7±0,12	10,07	<0,05	14	6,6±0,24	5,3±0,20	4,9	<0,05
		G	18	7,1±0,32	6,4±0,15	23,33	<0,05	16	6,7±0,35	5,4±0,24	3,10	<0,05
2.	Running 60 m distance (seconds)	B	12	12,4±0,1	12,7±0,1	5,00	>0,001	14	12,6±0,2	12,3±0,20	4,9	>0,001
		G	18	12,5±0,2	12,4±0,1	0,45	>0,1	16	12,7±0,3	12,4±0,24	0,40	>0,01

The ability (time) of primary school students to perform speed exercises decreased from 0.2 seconds to 0.6 seconds per year.

While the difference in boys' results in the 30-meter sprint was 0.2 seconds between the ages of, the difference between grades II-III increased by 0.3 seconds or 1 percent. between grades III-IV, it is 0.6 seconds. In girls, it is 0.1; 0.3; Equal to 0.5 seconds. These figures show that the results of boys and girls in performing speed exercises among primary school students do not differ much from each other.

According to the literature analysis, the average performance of boys and girls in 30-meter run was 7.6-8.7 seconds, 6.9-7.1 seconds, 6.6-8 seconds. 6.9 seconds, according to our data, 7.1-7.2; 6.9–7.2; 6.6–6.7; 6.0–6.4 seconds. There is no difference between the quality of speed in the students of the experimental elementary group. When analyzing the results of boys running from a distance of less than 60 meters, children in the control group were 0.1 seconds higher (0.8 percent), which was not statistically significant (t = 0.71, R>). 0.1),

Post-experimental results: If before the experiment there was no statistical difference (R> 0.05) in the results of running 30 meters between students of I-IV control and experimental groups, then after the experiment a statistical difference was observed between children. When analyzing the

boys' post-experimental results in the 60-meter low start, they improved by 0.7 seconds (6.9 percent) in the I – II class experimental groups and differed statistically (t = 5.00, R> 0.001). In the control groups, the improvement was 0.1 seconds (0.86 percent) and did not differ statistically. 8 percent) control group is high, which is not statistically significant (t = 0.45, R> 0.1).

The control group was 0.1 s (0.8 percent) higher, which was not statistically significant (t = 4.09, R> 0.001). When the performance of the boys in the sub-60-meter dash was analyzed in the control group, there was a statistical difference of 0.6 seconds (5.6 percent) compared to 0.1 seconds (0.8 percent) in the boys. .) is higher than the control group, which is not statistically significant (t = 2, 72 R> 0.01). Analysis of the results of the Rapid-Strength Qualities shows that there is a higher difference in older children for physiological reasons. It is at this age that the tendency to develop agility develops, and aging occurs at different times in different children. These laws affect the physical fitness of students.

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Rezyume: Ushbu maqolada voleybolchilarning 30 va 60 metrga yugurish natijasida tezlikni rivojlantirishdagi samaradorligi haqida so'z boradi.

Резюме: В данной статье речь пойдет об эффективности волейболистов в развитии скорости в результате бега на 30 и 60 метров.

Kalit so'zlar: Voleybol, sport, mashg'ulot, jismoniy sifat, tezkorlik, mashq, rivojlanish, tayyorgarlik.

Ключевые слова: волейбол, спорт, занятие, физические качества, быстрота, упражнение, развитие, подготовка.

DIDACTIC BASIS OF ASSESSING COMMUNICATIVE COMPETENCE OF FOREIGN LANGUAGE LEARNERS

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Summary: *This article is devoted to the investigation of didactic basis of assessing communicative competence of foreign language learners. The analysis of didactic basis of assessment is related to the study of didactic principles of teaching. As a result, the following didactic principles of assessment have been analyzed: practicality / consequentiality, systematization, individual approach, differentiate approach / stratification, objectiveness and the principle of same requirements.*

Key words: *didactic principles of teaching and learning, language teaching principles, practicality / consequentiality, systematization, individual approach, differentiate approach / stratification, objectiveness and the principle of same requirements.*

When we talk about the process of teaching, there is a lot of emphasis on its theoretical and methodological basis, including the fact that it is carried out on didactic principles. Various opinions and views are observed regarding the didactic principles. Consequently, the number of didactic principles has been observed from 6 to 11. The reason for this is that over time, several changes have also entered to the education sphere. With this, there is also a change in the existing didactic principles. Currently, there are general principles of teaching that experts recognize. They are:

1. Awareness and activism,
2. Exhibitionism,
3. Systematization and consistency,
4. Thoroughness,
5. Scientific principle,
6. Intelligibility.
7. The principle of the connection of theory with practice [2: 576].

On the basis of universal principles of teaching some definite principles of foreign language teaching have also been developed. According to G.V.Rogova, I.N.Vereshchagina, there are principles of education, awareness, activeness, the principle of visibility, easiness/hardness, individual principle [5: 224].

To this issue, J.Jalolov also expressed his reaction. In addition to the above, he also proposes the principle of systematization [1: 368].

Based on the didactic principles used in teaching a foreign language, we will explore the principles of control and assessment of the knowledge, skills and qualifications received by students in learning a foreign language.

The task of teachers in the educational process, especially during supervision, is to determine the degree of control of students and make an objective assessment. The successful implementation of this task requires the teacher to adhere to the didactic principles of checking and assessing the level of knowledge of students. This will serve to increase the effectiveness of the educational process in the future. Didactic principles of control of knowledge, skills and competencies are understood to be the theoretical basis of didactic principles for the content, methods, types and other

issues related to the organization of practical activities of teachers and students and pedagogical control.

The exact content of the principles of control is determined, on the one hand, by the goals and objectives of education and upbringing, including those performed during supervision, on the other hand, by the objective laws of control of knowledge, skills and qualifications.

The following didactic principles for assessment student knowledge are outlined in the higher education by T.I.Orlov:

1. Practicality / consequentiality.
2. Systematization.
3. Individual approach.
4. Differentiate approach / stratification.
5. Objectiveness.
6. The principle of same requirements [4: 12-17].

Taking into account universal principles and features of foreign language, let us dwell on the didactic principles of assessing the factorization of speech by students in a foreign language.

The principle of practicality. The control of knowledge, skills and qualifications of students should be, first of all, practical, that is, productive. It should not only be a means of showing the successes and shortcomings achieved by the teacher and students, but also to encourage the teacher and students to work harder, to achieve even more success in the learning process and to learn further. Ultimately, specialists are trained in higher educational institutions in accordance with the requirements of the state educational standard.

The principle of systematization is one of the main didactic principles of control. It is known to all that the extent to which education is carried out in a systematic way is important for the implementation of monitoring work by the teacher and students, as well as the management of the educational institution. This, in its place, forms the basis for the formation of theoretical and practical knowledge, skills and qualifications of students in this discipline. The more consistent, continuous control work is carried out with each other, the more complete control functionalities are observed. In this regard F. N.Talizina stated:" If control is carried out only for the purpose of determining the final results, the consistency of control cannot effectively affect the quality of student knowledge acquisition " [6: 288].

Currently, serious attention is paid to the issue of systematic control of knowledge, skills and qualifications of students. An example of this is the current ranking system. It has been suggested that the main task of the rating system is to assess student appropriation systematically. For this purpose, such types of control as current, intermediate and final control are being carried out. So, if the control is carried out in a systematic round, it will be able to show the pros and cons of the educational process and also gain a position of promotion by placing full scores on students.

The principle of an individual approach. Control and assessment of knowledge, skills and competencies can have a stimulating force at all stages of the learning process. But, in this regard, each student's answer to the tasks, test or control work must be checked separately. The principle of this approach is manifested not in a general examination of the work of students of the entire group, but in a deep and truthful determination and assessment of the level of assimilation of each student. If it is necessary to determine the degree of appropriation of the entire group in full, then in this case this group is determined by indicating the degree of appropriation of each of their students. The foundation is laid for the formation of the competence of each student by taking into account such characteristics as the achievements and shortcomings of each student.

The principle of differentiate approach is the purpose of checking and assessing the level of knowledge of students, not only to determine knowledge, skills and qualifications, but also to quantify and qualitatively identify those knowledge, skills and qualifications. The mark scored as a result of the examination should clearly indicate the level of knowledge of the student at the time of control – the content of his knowledge. This manifests itself in a check-in grade or score.

Looking at the history of the scoring system, this system first appeared in Germany. It was composed of three points. 1. Good 2. Average 3. Bad. Scores indicated the student's position among others. Over time, the middle discharge was divided into classes: as a result, a 5-point system appeared, and it began to be used in Russia as well [3: 14].

Over a long period of time, in higher educational institutions, tests in the assessment system also began to be used as a type of control, but they were assessed as "passed" or "did not pass". This is in complete contradiction with this principle of control. Such an assessment also affects the psyche of the student.

It seems to us that the criteria for assessing the knowledge, skills and qualifications of students are clearly developed. Furthermore, the student's level of knowledge is also clearly assessed. On the way to achieving this goal, several methods of assessment were used. As one of these, until the 90s, it was observed that teachers of higher educational institutions and Secondary Schools put a plus or minus sign in front of grades. But even this did not last much. The reason is, plus and minus signs also began to be put approximately. As a result, the "strengthening" or "shrinking" of the grades in a non-trivial case could not gain its position.

The principle of objectiveness. It is known that the main task of control and assessment is to correctly determine the level of knowledge of students. Therefore, each grade or score assigned is objective, that is, it must clearly state the speech factor of the student, that is, the content of his knowledge, its level, quality, in short, the student's indicator of mastering. Only control based on scientific criteria is available to the teacher in the learning process, especially when identifying shortcomings, and provides the basis for overcoming difficulties. The fact that the price is not put correctly leads to negative consequences, as a result of which educational work can be damaged.

It is worth noting that the grades for students should be put with great care and rigor. A little indulgence, kindness, or a push towards students, which can be allowed by the teacher, can lead to students' taking different approaches to the learning process and its quality. Ultimately, control and evaluation become simply formalities.

The assessment of knowledge, skills and competence in general should be an important tool of teaching. Only by making a valid assessment can lead the behavior of students to a positive side, an increase in respect for the teacher, an increase in interest in the teaching profession as a whole.

In this case, there are also psychological causes and factors that can also cause the assessment not to be put correctly. For example, it happens that the teacher is content with a prior to the student's knowledge, does not "distort" the grades in him by making an assessment or "familiarization" with the rating book, seeks and even defraud the student's scholarship amount by turning to the "good" grade, as a result of some students ' remarks in the "My marks should be excellent".

The principle of same requirements. All students are required to comply with the same requirements during studies. For example, the level of speech factors of students in a foreign language should be assessed on the basis of the same criteria. This is a complex task. One teacher teaches several students. Or students are taught by several teachers from different aspects of the language. In this, the situation becomes more entangled. Because the characteristics of students, such as their level of knowledge, consciousness, worldview, as well as the fact that teachers also have

different levels of professional skills, that is, they strive to cultivate and identify the speech factor of students through different methods and techniques. As a result of this diversity, students are brought under control through different criteria. This condition can have a number of negative consequences. Firstly, the tasks set out in the Standards are not carried out, and secondly, the didactic and pedagogical tasks of control are not taken into account. Such factors undermine the decisive importance of control in the educational process.

In conclusion, it can be said that didactics and its principles plays an important and fundamental role in the organization of all educational subjects, training, control of the knowledge, skills and qualifications of learners. All didactic principles of control are closely connected to each other, and they form a control system in a holistic way. Every teacher who adheres to didactic principles will inevitably achieve the expected results in the future in the educational system in higher education.

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Rezyume: Ushbu maqola chet tilini o'rganuvchilarning kommunikativ kompetentsiyasini baholashning didaktik asoslarini o'rganishga bag'ishlangan. Baholashning didaktik asoslarini tahlil qilish o'qitishning didaktik tamoyillarini o'rganish bilan bog'liq. Natijada baholashning quyidagi didaktik tamoyillari tahlil qilindi: amaliylik / natijaviylik, tizimlilik, xususiy yondashuv, tabaqali yondoshuv, haqqoniylik va talablarning bir xilligi printsipi.

Резюме: Данная статья посвящена исследованию дидактических основ оценки коммуникативной компетентности изучающих иностранный язык. Анализ дидактических основ оценивания связан с изучением дидактических принципов преподавания. В результате были проанализированы следующие дидактические принципы оценивания: практичность/последовательность, систематизация, индивидуальный подход, дифференцированный подход/стратификация, объективность и принцип одинаковых требований.

Kalit so'zlar: o'qitish va o'qitishning didaktik tamoyillari, tilni o'qitish tamoyillari, amaliylik / natijaviylik, tizimlilik, xususiy yondashuv, tabaqali yondoshuv, haqqoniylik va talablarning bir xilligi printsipi.

Ключевые слова: дидактические принципы преподавания и заучивания, принципы преподавания языка, практичность/ последовательность, систематизация, индивидуальный подход, дифференцированный подход/ стратификация, объективность и принцип одинаковых требований.

BASIC PRINCIPLES OF USING CLIL AT SCHOOLS.

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Summary: *This article discusses the specifics and basic principles of using innovative technology and an approach as a subject-language integrated learning (CLIL) in foreign language lessons at school. The relevance of using this approach, which allows you to increase the motivation of students in learning a foreign language, is substantiated.*

Keywords: *specificity of the subject, content, communication, language and cognition, culture, methods.*

Nowadays, teaching techniques and technologies are becoming especially popular, which allow learners to apply the acquired knowledge directly today, not focusing only on long-term prospects. Learners may not understand what the long-term perspective of learning English is, as most often they do not plan to move to English-speaking countries in the near future, make a pen pal or shop in a foreign store, do not think about the possibility of finding work in international projects or companies.

This can lead to a decrease in motivation and loss of interest in learning a foreign language. One of the technologies that can help teachers in solving this problem is the innovative technology CLIL (Content and Language Integrated Learning). CLIL is an approach in which a foreign language acts as a means of teaching the subjects of the school curriculum.[1].

Learners study subjects in a foreign language, while improving foreign language communicative competence, respectively, language and subject knowledge are closely related. This approach is correlated with the requirements for the educational process today: it allows taking into account the needs of schoolchildren in the use of foreign languages when studying other school subjects, as well as for self-education in areas of interest to them, including their professional orientations. [2].

The relevance and basic principles of this approach is due to the specifics of the subject of a foreign language. One of the characteristics of a subject is interdisciplinary, that is, the content of speech in a foreign language can be information from different areas of knowledge, for example, literature, art, history, geography, mathematics, etc. Indeed, learning a foreign language is impossible out of context, so learners work with texts containing information from various subject areas.

Thus, for example, in an exemplary program for a basic school, the subject content of speech includes such topics as "Nature: flora and fauna", "Ecological problems. Environmental protection", "Climate, weather", which are closely related to the subject area of biology. The topic "Country / countries of the language being studied and their native country, their geographical location, capitals and large cities, regions" involves the study of geography in English lessons.

In addition, a foreign language is characterized by multifunctionality, that is, it can act as a learning goal and as a means of acquiring knowledge. Thus, this approach does not contradict modern requirements and can be successfully applied in education at all levels. [3].

Children can be successful only in what they are sincerely interested in. CLIL technology contributes to the creation of a space for choosing educational activities to determine and develop students' personal and professional interests, inclinations, abilities and related meta-subject skills and

abilities. In the hands of children is a tool that allows you to see further and more. [4]. CLIL opens up a world of new possibilities. "Teachers work with CLIL, CLIL works for everything".

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Rezyume: Ushbu maqolada maktabda chet tili darslarida fan-til integratsiyalashgan o'rganish (CLIL) yondashuvi sifatida qo'llashning o'ziga xos xususiyatlari ko'rib chiqiladi. Chet tilini o'rganishda talabalarning motivatsiyasini oshirishga imkon beradigan ushbu yondashuvdan foydalanishning dolzarbligi isbotlar keltirilgan.

Резюме: В данной статье рассматривается специфика использования инновационной технологии и подхода как предметно-языкового интегрированного обучения (CLIL) на уроках иностранного языка в школе. Обоснована актуальность использования этого подхода , которая позволяет повысить мотивацию учащихся при изучении иностранного языка.

Kalit so'zlar: predmetning o'ziga xosligi, mazmuni, muloqot, til va bilim, til vamadaniyat , metodlar.

Ключевые слова: специфика предмета, содержание, коммуникация, язык и познание, культура, методы.

METHODOLOGICAL FEATURES OF THE DEVELOPING OF ENGLISH LANGUAGE LINGUOCULTURAL COMPETENCE IN HIGH SCHOOL STUDENTS

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Summary: In this article methodological characteristics of the development of english language and cultural competences among secondary school students are studied.
Key words: high school students, linguistic and cultural competence, language and cultural skills, methodology, units of choice

Understanding the methodological features of developing English language linguocultural competence in high school students is essential for educators seeking to facilitate effective language learning experiences. The acquisition of linguistic and cultural skills requires a well-designed and adaptable approach that takes into account the unique characteristics of high school students. Methodology encompasses various instructional techniques, materials, and assessments employed to foster language proficiency and cultural understanding. By considering the cognitive abilities, learning styles, and interests of high school students, educators can employ a range of strategies such as communicative activities, authentic materials, technology integration, and cultural immersion experiences. This chapter explores the methodological aspects of developing English language linguocultural competence in high school students, highlighting the significance of engaging, student-centered approaches that empower learners to actively participate in their language acquisition journey and develop a deep appreciation for the cultural dimensions of the English language.

Particularly relevant in terms of the theory of methodology is the development of the problem and the theoretical substantiation of a fundamentally new approach to determining one of the components of the content of education (linguo-cultural component) for the formation of linguistic-cultural competence. The criteria for selecting authentic materials and their use in the educational process are important.

Authentic materials must meet the following criteria: adequacy to regional realia; thematic marking; information richness; compliance with the life and speech experience of students. [1]

As for the selection units, it is recommended to select different types of texts that represent the socio-cultural background: literary and informative texts, newspaper and magazine articles, etc. Quite a striking specificity is expressed in the lyrics of the countries of the studied language, which have a special property of motivation as much as possible.[2]

Therefore, the text is the first unit of selection of authentic materials.

In addition to the texts of Vereshchagin E.M. recommends using visual materials (caricatures, reproductions, subject and situational pictures) and visual-textual nature (tables, diagrams, maps, graphs, crossword puzzles). [3]

In the process of forming linguistic and cultural competence, the use of a communicative technique is an objective necessity dictated by the laws of any education as such. As you know, everything that a person learns, he acquires in order to use it in future activities. It is known that the use of knowledge, skills, and abilities is based on transfer, and the transfer depends on how adequate the learning conditions are for the conditions in which this knowledge, skills, and abilities are supposed to be used. Therefore, it is necessary to prepare a student to participate in the process of

foreign language communication in the conditions of foreign language communication created in the classroom. [5]

This determines the essence of communicative communication, which lies in the fact that the learning process is a model of the communication process. [4] In this case, communication is considered not as a methodological principle, even if it is a leading one, but as a methodological principle that determines, on the one hand, the methodological principles of teaching, and on the other hand, the choice of general scientific methods of cognition, the initial ones for building the learning process. [1]

Familiarization of students with the intercultural component of the language can be carried out using pictures, drawings; realia (stamps, coins, etc.); communicative gestures; video; country-specific comments; texts of various kinds. It is advisable to invite native speakers to the class. As part of training and application, activities such as role-playing, project work, staging performances, using fairy tales, songs, poems, etc. can be used. In addition, for the formation of LCC (linguacultural competence) recommended: the creation of clubs by correspondence; cooking according to national recipes; solving geographical riddles and puzzles; collecting models of cars, ships, brands, toys from countries; placement in the class of flags, symbols, posters. These and other forms and methods of work will help students acquire intercultural communication skills.

The main goal of teaching a foreign language in a general education school is to develop a student's personality who is able and willing to participate in intercultural communication and improve independently in the activity being mastered. In order to participate in a direct and indirect dialogue of cultures, it is necessary to gradually get acquainted through the language being studied with the history and modern life of the country whose language is being studied, its traditions and culture. At present, the study of a foreign language is becoming more and more inseparable from the simultaneous acquaintance of students with the culture of the country of the language being studied. This aspect, reflecting culture, is called linguo-cultural studies. Linguocultural studies to the greatest extent contributes to the fact that a foreign language, along with fulfilling its main, communicative function in the educational process, performs a cognitive and communicative function, since in foreign language lessons students get acquainted not only with new ways of expressing and perceiving thoughts, but also receive information about the national language. the culture of the people.

According to G.D. Tomakhin, Linguocultural studies is a purely linguistic discipline, since the subject of Linguocultural studies are the facts of the language, reflecting the characteristics of the national culture. Culture is studied through language, and linguistic methods are used to select, describe, and present linguistic and cultural material. In the interpretation of E.M. Vereshchagin and V.G. Kostomarov, linguistic and cultural studies are understood as cultural studies focused on the tasks and needs of study, but unlike cultural disciplines, it has a philological nature, acts through the language and is obligatory in the process of studying it.

In the linguo-cultural component of the content of training, scientists include the following. G.V. Rogov includes material of different levels, including texts for listening and reading, which contain information about the country of the language being studied from geography, history, and social life. The most important means of introducing students to the culture of the country of the language being studied are the texts of works of art. They differ significantly from informational texts on the culture and traditions of the country of the language being studied. Informational texts are usually neutral, concise, and therefore some part of the information provided in them is poorly perceived by students, or is forgotten very quickly. Texts from fiction, with their emotional coloring,

make the reader a witness of the described events related to history or traditions, introduce them to the specific side of the culture of another people and, therefore, are the most significant means of assimilation of linguistic and cultural information. It is the reading of specially selected works of art that contributes to a more solid assimilation of cultural information. Literary material can be presented according to the problem-thematic feature of the selection of textual material of the corresponding content. At the same time, attention should be paid to the following criteria: regional value; compliance with age characteristics; compliance with the speech experience of students; compliance with the life experience of students; compliance with the interests of students; accessibility in terms of linguistic means.

The novelty of the approach of I. L. Bim lies in the fact that she believes that the content of education should include elements of the linguistic culture of the peoples who speak the language being studied, and country-specific information, in relation to situations of communication, about the need to saturate the subject content of speech with country-oriented material with an orientation to the dialogue of cultures. Thus, here, under the linguistic and cultural aspect, knowledge is accepted, or rather, knowledge of the elements of linguistic culture, including in relation to situations of communication, this includes: the study of models of everyday life; study of patterns of cultural behavior. Let us dwell in more detail on the study of patterns of everyday life. Each culture offers a specific selection of patterns associated with areas of daily life such as work, household, shopping, etc. It is very important to introduce students to the patterns of people's everyday life, namely, what the people of this country do under normal conditions.   To a large extent, this will be facilitated by regional exploration exercises of a search nature. An important role in performing these exercises is given to independent analysis, which is based on:

- comparison of several cultures;
- comparison of the intracultural semantic field, etc.

In summary, the age features of high school students encompass various aspects that contribute to their personal and cognitive development. High school students at this stage demonstrate a growing sense of self-awareness and self-determination, as they begin to form their individual identities. They typically possess a relatively high cultural level and outlook, reflecting their exposure to diverse experiences and knowledge. Furthermore, high school students exhibit a heightened cognitive-logical behavior, indicating their ability to think critically and analytically. They also showcase determined inclinations and interests, emphasizing their emerging passions and preferences. Independence becomes more pronounced during this period, as they strive for autonomy and take responsibility for their actions. Additionally, high school students demonstrate an enhanced ability to concentrate on tasks, reflecting their maturing cognitive capabilities. Finally, they often display a negative attitude toward mechanical methods of fixing, indicating a desire for more meaningful and engaging learning experiences.

Regarding the methodological foundations for the formation of English-speaking country-specific competence, various scholars have contributed their perspectives to this field. Researchers such as I.L. Beam, G.V. Horny, G.D. Tomakhina, E.M. Vereshchagin, and V.G. Kostomarov have proposed approaches to address this challenge. These methodological foundations include careful selection of Linguocultural studies material, particularly authentic texts that provide accurate representations of the language and culture being studied. Material is incorporated at different levels, encompassing texts for listening and reading, which offer insights into the geography, history, and social life of the country associated with the language. Moreover, elements of the linguistic culture of the language speakers and regional information are introduced to enhance students' Linguocultural

competence and provide a holistic understanding of the language in its cultural context. These methodological foundations aim to create engaging and comprehensive learning experiences that foster a deep appreciation for the linguistic and cultural nuances of the target language.

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Rezyume *Ushbu maqolada o'rta maktab o'quvchilarida ingliz tili va madaniy kompetentsiyalarini rivojlantirishning uslubiy xususiyatlari o'rganiladi.*

Резюме: *В данной статье рассматриваются методические особенности развития англоязычной и культурологической компетенции старшеклассников.*

Kalit so'zlar: *o'rta maktab o'quvchilari, lingvomadaniy kompetentsiya, til va madaniy ko'nikma, metodologiya, tanlov birliklari.*

Ключевые слова: *старшеклассники, лингвокультурная компетенция, языковые и культурологические навыки, методика, единицы отбора.*

ON THE ETYMOLOGIES OF SOME PHYTONYMS IN THE KARAKALPAK LANGUAGE

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Summary: This article reveals the etymology of some phytonyms in the Karakalpak language. Many scientific literatures, etymological dictionaries and botanical literature have been used to determine the origin of plant names. The etymology of plant names, such as sedge (olen), quinoa (alaputa), elecampane (andyz), leafless barnyard grass (iytsiygek), eastern saltwort (kuyrewik), Belange saltwort (qarabaraq), white nymph (tung`iyiq), has been determined.
Key words: karakalpak language, phytonym, plant, etymology, alaputa (quinoa), andiz (elecampane), tungiyiq (Nymphaea).

Introduction.
Phytonyms in the Karakalpak language have not been studied in a specific etymological way. But in determining the etymology of phytonyms in Turkic languages, the works of famous Turkologists E. V. Sevortyan, L. V. Dmitrieva, A. K. Borovkov, A. Járimbetov have a different place. For example, E. V. Sevortyan, in his work "Etymological dictionary of Turkic languages", made an etymological analysis of a number of phytonyms related to many Turkic languages, such as baldir, baldirgan, burchak, olan, and said that their origin is the old Turkic language.

According to the author's research, phytonyms such as baldır and baldırgan are cognate with the words mood and fish in our language. The root of all this is the word bal, which means "wet, watery" in the old Turkish language [12. 60].

The main part. According to E. V. Sevortyan, the root of the word olan (osoka) is the verb to die. The meaning of this word in the old Turkish language is expressed as "to be wet, to be wet". As a result of adding the suffix -en or -en to this root, the name of small grass growing in moist, watery lands - olan was made from the verb [12. 528]. The fact that the word "hol" in the modern Karakalpak language remains in the sense of "wet" confirms that this opinion is correct.

So, in the Turkological literature, apart from these, one can find a few etymological analyzes of phytonyms. We will quote most of them:

Olaputa. In the Karakalpak language, the variants of this word, alabota, alabuta, are also used. This term is found in almost identical forms in some Turkic languages: alabota in Kazakh and Nogai languages, alabuta in Bashkir and Zangar languages, alabata in Kyrgyz, Russian lebeda in Al Tuva and Khakas languages. According to some sources, the word "lebeda" in Russian comes from the word "olabata" in Turkic languages [6. 139-141]. L. V. Dmitrieva believes that this word was exchanged from Russian to Turkic languages [4. 219]. According to A. Járimbetovtiń, the word alabota was formed from the combination of the words ola and bota "camel's child" [6. 141]. The word olabota is also used in the Kazakh language, and B. Qoliev writes about it: "The meaning of the word ola, the first component of the term olabota (lebeda) in our language, is understandable to all of us. It means not one color, but all kinds of colors. But its second component - the word bota - remains unclear in these words. If we understand the word "camel" as usual, then it is difficult to combine this word with the previous word "ola". The reason for this is that this type of bush has never met in this world. Therefore, it is correct to consider bota as a different word from Alabota" [7. 88]. B. Qoliev connects the word bota in the word alabota with the word bùta, which means "a lot", "abundant" in the dictionary of Mahmud Kashgari [7. 89]. So, the word alabuta means "a plant of many colours". V. A. Merkulova, who studied plant terms in the Russian language, asserts that the

word "alabota" may have originated from the combination of the words "olb" and "oda" in Slavic languages. [10. 111-112] Al N. B. Burganova considers that the word "alabota" was formed from the combination of the Turkic words alap < pahlavan (legendary hero) and oti [1. 137]. In our opinion, the word "olaputa" was formed from the combination of two words "ola" and "buta". So, the word "alabuta" means "appearance is beautiful". This plant is also used in the "Codex Kumanikus", where it is given as alabuta [3. 42].

Andyz. In the "Explanatory dictionary of the Karakalpak language" this word is given in the meaning of a yellow herb that is grown in the field and is used for medicine. Anduz word was also used in old Turkish languages: anduz [12. 150]. Mahmud Kashgari showed that the word "*anduz*" is a plant root that is dug up from the ground, and it is prescribed for the treatment of horses with stomach ache: "If it is andyz, the horse will not die" [13. 148]. Different forms of the word andyz are found in modern Bashkir, Nogai, Kazakh, Tatar, Kyrgyz, Turkmen and Karakalpak languages, andyz in Uzbek. M. Ryasyanen connects the word andyz with the old Turkish word *andu* "to protect", "to look after" [6. 83]. And E.V. Sevortyan believes that all the forms of this word in the Turkish languages come from the roots an (ang), an, en [12. 150].

Atshokai. In the explanatory dictionary of the Karakalpak language, this word is defined as "the root of a plant that sprouts from the ground", and in the Karakalpak-Russian dictionary, it is defined as "the name of decorative tubers, used in food". It is quoted in V.V. Radlov as "*Atshungkai* - the root of the reed can be eaten" [1.473]. B. Kaliyev calls the root stem under the water, which grows on the shores of the lake, in the water, as a thorn, and it is also called an antshonkai in the folk language [7. 41-42]

A certain type of plant is called horsetail in different botanical literature. However, every scientist named different plants by this name. For example, S. Yerezhepov called "*atshokai*" the plant *"сыть круглый"* in Russian [5, 218], while B. Sherbaev called this plant "assalam aleikum" in Karakalpak [14. 269; 15. 39], and called atshokai or donizolen another plant [15, 20]. In the dialectological dictionary of the Karakalpak language, atshokai is a kind of plant. However, it does not specify what kind of plant it is. B. According to Sherbaev, milkweed plant is also called *atshokai* or *ashokey* [14. 215; 15. 45].

Therefore, we can come to the following conclusion about the term atshokai: In recent times, this term has been used to describe reeds or the root of a plant that resembles reeds. At the present time, atshokai means a specific type of plant. There are reasons for this: both reeds and atshokai grow in water or on moist soil. Therefore, most of the plants growing in water that resemble reeds are called reeds.

In the modern Karakalpak language, the roots of reeds are called "*porryk*" [9. 120]. N. I. Ilminsky also called "*porryk*" the root of reeds". Therefore, according to our opinion, atshokai is not the root of a reed, but the root of a plant that is similar to a reed. This word was later used as a name for a plant.

Iytsiygek. It is a perennial plant with a height of up to 90 centimeters. It belongs to the family of Chenopodiaceae. It begins to grow in May and blooms in early August. This word is used in many Turkic languages: in Kazakh *itsygek*, in Uzbek *itsygak, boldiriq, koragachin*, in Turkmen *uldruk*, in Kyrgyz *itsiigak*, *kempir mushtum*. In Russian, it is used in two different terms "*ежовник безлистный"* or *"анабазис безлистный"*. However, the some Karakalpak resources , a completely different plant (kermek gmelina) is called iytsiygek [2. 55]. In fact, this plant is *"boyawtamir"*. The term iytsiygek is also used in the Russian language in the form of iytsygek [6. 112]. A. Zharimbetov expressed the following opinion about the iytsiyek plant: "It consists of two parts: iyt- "dog" and

siygek (siyiw-"to urinate and literally: grass, on which the dog urinates) [6. 112]. It is an acceptable opinion. In fact, as we can see, the term is related to the plant on which a dog urinates.

Iytsiygek is mostly widespread in the foothills of Usturt and it grows in desert or semi-desert areas, in barren, sandy places with close groundwater and where crops are not grown. In the dialectological dictionary of the Karakalpak language the following meaning is given to the word iytsiygek: "there is a type of plant that is not eaten by cattle, the grass has bitter taste , and its root is a cure for chest pain." In fact, a decoction made from the roots of iytsiygek is used as a remedy for lung disease, and powder made from its leaves is sprinkled to cure a wound. Also, it is used not only for medicinal purposes, but also in the preparation silk. In order to make the thread of the silkworm be of high quality, iytsiygek is spread on top of the cocoons.

Kuyrewik. (solyanka vostochnaya). This plant, which belongs to the family of Chenopodiaceae, is used in the Karakalpak language in the form of *keyrewik* and *kuyrewik*. In some botanical literature, it is also called "*боз күйреўик* "In the Kazakh language, this plant is called "*шығыс сораңы"*. And kuyrewik is used to name another type of plant from the family of Chenopodiaceae (*solyanka jestkaya or orlevaya*). It grows in abundance in deserts and semi-deserts of Central Asia. The term "*kuyrewik*" is derived from the word "*kuyrew*" and it means that something becomes dry due to the influence of other external factors [8. 54]. So, this term was formed by adding –"*ik*" noun forming suffix.

Karabarak. It is a tall bushy plant that produces firewood and reaches a height of 80-120 cm. In the explanatory dictionary of the Karakalpak language, the term is defined as "plant in sagebrush family". However, this plant belongs to the family of Chenopodiaceae. Karabarak is called *karabarak* in Uzbek, *karabarak* in Kazakh, *shortan* in Turkmen. In the Kazakh language, there are also variants of it - *barkin, karbarkin, korkara.*

Kazakhs from Karakalpakstan cal it *karabarkin*. Karabarak is called *gorkara* in some places. It is one species of karabarak.

The word Karabarak is consists of the combination of the words *kara* and *barak*, and the word of barak here means "*list*", i.e. "*leaf*" [16. 280]. So, the term karabarak means blackleaf.

Tuńǵıyıq (Nelumbium speciosum Willd.) A plant that grows in the deepest part of the sea. Its length is about 15-16 meters. In the north dialect of the Karakalpak language, it is used in the forms *tumguyuk* or *tumguyik*. The term Tungiyik is related to the fact that this plant grows in the deepest part of the sea. Tungiyik is called *Nilufar* in Uzbek, *Tungyik, Sugul, Dungirshen* in Kazakh, *Tunboyok/tomboyok* in Tatar, and *Nilufar* in Persian-Tajik. N.B. Burganova expresses the following opinion about the origin of the term *tonboyok* in Tatar language: this plant closes its flowers at night in order not to lose the freshness it receives from the sunlight throughout the day. It is said that it is called tonboyok (*мөн-night, бойоқ-close*) because of this property. [1. 134] In the explanatory dictionary of the Karakalpak language, it is said that the word "*tungiyik*" means bottomless, deep, bottomless place.

Conclusion.

To sum up, the Karakalpak language is very rich in plant names. Determining their etymology is one of the important issues in linguistics.

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Rezyume: Bu maqolada qoraqalpoq tilidagi ayrim fitonimlarning etimologiyasi ochib berilgan. O'simlik nomlarining kelib chiqishini aniqlashda ko'plab ilmiy adabiyotlar, etimologik lug'atlar va botanikaga oid adabiyotlardan foydalanilgan. O'lan, olabuta, andiz, itsiygak, keyrovuq, qorabaraq, nilufar (туңғыйық) kabi o'simlik nomlarining etimologiyasi aniqlangan.

Резюме: В данной статье раскрывается этимология некоторых фитонимов в каракалпакском языке. Многие научные литературы, этимологические словари и ботаническая литература были использованы для определения происхождения названий растений. Определена этимология названий растений, таких как осока (өлең), лебеда (алапута), девясил (андыз), ежовник безлистный (ийтсийгек), солянка восточная (күйреўик), Соляноколосник Беланже (қарабарақ), нимфия белая (туңғыйық).

Kalit so'zlar: qoraqalpoq tili, fitonim, o'simlik, etimologiya, alaputa (olabuta), andız (andiz), tunǵiyiq (nilufar, nilfiya).

Ключевые слова: каракалпакский язык, фитоним, растение, этимология, алапута (лебеда), андыз (девясил), туңғыйық (кувшынка).

VISUAL AND AUDITORY STIMULATION: ENHANCING LANGUAGE LEARNING THROUGH MULTIMEDIA

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Summary: In language education, the integration of visual and auditory stimuli through multimedia resources has proven to be an effective approach for enhancing language learning outcomes. This article explores the importance of visual and auditory stimulation in language acquisition and how multimedia can be utilized to facilitate the language learning process.
Keywords: language education, language learning, visua stimulation, auditory stimulation.

The Role of Visual Stimulation:

Visual stimuli play a crucial role in language learning as they provide learners with visual context, non-verbal cues, and visual representations of language use. Some key aspects of visual stimulation in language learning include:

1. Contextual Clues: Visual cues offer learners valuable context, allowing them to infer meaning and understand language use in real-life situations. Visual context helps learners make connections between words, expressions, and their corresponding visual representations.

2. Non-Verbal Communication: Visual stimuli provide learners with an understanding of non-verbal communication, including body language, facial expressions, and gestures. This knowledge enhances learners' ability to interpret and express themselves in a culturally appropriate manner.

3. Vocabulary Acquisition: Visual stimuli facilitate vocabulary acquisition by associating words with corresponding images. This visual representation helps learners create mental connections and recall vocabulary more effectively.

4. Comprehension Enhancement: Visual stimuli aid in comprehension by providing visual support alongside auditory input. Learners can better grasp meaning and infer information through the integration of visual and auditory modalities.

The Role of Auditory Stimulation:

Auditory stimulation is equally important in language learning as it exposes learners to authentic pronunciation, intonation, and language patterns. Some key aspects of auditory stimulation in language learning include:

1. Listening Comprehension: Auditory stimuli, such as recorded dialogues, conversations, and audio recordings, enhance listening comprehension skills. Learners are exposed to different accents, speech rates, and intonations, improving their ability to understand spoken language.

2. Pronunciation and Intonation: Auditory stimuli allow learners to hear native speakers' pronunciation and intonation patterns, aiding in the development of accurate pronunciation and natural language rhythm.

3. Language Patterns and Fluency: Exposure to auditory stimuli helps learners internalize language patterns, sentence structures, and idiomatic expressions. Regular exposure to authentic spoken language enhances fluency and natural language production.

4. Listening Strategies: Engaging with auditory stimuli requires learners to employ various listening strategies, such as predicting, inferring, and summarizing, to extract meaning from the audio input. These strategies contribute to the development of effective listening skills.

Multimedia Resources in Language Learning:

The integration of multimedia resources, which combine visual and auditory stimuli, has revolutionized language learning. These resources include instructional videos, interactive exercises, online platforms, and language learning apps. They provide learners with engaging and immersive experiences that enhance language acquisition. Some benefits of multimedia resources in language learning include:

1. Engaging Learning Experiences: Multimedia resources capture learners' attention and make the learning process more enjoyable and interactive. Learners can actively engage with the content through interactive exercises, quizzes, and games.

2. Authentic Language Use: Multimedia resources expose learners to authentic language use in real-life contexts. Videos, audio clips, and interactive exercises provide learners with opportunities to encounter natural language expressions and cultural nuances.

3. Personalized Learning: Multimedia resources offer learners the flexibility to tailor their learning experiences to their individual needs. Learners can choose content based on their interests, proficiency level, and learning goals.

4. Immediate Feedback: Multimedia resources often provide immediate feedback, allowing learners to assess their performance and make improvements. This instant feedback enhances the effectiveness of language learning and helps learners track their progress.

Finally, the integration of visual and auditory stimulation through multimedia resources plays a crucial role in enhancing language learning. Visual stimuli provide valuable context, non-verbal cues, and support vocabulary acquisition, while auditory stimuli improve listening comprehension, pronunciation, and fluency. Multimedia resources, with their engaging nature and authentic language use, offer learners personalized and interactive learning experiences. Incorporating multimedia resources into language learning curricula can lead to more effective language acquisition and improved overall proficiency.

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Rezyume: Til ta'limida multimedia resurslari orqali vizual va eshitish stimullarini birlashtirish tilni o'rganish natijalarini yaxshilashning samarali usuli ekanligi isbotlangan. Ushbu maqola tilni o'zlashtirishda vizual va eshitishni rag'batlantirishning ahamiyati va tilni o'rganish jarayonini osonlashtirish uchun multimediadan qanday foydalanish mumkinligini o'rganadi.

Резюме: В языковом образовании интеграция визуальных и слуховых стимулов с помощью мультимедийных ресурсов оказалась эффективным подходом для улучшения результатов изучения языка. В этой статье исследуется важность визуальной и слуховой стимуляции в овладении языком и то, как можно использовать мультимедиа для облегчения процесса изучения языка.

Kalit so'zlar: til ta'limi, til o'rganish, vizual stimulyatsiya, eshitish stimulyatsiyasi.

Ключевые слова: языковое образование, изучение языка, зрительная стимуляция, слуховая стимуляция.

THE PECULIARITIES OF A CLOSE TEST IN LANGUAGE LEARNING

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Summary: The given article deals with one of the forms of assessing learners skills as a close test, focuses attention on the peculiarity of the close test is that the case material in it is presented in the form of a coherent text and the possibilities of using the close test in teaching a foreign language
Key words: extralinguistic reality, substantiated presentation*, monologue, assimilation of vocabulary.*

As it is known, the traditional methods of testing of basic knowledge, language skills and abilities of students used in the educational process do not always meet the requirements for rational control. The need for effective forms of testing has led to an ever-increasing interest in the testing methods.

Testing as a method consists of a number of techniques, among which the so-called close-test deserves special attention. This type of test is also described in the methodological literature as an addition test or a recovery test. The close test was developed and proposed by the American scientist W. Taylor to determine how difficult a particular text is to read and understand, as well as how interesting this text is to the reader. [1].

V.Taylor received a fairly high correlation coefficient (0.76) between the results of the test and the results of answers to questions on the content of the same text. Since then, the close test has been widely used in foreign practice of teaching native and foreign languages as an effective method of assessing , mainly in writing.

The peculiarity of the close test is that the situation in it is presented in the form of a coherent text (both a monologue and a dialogue). Thus, the information of such kind of test situation refers, on the one hand, to the organization of the language, and, on the other hand, to extralinguistic reality. The combination of linguistic and extralinguistic features of the text makes it possible to overcome the abstraction of the models of the tested linguistic material. It shows that the success of the close test is directly dependent on restoring connections between the events or states of the characters described in the text. This is determined by learners vocabulary level and how adequately the learner understands the text of each specific test samples. [2].

The foregoing allows us to conclude that the close test can be used as a form of control in high school at an advanced stage of learning, when students have formed an appropriate language base on which to build a guess.

The method of compiling a close test does not present any particular difficulties.

In designing this test, the instructor should be guided by the following guidelines.

For the basis of the close test, it is necessary to choose a prose passage of at least 100 and no more than 300–400 words, in which every nth (i.e., 5th, 7th, etc.) word is omitted, regardless of whether it is structural or significant. An excerpt of prose should be a complete, logically substantiated presentation of facts or events, in which proper names are almost not mentioned, and the missing words are quite easily restored due to the context.

The close test can also be used for the purposes of current (monitoring) control, when it is important to identify in a timely manner how students have mastered the lexical material covered over a certain period of time. Since it is practically very difficult to find a text in which the words

intended for omissions would be combined within one topic, it is proposed, when constructing a close test, to proceed from the principle of selective exclusion of the material to be checked, which is considered the main one in controlling the possession of functional words (articles, prepositions, etc.). [3].

In other words, a word or phrase in the task is omitted in the place of the sentence where it is in accordance with the grammatical rules for the formulation of the statement. The introduction of this principle into the practice of creating a close test will greatly expand the possibilities of a teacher in organizing current control, because based on this principle, he can prepare several close tests during the study of a certain conversational topic and thus check the assimilation of all lexical material. Assimilation of vocabulary, as established, is one of the parameters of learning a foreign language, which is simultaneously associated with other parameters and even determines them. This point of view is confirmed by the data of E. A. Steinfeldt's frequency dictionary, according to which nouns make up 40.7% of all the most commonly used significant words, acting as semantic milestones and therefore contributing to the understanding of the text as a whole.

Evaluation of the quality of execution of all the above close tests can be carried out in the following way. For each correct answer, the student receives 1 point, for an incorrect answer or rejection of it - 0 points. If for his answer the subject chose not the word that needs to be inserted, but close to it in meaning (moreover, the word he chose corresponds to the meaning of the entire passage), then during the control of reading or listening skills, he receives I point, and during the current control - 0 ,5 points, since such an answer indicates a high level of development of the language guess, and not about the possession of the lexical material being mastered in a given period of time. When assessing the quality of the test, the total score (which is obtained if all the answers of the subject would be correct) is compared with the actual score. [4].

All this shows the most acceptable for the conditions of secondary school the possibility of using the close test in teaching a foreign language. As the above examples show, the close test in some cases can be an effective means of testing the knowledge, skills and abilities of learners.

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Rezyume : Ushbu maqolada talabalar bilimini baholash shakllaridan biri "klouz test" turi ko'rib chiqiladi, ushbu turdagi testning xususiyatlariga e'tibor qaratiladi, chunki bu material unda izchil matn shaklida taqdim etilgan va undan chet tilini o'rgatishda foydalanish imkoniyatlari haqqida aytib o`tiladi.

Резюме: В данной статье рассматривается одна из форм оценивания знания учащихся как «клоуз тест» , акцентируется внимание на особенности этого вида тестирования в том, что данный материал в ней представлен в виде связного текста и возможности использования его при обучении иностранному языку.

Kalit so'zlar: ekstralingvistik voqelik, motivatsion taqdimot, monolog, so'z boyligini oshirish va o'zlashtirish.

Ключевые слова: экстралингвистическая реальность, мотивированное изложение, монолог, усвоение лексики.

PEDAGOGICAL ASSURANCE OF THE QUALITY OF A LESSON AT THE UNIVERSITY

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Summary: *The article reveals the features of determining the quality of education in modern conditions, approaches to determining the quality of a lesson in a university setting, criteria for ensuring the quality of a lesson (world trends).*
Key words: *quality of education, quality of a lesson, criteria for ensuring the quality of education.*

INTRODUCTION. The quality of education in modern conditions is one of the most important characteristics that determines the competitiveness of not only individual educational institutions, but also national educational systems as a whole. That is why the task of ensuring the quality of training sessions occupies one of the central places in educational reforms, acting both as a goal and as a criterion indicator of the success of the measures taken.

The study of questions about the quality of the lesson, the effectiveness of pedagogical activity is one of the most relevant at all stages of the development of higher education. Analysis of the theoretical heritage of outstanding teachers of the past and present (Farabi, Beruni, R.Kh. Dzhuraev, A. Diesterweg, John Dewey, E. Kay, Ya. etc.), as well as the activities of well-known domestic and foreign schools, allows you to better see the sources of the quality of university education and upbringing, understand the factors and conditions that ensure it, draw the necessary conclusions for the theory and practice of today. There are different approaches to defining, designing and developing ways and directions to ensure the quality of the training session in a university setting:

- the quality of a lesson is often identified with the goal of the educational system (the quality of education is judged by the structure of the content of education, differentiated by the state educational standard and by the level of knowledge acquired by students and graduates of universities).
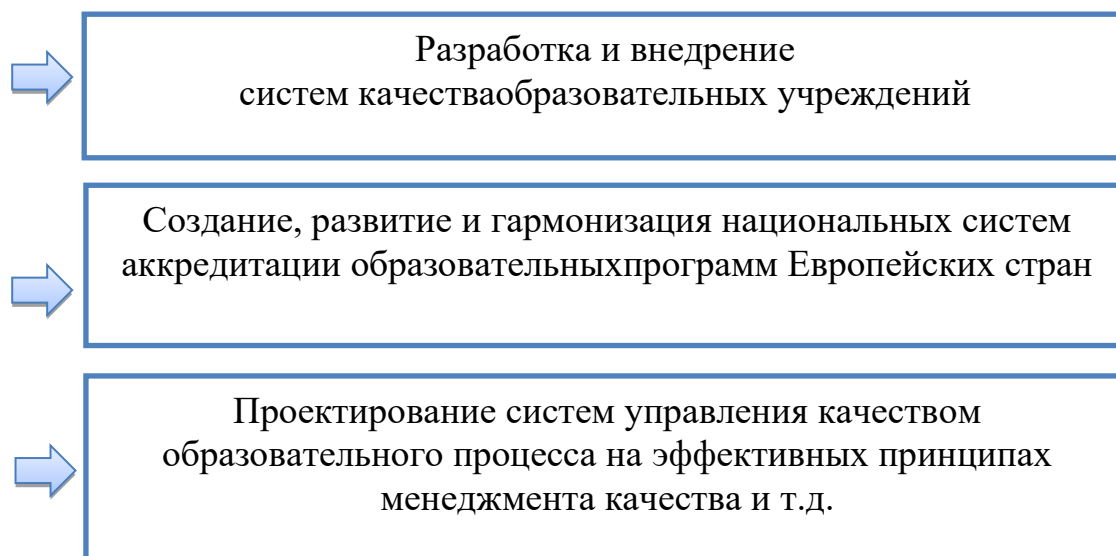
This mechanism for assessing the quality of education is the basis for state certification and accreditation of educational institutions, random checks of the quality of specialist training. It is impossible to draw objective conclusions about the quality of education at a university only on the basis of computer-based verification of curricula and computer-based testing of students' residual knowledge;

- the quality of the lesson is the level of education, upbringing, development of students. This approach is considered in their research by philosophers and psychologists who associate the existing problems in society not with any circumstances, but with the quality of education;

- the quality of the training session is considered as the quality of the work of an educational institution, as ensuring the necessary level of training of specialists, as the compliance of the content, educational programs with state educational standards. This approach limits the assessment of the quality of education to compliance with departmental standards and instructions, but does not take into account its social significance;

- the quality of the training session is related to the level of organization and the result of the educational process in the university. With this approach, the heads of faculties and departments, the

teaching staff are given the opportunity to focus their efforts on comprehensively ensuring the quality of training specialists at all stages of the educational process at the university.

Разработка и внедрение систем качестваобразовательных учреждений

Создание, развитие и гармонизация национальных систем аккредитации образовательныхпрограмм Европейских стран

Проектирование систем управления качеством образовательного процесса на эффективных принципах менеджмента качества и т.д.

At the same time, the main global trends in the field of ensuring the quality of the training session are reduced to certain criteria (Fig). Picture. Criteria in ensuring the quality of the training session (world trends)

CONCLUSION. An analysis of modern approaches to the problem of ensuring the quality of a training session indicates that there is no consensus on this issue. And this is largely due to the fact that each researcher considers the quality of the training session, based on their own experience, the nature of the activity or the subject of a particular study.

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Rezyume: Maqolada zamonaviy sharoitda ta'lim sifatini aniqlash xususiyatlari, universitet sharoitida dars sifatini aniqlashga yondashuvlar, dars sifatini ta'minlash mezonlari (jahon tendentsiyalari) ochib berilgan.

Резюме: В статье раскрываются особенности определения качества образования в современных условиях, подходы к определению качества учебного занятия в условиях вуза, критерии в обеспечения качества учебного занятия (мировые тенденции).

Kalit so'zlar: ta'lim sifati, dars sifati, ta'lim sifatini ta'minlash mezonlari.

Ключевые слова: качество образования, качество учебного занятия, критерии обеспечения качества образования.

IMPORTANCE OF ENGLISH LANGUAGE PROFICIENCY IN HIGHER EDUCATION INSTITUTIONS (HEUs)

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Summary: This article delves into the significance of English language proficiency in higher education institutions (HEUs). With globalization, English has become the dominant language of communication, facilitating interactions among individuals from diverse linguistic backgrounds. In HEUs worldwide, English serves as the primary medium of instruction, necessitating students to possess strong language skills to actively engage with their academic coursework.
Keywords: Globalization, English language proficiency, assessment.

Proficiency in English plays a pivotal role in students' academic success, enabling them to comprehend complex texts, actively participate in classroom discussions, and produce high-quality written work. By exploring these aspects, the article underscores the importance of English language proficiency in HEUs and lays the groundwork for understanding the role of IELTS as a final assessment tool to evaluate students' knowledge.

Globalization and the English language

Globalization has significantly transformed the way societies interact, communicate, and conduct business on a global scale. As countries and cultures become increasingly interconnected, the English language has emerged as the de facto global language of communication. This is due to several factors, including the historical influence of English-speaking nations, the dominance of English in international media and technology, and its status as the language of academia and research.

The widespread use of English as a global lingua franca has created a need for individuals to acquire proficiency in the language to participate fully in international communication, education, and professional settings. It serves as a common language that bridges linguistic barriers, enabling people from diverse backgrounds to connect, collaborate, and exchange ideas. English proficiency has become a vital skill in the globalized world, opening doors to educational, professional, and cultural opportunities.

In the context of higher education institutions (HEUs), the impact of globalization and the prominence of the English language are particularly evident. Many universities and colleges worldwide offer courses and programs conducted entirely in English to attract international students and foster multicultural learning environments. This trend reflects the recognition of English as the language of global knowledge and academic discourse.

As a result, students aspiring to study in HEUs need to possess a strong command of the English language to succeed academically and engage effectively in cross-cultural environments. English proficiency enables them to understand lectures, participate in class discussions, write research papers, and collaborate with peers from different linguistic backgrounds. Moreover, it enhances their ability to access and critically evaluate English-language resources, such as academic journals and publications.

Moreover, proficiency in English as the medium of instruction empowers students to navigate and critically analyze a wide range of English-language resources, including academic journals and publications, enabling them to stay abreast of the latest research and advancements in their fields.

Overall, the pervasive influence of globalization and the widespread adoption of English as a global language underscore the significance of language proficiency assessment, such as the IELTS, in evaluating students' readiness for academic and professional success in HEUs. The IELTS serves as a crucial tool for assessing English language skills and ensuring that students possess the necessary linguistic abilities to thrive in a globalized educational and professional landscape.

English as the medium of instruction in HEUs

English has increasingly become the medium of instruction in higher education institutions (HEUs) around the world. This shift is driven by various factors, including the globalization of education, the desire to attract international students, and the recognition of English as the language of knowledge and research.

HEUs adopt English as the medium of instruction to foster a multicultural and inclusive learning environment that prepares students for a globalized workforce. By offering courses and programs in English, universities aim to attract students from diverse backgrounds and promote intercultural exchange. This approach enables students to interact with peers from different countries, enhancing their cross-cultural understanding and communication skills.

Moreover, English as the medium of instruction facilitates the dissemination of knowledge on an international scale. English is widely recognized as the language of academia and research, with a vast majority of scholarly articles, journals, and conferences conducted in English. HEUs adopting English as the medium of instruction ensure that students have access to a broad range of educational resources and can actively engage with the latest advancements in their fields of study.

By using English as the medium of instruction, HEUs also prepare students for future career opportunities. In many professional domains, proficiency in English is a prerequisite for employment, particularly in multinational companies, research institutions, and global industries. HEUs aim to equip their graduates with the necessary language skills and cultural competence to thrive in an increasingly interconnected and competitive job market.

However, the adoption of English as the medium of instruction presents challenges for both students and faculty. Non-native English speakers may face difficulties in comprehending complex academic content and expressing themselves effectively. Faculty members need to ensure effective language support and teaching strategies to facilitate students' learning experience.

In summary, the use of English as the medium of instruction in HEUs reflects the recognition of English as a global language and the need to prepare students for an interconnected world. It provides students with access to international knowledge, promotes intercultural understanding, and enhances their employability in a globalized job market. The significance of English as the medium of instruction underscores the importance of language proficiency assessment, such as the IELTS, in evaluating students' readiness to succeed in HEUs.

Role of English language proficiency in academic success

English language proficiency plays a fundamental role in achieving academic success in higher education institutions (HEUs). Proficiency in English enables students to fully comprehend and engage with course materials, effectively communicate their ideas, and participate in academic activities.

Firstly, strong English language skills allow students to understand lectures, readings, and academic texts, which are often presented in English. Proficient comprehension of course materials facilitates critical thinking, analysis, and synthesis of information, enabling students to grasp complex concepts and contribute meaningfully to class discussions.

Secondly, English proficiency is essential for effective communication in both spoken and written forms. Students need to express their ideas coherently, articulate arguments, and present research findings in a clear and concise manner. Strong language skills enable students to convey their thoughts accurately and persuasively, enhancing their academic performance and contributing to their overall success.

Additionally, English language proficiency is crucial for academic writing. Students are expected to produce well-structured essays, research papers, and reports that demonstrate their understanding of the subject matter and their ability to engage in scholarly discourse. Proficient writing skills encompass grammar, vocabulary, and the organization of ideas, allowing students to effectively communicate their thoughts and meet the expectations of their instructors.

Moreover, English language proficiency facilitates effective collaboration with peers and professors. In HEUs, teamwork and group projects are common, and effective communication is essential for successful collaboration. Proficient English language skills enable students to engage in productive discussions, negotiate ideas, and contribute meaningfully to group work.

Furthermore, English language proficiency is closely linked to academic performance and achievement. Students with strong English skills are better equipped to engage with and internalize complex subject matter, leading to improved grades and overall academic success.

English proficiency also enhances students' ability to participate actively in class discussions and engage in critical thinking. Students who can effectively express their thoughts and ideas in English have the opportunity to contribute to academic discourse, share unique perspectives, and enrich the learning environment for themselves and their peers.

In addition, English language proficiency is crucial for students pursuing research and independent study. Proficient language skills enable students to access a wide range of academic resources, such as research articles, books, and online databases, which are predominantly available in English. The ability to navigate and comprehend these resources empowers students to conduct comprehensive research, develop well-supported arguments, and produce high-quality scholarly work.

Moreover, English proficiency opens doors to international academic opportunities, such as exchange programs, scholarships, and collaborations with scholars from around the world. These experiences not only broaden students' horizons but also foster cross-cultural understanding and prepare them for a globalized academic and professional landscape.

Lastly, in many disciplines, English proficiency is a prerequisite for presenting research findings at conferences, publishing articles in reputable journals, and participating in academic events. Strong language skills enable students to effectively communicate their research to a global audience, enhancing their visibility and credibility within their respective fields.

In summary, English language proficiency plays a multifaceted role in academic success. It facilitates comprehension of course materials, active participation in discussions, critical thinking, research skills, and engagement with the global academic community. Recognizing the importance of English language proficiency highlights the significance of language assessment, such as the IELTS, as a tool to evaluate and support students' academic journey in HEUs.

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Rezyume: *Ushbu maqola oliy ta'lim muassasalarida (OTM) ingliz tilini bilishning ahamiyatini o'rganadi. Globallashuv bilan ingliz tili turli tillarga mansub shaxslar o'rtasidagi o'zaro munosabatlarni osonlashtirib, dominant muloqot tiliga aylandi. Butun dunyo boʻylab oliy oʻquv yurtlarida ingliz tili asosiy taʼlim vositasi boʻlib xizmat qiladi, bu esa talabalardan akademik kurs ishlarida faol qatnashish uchun kuchli til koʻnikmalariga ega boʻlishlarini talab qiladi.*

Резюме: *В этой статье рассматривается значение владения английским языком в высших учебных заведениях (ВОУ). В условиях глобализации английский стал доминирующим языком общения, облегчая взаимодействие между людьми из разных языков. В высших учебных заведениях по всему миру английский язык служит основным средством обучения, что требует от студентов сильных языковых навыков для активного участия в учебной работе.*

Kalit so'zlar: *Globallashuv, ingliz tilini bilish, baholash.*
Ключевые слова: *глобализация, владение английским языком, оценка.*

THE CONCEPT AND ESSENCE OF MONITORING IN THE FIELD OF EDUCATION

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Summary: *The article reveals the features of monitoring the quality of education in modern universities. The characteristics of monitoring in education are very complex, and none of the existing definitions can be called wrong. This is due to the fact that each definition reflects a certain aspect or essence of monitoring in education.*

Keywords: *monitoring, research, education quality, diagnostics, observation, education monitoring, analysis, monitoring concepts, monitoring function, monitoring system.*

INTRODUCTION.

Modern higher education faces competition at different levels: international, regional, interuniversity and intra university. Higher education institutions compete for financial support, additional funds for research, attracting highly qualified scientists and teachers, as well as the best students, including foreign ones. Increasing competition between educational institutions in the labor market and in the education sector has increased the need to ensure the quality of education through appropriate mechanisms.

Systematic monitoring using information sources is essential for effective quality assurance in education. This contributes to more effective coordination of education management and comprehensive data collection. Monitoring is the science of observing objective reality, which is used in many areas of human activity.

Monitoring of the environment, resources and health is now an integral part of everyday life, and the data collected can affect many aspects of public activity. The importance of monitoring certainly depends on the region, situation and characteristics. Monitoring is the constant observation, assessment and analysis of the state of the environment associated with human activities in various fields in order to achieve the desired results and develop important recommendations. Etymologically, monitoring comes from the Latin word "monitor", which means to observe, control or predict environmental conditions associated with human activities.

Modern educators define the term "monitoring" in different ways, depending on its nature and how it is used. For example, some researchers associate monitoring with the process of observation (G.V. Gutnik, G.M. Kodzhaspirova, Sh. Kurbanov, A.N. Mayorov, E. Seitkhalilov, E.A. Talykh, etc.), control (R. Akhliddinov, N. Nemova, V.A. Mizherikov and others), diagnostics (Sh.A. Abdullaeva, V.I. Andreev, R.Kh. Juraev, V.I. Zvereva, Kh.F. Rashidov, T. A. Stefanovskaya, T.A. Strokova, A.P. Khudaiberganov and others), expertise (A.S. Belkin, M.M. Vakhobov, V.D. Zhavoronkov, M.V. Zanin and others).

The concept of educational monitoring is compared in detail with other technical terms such as "research", "expertise", "observation", "management", "diagnostics" and "management information support". All these terms have a similar meaning to monitoring, but are not exactly the same. Monitoring in education is associated with terms that refer to the presence or absence of certain content elements. The characteristics of monitoring in education are very complex, and none of the existing definitions can be called wrong. This is due to the fact that each definition reflects a certain aspect or essence of monitoring in education.

Monitoring of education is a complex mechanism that includes the collection, analysis, storage and dissemination of information about the education system and its components. Its main goal is the effective management of data on educational processes, assessment of the current situation at a certain point in time and forecasting the development of events in the future. The concept of monitoring involves the collection of operational data, including the systematic observation of the activities and learning of participants, as well as the observation of processes and events in the real target environment. Monitoring focuses on ongoing processes related to the implementation of a planned business consulting project.

Educational monitoring in pedagogy is a complex concept, and all definitions relate to various aspects, functions and characteristics, but the main features of educational monitoring can be clearly distinguished (see Fig. 1.1).

continuous study of a certain object	duration and regularity of tracking
purposefulness of monitoring activities	monitoring system integrity

Picture 1.1. Characteristics of pedagogical monitoring

According to A.N. Mayorov, "monitoring" means constant and continuous monitoring of conditions and possible situations in the learning environment, reporting on undesirable or unacceptable scenarios and their timely elimination. According to T. A. Strokova, the concept of "monitoring" is continuous and involves the collection, processing, systematization, analysis, evaluation and interpretation of information about problem situations, forecasting future indicators, developing and making decisions on corrective measures. According to VI Zvereva, "monitoring" in pedagogy is an organizational form of managing information about the education system. It involves not only the collection, storage, processing and dissemination of data, but also the constant monitoring of the state of the system and forecasting the development of events in the future." According to T. A. Stefanovskaya, educational monitoring is a procedure used to diagnose, evaluate and predict the state of the educational process. In this process, the progress, results and prospects of educational activities are monitored.)".

Monitoring, according to M. N. Skatkin, is result-oriented (educational processes), process-oriented (aimed at managing the final results of processes), process-oriented (conditions and results) and integrative (to form the foundations of concepts and theories that predict development, processes, results and changes in educational activities) (by analyzing their combination). Monitoring also includes "specific management functions such as monitoring and evaluating student behavior and providing feedback on the actual performance of the education system and its fit for purpose." Researchers have identified five characteristics of subsequent learning (A.S. Belkin and V.D. Zhavoronkov) (see Figure 1.2).

indicative function - provides information about the organizations of expedient interaction between the subjects of the educational process
constrictive function - provides an opportunity to use the information received for the organization of transformative (constructive) activities of the subjects of the educational process
organizational activity function - allows you to track the results of the practical activities of the subjects of the educational process, which constitutes the content of their interaction
correctional function - is aimed at correcting the joint actions of subjects and provides resolution of various kinds of problems, difficulties that arise in the process of their joint activities and are generated by the action of both natural, inevitable, and random, accompanying factors

evaluative prognostic function - makes it possible to evaluate the information received by subjects in the process of pedagogical interaction, determine the effectiveness of mutual efforts to achieve an educational result, outline ways for the development of their interaction in the future, as well as set new goals, objectives, plan further activities and develop mechanisms for its implementation.

Picture. 1.2. Functions of pedagogical monitoring

It should be noted that the lack of monitoring functions has a negative impact on the effectiveness of management activities based on monitoring information. Failure to perform these functions results in the loss of the systematic, predictive and stimulating power of monitoring information. It is important to emphasize that the functions of planning, organization, coordination and control, which have a significant impact on the effectiveness of management activities, can only be performed if all the functions of educational monitoring are fully implemented.

However, in order to better understand the nature of educational monitoring, it is important to consider it as a single system with elements, structures and determinants. In the context of higher education, specific types of monitoring can also be identified. (Fig. 1.3).

By the scale of education goals (strategic, tactical, operational)	By the frequency of procedures (single, periodic, systematic)
By stages of training (input or qualifying, training or intermediate, output or final)	By coverage of the observation object (local, selective, continuous)
By time dependence (retrospective, warning or leading, current)	according to the forms of the object of subjective relations (external or social, mutual control, introspection)
by organizational forms (individual, group, frontal)	according to the toolkit used (not standardized, standardized matrix and draw)

-By the scale of education goals (strategic, tactical, operational)

-According to the stages of training (input or qualifying, training or intermediate, output or final)

-By time dependence (retrospective, preventive or leading, current)

-By the frequency of procedures (single, periodic, systematic)

-By coverage of the observation object (local, selective, continuous)

-According to the forms of object-subject relations (external or social, mutual control, introspection)

-By organizational forms (individual, group, frontal)

-According to the tools used (not standardized, standardized matrix, etc.)

Picture. 1. 3. Special types of monitoring in higher education

However, monitoring must follow certain principles formulated as specific requirements in an academic context (see Figure 1.4).

The principle of scientificity is the introduction of a monitoring system that follows a process based on scientific principles and objective criteria, excluding stereotypes and subjective evaluation methods. The principle of predictability - the most important task of monitoring is not only to assess the current state of the process, but also to identify trends and predict possible training measures.

Picture. 1.4. Monitoring principles

S.E.Shishov and V.A.Kalney propose to apply the principles of humanization, humanization, differentiation and individualization of education when monitoring the quality of education. They

provide information about the different types of monitoring, their functions, methods used in different areas, and describe the enabling environment.

Conclusion.

Since educational monitoring is a complex and multifaceted concept, reflecting various practices and combinations of various functions that reinforce certain aspects, it cannot be assumed that any of the existing interpretations is incorrect. For a monitoring system to function effectively, its components and their relationships must be clearly defined, and monitoring should be organized and carried out on the basis of scientifically substantiated principles.

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Rezyume: Maqolada zamonaviy universitetlarda ta'lim sifatini monitoring qilish xususiyatlari ochib berilgan. Ta'limda monitoringning xarakteristikalari juda murakkab va mavjud ta'riflarning hech birini noto'g'ri deb atash mumkin emas. Buning sababi shundaki, har bir ta'rifda ta'limdagi monitoringning ma'lum bir jihati yoki mohiyati aks etadi.

Резюме: В статье раскрываются особенности мониторинга качества образования в современных вузах. Характеристики мониторинга в образовании очень сложны, и ни одно из существующих определений нельзя назвать неправильным. Это связано с тем, что каждое определение отражает определенный аспект или сущность мониторинга в образовании.

Kalit so'zlar: monitoring, tadqiqot, ta'lim sifati, diagnostika, kuzatish, ta'lim monitoringi, tahlil, monitoring tushunchalari, monitoring funktsiyasi, monitoring tizimi

Ключевые слова: мониторинг, исследование, качество образования, диагностика, наблюдение, мониторинг образования, анализ, концепция мониторинга, функция мониторинга, система мониторинга.

THE USAGE OF METAPHORS IN ENGLISH AND KARAKALPAK POETRY

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Summary: *This article deals with metaphors which were used in the poems of English and Karakalpak poets. Metaphors are considered to be a part of poetry due to the fact that that they are used to brighten and clarify the effect of the words to readers.*
Key words: *metaphor, stylistic devices, figurative meaning of a word, poetry.*

Writers and poets look at this world in special ways. Moreover, they make their readers see ordinary things with different ways. This various outlook to the objects and people mentioned above is depicted by figurative language (i.e. stylistic devices or expressive means) in linguistics. To be precise, it is called a figurative meaning of a word in Karakalpak language. Russian scientist prof. I.G.Galperin divided stylistic devices and expressive means into 3 groups: phonetic, lexical and syntactic [4, 25]. Metaphor, which is included in the group of lexical expressive means, is often used both in English and Karakalpak poetry. In our article we deal with works of poets who used metaphors.

A metaphor is a type of stylistic device where the writer links disparate ideas that do not fit together literally but can be interpreted figuratively as a comparison. An example of a metaphor would be the statement, "This library is an ocean of knowledge." The library is obviously not an ocean, so a literal interpretation of the sentence would make little sense. However, interpreted figuratively, it is clear that the library is compared to an ocean in order to express that it feels vast and deep. The metaphor reveals an aspect of the library that may not come across as vividly if the writer simply said that the library was large. [9, 1] According to Berdimuratov, "Metaphor is a device that is used to describe one object with another that has similarities to the first object. As a result, we can find out another new meaning out of this phenomenon and these similarities usually depend on the color, shape, actions or appearance. The figurative meaning of a word is based on the similarities mentioned above [1, 33]. Kazakh scientist, Z.Kabdalov states that one of the major phenomenon in literature is a figurative meaning of a word or metaphor. It helps the word to strengthen the impact of it on the readers and to increase the meaning of an object [6, 15].

While describing the objects and phenomena, writers and poets use words and phrases. That is why, stylistic devices are called as figurative language as well. Metaphors are often confused with similes, but the difference between them is similes are used with words "like", "as". In Karakalpak language metaphors are indicated by nouns, adjectives and verbs. For example:

Jete almay samallar jilar,
Bir – "g'an'q" etil kerbaz "volgalar"
Basip ozip o'tpekshi bolar.

Here, "the winds are crying" are considered as metaphors using verb "cry".

A'wparin! Bul kimnin' gu'li?
A'jiniyaz, Maqtumquli,
Ku'nshig'istin' ko'p bu'lbili
Sayray-sayray ta'rip etken,
Endi na'wbet bizge jetken…

One of the greatest Karakalpak poets and writers Ibrayim Yusupov mentioned girls and their beauty with the metaphor "flower", also metaphor "nightingale" means men who are in love. In addition to this, I.Yusupov defines "nightingale" with different meaning in his another work.

Sen sahra bu'lbili edin' sayrag'an
Bag' tappag'an jerde shengelge qong'an
Japakesh el ushin jan pida' qilg'an
Da'rtli kewillerdin' da'rmani boldin'

Here the poet describes one of the greatest Karakalpak poets, Berdakh as the Nightingale of the Desert. The main aim of using such metaphors in poems is to depict the things or people in artistic way.

In English language metaphors are sometimes denoted by personifications. Personification is a particular case of metaphor. It consists in attributing life and mind to inanimate things. Besides the actual objects of Nature abstractions of the mind, such as life, death, truth, wisdom, love, evil, hope, etc. are frequently personified. Personification is when you give human attributes (characteristics) to the object that is being personified. The objects are not human, and in many cases, they're not even living things. In poetry, personification can be used to emphasize a point in your writing. It can also be used to make a reader understand something you're trying to say. Personification is a way to add more description to your poem by giving human characteristics to inanimate objects it makes winter seem human.

Ah, William, we're weary of weather,"
said the sunflowers, shining with dew.
"Our traveling habits have tired us.
Can you give us a room with a view?"

The sunflowers in the poem "Two Sunflowers Move in the Yellow Room" by William Blake are talking to William Blake, telling him that they want to be moved because they are tired of being outside in the weather.

In the poem "Tree at my window" by Robert Frost, the tree is personified as someone that stands outside, and has worries and movements, instead of it just being a plain tree [47, 10].

But tree, I have seen you taken and tossed,
And if you have seen me when I slept,
You have seen me when I was taken and swept
And all but lost.
That day she put our heads together,
Fate had her imagination about her,
Your head so much concerned with outer,
Mine with inner, weather.

The poem "The mirror" by Silvia Plath suggests that the mirror that hangs on the wall isn't just a reflective surface, but a thinking, functioning object that tells users the truth about themselves [59, 7].

I am silver and exact. I have no preconceptions.
Whatever I see I swallow immediately
Just as it is, unmisted by love or dislike.
I am not cruel, only truthful,
The eye of a little god, four-cornered.

In conclusion, the metaphors used in poetry show much more emotional impact on readers and explain more about the characters and things in poems. By working on this research we would like to conclude that metaphor is a type of stylistic devices which reveal the feelings and inner world of personages in literary works.

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Rezyume: Ushbu maqolada ingliz va qoraqalpoq shoirlari ijodida qo'llangan metaforalar haqida so'z boradi. Metaforalar she'riyatning bir qismi hisoblanadi, chunki ular she'riy asar o'quvchilari tomonidan qo'llaniladigan so'zlarning ta'sirini oshirish va kuchaytirish uchun ishlatiladi.

Резюме: В этой статье рассмотрены метафоры, использованные в произведениях английских и каракалпакских поэтов. Метафоры считаются частью поэзии, потому что они используются для выявления и усиления влияния слов, используемых читателями поэтических произведений.

Tayanch so'zlar: metafora, stilistik vosita, so'zning majoziy ma'nosi, she'r.

Ключевые слова: метафора, стилистическое устройство, переносное значение слова, поэзия.