

**SCIENCE AND EDUCATION
IN KARAKALPAKSTAN**

**ҚОРАҚАЛПОҒИСТОНДА
ФАН ВА ТАЪЛИМ**

**ҚАРАҚАЛПАҚСТАНДА
ИЛИМ ҲАМ ТӘЛИМ**

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**ON ONE METHOD FOR SOLVING THE INITIAL–BOUNDARY VALUE PROBLEM
FOR THE HEAT CONDUCTIVITY EQUATION SEMI-ENDLESS ROD**

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Summary: *In this paper, using the Duhamel principle, a solution is obtained for a specific initial–boundary value problem for the heat equation on a semiaxis.*

Keywords: *heat equation, initial–boundary value problem, Duhamel principle, convolution of functions, Cauchy problem.*

INTRODUCTION

In many important problems of heat conduction for homogeneous media, one has to deal with such boundary conditions, the concentration of a substance at the boundary (the temperature of the end of the rod) is a certain given function of time.

Consider such a problem for a semi–infinite rod.

Find a solution to the heat equation

$$u_t = a^2 u_{xx}, \quad t > 0, \quad x > 0, \quad (1)$$

satisfying the initial condition

$$u|_{t=0} = 0 \quad (x > 0) \quad (2)$$

and boundary condition

$$u_x|_{x=0} = g(t) \quad (t > 0), \quad (3)$$

where $g(t) \rightarrow 0$ at $t \rightarrow 0$ (agreement condition).

This is a more difficult task, since the boundary condition is inhomogeneous and inconstant. In order to solve it, it is necessary first of all to replace the boundary condition (3) with a homogeneous one by introducing a new desired function:

$$v(x, t) = u(x, t) - g(t)x. \quad (4)$$

Then for $v(x, t)$ equation (1) takes the form

$$v_t = a^2 v_{xx} - g'(t)x, \quad (5)$$

initial condition (2) reduces to

$$v|_{t=0} = u|_{t=0} - g(0)x = -g(0)x = 0, \quad (6)$$

(because the $g(t) \rightarrow 0$ at $t \rightarrow 0$), and boundary condition (3) to

$$v_x|_{x=0} = u_x|_{x=0} - g(t) = 0. \quad (7)$$

Thus, we have replaced the homogeneous equation (1) with the inhomogeneous boundary condition (3) by the inhomogeneous equation (5) with the homogeneous boundary condition (7), i.e. reduced the desired task to a new task

$$\begin{cases} v_t = a^2 v_{xx} - g'(t)x, \\ v|_{t=0} = 0, \quad v_x|_{x=0} = 0. \end{cases} \quad (8)$$

Let us show that the solution of problem (8) can be determined according to the Duhamel principle, i.e., in the form of a convolution. To do this, consider the expression

$$\int_0^t \psi(t-\tau)\chi(\tau)d\tau,$$

called function convolution ψ and χ . To find the derivative of a convolution t , we use the Leibniz rule:

$$\frac{d}{dt} \left(\int_0^t \psi(t-\tau)\chi(\tau)d\tau \right) = \psi(0)\chi(t) + \int_0^t \psi'(t-\tau)\chi(\tau)d\tau.$$

We use this formula, taking as ψ any decision $u^* = u^*(x, t)$ homogeneous equation $u_t^* = a^2 u_{xx}^*$ and putting

$$\omega(x, t) = \int_0^t u^*(x, t-\tau)\chi(\tau)d\tau. \quad (9)$$

Then

$$\omega_t = u^*(x, 0)\chi(t) + \int_0^t u_t^*(x, t-\tau)\chi(\tau)d\tau, \quad \omega_{xx} = \int_0^t u_{xx}^*(x, t-\tau)\chi(\tau)d\tau,$$

so

$$\omega_t - a^2 \omega_{xx} = u^*(x, 0)\chi(t) + \int_0^t [u_t^*(x, t-\tau) - a^2 u_{xx}^*(x, t-\tau)]\chi(\tau)d\tau.$$

Since the function $u^*(x, t)$ is chosen so that it is a solution of a homogeneous equation, then the integrand is equal to zero for any value $t > \tau$ and hence

$$\omega_t - a^2 \omega_{xx} = u^*(x, 0)\chi(t). \quad (10)$$

Now let the function $u^*(x, t)$ satisfies the initial condition

$$u^*|_{t=0} = -x \quad (11)$$

and boundary condition

$$u_x^*|_{x=0} = 0. \quad (12)$$

Next, the initial function $f(x) = -x$ let's continue in an even way $f(-x) = f(x)$ on the negative axis. Then by the well-known formula we have

$$u^*(x, t) = \frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} f(\xi) e^{-\frac{(x-\xi)^2}{4a^2 t}} d\xi =$$

$$\begin{aligned}
 &= \frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} f(\xi) \left\{ e^{-\frac{(x-\xi)^2}{4a^2t}} + e^{-\frac{(x+\xi)^2}{4a^2t}} \right\} d\xi = \\
 &= -\frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} \xi \left\{ e^{-\frac{(x-\xi)^2}{4a^2t}} + e^{-\frac{(x+\xi)^2}{4a^2t}} \right\} d\xi.
 \end{aligned}$$

Let us transform this formula using the probability integral $\Phi(z)$:

$$\Phi(z) = \frac{2}{\sqrt{\pi}} \int_0^z e^{-\mu^2} d\mu,$$

where $\Phi(-z) = -\Phi(z)$, $\Phi(0) = 0$, $\Phi(\pm\infty) = \pm 1$.

For this, assuming

$$\mu = \frac{\xi - x}{2a\sqrt{t}}, \quad \xi = 2a\sqrt{t}\mu + x, \quad d\xi = 2a\sqrt{t}d\mu,$$

notice, that

$$\begin{aligned}
 J_1 &= -\frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} \xi e^{-\frac{(x-\xi)^2}{4a^2t}} d\xi = -\frac{1}{\sqrt{\pi}} \int_{-x/2a\sqrt{t}}^{+\infty} (2a\sqrt{t}\mu + x) e^{-\mu^2} d\mu = \\
 &= \frac{a\sqrt{t}}{\sqrt{\pi}} \int_{-x/2a\sqrt{t}}^{+\infty} e^{-\mu^2} d(-\mu^2) - \frac{x}{\sqrt{\pi}} \int_{-x/2a\sqrt{t}}^{+\infty} e^{-\mu^2} d\mu = \\
 &= -\frac{a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}} - \frac{x}{\sqrt{\pi}} \left[\int_{-x/2a\sqrt{t}}^0 + \int_0^{+\infty} \right] e^{-\mu^2} d\mu = \\
 &= -\frac{a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}} - \frac{x}{2} \Phi\left(\frac{x}{2a\sqrt{t}}\right) - \frac{x}{2};
 \end{aligned}$$

further assuming

$$\mu = \frac{\xi + x}{2a\sqrt{t}}, \quad \xi = 2a\sqrt{t}\mu - x, \quad d\xi = 2a\sqrt{t}d\mu,$$

we have:

$$\begin{aligned}
 J_2 &= -\frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} \xi e^{-\frac{(x+\xi)^2}{4a^2t}} d\xi = -\frac{1}{\sqrt{\pi}} \int_{x/2a\sqrt{t}}^{+\infty} (2a\sqrt{t}\mu - x) e^{-\mu^2} d\mu = \\
 &= \frac{a\sqrt{t}}{\sqrt{\pi}} \int_{x/2a\sqrt{t}}^{+\infty} e^{-\mu^2} d(-\mu^2) + \frac{x}{\sqrt{\pi}} \int_{x/2a\sqrt{t}}^{+\infty} e^{-\mu^2} d\mu =
 \end{aligned}$$

$$= -\frac{a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}} + \frac{x}{\sqrt{\pi}} \left[\int_{x/2a\sqrt{t}}^0 + \int_0^{+\infty} \right] e^{-\mu^2} d\mu =$$

$$= -\frac{x}{2} \Phi\left(\frac{x}{2a\sqrt{t}}\right) + \frac{x}{2} - \frac{a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}},$$

as a result

$$-\frac{1}{2a\sqrt{\pi t}} \int_0^{+\infty} \xi \left\{ e^{-\frac{(x-\xi)^2}{4a^2t}} + e^{-\frac{(x+\xi)^2}{4a^2t}} \right\} d\xi = -\frac{2a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}} - x\Phi\left(\frac{x}{2a\sqrt{t}}\right).$$

Therefore, we finally obtain the solution of the problem in the form

$$u^*(x, t) = -\frac{2a\sqrt{t}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2t}} - x\Phi\left(\frac{x}{2a\sqrt{t}}\right),$$

Then the function $\omega(x, t)$, defined by formula (9), will take the form:

$$\omega(x, t) = -\int_0^t \left[\frac{2a\sqrt{t-\tau}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2(t-\tau)}} + x\Phi\left(\frac{x}{2a\sqrt{t-\tau}}\right) \right] \chi(\tau) d\tau.$$

According to equality $\omega_t - a^2\omega_{xx} = u^*(x, 0)\chi(\tau)$ and condition $u^*(x, 0) = -x$ it is a solution to the equation

$$\omega_t = a^2\omega_{xx} - \chi(t)x,$$

satisfies the conditions

$$\omega|_{t=0} = 0, \quad \omega_x|_{x=0} = 0.$$

It remains only to put

$$\chi(t) = g'(t)$$

and the problem is solved. Final function $v(x, t)$, which satisfies the inhomogeneous equation (5) and conditions (6) and (7), will have the form:

$$v(x, t) = -\int_0^t \left[\frac{2a\sqrt{t-\tau}}{\sqrt{\pi}} e^{-\frac{x^2}{4a^2(t-\tau)}} + x\Phi\left(\frac{x}{2a\sqrt{t-\tau}}\right) \right] g'(\tau) d\tau,$$

or, after integration by parts

$$J_1^* = -\frac{2a}{\sqrt{\pi}} \int_0^t \sqrt{t-\tau} \cdot \exp\left(-\frac{x^2}{4a^2(t-\tau)}\right) g'(\tau) d\tau =$$

$$\begin{aligned}
 &= -\frac{2a}{\sqrt{\pi}} \left\{ \sqrt{t-\tau} \exp\left(-\frac{x^2}{4a^2(t-\tau)}\right) \Big|_{\tau=0}^{\tau=t} - \int_0^t g(\tau) \frac{\partial}{\partial \tau} \left[\sqrt{t-\tau} \exp\left(-\frac{x^2}{4a^2(t-\tau)}\right) \right] d\tau \right\} = \\
 &= \frac{2a}{\sqrt{\pi}} \int_0^t g(\tau) \frac{\partial}{\partial \tau} \left[\sqrt{t-\tau} \exp\left(-\frac{x^2}{4a^2(t-\tau)}\right) \right] d\tau = \\
 &= \frac{2a}{\sqrt{\pi}} \int_0^t g(\tau) \left\{ -\frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{2\sqrt{t-\tau}} - \frac{x^2 e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{4a^2(t-\tau)^{3/2}} \right\} d\tau = \\
 &= -\frac{a}{\sqrt{\pi}} \int_0^t g(\tau) \frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{\sqrt{t-\tau}} d\tau - \frac{x^2}{2a\sqrt{\pi}} \int_0^t g(\tau) \frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{(t-\tau)^{3/2}} d\tau, \\
 J_2^* &= -x \int_0^t \Phi\left(\frac{x}{2a\sqrt{t-\tau}}\right) g'(\tau) d\tau = \\
 &= -x \left[\Phi\left(\frac{x}{2a\sqrt{t-\tau}}\right) g(\tau) \Big|_{\tau=0}^{\tau=t} - \int_0^t g(\tau) \frac{\partial \Phi}{\partial \tau} d\tau \right].
 \end{aligned}$$

Because $g(0) = 0$, $\Phi(\infty) = 1$ and

$$\frac{\partial}{\partial \tau} \Phi\left(\frac{x}{2a\sqrt{t-\tau}}\right) = \frac{\partial}{\partial \tau} \left(\frac{2}{\sqrt{\pi}} \int_0^{x/2a\sqrt{t-\tau}} e^{-z^2} dz \right) = \frac{x}{2a\sqrt{\pi}(t-\tau)^{3/2}} e^{-\frac{x^2}{4a^2(t-\tau)}},$$

That

$$J_2^* = -g(t)x + \frac{x^2}{2a\sqrt{\pi}} \int_0^t \frac{g(\tau)}{(t-\tau)^{3/2}} e^{-\frac{x^2}{4a^2(t-\tau)}} d\tau.$$

From here

$$\begin{aligned}
 v(x,t) &= -\frac{a}{\sqrt{\pi}} \int_0^t g(\tau) \frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{\sqrt{t-\tau}} d\tau - \frac{x^2}{2a\sqrt{\pi}} \int_0^t g(\tau) \frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{(t-\tau)^{3/2}} d\tau - \\
 &\quad -g(t)x + \frac{x^2}{2a\sqrt{\pi}} \int_0^t \frac{g(\tau)}{(t-\tau)^{3/2}} e^{-\frac{x^2}{4a^2(t-\tau)}} d\tau =
 \end{aligned}$$

$$= -g(t)x - \frac{a}{\sqrt{\pi}} \int_0^t g(\tau) \frac{e^{-\frac{x^2}{4a^2\sqrt{t-\tau}}}}{\sqrt{t-\tau}} d\tau.$$

According to formula (4), the final solution of the problem will be

$$u(x, t) = -\frac{a}{\sqrt{\pi}} \int_0^t \frac{g(t-\tau)}{\sqrt{\tau}} e^{-\frac{x^2}{4a^2\tau}} d\tau.$$

CONCLUSION

The results obtained can be used in the theory of linear differential and integral operators, in mathematical physics when integrating nonlinear equations, and also in diffusion theory.

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Rezyume: *Uchbu maqolada Dyamel prinsipi usulida yarim o'qdagi sterjenning issiqlik o'tkazuvchanlik tenglamasi uchun boshlang'ich–chegaraviy masalaning yechimi topilgan.*

Резюме: *В данной работе с помощью принципа Дюамеля получено решение конкретной начально–краевой задачи для уравнения теплопроводности полубесконечного стержня.*

Kalit so'zlar: *yarim chegaralangan sterjenning issiqlik o'tkazuvchanlik tenglamasi, Dyamel prinsipi, boshlang'ich–chegaraviy masala, Koshi masalasi.*

Ключевые слова: *уравнение теплопроводности для полубесконечного стержня, принцип Дюамеля, начально–краевая задача, задача Коши.*

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DIFFERENCE SCHEMES OF HIGHER ACCURACY FOR A PSEUDO-PARABOLIC EQUATION

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Summary: *Difference schemes of the finite difference method and the finite element method of a higher order approximation for the Sobolev-type pseudo-parabolic equation are studied in the article. An increase in the order of accuracy in space variables is realized by the finite difference method, and in time - by the finite difference method and the finite element method. A priori estimates for solving difference schemes are obtained and, on their basis, estimates of the accuracy of the proposed difference schemes are determined with sufficient smoothness of the solution to the original differential problem. The orders of the convergence rate of the considered methods in space and time are determined. Implementation algorithms for the constructed difference schemes are proposed.*

Keywords: *Pseudo-parabolic equation, difference schemes, finite difference method, finite element method, a priori estimates, stability, convergence, accuracy.*

1. Introduction. Recently, numerous scientific publications devoted to the study of Sobolev-type pseudo-parabolic equations have appeared. By pseudo-parabolic equations, we mean all higher-order equations with a first-order time derivative of the following form

$$\frac{\partial}{\partial t}(A(u)) + B(u) = 0,$$

where $A(u)$ and $B(u)$ are elliptic operators, generally speaking, nonlinear ones [1]. They are related to compound type equations. Such problems arise in many areas of modern science, for example, in problems of semiconductor physics, plasma physics, chemistry, ecology, biology, hydrodynamics of stratified and filtering liquids, the theory of “creep” of structural elements, etc.

General issues of unique solvability and analytic properties of initial-boundary value problems for pseudo-parabolic equations of Sobolev type were studied in [1]-[6]. At present, more attention is paid to numerical methods for solving such problems. In particular, in [1], [2], high-order Sobolev-type equations are reduced by some transformation to two equations (one contains differentials in time, the other - only in space), and then these equations are solved by the finite difference method using quasi-uniform grids. Difference schemes built on quasi-uniform grids have second-order accuracy in time and space variables, with sufficient smoothness of the solution to the original differential problem. Similar problems were studied in [7]–[10], where high-order Sobolev-type equations with a second-order time derivative were mainly considered. At the same time, schemes of the finite element method of a high order of accuracy were constructed and studied with minimal requirements for the smoothness of the solution to the original differential problem. Difference schemes (with the accuracy of the first and second orders) for an equation with nonlocal boundary conditions were studied in [11]–[13].

As is known, the study of the laws and features of non-stationary processes plays a paramount role in the development and improvement of technological processes, technical installations, and devices in a number of industries and determines the relevance of research in these areas. This addresses the construction and study of numerical methods of higher accuracy (more than two) for various non-stationary initial-boundary value problems, including for pseudo-

parabolic equations. However, numerical methods have their limitations in terms of stability, accuracy, and economy. Therefore, the problem of choosing the optimal method is relevant.

In this article, the authors consider the issues of constructing and studying difference schemes of higher accuracy of boundary value problems for one pseudo-parabolic Sobolev-type equation (in the literature, the Barenblatt-Zhel'tov-Kochina equation). The initial-boundary value problem is first approximated in space variables by the finite difference method, and then for the resulting system of ordinary differential equations of large dimension, the finite difference method of the fourth-order of accuracy in space and the second-order of accuracy in time is applied. The schemes of the finite element method of the fourth-order of accuracy in time, constructed and studied in [14], are also considered. Theorems on the stability, convergence, and accuracy of the constructed difference schemes are obtained.

2. Statement of the problem. Consider the following equation [1]

$$(\lambda - \Delta) \frac{\partial u}{\partial t} = \alpha^2 \Delta u + f(x, t), \quad (x, t) \in Q_T, \quad (1)$$

where $\Delta = \frac{\partial^2}{\partial x_1^2} + \frac{\partial^2}{\partial x_2^2}$ is the two-dimensional Laplace operator, λ, α are positive constants,

$Q_T = \Omega \times [0, T]$, $\Omega = \{x: 0 < x_k < l_k, k = 1, 2\}$ is the bounded domain with boundary $\partial\Omega$ of class C^∞ . In cylinder Q_T , we consider the Cauchy-Dirichlet problem

$$u(x, 0) = u_0(x), \quad x \in \Omega, \quad (2)$$

$$u(x, t) = 0, \quad (x, t) \in \partial\Omega \times [0, T] \quad (3)$$

for equation (1).

Equation (1) models fluid filtration in a fractured-porous medium [2]. In what follows, we assume that $\lambda \notin \{\lambda_k\}$, where $\{\lambda_k\}$ is the set of eigenvalues of the homogeneous Dirichlet problem for the Laplace equation in domain Ω .

It is known from [3] that if $u_0(x) \in C^2(\bar{\Omega})$, $\frac{\partial^3 u_0(x)}{\partial x^3} \in L_2(\Omega)$, $u_0(0, x_2) = u_0(l_1, x_2) = 0$,

$\frac{\partial^2 u_0}{\partial x_2^2}(0, x_2) = \frac{\partial^2 u_0}{\partial x_2^2}(l_1, x_2) = 0$, $u_0(x_1, 0) = u_0(x_1, l_2) = 0$, $\frac{\partial^2 u_0}{\partial x_1^2}(x_1, 0) = \frac{\partial^2 u_0}{\partial x_1^2}(x_1, l_2) = 0$, then there is a unique classical solution to problem (1)-(3):

$$u(x, t) = \sum_{m=1}^{\infty} \sum_{n=1}^{\infty} \varphi_{mn} \exp\left(-\frac{\alpha^2 \lambda_{mn}}{1 + \alpha^2 \lambda_{mn}} t\right) \sin \frac{m\pi}{l_1} x_1 \sin \frac{n\pi}{l_2} x_2, \quad (4)$$

where $\varphi_{mn} = \frac{4}{l_1 l_2} \int_0^{l_1} \int_0^{l_2} \varphi(x) \sin \frac{m\pi}{l_1} x_1 \sin \frac{n\pi}{l_2} x_2$, $\lambda_{mn} = \mu_m + \nu_n$, $\mu_m = \left(\frac{m\pi}{l_1}\right)^2$, $\nu_n = \left(\frac{n\pi}{l_2}\right)^2$.

For further research, we define subspace $H = W_2^1(\Omega)$ - the Sobolev space, vanishing at the boundaries, where the scalar product and the norm are defined as follows:

$$(u(x), g(x)) = \iint_{\Omega} \left(u g + \sum_{m=1}^2 \frac{\partial u}{\partial x_m} \cdot \frac{\partial g}{\partial x_m} \right) dx, \quad \|u(x_1, x_2)\|_{W_2^1(\Omega)}^2 = \iint_{\Omega} \left(u^2 + \sum_{m=1}^2 \left(\frac{\partial u}{\partial x_m} \right)^2 \right) dx.$$

3. Discretization in space. An approximate solution to problem (1)-(3) is sought using the method of finite differences. To approximate the problem in terms of spatial variables, we introduce uniform grid $\bar{\omega}_h = \bar{\omega}_{h_1} \times \bar{\omega}_{h_2}$, where

$$\bar{\omega}_{h_\alpha} = \{x_{i_\alpha} = i_\alpha h_\alpha : i_\alpha = 0, 1, \dots, N_\alpha; h_\alpha = l_\alpha / N_\alpha\}, \alpha = 1, 2. \quad (5)$$

Here $h_\alpha > 0$ are the steps along the spatial directions.

Let us construct subspace $H_h \subset H$ approximating H , i.e. $H_h = W_2^1(\omega_h)$ - the space of grid functions $\mathcal{G}(x_1, x_2)$ with norm $\|\mathcal{G}\|_h^2 = \sqrt{\sum_{i_1}^{N_1} \sum_{i_2}^{N_2} h_1 h_2 [(\mathcal{G}_{\bar{x}_1})^2 + (\mathcal{G}_{\bar{x}_2})^2]} \leq M$, where constant M does not depend on h_1, h_2 . Here $\mathcal{G} = \mathcal{G}(i_1 h_1, i_2 h_2)$, $\mathcal{G}_{\bar{x}_1} = [\mathcal{G}(i_1 h_1, i_2 h_2) - \mathcal{G}((i_1 - 1)h_1, i_2 h_2)] / h_1$, $\mathcal{G}_{\bar{x}_2} = [\mathcal{G}(i_1 h_1, i_2 h_2) - \mathcal{G}(i_1 h_1, (i_2 - 1)h_2)] / h_2$. $W_2^1(\omega_h)$ is the space of grid functions vanishing at the boundaries.

Approximating the original problem (1)-(3) only in terms of space variables, we obtain the following differential-difference problem

$$D \frac{du_h}{dt} + Au_h = f_h, \quad t \in (0, T], \quad (6)$$

$$u_h(0) = u_{h,0}, \quad x_i \in \bar{\omega}_h, \quad (7)$$

where $u_h \in H_h$, $f_h \in H_h$,

$$D = \lambda E - \Lambda, \quad A = -\alpha^2 \Lambda, \quad \Lambda = \Lambda_1 + \Lambda_2, \quad \Lambda_\alpha y = -y_{\bar{x}_\alpha x_\alpha}, \quad \alpha = 1, 2. \quad (8)$$

The order of system (6) is equal to N - the number of internal nodes of grid ω_h . Here, Λ is the five-point difference operator of the second-order approximation, i.e., operators D , A approximate operators $\lambda - \Delta$ and $\alpha^2 \Delta$ with the second-order of the approximation error, respectively.

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

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

$$\bar{\Lambda} y = \Lambda_1 y + \Lambda_2 y + \frac{h_1^2 + h_2^2}{12} \Lambda_1 \Lambda_2. \quad (9)$$

Then operators

$$\bar{D} = \lambda E - \bar{\Lambda}, \quad \bar{A} = -\alpha^2 \bar{\Lambda}, \quad (10)$$

approximate (8) with the fourth-order in h . Hence, we obtain a semi-discrete problem

$$\bar{D} \frac{du_h}{dt} + \bar{A} u_h = \bar{f}_h, \quad t \in (0, T], \quad (11)$$

$$u_h(0) = u_{h,0}, \quad x_i \in \bar{\omega}_h, \quad (12)$$

where $\bar{f}_h = f + \frac{h_1^2}{12} \Lambda_1 f + \frac{h_2^2}{12} \Lambda_2 f$. Problem (11), (12) approximates the original problem (1)-(3)

with the fourth-order in space $-O(|h|^4)$, $|h|^4 = h_1^4 + h_2^4$.

4. Discretization in time. Approximation in time can be realized in two ways.

1°. Problem (11), (12) is approximated on the grid $\omega_\tau = \{t_n = n\tau, n = 1, 2, \dots, M, \tau = T / M\}$ by the difference scheme

$$\bar{D} y_i + \bar{A} y^{(\sigma_1, \sigma_2)} = \varphi, \quad y^0 = u_0, \quad y^1 = u_1, \quad (13)$$

where

$$y^{(\sigma_1, \sigma_2)} = \sigma_1 \hat{y} + (1 - \sigma_1 - \sigma_2)y + \sigma_1 \check{y} = y + \tau(\sigma_1 - \sigma_2)y_t + \frac{\tau^2}{2}(\sigma_1 + \sigma_2)y_{\bar{t}}. \quad (14)$$

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

Difference scheme (13) with identity (14) can be written in the canonical form of three-layer difference schemes

$$\bar{B}y_t + \tau^2 \bar{D}y_{\bar{t}} + \bar{A}y = \varphi, \quad y^0 = u_0, \quad y^1 = u_1, \quad (15)$$

with operators

$$\bar{D} = \frac{(\sigma_1 + \sigma_2)}{2} \bar{\Lambda}, \quad \bar{B} = \lambda E + [1 + \tau(\sigma_1 - \sigma_2)] \bar{\Lambda}, \quad \bar{A} = A. \quad (16)$$

Let us define the errors of scheme (15) by $z = y - u$. Then, substituting $y = z + u$ into (15), we obtain the problem for the error

$$\bar{B}z_t + \tau^2 \bar{D}z_{\bar{t}} + \bar{A}z = \psi, \quad z^0 = 0, \quad z^1 = 0, \quad (17)$$

where ψ is the approximation error of scheme (15) on solution $u(x, t)$ of equation (1). By direct calculation, we verify that $\psi = O(\tau^2 + |h|^4)$.

To study the stability of scheme (15), we use well-known theorems on the stability of three-layer difference schemes from [4]. Since, constant difference operators are $\bar{D} = \bar{D}^* > 0$, $\bar{B} = \bar{B}^* > 0$, then, according to Theorem 1 from [4, p. 231], under meeting the following conditions

$$\bar{A} > 0, \quad \bar{D} > \frac{1}{4} \bar{A}, \quad (18)$$

$$\bar{B} + \frac{\tau}{2} \frac{\rho - 1}{\rho + 1} \bar{A} \geq 0, \quad \rho \geq 1, \quad (19)$$

the following a priori estimate holds

$$\|y^{n+1}\|_A \leq \rho \|y^n\|_A, \quad n = 0, 1, \dots, \quad \rho \geq 1, \quad (20)$$

where

$$\|y^n\|_A = \frac{1}{4} \|y^n + y^{n+1}\|_A^2 + \|y^{n+1} - y^n\|_{\bar{D} - \frac{1}{4}\bar{A}}^2. \quad (21)$$

Conditions (18), (19) with (16) take the following form

$$\left(\frac{\sigma_1 + \sigma_2}{2} - \frac{1}{4} \right) \bar{\Lambda} > 0, \quad (22)$$

$$\lambda E + \left[1 + \tau(\sigma_1 - \sigma_2) + \frac{\tau}{2} \frac{\rho - 1}{\rho + 1} \right] \bar{\Lambda} \geq 0. \quad (23)$$

Since $\rho \geq 1$, then the difference scheme (13) is stable for all τ and h , if its parameters satisfy the following inequalities

$$\lambda > 0, \quad \sigma_1 + \sigma_2 > 0.5, \quad \sigma_1 \geq \sigma_2. \quad (24)$$

Therefore, the following theorem is proved.

Theorem 1. Under condition (24), difference scheme (13) is stable with respect to initial data, and estimate (20) holds for its solution $y^n \in H_h$.

Based on this theorem and Theorem 3 given in [4, p. 257], the following assertion holds.

Theorem 2. Let conditions (24) be satisfied. Then the solution to the difference scheme (13) is stable with respect to the initial data and the right-hand side, and for its solution $y^n \in H_h$, the following a priori estimate holds

$$\|y^{n+1}\|_{\mathcal{M}} \leq e^{0.5ct_n} \left(\|y^0\|_{\mathcal{M}(\mathcal{Q})} + \sum_{k=0}^n \|B_1^{-1} \varphi^k\|_{\bar{D}} \right), \quad (25)$$

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

Considering the problem for the error (17) and a priori estimate (25), we obtain a theorem on the convergence and accuracy of scheme (13).

Theorem 3. Let conditions (24) be satisfied. Then the solution to the difference scheme (13) $y^n \in H_h$ converges to a smooth solution of the original problem (1)-(3) and the following accuracy estimate holds for it:

$$\|y(x_i, t_n) - u(x_i, t_n)\|_1 \leq M(\tau^2 + h^4), \quad (x_i, t_n) \in \bar{\omega}_{\tau h} = \bar{\omega}_{\tau} \times \bar{\omega}_{h_x}, \quad \bar{\omega}_{\tau} = \omega_{\tau} \cup \{0\}.$$

2°. Problem (11), (12) is approximated by the three-parameter difference scheme from [5]

$$\bar{D}y_t - \gamma \bar{A} \dot{y}_t + \bar{A} y^{(0.5)} = \phi_1, \quad \gamma \bar{D} \dot{y}_t + \alpha \bar{A} y_t - \beta \bar{A} \dot{y}^{(0.5)} = \phi_2, \quad (26)$$

where $\phi_1 = \frac{1}{\tau} \int_{t_n}^{t_{n+1}} \bar{f}_h(t) dt$, $\phi_2 = \frac{1}{\gamma \tau} \int_{t_n}^{t_{n+1}} \bar{f}_h(t) (s_1 \mathcal{G}_2^{(1)} + s_2 \mathcal{G}_2^{(2)}) dt$, $s_1 = 15\gamma - 35\alpha / 3$, $s_2 = 140\gamma - 350\alpha / 3$,

$$\mathcal{G}_1^{(1)} = 1/2, \quad \mathcal{G}_2^{(3)} = \tau \xi (1 - \xi) (\xi - 1/2), \quad \xi = (t - t_n) / \tau.$$

The initial conditions for (26) are set as follows: in addition to the natural condition $y^0 = u_0$, it is necessary to set $\dot{y}^0$. To do this, from the system of equations (11) at $t = 0$, we determine $\dot{u}_0 = \bar{D}^{-1}(f^0 - \bar{A}u_0)$ and set $\dot{y}^0 = \dot{u}_0$, therefore, the initial conditions for (26) have the following form:

$$y^0 = u_0, \quad \dot{y}^0 = \bar{D}^{-1}(f^0 - \bar{A}u_0). \quad (27)$$

Based on the calculated values $\dot{y}^{n+1}, \dot{y}^n, y^{n+1}, y^n$ it is possible to restore the approximation to $u_h(t)$ for any $t \in [t_n, t_{n+1}]$, $n = 0, 1, \dots$ by the following formula:

$$y(t) = y^n \phi_{00}^n(t) + \dot{y}^n \phi_{10}^n(t) + y^{n+1} \phi_{01}^n(t) + \dot{y}^{n+1} \phi_{11}^n(t).$$

Here $\phi_{00}^n(t) = 2\xi^3 - 3\xi^2 + 1$, $\phi_{01}^n(t) = 3\xi^2 - 2\xi^3$, $\phi_{10}^n(t) = \tau(\xi^3 - 2\xi^2 + \xi)$, $\phi_{11}^n(t) = \tau(\xi^3 - \xi^2)$, $\xi = \frac{t - t_n}{\tau}$

Difference scheme (26), (27) has the fourth-order of approximation error in time if the conditions obtained in [5] are met:

$$\alpha + \beta = \gamma, \quad \alpha, \beta, \gamma = O(\tau^2). \quad (28)$$

The following theorem on the convergence of the solution of difference scheme (26), (27) to the solution of problem (11), (12) was also proved there.

Theorem 4. Let conditions (28) and stability conditions be satisfied

$$\tau \leq 2 / \sqrt{\beta}. \quad (29)$$

Then, the solution of the difference scheme (26), (27) converges to a smooth solution of the original problem (11), (12) and the accuracy estimates are valid for its solution:

$$\|y(t) - u(t)\|_{\bar{A}^2} \leq M\tau^4, \quad \|\dot{y}(t) - \dot{u}(t)\|_{\bar{A}^2} \leq M\tau^4, \quad \forall t \in \bar{\omega}_{\tau}.$$

Then, considering the approximation errors of operators (10) and the results of Theorem 4, we obtain the following assertion.

Theorem 5. Let conditions (28) and (29) be satisfied. Then the solution of the difference scheme (26), (27) $y^n \in H_h$ converges to smooth solution $u(x, t)$ of problem (1)–(3) and the following accuracy estimates hold

$$\|y(x, t) - u(x, t)\|_{\bar{A}^2} \leq M(h^4 + \tau^4), \quad \|\dot{y}(x, t) - \dot{u}(x, t)\|_{\bar{A}^2} \leq M(h^4 + \tau^4), \quad \forall (x, t) \in \bar{\omega}_{hr}.$$

5. Implementation algorithms. Since the operators $\bar{D} = \bar{D}^* > 0$, $\bar{A} = \bar{A}^* > 0$ are self-adjoint and positive, there are inverse operators $\bar{D}^{-1}$, $\bar{A}^{-1}$, hence the difference scheme (13) is calculated as an explicit scheme. Therefore, the scheme is easy to program. In [14], two implementation algorithms for scheme (26), (27) are presented.

6. Conclusions. In this article, based on the finite difference method, a numerical method of high accuracy for solving the first boundary value problem for the Barenblatt-Zhel'tov-Kochina equation was developed and investigated. The stability and convergence of the constructed difference schemes were proved, and accuracy estimates were obtained on their basis. Likewise, multidimensional equations can be investigated and other boundary value problems considered.

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Rezyume: Ushbu maqolada Sobolev tipidagi psevdoparabolik tenglama uchun chekli ayirmalar usuli va chekli elementlar usulining yuqori aniqlikdagi ayirmali sxemalari tadqiq qilingan. Fazoviy o'zgaruvchilarning aniqlik tartibinining ortishi chekli ayirmalar usuli asosida, vaqt bo'yicha esa chekli elementlar usuli asosida amalga oshiriladi. Ayirmali sxemalarning yechimi

uchun aprior baholar olingan va ular asosida taklif qilingan ayirmali sxemalarning aniqlik baholari dastlabki differentsial masalani yechishning etarli darajada silliqligida olingan. Ko'rib chiqilayotgan usullarning fazo va vaqt bo'yicha yaqinlashish tezligining tartiblari aniqlangan. Qurilgan ayirmali sxemalni amalga oshirish algoritmlari taklif etilgan.

Резюме: В работе исследованы разностные схемы метода конечных разностей и метода конечных элементов повышенного порядка аппроксимации для псевдопараболического уравнения Соболевского типа. Повышение порядка точности по пространственным переменным осуществляется методом конечных разностей, а по времени методом конечных разностей и методом конечных элементов. Получены априорные оценки для решения разностных схем и на их основе получены оценки точности предложенных разностных схем при достаточной гладкости решения исходной дифференциальной задачи. Определены порядки скорости сходимости рассматриваемых методов по пространству и по времени. Предложены алгоритмы реализации построенных разностных схем.

Kalit so'zlar: Psevdoparabolik tenglama, ayirmali sxemalar, chekli ayirmalar usuli, chekli elementlar usuli, aprior baholar, turg'inlik, yaqinlashish, aniqlik.

Ключевые слова: Псевдопараболическое уравнение, разностные схемы, метод конечных разностей, метод конечных элементов, априорные оценки, устойчивость, сходимость, точность.

FIBER YIELD OF MEDIUM STAPLE COTTON LINES IN DIFFERENT GROWING ZONES

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Summary: *An assessment was made of the fiber yield of the lines of medium staple cotton in 2018-2020, in Tashkent, Fergana and Kashkadarya regions of the Republic of Uzbekistan. 10 lines of different genetic origin were tested. The influence of the genotype and the environment on the manifestation of fiber yield was studied.*

Keywords: *Gossypiumhirsutum, genotype, environment, fiber yield, selection.*

Introduction. Fiber yield is the percentage ratio of the mass of pure fiber to the mass of raw cotton from which a given amount of fiber is obtained. According to V.M. Efimenko[1], if the fiber yield was increased by only one percent, then the amount of fiber would increase by 45 thousand tons, or almost three percent of the gross fiber production [2]. The studies of D.N.Samarkin, S.S.Sadikov, I.S.Varuntsyan and others [3] indicate a change in the yield of cotton fiber under the influence of soil-climatic and seasonal growing conditions, as well as differences within the plant, depending on the position of the bolls on the bush and within the boll, on the position of the voles in the lobule.

The aim of our research was to study the yield of fiber in cotton lines of various genetic origins in an ecological test, as well as to determine the influence of the genotype and environment on the overall phenotypic variability of the trait.

Material and methods. The studies were carried out in 2018-2020 on the fields of the Institute of Breeding, Seed Production and Agrotechnology of Cotton Cultivation, (Tashkent region, Salar township), as well as branches of the Institute in the Fergana region (Kuva) and Kashkadarya region (Kasbi), differing in soil and climatic conditions. Sowing seeds was carried out at the optimal time. Seeding scheme 60 cm x 20 cm x 1 plant.

We used 10 lines of cotton of the species *G.hirsutum* L., obtained on the basis of introgressive forms with the participation of the wild species *G. trilobum* Skovsted, as well as varieties of foreign selection from the collection of SRIBSPACC. The most productive individual selections of these lines were divided into three parts and their seeds were sown in three different ecological zones. Experimental data on the influence of the genotype and environment on fiber yield were processed by the method of two-factor analysis of variance with repetitions according to R.Fisher, 1958.

A comparative analysis of the fiber yield in 2018 for the studied lines showed significant differences between them. A high fiber yield was noted in line 752 - an average of 41% in the regions (Table 1). Also, a high yield was observed for lines 681 and 782 - 39.2 and 39.0, respectively. The lowest fiber yield was observed for line 765 – 34.1%. The fiber yield of the remaining lines studied ranged from 36.0-38.4%. It should be noted that most of the lines showed the stability of the trait in the regions. Groups of lines by regions also differed from each other. So, the greatest results were noted in the Ferghana region on average for the group of 38.6%, followed by the Kashkadarya region 37.4%, and in the Tashkent region this figure was 36.9%. It must be said that the absolute majority of lines exceeded their indicator in the Fergana region.

Table 1

Fiber yield rates for cotton lines (2018)

Region	Line numbers	n	$\bar{x}$ %	S	S ²	V %
Tashkent (Salar)	481	19	35.7	2.43	5.91	6.8%
	595	20	38.1	0.77	0.59	2.0%
	655	21	36.8	3.98	15.86	10.8%
	681	16	38.9	1.41	2.00	3.6%
	705	16	36.7	2.04	4.17	5.6%
	752	15	40.1	1.11	1.22	2.8%
	765	10	33.1	0.85	0.72	2.6%
	782	14	38.3	0.92	0.85	2.4%
	956	24	36.5	0.97	0.94	2.7%
	998	23	35.0	0.62	0.39	1.8%
	St. Namangan 77	18	37.2	0.22	1.27	3.6
	St. S-6524	17	35.7	0.34	1.54	3.9
Fergana (Kuva)	481	16	38.3	1.10	1.20	2.9%
	595	20	39.3	1.17	1.36	3.0%
	655	17	38.0	1.65	2.72	4.3%
	681	18	39.5	0.99	0.98	2.5%
	705	19	39.3	0.72	0.51	1.8%
	752	18	42.0	0.47	0.22	1.1%
	765	11	35.2	1.51	2.27	4.3%
	782	11	39.7	1.45	2.10	3.7%
	956	19	38.3	1.77	3.14	4.6%
	998	14	36.7	0.65	0.42	1.8%
	St. Namangan 77	16	38.0	0.42	2.97	7.8
	St. S-6524	16	36.5	0.46	1.97	5.0
Kashkadar ya (Kasbi)	481	19	36.8	0.28	0.08	0.7%
	595	18	37.9	0.76	0.58	2.0%
	655	20	35.9	1.44	2.06	4.0%
	681	9	39.1	0.47	0.22	1.2%
	705	17	37.0	1.13	1.27	3.0%
	752	12	40.7	1.01	1.03	2.5%
	765	17	34.0	1.26	1.59	3.7%
	782	20	39.0	0.83	0.69	2.1%
	956	12	37.5	0.99	0.99	2.6%
	998	11	36.4	0.75	0.56	2.0%
	St. Namangan 77	21	37.8	0.40	1.73	4.8
	St. S-6524	22	37.0	0.40	2.03	5.6

Analysis of variance of fiber yield in cotton lines 2018

Source of variation	SS	df	MS	F	P-value	F critical
Sample	384.1043	9	42.67825	22.60005	1.44E-19	1.985595
Columns	62.97848	2	31.48924	16.67497	6.91E-07	3.097698
Interaction	16.22017	18	0.901121	0.477184	0.961678	1.719592
Inside	169.9572	90	1.888414			
Total	633.2602	119				

Genotype	60.7%
Environment	9.9%
Interaction (GS)	2.6%
Random deviations	26.8%

The results of a two-factor analysis of fiber yield showed a significant difference between genotypes and groups by region. The proportion of the influence of the genotype on the variability of fiber yield was high - 60.7%. External conditions affected the trait by almost 10%. The influence of the interaction of genotype-environment factors on fiber yield was found to be insignificant.

In 2019, the maximum fiber yield in all three regions was observed at the L-752 line, respectively 41.9% in Tashkent, 44% in Fergana and 42.4% in Kashkadarya region (Table 2). Lines L-765, L-998 and L-655 showed consistently low results in fiber yield in three different soil-climatic zones, which indicates the stability of the trait and its greater dependence on the genotype.

A significant variability in the fiber yield was observed in the L-752 lines - 5.58%, the L-705 line - 7.78%, and the L-765 line - 9.74%. The lowest coefficient of variation was observed for line L-998, respectively, by regions – 2.19, 3.11, and 2.62%, which indicates the stabilization of the trait in this line.

Table 2

Fiber yield rates for cotton lines (2019)

Region	Line numbers	n	$\bar{x}$ %	S	S ²	V %
Tashkent (Salar)	481	30	38.2	1.83	3.36	4.80
	595	16	37.9	1.91	3.66	5.05
	655	29	37.1	2.00	3.98	5.38
	681	30	40.0	2.03	4.10	5.07
	705	32	38.6	2.13	4.53	5.51
	752	34	41.9	2.34	5.47	5.58
	765	29	35.7	1.89	3.58	5.30
	782	27	39.9	1.52	2.32	3.82
	956	34	39.4	1.50	2.25	3.81
	998	34	37.0	0.81	0.66	2.19
	St. Namangan 77	33	36.6	0.48	0.23	0.01
	St. S-6524	28	36.6	0.64	0.41	0.02
Fergana (Kuva)	481	27	38.6	2.45	5.98	6.34
	595	31	39.4	2.57	6.61	6.53
	655	26	37.8	2.72	7.41	7.21
	681	34	39.7	2.87	8.26	7.25
	705	31	39.3	3.10	9.62	7.89

	752	32	44.0	3.36	11.28	7.63
	765	33	36.0	2.38	5.68	6.62
	782	28	39.7	2.50	6.24	6.29
	956	28	39.3	2.01	4.02	5.11
	998	27	35.9	1.12	1.25	3.11
	St. Namangan 77	22	37.3	0.53	0.28	0.01
	St. S-6524	26	37.9	0.84	0.71	0.02
Kashkadar ya (Kasbi)	481	36	39.4	2.98	8.89	7.57
	595	35	38.6	3.11	9.70	8.06
	655	30	36.2	3.22	10.34	8.87
	681	29	39.5	3.24	10.49	8.20
	705	28	39.5	3.39	11.51	8.58
	752	32	42.4	3.72	13.81	8.76
	765	29	37.8	3.68	13.58	9.74
	782	30	40.4	1.93	3.74	4.78
	956	31	38.0	1.41	2.00	3.72
	998	30	36.5	0.96	0.92	2.62
	St. Namangan 77	23	38.1	0.35	0.12	0.01
	St. S-6524	23	38.0	0.74	0.55	0.02

**Two-factor analysis of variance
of fiber yield (%)**

<i>Source of variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F critical</i>
Sample	381.9606	9	42.44006	13.24166	3.04E-13	1.985595
Columns	3.455195	2	1.727597	0.539025	0.585188	3.097698
Interaction	40.08954	18	2.227197	0.694904	0.807696	1.719592
Inside	288.4537	90	3.205041			

Genotype	53%
Environment	0%
Interaction (GS)	6%
Random deviations	40%

In the experiments of 2019, a two-way analysis of variance revealed that the differences between the lines are significant, and the share of the influence of the genotype on the manifestation of the trait was 53%. The P-value of the environmental factor turned out to be less than 0.05, i.e. there is no difference between the samples by region. The same applies to the interaction of genotype-environment factors: the P-value of the genotype-environment interaction factor turned out to be less than 0.05, therefore, the difference in the averages for this factor is insignificant. The share of influence of unaccounted factors on fiber yield was 40%.

In 2020, for the vast majority of lines, the average fiber yield by region was 39% and slightly higher (Table 3). The exceptions were lines 481 and 705, their average yield was the same 37.6%. The maximum indicator was noted at line 681 - 40% on average in three regions. It should be noted that in the Fergana region, most of the lines improved this indicator by 1 - 1.3% and

averaged 39.8% in the Fergana region, 38.3% in the Tashkent region, and 38.8% in the Kashkadarya region.

Table

Fiber yield rates for cotton lines (2020)

Region	Line numbers	n	$\bar{x}$ %	S	S ²	V %
Kashkadar ya (Kasbi)	481	20	36.9	0.65	0.43	1.8%
	595	14	38.4	0.55	0.31	1.4%
	655	14	37.5	0.24	0.06	0.6%
	681	21	39.2	0.38	0.15	1.0%
	705	19	36.9	0.85	0.73	2.3%
	752	17	39.5	0.42	0.18	1.1%
	765	24	39.0	0.29	0.08	0.7%
	782	18	38.8	0.47	0.22	1.2%
	956	11	39.2	0.85	0.73	2.2%
	998	12	38.0	1.41	1.98	3.7%
	St. Namangan 77	19	34.1	0.32	0.10	0.9
	St. S-6524	19	34.3	0.41	0.17	1.2
Kashkadar ya (Kasbi)	481	6	38.5	0.53	0.28	1.4%
	595	8	39.7	0.91	0.83	2.3%
	655	9	38.8	0.48	0.23	1.2%
	681	8	40.4	0.80	0.63	2.0%
	705	20	38.0	0.94	0.89	2.5%
	752	20	40.5	0.45	0.20	1.1%
	765	26	40.7	0.22	0.05	0.5%
	782	19	39.7	0.43	0.19	1.1%
	956	10	40.6	0.73	0.54	1.8%
	998	8	40.7	0.29	0.08	0.7%
	St. Namangan 77	15	38.6	0.48	0.23	1.2
	St. S-6524	15	35.2	0.54	0.29	1.5
Kashkadar ya (Kasbi)	481	11	37.3	0.54	0.29	1.4%
	595	7	39.0	0.82	0.68	2.1%
	655	19	37.9	0.26	0.07	0.7%
	681	13	40.2	0.64	0.41	1.6%
	705	21	38.0	1.20	1.44	3.2%
	752	21	39.5	0.97	0.94	2.5%
	765	19	39.5	0.72	0.51	1.8%
	782	21	38.8	1.23	1.51	3.2%
	956	11	39.0	2.43	5.91	6.2%
	998	13	38.8	0.98	0.96	2.5%
	St. Namangan 77	17	35.7	0.31	0.09	0.8
	St. S-6524	18	33,7	1.82	3.31	5.4

Analysis of variance of fiber yield in cotton lines						
Source of variation	SS	df	MS	F	P-value	F critical
Sample	87.96712	9	9.774124	13.64084	1.47E-13	1.985595
Columns	42.96076	2	21.48038	29.97817	1.05E-10	3.097698
Interaction	9.647139	18	0.535952	0.747979	0.752857	1.719592
Inside	64.48807	90	0.716534			
Total	205.0631	119				
Genotype	42.9%					
Environment	21.0%					
Interaction (GS)	4.7%					
Random deviations	31.4%					

Analysis of variance showed a significant difference between lines and groups. A significant proportion of the influence of the genotype on the variability of the trait 42.9 was established, the environment significantly affected - 21%.

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Rezyume: O'zbekiston Respublikasining Toshkent, Farg'ona va Qashqadaryo viloyatlarida 2018-2020 yillarda o'rta navli paxta liniyalarining tola hosildorligiga baho berildi. Turli xil genetik kelib chiqadigan 10 ta chiziqli sinovdan o'tkazildi. Genotip va atrof-muhitning tola hosildorligining namoyon bo'lishiga ta'siri o'rganildi.

Резюме: Проведена оценка выхода волокна линий средневолокнистого хлопчатника в 2018-2020 годах в Ташкентской, Ферганской и Кашкадарьинской областях Республики Узбекистан. Было протестировано 10 линий разного генетического происхождения. Изучено влияние генотипа и среды на проявление выхода волокна.

Kalit so'zlar: *Gossypiumhirsutum*, genotip, muhit, tola unumi, seleksiya.

Ключевые слова: *Gossypiumhirsutum*, генотип, среда, выход волокна, селекция.

**ENVIRONMENTAL WATER BODIES OF THE SOUTHERN ARCHIPELAGO
IMBALANCE**

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Summary: *The article presents the results of the analysis of the distribution of biogenic elements in the aquatic ecosystems of the Aral Sea region by the method of principal components. The analysis performed shows that, in general, the studied system of characteristics of the state and distribution of biogenic elements in the studied water body does not differ in the stability of correlations; in certain periods of observation, correlations between the studied indicators weaken or even are absent.*

Keywords: *Aral Sea Area, monitoring, biogenous elements, water ecosystems, eutrophication.*

In the world's leading scientific centers, large-scale research is being carried out on the development of methods for predicting changes in the state of water ecosystems under the influence of human economic activities, with the integrated use of water management and water management.

Degradation processes in the hydrosphere lead to a decrease in the recreational potential of water resources and water bodies. Solving priority tasks in the field of protection of water resources and their rational use is gaining urgent importance. In this regard, conducting research on the development of new innovative methods of monitoring and bioindication of water ecosystems is becoming an important priority.

The aquatic ecosystem is considered as a system consisting of two independent but actively interacting components: the abiotic part of the ecosystem, i.e. water, with its dissolved (including gases) and mixed substances, the edges and bottom soil of water bodies, and the biotic part of the ecosystem, i.e. all Hydrobionts and their complexes are biocenoses. Among the characteristics of the abiotic part of aquatic ecosystems, which are most important for the development of the aquatic ecosystem, the following can be included: temperature, mineralization (salinity), light, gas regime, the composition of chemical substances, including biogenic, organic and pollutant); oxygen and carbon dioxide concentration; flow rate; the intensity of water exchange between different parts of the water body; water level, glacial events, soil character, etc.

The biotic part of the ecosystem consists of micro- and macroorganisms of the water layer and bottom sediments, which are divided into plankton, benthos and bottom sediments.

The study of lake ecosystems began at the beginning of the 20th century. G.G. Vinberg (1934, 1946, 1960, 1974, 1975), S.I. Kuznetsov (1952, 1970, 1985, 1989), L.L. The scientific works of Rossolimo (1967, 1971, 1975) provided the first complete information on the morphometry, hydrochemistry, hydrobiology and microbiological processes of some large lakes (White, Blue and others).

The amount of knowledge being collected, level of stability, geographical location, formation of depth, nature of water exchange, water balance, thermal regime, water mineralization, nutritional conditions of water organisms, etc. made it possible to classify lakes according to In the evolution of lakes, it is divided into several stages (youth, maturity, old age, discomfort) characterized by changes in the level of trophic and biological productivity.

In addition, lake ecosystems are characterized by the accumulative quality of metabolism, bias from water collection, weak water exchange, significant temperature stratification, oxygen dichotomy in the summer season, etc. is shown to be characterized by

Central Asia is considered the ancient seat of civilization and has been under anthropogenic influence for a long time, which has become increasingly stronger in the conditions of scientific and

technical progress. As a result, the process of changing the status of water bodies has been accelerated by the active participation of people in the territory of water catchment areas. The intensively increasing use of water resources for economic needs leads to significant changes in the water regime, including river flows, basins and catchment areas. This effect is especially large in arid zones where there are almost no rivers that are not used for agriculture.

The lake is a natural coastal water body with a slow water exchange. Typically, lakes have a wind-induced riparian zone profile. Lakes have no direct connection with the ocean. Two invariable conditions are necessary for the formation of a lake: the presence of a natural depth, that is, the lowness of the earth's surface, and the presence of a certain volume of water located in this depth.

Lakes are very sensitive to external influences, including natural climate changes. According to the nature of water exchange, lakes are divided into two large groups: flowing and non-flowing. Lakes that receive water from the outside and do not give anything to the natural or artificial water flow, but only use it for evaporation, infiltration or artificial water intake, are considered non-flowing. In other words, there is no water flow over the surface of such a water body. In all lakes, the main morphological elements are distinguished with greater or lesser accuracy: a depression, that is, a natural depression of the earth's surface of various origins, on the border of which the lake is located; an arm of a lake occupied by water.

An important element of lake depth is its shoreface, which, depending on the receding character of the shore, includes the shoreface, lakeshore ridges, and lakeshore shallows. The last two elements of the lake depth are often called the littoral, its characteristic features include the shallowness of the water and the influence of waves. Beyond the littoral boundaries, there is an underwater basin (i.e., sublittoral). The shallow part of the lake is pelagic; the bottom of the lake is called profundal.

Lakes fill depressions of various genesis. Since the processes of formation of these depressions are biased by local conditions in most cases, lakes are concentrated in certain areas.

Depending on the origin, lake depths can be tectonic, volcanic, meteoric, glacial, thermokarst, suffazion, fluvial, marine, organogenic. Lakes located in these depths are given the same names.

The oldest and deepest of the existing lakes were formed by tectonic activity, but most of the lakes were formed by glacial processes.

Not long ago, the lower Amudarya was called the "Great Lakes". Amudarya used to form numerous and calm water bodies. Reed fields 0.7 mln. occupied an area of about

Water mineralization ranged from 400 to 1400 mg/l in most lakes and was determined by the Amudarya hydroregime: in spring and summer, during floods, lake water salinity is minimum, and maximum in autumn and winter. The chemical composition of water is hydrocarbonate in summer, chloride-sulfate in winter and autumn.

An important aspect of the water balance of lakes is the rate of water exchange. This characteristic is determined by the time (in years) of complete exchange of water in the lake, which is expressed as the ratio of the volume of the lake to the flow of water flowing out of it, or by the inverse value known as the coefficient of water exchange of the water body. Water bodies with a shorter cycle of complete water exchange are cleaned of pollutants faster and generally have a lower concentration of them.

Water is a good solvent, and therefore lake waters contain a lot of dissolved substances. Most of the mass of these substances is represented by a limited number of compounds in most lakes, notably calcium, magnesium, sodium and potassium cations and anions consisting of bicarbonate, sulfate and chloride. Other substances, such as plant nutrients (nitrogen and phosphorus) and metals (iron and manganese) are involved in almost small amounts. Lakes are called chloride, sulfate, or carbonate, depending on which anions have accumulated in them in the greatest amount due to evaporation or atmospheric precipitation.

According to experts, a group of water bodies appeared spontaneously when the excess of collector-drainage water began to fill various geomorphic depressions (Togyz-Tore Lake, Saykol). The second group of water bodies includes the depths of the former lakes (Karateren lake, Dautkol, Saryqamys lake) where the collector-drainage water was transferred. The third group of lakes has a freshwater stream, but in recent years they have been heavily polluted (Khojakol, Maqpalkol, Shegekol). Current limnological characteristics of some water bodies of the Amudarya delta are presented in table 1.1. As a result of draining of collector-drainage waters, new types of water basins appeared in the Aqchadarya and Amudarya delta plains, for example: irrigation-waste (Ayazkala, Aqchakol, Karateren, sudoche lake system). According to experts, these irrigation-waste lakes act as an accumulator of water-soluble salts, poisons and agrochemicals. On the one hand, the water exchange and total area of the watersheds in question have experienced significant and strong fluctuations due to the strong development of irrigated agriculture in the region and the soil and waste water.

Dynamics of expansion and area changes of island water basins

Water bodies	Barkhanskova et al., 1963		Abdirov et al., 1970		Sagidullaev, 1986		Atanazarov, 2017	
	Total area, per hectare	Vegetation, %	Total area, per hectare	Vegetation, %	Total area, per hectare	Vegetation, %	Total area, per hectare	Vegetation, %
Davutkol	600	80	1170	90	650	20	3500	30
Karateren	640	15	650	12	-	-	2700*	-
Shegekol	180	65	180	60	150	25	230	10

Note: — no information, * - O. Information from Nuritdinov

According to experts, 1964-1965. Intensive growth of wetland vegetation (up to 90% of the area) was observed in the Davutkol lake system, a large mass of plant debris accumulated, which caused local fish kills.

In the 1980s, after the main lines of drainage systems and irrigation canals were cleaned and expanded, the vegetation area of the reservoirs was significantly reduced, and the total area of the lake has increased significantly in recent times. In Shegekol, the anthropogenic impact was expressed in the increase of mineralization due to the deterioration of Amudarya water, in which the share of collector-drainage waste increased sharply.

According to scientific literature, 1959. in most cases, the water in the lake was poorly mineralized and saturated with oxygen up to 127%, the reaction of the environment was neutral and low-alkaline, pH 7.8 was not orthotic. According to the data of 1963, the pH of water in the lakes was 7.4-8.4, the oxygen saturation of the water mass was 64-204%, the chlorine salinity was 86-259 mg/l, that is, the reaction of the environment within a 5-year period was from neutral to low alkalinity. has changed. 1964-1968 in freshwater ponds, oxygen content was 22-160%, oxygen saturation was 42-153%, salinity was 3.9-9.9 g/l. Currently, the active reaction of the environment and the general mineralization of water have increased, while the content of oxygen, on the contrary, has decreased. In the period under consideration, the Arolboyi water bodies have undergone major changes.

It is necessary to take seasonal factors into account when developing the scientific basis for the regulation of anthropogenic pressure, predicting the consequences of anthropogenic pollution, and solving practical environmental problems related to the development of the regime of wastewater discharge into water bodies.

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Rezyume: Maqolada biogen elementlarining Orol dengizining suvi ekosistemalarida asosiy komponent metodi sifatida joylashgan analiz natijalari keltirilgan. O'tkazilgan analiz natijasi ko'rsatgichi bo'yicha umumiy o'rganilayotgan xarakteristik vaziyat sistemasi va biogen elementlarining joylashishi o'rganilayotgan suv ob'iekti korreliyatsion aloqalar barqarorligi bilan ajralmaydi, ayrim muddat kuzatuvlarida korreliyatsion aloqalar o'rganilayotgan ko'rsatgichlar orasida kuchsizlanadi yoki umuman yo'q bo'lib ketadi.

Резюме: В статье приведены результаты анализа распределения биогенных элементов в водных экосистемах Приаралья методом главных компонент. Проведенный анализ показывает, что в целом изучаемая система характеристик состояния и распределения биогенных элементов в исследуемом водном объекте не отличается стабильностью корреляционных связей, в отдельные сроки наблюдений корреляционные связи между изучаемыми показателями ослабевают или даже отсутствуют.

Kalit so'zlar: Orolbo'yi, kuzatish, biogen elementlar, suv ekosistemasi, evtrofikatsiya jarayoni.

Ключевые слова: Приаралье, мониторинг, биогенные элементы, водные экосистемы, эвтрофикация.

ORGANIZING THE GENERAL MECHANISMS OF NON-SPECIFIC ADAPTIVE REACTIONS OF THE ORGANISM

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Summary: *The article presents the analytical results of the study of general adaptation syndrome or stress-reaction of students' body reactivity to the influence of unmoderated factors and adaptation syndrome of body reactivity or stress state during study. The psycho-emotional nature of the students of Karakalpak State University, which is a higher educational institution, and the general mechanisms of their unconscious adaptive reactions during the exam and pre-exam period were studied. In the studied students, it was found that compensatory adaptation reactions in the form of an organism's response to the influence of intermediate factors are tense and depend on the age and gender of these students.*

Keywords: *adaptation syndrome, stress-reaction, stress state, student, physiological stress, stressogenic factor, compensatory adaptation reactions, adaptive reactions, Holmes-Ray scale, health, examination.*

The universal model of the compensatory-adaptive reactions of the organism to the influence of non-stable factors, which is not unique to itself, has found non-specific resistance mechanisms. These conditions of the organism's reactivity can be considered as a measure of the health of each individual, whether it is the development of the hyperadaptation syndrome or the inhibition of the stress-reaction. In , the long-term adverse effects of such reactions lead to the emergence of adaptive diseases. Recently, one way to improve health has been to increase the body's resistance to stress.

Physiological stress is a reaction of the whole organism, which involves a complex of changes that are not recognized by the adaptive characteristic. These changes are manifested at the vegetative, humoral, biochemical, behavioral, and spiritual levels, and are aimed at protecting the organism from the negative effects of physical or psychoemotional effects (stressors). In terms of physical stressors, temperature, mechanical, chemical, and electromagnetic factors can influence the threshold to a certain extent. As a stressor, it is possible to disrupt the functions that are important for survival. In the work of other factors - failure to satisfy biological or social needs, excessive amount of information, life-threatening situations that lead to unpleasant emotional reactions, etc., can play the role of factors that lead to the development of stress. A life-long stressful injury situation can lead to exercises that a person can't do on their own. Also, the significance of the past event, which was pressed together with Sonin, is also of great importance [8].

Daily stress factors have an adverse effect on a person's physical and intellectual nature. If a person spends every day standing in the left position, he will quickly succumb to stress factors. Stress factors have been studied for many years by medical workers, biologists, and psychologists. possible. In general, in the work of the community, individuals often get into stressful situations due to mutual disagreements, quarrels, lack of cooperation, separation from the community, lack of mutual support and reinforcement. Unfortunately, such situations exist in many communities, and in any community, it is necessary to find ways to prevent disagreements. It is widely known that constant stress is a part of students' life. The flow of various stress factors in the life of students starts from the first day. School places are all important factors in the learning process, the first stress factor is to compare and buy subjects, the second stress factor is to learn to live, the second stress factor is the stress factor of students' living conditions, the fourth stress factor is the prohibitions of the current, intermediate and secondary schooling. Also, money is the fifth stress

factor for the lack of material life, participation in socially beneficial activities, and the sixth stress factor.

Therefore, we aimed to study the stress level among students and analyze the stress level of students in the process of education. It is necessary to overcome the difficulties of the student period, learn a new role, and change the old ones, as a result of this, it is possible to experience stress. During the study process, the students faced great mental and emotional stress, the amount of knowledge given in a short period of time during the lectures and practical lessons is not in the native language of the literature, the student is not very comfortable. Learning coursework requires a certain amount of effort from the nervous system. Daily, intermittent and weekly restrictions can cause constant anxiety attacks throughout the year. B. Cannon, Hans Seele, L.A. Kitaev, Yu. B. Sherbatykh, David Myers, Yu. Y. Alexandrov and others.

Daily life stress can be determined by a special scale (Holmes-Ray scale) [8]. This scale consists of a series of events that evaluate stressogenic effects in life. Ádette had a total of 150 such events in one year. If it is more than two times (300 points), then the risk of developing diseases in this person increases to 80%. If the sum of the number of events fluctuates between 300 and 200 points, then the probability of the occurrence of diseases does not decrease by 50%, and if the sum of points decreases from 200 to 150, the frequency of physical reaction to stress decreases by 30%. and there were students who were overflowing with natural pangs. In order to compare the effects of psychoemotional nature (stressor) of the students in the study centers, the test period (session) and the test period (session), the students were tested for the specific purpose of stress-reaction according to the Holmes-Ray scale. For this reason, the time when the students are most likely to be stressed was chosen before the exams (session). The reason for choosing such a time is that the students are preparing for the exam, which has caused some difficulties for the students. Among the students of the 1st and 4th years of the school, stress conditions and the reasons for stress were studied. Two types of test questions were given to the students: "Life events", "Stress related to the flow". In terms of courses, it was found that 1st-year students were more stressed than 4th-year students. A total of 100 students took the exam. The best score was determined by the students of the "Death Events" questionnaire, and 491 points were scored. "Flow-related stress conditions" increased among students of natural pangs of satisfaction.

It was found that the students were in debt, failed exams, were away from their parents, had a lot of homework, and were sick. Before the exam, it was found that most of the students had trouble breathing, increased heart rate, increased appetite, and disturbed sleep. The 1st year students, who are familiar with the adaptive mechanisms of the body's adaptive reactions, rated their score better than 6 points (out of a 10-point system). For 4th year students, they set a scale of 0-6. Most of the 1st year students rated their stress level at work as "A little low" after 3 months, while the 4th year students rated it as unchanged. I think that ``session" has the same meaning as ``stress". During the preparation days before the exam, the exam itself was a ritual, and the nervous system was being trained by the students. According to Andre Moreau, who spoke at a shoemaker's conference in France, "a difficult exam has a strong impact on a student when it is easily suppressed. "Fear is a disease of its own: it makes it difficult for one to fight with each other. Looking at the students, it is not the process of giving answers in the exams, but it seems that waiting for the turn of the day hurts the student a lot. In order to find out the level of stress during the exams (session), questionnaires were taken immediately after the exams. The results showed that there was a large discrepancy between the results and scores. For example, the "Lifetime Events" questionnaire is more interesting. The score was 255, which is almost 50% lower, and the best score was 178 due to the current stress conditions. A total of 100 students participated in this survey, 43 of them were boys and 57 were girls. Referring to the questionnaire, the average score of the boys before the exam in the "Lifetime Events" survey was 179.81 points, and the average score of the girls was 189.74 points. According to the questionnaire "Flow-related stress states", boys

scored an average of 130.3 points and girls scored 176.04 points. After the exam, in the survey "Omirdegi waqiyalar" men scored an average of 94.1 points, while girls scored 132.4 points. According to the questionnaire "Flow-related stress conditions", the average score for boys was 101.5 and for girls was 121.4.

(1- table)

Sex	The events in the house were tested	Study-related stress tests were performed	The events of the day after the exam	Study-related stress is like after the exam
Children	179,81	130,3	94,1	101,5
Girls	189,74	176,04	132,4	121,4

According to two questionnaires, 19 students of different ages chose to study according to the level of stress in the students. The reason is that most of the 19-year-old students are 2nd-year students. When I met with the teachers who taught them, and when I asked them why, they said that the students were facing difficulties in writing the reports. According to both questionnaires, the students of the science department scored high scores on stress, and the lowest performance was found in the 4th year students of the faculty of natural sciences. Sorawnama natijesi tomen kórsetkishke iye boldı among students aged 22-23.

(2-table)

Age	Number	The events in the house were tested	The events of the day after the exam	Study-related stress tests were performed	Study-related stress is like after the exam
18	20	232,6	211,4	304,2	247,6
19	23	266,6	157,3	356,7	221,5
20	17	97	88,5	130,4	106,7
21	12	143,3	112,5	121,1	8
22	16	89,4	46,6	88,2	54,4
23	12	111,3	95,5	72,3	69,4

If we make a comparison based on satisfaction, it is clear that the results of stress in the students of the satisfaction of subjects are better. The lowest result was found in the students of natural sciences.

(3-able)

Faculty	The events in the house were tested	Study-related stress tests were performed	The events of the day after the exam	Study-related stress is like after the exam
Mathematics	231,125	154	149,375	67
Geography and natural resources	86,7	100,28	66,57	33,71
Biology	154,7	145,6	86	68,7

1. Many people think that the birth of a person is stressful. Stress in the student's work is considered to be a daily overload that has an effect on mental and somatic functions, which is related to the physical changes of the study process at the university. The modern student has found that stress is not an unnatural phenomenon, but a reaction against the inevitable process of coping with the accumulated exercises and daily difficulties. Stress can be caused by factors related to the events of the person's life or the work of the place of study. Unpleasant feelings play a big role in all stress situations. They affect a person's health and his body [3]. The psychohygiene

of the flow process is important in maintaining the mental health of the family members. First of all, almost all students will learn for 4 years and will build the foundation of their life. As a result of our research, we have come to the conclusion that the causes of stress in students are the number of study problems, and this problem affects the student's mental health. All of these can be taken from the students' self-discipline and the urgency of the time management. After all, stress is an inseparable part of every student's daily life. The stress reaction, for example, the start of the day, sleep, physical activity, breathing, sleep quality, relationship with others, and lifestyle are considered as a part of it. His lifestyle depends on the student himself - whether he is active or not, it depends on his daily routine, passive behavior, how often he is under stress, and how often he is under stress. However, the modern man does not have the methods of organizing his body in a dated way, but it also has psychological effects, and it is necessary to restore the normal mental state through actions and actions. It is necessary to support self-regulation methods in a timely manner, stress tolerance, intellectual balance, and the ability to regenerate intellectual resources. In this way, stress-related activities are becoming a regular habit. For example, physical breaks are held every 2 hours in classrooms. It will be better if such poems are performed under the background of music played by everyone [5-7].

Taking into account the students' satisfaction, course, and gender differences in the mechanisms of the body's adaptive reactions that are not unique to itself, we have the following points for the purpose of preventing the stress-reactivity effect of the learning process:

1) 1st-year students will be trained in the required assignments from lectures, seminars, laboratories, practical trainings, tutors, and tutors in the spare time of the introductory credit module system;

2) In order to reduce the mental stress of the students beyond the limit of fatigue, systematic tasks and the replacement of prohibited tasks in specific times are prepared with methodical guidelines;

3) After the exams, the students have at least one day's rest after all the hard work during the exam;

4) Knowledge of the rules and regulations of educational institutions and the rights of students;

5). We believe that if the tutors of the educational institutes are given the opportunity to improve their academic performance and improve the teaching materials, if the students are given a refresher course.

6) Since the session itself is the main stressogenic factor in students' lives, we recommend that the subjects be held in a cyclical manner;

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Rezyume: *Maqolada mutadil bo'lmagan omillarning ta'siriga talabalar organizmining reaktivliginig umumiy adaptatsion sindromi, yoki stress-reaktsiyasini o'rganish va o'qish*

jarayonida tananing reaktivligining adaptatsiya sindromi yoki stress holatininig tahliliy natijalari keltirilgan. Oliy o'quv yurti bo'lgan Qaraqalpoq davlat universitetining aniq va tabiiy fanlar mutaxassisliklarida ta'lim olayotgan talabalarning psixosotsial tabiatini imtihon va imtihon oldi davrida o'ziga tan bo'lmagan adaptiv reaksiyalarining umumiy mexanizmlari o'rganilgan. O'rganilgan talabalarda organizmning oraliq omillari ta'siriga javobi ko'rinishidagi kompensator moslashuv reaksiyalari tarangligi va bu talabalarning yoshi va jinsiga bog'liqligi aniqlandi.

Резюме: В статье представлены аналитические результаты исследования общего адаптационного синдрома или стресс-реакции реактивности организма студентов на воздействие неуровновешенных факторов и адаптационного синдрома реактивности организма или стрессового состояния в процессе учебы. Изучены психоэмоциональный характер студентов Каракалпакского государственного университета, являющегося высшим учебным заведением, и общие механизмы их бессознательных адаптационных реакций в экзаменационный и предэкзаменационный период. У обследованных студентов установлено, что компенсаторно-адаптационные реакции в виде ответа организма на воздействие промежуточных факторов носят напряженный характер и это зависит от возраста и пола студентов.

Kalit so'zlar: adaptatsion sindrom, stress-reaktsiya, stress holati, talaba, fiziologik stress, stressogen faktor, kompensator moslashuv reaksiyalari, adaptiv reaksiyalar, Xolms-Rey shkalasi, salomatlik, imtihon.

Ключевые слова: адаптацион синдром, стресс-реакция, стрессовые состояние, студент, физиологический стресс, стрессоген фактор, компенсаторно-адаптационные реакции, адаптационные реакции, шкала Холмса-Рея, здоровье, экзамен.

TECHNICAL SCIENCES

ENVIRONMENTAL PROBLEMS IN DRINKING WATER SOURCES

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Summary: *In order to provide the population with the necessary amount of drinking water, water must be treated and continuously supplied. This requires improving the technical and operational condition of the water supply system. The water source is the most important element of the water supply system, and it is very important to improve the performance of water treatment dams and their efficient operation without polluting the environment.*

Keywords: *Water sources, drinking water, pollution, sea otters, aquatic species, frogs, ecosystem safety.*

The sources of water are natural surface waters and groundwater, which provide drinking water for households, industrial quarries and residents. The type and degree of pollution of surface waters, the quality composition and quantity of runoff from irrigation systems, untreated or poorly treated domestic and industrial wastewater, agricultural land, residential areas and other waters determine the composition of runoff from the site. If water sources are contaminated with organic species, they may contain parasite eggs, protozoa and intestinal pathogens. There are also three types of chemical contaminants: Petroleum products, phenols, synthetic elements, pesticides and metal salts.

Various environmental and technical problems have arisen in relation to the treatment of drinking water, the presence of underwater species and protection from aquatic animals. Biogenic components of water sources cause phytoplankton overgrowth due to anthropogenic influences. Water seeds are known to be good for the eyes. It supports the self-purifying effect of water in water bodies.

However, the intensive introduction of nutrients and organic elements into water sources leads to negative assessments due to increased water concentrations. In this case, the kettle starts to pollute the water source. An increased amount of algae in the water reduces the turbidity of the water, increases the turbidity of the sludge, changes the chemical composition of the water and negatively affects water treatment systems (filters). For this reason, sanitary and hygienic inspections of water sources and water supply systems are necessary.

Algae cover the surface of the sand filter, creating a biofilter that improves water filtration and reduces the frequency of filter cleaning.

It has been found that when there is algae growth in the water source, the duration of the filter cycle is reduced to 5 hours and the number of filter rinses and washes is increased to 30 times a day. This creates favourable conditions for bacterial growth.

The phenomenon of floating species in waters flowing from river banks to water sources poses the most serious problems of water intake, sometimes leading to complete disruption of water supply to consumers. In many parts of our country, negative experiences with water abstraction are pronounced. This makes it very difficult to supply drinking water to a number of rural settlements, resulting in interruptions to the water supply. Thus, the impressions of floating species prove that the geographical location of water sources and the natural-climatic conditions of an area are linked. The magnitude of water impacts is variable, varying from year to year and sometimes unexpected [1].

In many cases, the adverse effects of floating species can lead to disturbance of the natural river regime. The adverse effects of aerosol species on the operation of the catchment have

accompanied the development of centralised water supply throughout the year. Reservoirs that trap pollutants in their catchments are susceptible to internal contamination, often by algae species. Such contamination leads to significant pressure drops in the intake systems and to the closure of intakes.

Frogs in water can move forward under the influence of fluid currents. For this reason, power losses must be considered when using ponds to overcome the conflict of water intakes [2].

A common and effective method of removing algae pollution is to chlorinate the water by adding chlorine to the water intake grid. The determination of the chlorine dosage is confirmed by some kind of sign at the production site.

The increasing number of dams and the growing number of people who draw their water from surface sources are changing the aquatic environment and seriously affecting the balance of ecosystems. This is characteristic of ecologically important rivers and basins. In most regulated abstraction solutions, the provision of fish protection facilities is not fully covered by the water source. The increasing demand for drinking water poses new challenges for water supply.

Although many projects have been successful for some time, they cannot fully exploit the catchment area by moving the water supply system from the source to the settlement. The construction and operation of water intakes without fish protection measures is not allowed [3].

In order to provide the population with clean drinking water and to strengthen environmental protection, it is necessary to consider water supply issues and to identify the main negative factors.

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Rezyume: Aholini kerakli darajadagi ichimlik suvi bilan ta'minlash uchun suvni tozalash va uzluksiz ta'minlash zarur. Buning uchun suv ta'minoti tizimining texnologik va ekspluatatsion sharoitlarini yaxshilash kerak. Suv manbai suv ta'minoti tizimining eng zarur elementi bo'lib, bu erda suvni tozalash to'g'onlarining ish faoliyatini yaxshilash, atrof-muhitga zarar etkazmasdan ularning samaradorligini oshirish masalalari katta ahamiyatga ega.

Резюме: Очистка и непрерывная подача воды необходимы для обеспечения населения необходимым количеством питьевой воды. Для этого необходимо улучшить техническое и эксплуатационное состояние системы водоснабжения. Источник воды является важнейшим элементом системы водоснабжения и очень важно улучшить работу водоочистных плотин и повысить их эффективность, не загрязняя окружающую среду.

Kalit so'zlar: Suvlar bilan ta'minlashlik manbai, ichimlik suvlar, iflosliklar, vodroseller, suvlarda qalqib chiqishchi zotlar, baqanshaqlar, ekologik xavfsizlik.

Ключевые слова: Источник водоснабжения, питьевая вода, грязь, водусели, водные щиты, бобы, экологическая безопасность.

CALCULATION OF THE PIT WALL MASS BY FINITE ELEMENT METHOD IN THE MIDAS GTS NX SOFTWARE

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Summary: *This article presents the calculation of the stability of the contour zones of the Amantaytau quarry by the finite element method. This method is based on step by step decline strength characteristics materials in the model. Dimensions models chosen given the absence influence boundary conditions for tense the state of the edge array. For numerical simulation, we used Midas GTS NX software. Graphical results of numerical simulation are presented.*

Keywords: *Calculation of stability of near- edge zones, finite element method, model, stress state of a near- contour massif, modeling, Midas GTS NX software.*

In international practice, calculations by the methods of limit equilibrium are recommended to be verified by numerical simulation [1]. The need for numerical simulation is due to the impossibility of taking into account a complex stress state under the assumption of absolute rigidity of the rock by limit equilibrium methods.

Stability calculations in accordance with the Terms of Reference were carried out using the finite element method. For simulation, the Midas GTS NX software package [2] was used.

The solution is made in a two-dimensional setting. The model of rock behavior is chosen as elastoplastic with a yield strength corresponding to the Hooke-Brown strength curve for rocks of the Paleozoic complex and Coulomb for rocks of the upper unconsolidated strata.

Calculation of the stability factor of the pit wall in the design contour was made by the strength reduction method. This method consists in the fact that the strength characteristics of the materials in the model are reduced step by step, and as the Coulomb strength condition is no longer met in some elements, they are excluded from the calculation. The coefficient by which the characteristics are reduced, at which the calculation ceases to converge (that is, the model is destroyed), is taken as the stability factor.

The dimensions of the model are chosen so as to ensure that the boundary conditions do not affect the stress state around the working.

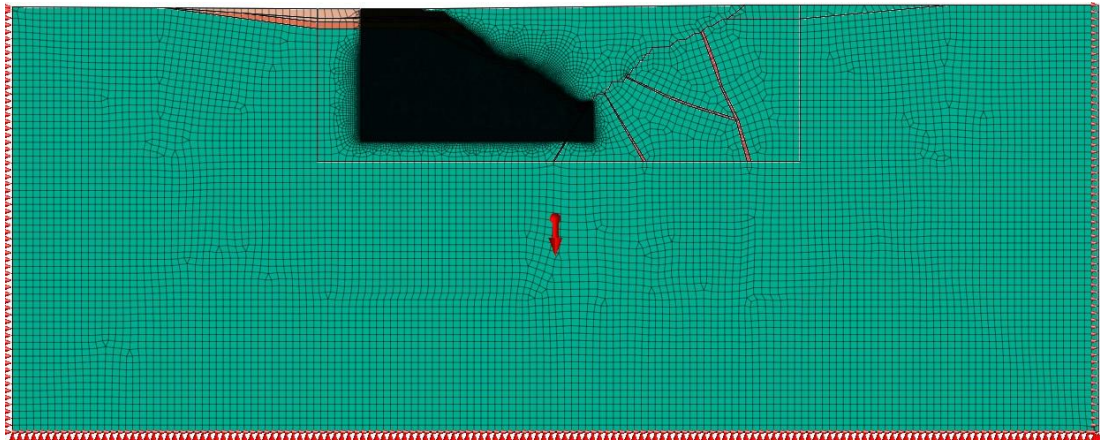
The calculations take into account the action of the natural stress field, studied at the first stage of this work [3], which is given in the following form:

$$\begin{aligned}\sigma_{\text{гор.мерид.}} &= 3M\Pi a + 1,14\gamma H, \\ \sigma'_{\text{гор.мерид.}} &= 2M\Pi a + \gamma H.\end{aligned}$$

In the model, this dependence is approximated when specified in terms of lateral pressure coefficients K_0 and is given in the form of reduced dependences using the Initial equilibrium force function.

As an example, Figure 1 shows the appearance of the Midas GTS NX section built in the preprocessor (that is, before starting the calculations). Similarly, 12 sections were rebuilt along the profile lines shown in Figure 2.

a)



b)

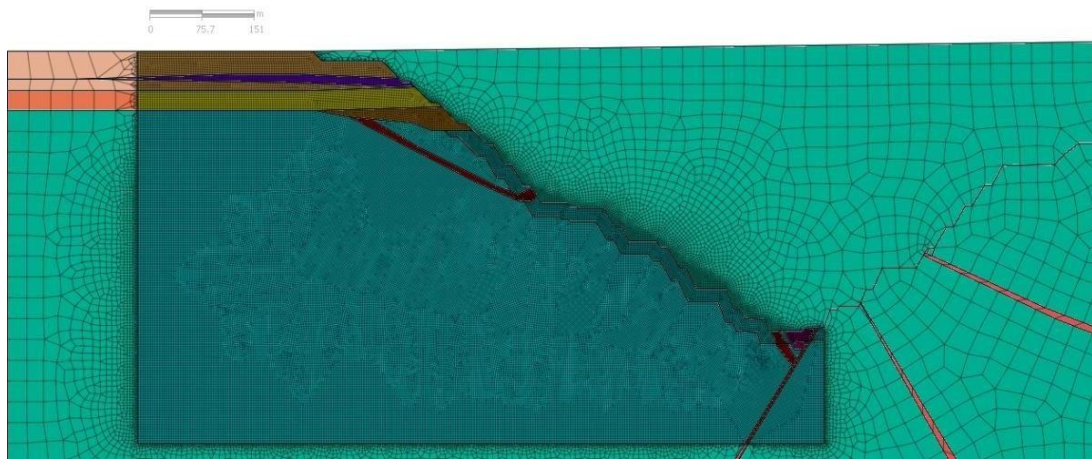


Fig.1. Model prepared to run calculations:

a) general view of the model; b) detailing of the calculated side of the quarry

On the borders models displacement limited: on axes x , y on bottom horizontal border, along the axis x on the side vertical borders.

Visually highlighted in Figure 1 is the central part of interest models are divided into a finer grid. For the rocks in it, an elastic-plastic model behavior, in the rest parts models elastic rocks.

Module elasticity and coefficient Poisson adopted in models, given in table 1. The modulus of elasticity of loose and semi-rocky rocks is taken equal to the same value in the piece according to the test results. For rocks, the recalculation for array in accordance With empirical addition proposed Hook and Didrichs [four]:

$$E_{rm} = E_i \left\{ 0,02 + \frac{1 - D/2}{1 + \exp[(60 + 15D - GSI)/11]} \right\}$$

where E_i - module elasticity mountainous breeds in piece.

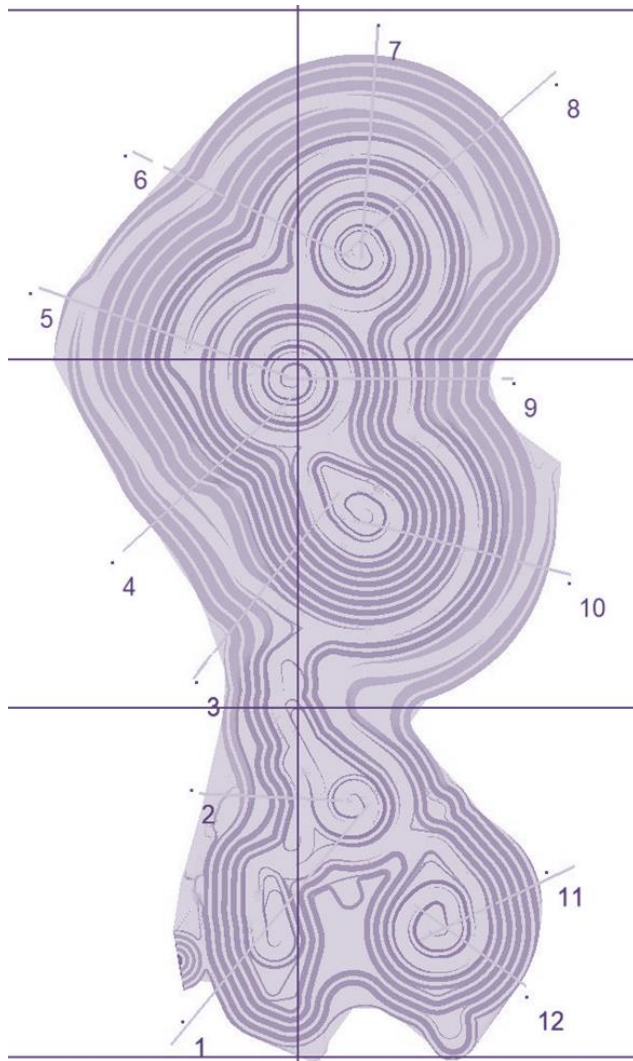


Fig. 2. Plan career With indicating location of settlement incisions

FROM using described above parameters performed modeling stress-strain states array method final elements at staging boards career in design circuit. Along slope sides highlighted zone With lowered characteristics With indicator violations $D=1$. The rest part model is given With zero indicator violations . Modeling performed on 12 cuts, With calculation reserve sustainability method strength reduction.

Calculation completed stages . On the first stage carried out modeling stress-strain states array before working off career, on the second carried out calculation at excavation breeds in design contour co decline strength [5].

The simulation performed showed that none of the sections provides a stability margin greater than one. Features of the Midas GTS NX program limit the possibility of calculating the stability margin with safety factors less than one when specifying lateral horizontal (tectonic) stresses, therefore, to display the stress-strain state, each section was additionally modeled with setting tectonic stresses through the coefficients of lateral pressure K_0 .

Table 1.

Elastic-mechanical characteristics models

Rocks	Module elasticity , 10⁴ MPa	Poisson's coefficient
Overlaying sandstone, shale and siltstone	0.99 _	0.31
rock faults	0.6 3	0.31
Cataclasites	0.84	0.31
Clay deluvial	0.000 27	0.47
Clay alluvial	0.000 27	0.41
Sand	0.00091	0.37
Marl	0.00 74	0.34

As an example, the graphical results of the performed numerical simulation for section 5-5 are shown (Fig. 3)

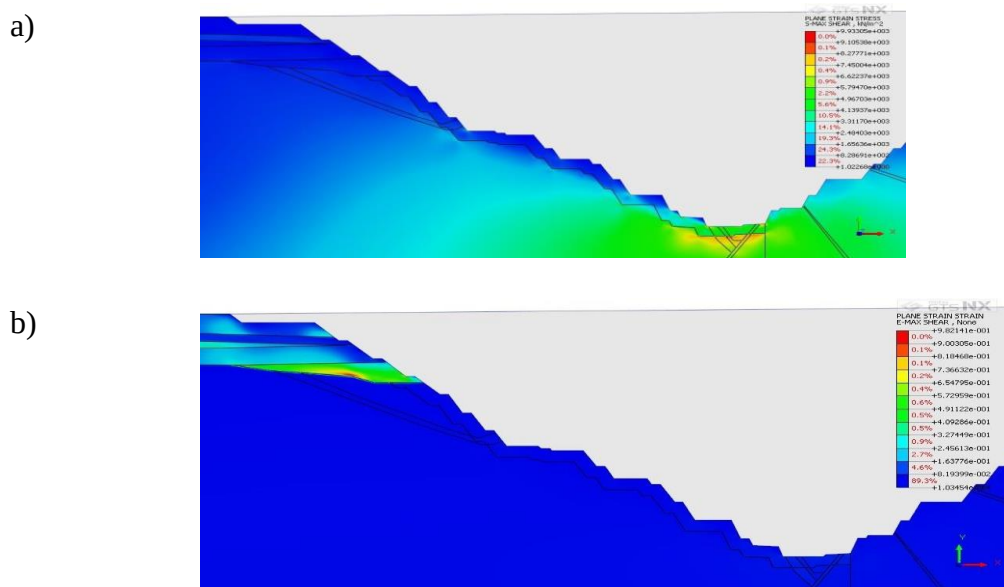


Fig.3. Results of numerical modeling for section 5-5:
a) the greatest shear deformations; b) the highest shear stresses

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Rezyume: Ushbu maqolada Amantaytau karerining kontur zonalari barqarorligini chekli elementlar usuli bilan hisoblash keltirilgan. Ushbu usul modeldagi materiallarning bosqichma-bosqich pasayishiga asoslanadi. Chegaraviy massiv holatini keskinlashtirish uchun chegara sharoitlarining yo'qligi hisobga olingan holda tanlangan modellarning o'lchamlari. Raqamli simulyatsiya uchun biz Midas GTS NX dasturidan foydalandik. Raqamli simulyatsiyaning grafik natijalari keltirilgan.

Резюме: В данной статье представлен расчет устойчивости контурных зон карьера Амантайтау методом конечных элементов. Этот метод основан на пошаговом снижении прочностных характеристик материалов в модели. Размеры моделей выбраны с учетом отсутствия влияния граничных условий на напряженное состояние краевого массива. Для численного моделирования использовалась программа Midas GTS NX. Представлены графические результаты численного моделирования.

Kalit so'zlar: Yaqin zonalar barqarorligini hisoblash, chekli elementlar usuli, model, konturga yaqin massivning kuchlanish holati, modellashtirish, Midas GTS NX dasturi.

Ключевые слова: Расчет устойчивости приконтурных зон, метод конечных элементов, модель, напряженное состояние приконтурного массива, моделирование, программа Midas GTS NX.

**ORGANIZATION OF EFFICIENT USE OF TRANSPORT IN THE FIELD OF
CONSTRUCTION**

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Summary: *In this article, it is stated that the continuity and speed of construction depends on the operation of transport, as well as directly affects the cost of construction.*

Keywords: *types of transport used in construction, transportation methods, quarries, warehouses, building materials, railway transport, water transport*

Transport is important in the construction production system as a technological link that connects construction objects with construction industry enterprises, quarries, construction base, warehouses and other sources of material and technical support of construction. Taking into account the high material consumption of construction production, the need to provide it with continuous construction materials clearly demonstrates the role of transport.

About a quarter of all construction labor costs are transportation and handling operations. The use of complex mechanization of all transport processes and the rational organization of warehouses will significantly reduce labor costs and construction time.

Almost all available types of transport are used in the construction - automobile, railway, water, air, tractor vehicles. In the transportation of construction materials, the main cargo falls on road, railway and water transport.

The type of vehicle is selected depending on the distance of transportation, the time allocated for its delivery, the quantity and characteristics of the products, local road and climatic conditions. Based on the physical and geometric parameters of construction materials, which types of construction transport are suitable, as well as transportation and loading, methods and means of unloading, and storage requirements are determined.

Construction service transport is divided into internal and external according to its purpose. Transport that delivers materials, structures and products to the construction site from places outside this site (factories, quarries, workshops, etc.) is called external transport. Internal transport is intended for the transportation of goods within the construction site.

In addition, in the direction of movement of goods, transport within the construction area can be vertical and horizontal.

Vertical transport is designed for lifting construction structures, materials and equipment using various types of cranes, forklifts, freight and passenger elevators.

Horizontal transportation involves moving similar construction materials to work sites from vehicles or warehouses. [1]

A properly selected method of transportation leads to a rational use of vehicles on the construction site, as well as to an increase in the efficiency of mechanization of construction and assembly works.

Long-distance transportation is often considered efficient in railway transport. It has high power and low cost. Railway transport can be normal and narrow gauge. It is advisable to use normal track railway transport in cases where the main building materials are delivered to the construction site through the public railway network and the costs of installing temporary stations are low. Narrow-gauge railway transport is convenient for transporting small closed loads from raw material sources to the factory or from the factory to the construction site, and the construction of such gauge railways is much easier and cheaper, but its operating costs are more expensive than those of ordinary gauge.

In terms of importance for construction, motor transport is superior to others, as it is characterized by great maneuverability, mobility, ease of unloading. The use of road transport is recommended, especially when there are permanent roads.

Tractor types of transport are used to transport building materials and constructions over short distances. Its advantage is that it can be used on roads that no other land transport can pass, especially for the delivery of constructions to the installation site.

Water transport is the cheapest, but it is used only on construction sites located near water bodies, so it is used as external transport. Some facilities built directly on water bodies may be exempt. The disadvantage of water transport is its seasonality, it is also necessary to take into account the availability of parking spaces and handling facilities at cargo receiving points.

Mechanized vehicles (buses, forklifts, etc.) are a very effective form of transportation at construction sites. They significantly reduce manual labor in loading and unloading operations.

Special and aerial transport (belt and pneumatic conveyors, cableways, helicopters) are used in mountainous areas, unexploited forest areas, among swamps, sometimes in extremely difficult conditions during the reconstruction of complex structures. This is a very expensive form of transport (especially helicopters), which is usually used when there are no other options for transporting goods.

According to statistical data, in the Republic of Uzbekistan in 2022, in the Republic of Uzbekistan, in road transport - cargo transportation was 1,362,499.50 thousand tons, foreign trade cargo turnover was 29,196.6 thousand tons, the share of road transport services in the GDP was 3.3%, in railway transport - cargo transportation 70,455.0 thousand tons, foreign trade turnover 39,727.3 thousand tons. The share of railway transport services in the gross domestic product is 0.7%, in air transport - cargo transportation is 5.1 thousand tons, foreign trade cargo turnover is 60.6 thousand tons, the share of air transport services in the gross domestic product is 0.2%. [4]

Reducing the cost of transportation work is a very difficult task, and its solution is carried out in two ways: reducing the weight of the building and shortening the transportation distance, and comprehensive mechanization of all transportation, loading and unloading operations.

The transition to the construction of buildings from large industrial structures - blocks, panels, three-dimensional elements - always leads to a decrease in the weight of buildings due to the widespread use of light materials. The creation of new materials and parts that are lighter than the existing ones by the industry, the use of plastic, aluminum alloys, etc. will further reduce the weight of structures.

In the design of transport organization, the type and number of vehicles, their movement routes are determined, the concepts of cargo circulation and cargo transportation are used. The turnover of the construction organization is the total weight of goods received and sent by the organization in all directions per unit of time, measured in tons per year, month, day, etc.

Cargo transportation is determined by the amount of goods transported per unit of time in a certain direction. Cargo transportation schemes are created separately for each material, taking into account the amount, direction and distance of transportation. The type of means of transport is selected depending on the size and direction of each cargo flow, the distance of transportation and local conditions. The load flow to the object under construction is determined based on the calendar plan of providing it with building materials and constructions.

The number of vehicles, i.e. cars, railway wagons (platforms), locomotives, etc., is determined taking into account the size of the vehicle and its carrying capacity.

When designing the organization of transport, it is recommended to consider several options for choosing transport and its forms of movement and to get the best one in terms of technical and economic indicators. In the conditions of the market economy, the relevance of the tasks of optimizing transport routes has not decreased at all, because in the competitive

environment, transport organizations and their customers are forced to look for any reserves to reduce transport costs. Routes are one of the solutions to such a problem.

To transport construction materials, it is necessary to use existing roads or build roads that will be used after construction.

In connection with the need to transport goods that differ significantly in their characteristics, dimensions, loading and unloading methods, appropriate specialization of vehicles is necessary.

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Rezyume: Ushbu maqolada qurilishning uzluksizligi va tezligi transportning ishlashiga bog'liqligi, shuningdek, qurilish narxiga bevosita ta'sir qilishi ko'rsatilgan.

Резюме: В данной статье указано, что непрерывность и скорость строительства зависит от работы транспорта, а также напрямую влияет на стоимость строительства.

Kalit so'zlar: qurilishda qo'llaniladigan transport turlari, tashish usullari, karerlar, omborlar, qurilish materiallari, temir yo'l transporti, suv transporti

Ключевые слова: виды транспорта, используемые в строительстве, способы перевозки, карьеры, склады, строительные материалы, железнодорожный транспорт, водный транспорт.

**EQUIPMENT OF LIVESTOCK BUILDINGS AND THE SIGNIFICANCE OF
CONSTRUCTION ASSETS**

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Summary: *In this state, there is a description of the facilities of living facilities, building materials and selection, coefficients of heat transfer of building materials and barren facilities, microclimate, the influence of temperature, and total humidity, as well as the productivity of livestock, as well as safety measures during the operation of living facilities.*

Keywords: *animal husbandry, building, operation, microclimate, radiation, objects, wall, floor, ceiling, barrier, device, door, window, object.*

Karakalpakstan has a large territory. Including sufficient conditions for animal husbandry. Today special attention is paid to the development of animal husbandry, mainly to livestock and poultry farming.

The sanitary-hygienic conditions of the buildings built for animals often depend on the construction of some parts of the buildings and the quality of construction materials. The assessment of 300 hygiene requirements of animal husbandry buildings in collective farms and farms of Samarkand and Jizzakh regions shows that in the last 15-20 years, buildings have been built on the basis of a large number of projects for animals that are very different from each other. In some households, buildings that are not included in the project category (typical) are still being used.

Various construction materials were also used. Various technological and constructive principles have been preserved. The inspected buildings differ from each other in many indicators. Thus, the width of the piggery is 7-18 m, the length is 46-84 m, and the height is 2.2-2.6 m. Their internal planning differs from one another in terms of building ventilation, sewerage, fertilization, animal care methods, etc. It is known that all built factors have certain effects on the creation of microclimate in pig houses.

The air temperature has dropped to minus degrees. In particular, an unfavorable microclimate occurred in buildings with non-ventilated roof coverings, where the moisture condition of the air was generalized in rooms covered with reinforced concrete. Regardless of the use of heating systems in these buildings, relative humidity drops to 94-96%, and even up to 100% on some days. The thermal insulation properties of the devices have a significant effect on the normalization of the temperature conditions in the buildings.

When we carefully checked the microclimate of livestock buildings in the fall, it became clear that it has a great impact on the productivity of animals. The microclimate condition in the piggery of the "Rassvet" farm was highly inconvenient. It showed that the weight of a two-month-old piglet did not exceed 11.6 kilograms, and the waste was 40.2 percent. Therefore, one mother pig had to raise a total of 4.9 piglets. The main reason for the waste was diseases caused by colds. The hygroscopicity of building materials and their heat protection qualities affect the microclimate in the buildings used for animals.

In the design of rural household appliances, products, concrete and reinforced concrete frames, engineers and technologists should choose materials taking into account the intended use of the buildings and the environment in which they will be used. For example, heat is radiated from the skin of animals. It was appropriate for the technologist-engineer to know this.

Radiation of heat is expressed by the temperature of the surface of the skin of the body at the level of 30-36°, and the emission of invisible infrared long-wave rays from the deep parts of the body. Radiated heat affects surrounding objects, i.e. walls, floor, ceiling, ceilings, etc. facilities, if

the temperature of the interior of the building is low, as well as humid air, their walls, ceilings, doors and windows at low humid temperatures, and when goods are stored, should reduce the humidity of the air.

The thermal conductivity properties of some building materials and wall-mounted devices can be found by looking at the quantities shown in Table VI.28.

Heat transfer coefficients of building materials and barrier devices.

Serial number	Building materials and fence devices	Volumetric mass, kg/cm ³	Thermal conductivity, kk/m.s.d
1.	Reinforced concrete	2200	1.54
2.	Lightweight concrete	1000	0.41
3.	Aerated concrete	800	0.29
4.	Gravel	1800	1.16
5.	Wood (, pine)	560	0.17
6.	Ordinary or silicate brick	1800	0.81
7.	Stone (slag)	1000	0.29
8.	52 cm thick brick wall.	-	1.24-1.28
9.	This is also - 64 cm. "-"	-	1.03-1.06
10.	Asphalt concrete floor	1800	0.72
11.	Light concrete poured floor	900-1300	0.29-0.44
12.	Mineral cotton	200-400	0.05-0.08
13.	Granite (rock)	2600	2.5
14.	Poroplasts	200-800	0.03-0.5
15.	Tiles made of peat	300	0.08
16.	Asbozurite	400-800	-

The influence of building materials on the microclimate of cattle housing can be presented in the following table VI.29.

Serial number	Physical properties of air	Walls		Generalized roofing tiles kk/m.s.d		
		Limestone flooring	Keramsite concrete panels			From wood
1.	Temperature C	5,6-11,2	0-5,2	6,8-8,2	5,9-9,1	5,4-8,0
2.	Relative humidity, percent %	85,6-87,9	98-100	88-90	99-100	87,7-89

Moist air draws a greater amount of heat from the surface of the body when the temperature is low compared to dry air.

Thus, low temperature and high level of humidity cause rapid heat conduction, cold diseases of cattle and animals, high consumption of feed, decrease in growth and productivity of animals: decrease in wool quality of sheep. Humidity, low air temperature, as well as high air humidity and protective measures of livestock buildings are always considered during their operation.

Due to the fact that the Central Asian region is in a hot-dry climate, the deformability of polymer concretes, i.e. shrinkage, the mobility of concrete, the penetration of concrete into the air, and when the temperature and humidity are low and high the change of polymer concrete occurs.

Heat-induced deformations should be understood in such a way that the repetitive deformation is filled with reactoplast fillers, which are produced by heating or cooling. It is accepted to evaluate such deformations as coefficient of thermal expansion (CTE). In particular, the

coefficient of thermal expansion is of great importance when materials or materials are placed, or stacked on top of each other, or in layered structures, when several materials work together.

So, for example, all of reinforced concrete widespread in constructions in our region made it possible for the creation of the CTE in constructions, i.e often, the coefficient of thermal expansion of concrete is 8 - 14 : 106 and that of steel reinforcement is very close to each other - 10 - 12 : 106.

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Rezyume: *Ushbu maqolada chorvachilik binolarining qurilmalari, qurilish ashyolari va ularni tanglash, qurilish ashyolarining va to'siq qurilmalarining issiqlik utkazuvchanglik koeffitsientlari, mikroiklim, namlik jumladan haroratning chorva xayvonlarining o'sishi va mahsuldorligiga ta'siri, shuningdek chorva binolarining ekspluatatsiya davrida himoya tadbirlari ochib berilgan.*

Резюме: *В данной статье рассмотрены устройства животноводческих помещений, строительные материалы и их выбор, коэффициенты теплопередачи строительных материалов и барьерных устройств, микроклимат, влияние температуры, в том числе влажности, на рост и продуктивность скота, а также меры защиты при эксплуатации животноводческих помещений.*

Kalit so'zlar: *chorvachilik, bino, ekspluatatsiya, mikroiklim, nurlanish, predmetlar, devor, pol, shift, to'siq, qurilma, eshik, deraza, ashyo.*

Ключевые слова: *животноводство, здание, эксплуатация, микроклимат, радиация, объекты, стена, пол, потолок, барьер, устройство, дверь, окно, объект.*

**SOME EXAMPLES OF THE APPLICATION OF MODIFIED FINE-GRAIN CONCRETE
IN CONSTRUCTION**

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Summary: *The publications on scientific research conducted to beneficiate fine-grained concrete are discussed in the article. Experimental and theoretical studies aimed at improving the technology of fine-grained concrete production are studied, taking into account domestic raw materials and the operating conditions of fine-grained concrete products. The issues of structure and properties of fine-grained concrete with organomineral additives obtained as a result of mechanochemical activation of fly ash from thermal power plants with a superplasticizer are considered. These types of additives include mechanically activated rice husk ash, crushed zeolite rock, fly ash from thermal power plants, etc.*

Keywords: *fine-grained concrete, complex additive, organomineral additive, aggregate size, composition, Portland cement, superplasticizer, high-strength concrete, hyperplasticizer, silica fume, metakaolin, fly ash.*

At present, modified fine-grained concrete (MFGC) is gaining wide practical use in the construction. This is due to its high structural and technical characteristics and the possibility of regulating the properties over a wide range. One of the main properties of MFGC is high compressive strength; and the greatest strength of concrete is achieved by qualitative selection of the raw material composition and the choice of a rational technology for its production.

Since the middle of the 20th century, the average compressive strength of high-strength concretes has consistently increased from 35 to 50–80 MPa, and in recent years up to 150 MPa [1, 2]. To obtain high-strength MFGC, it is necessary to create a dense, homogeneous structure. This can be achieved by fulfilling a number of conditions arising from the physical foundations of concrete structure formation [3-5]:

- use of high-quality binders and fillers;
- extremely low water-cement (W/C) ratio;
- high maximum permissible content of Portland cement;
- use of superplasticizers and complex mineral additives that contribute to obtaining a dense microstructure of concrete;
- thorough mixing and compaction of the concrete mixture;
- creating the most favorable conditions for cement hydration in the process of concrete hardening.

According to Yu.M. Bazhenov [6], for high-strength concretes, cement with an activity of more than 50 MPa and preferably with low values of normal density should be used. In addition, depending on the purpose of concrete, it is advisable to use Portland cement of a certain mineralogical composition for its preparation.

Recently, concrete mixes without coarse aggregates, that is, fine-grained concrete mixes, have been increasingly used to obtain modified high-strength concrete. The transition to fine-grained concretes (FGC) allows us to create new types of concretes with an improved structure. Fine-grained concretes that do not contain coarse aggregates have found wide application in the manufacture of thin-walled reinforced concrete structures, reinforced cement products, masonry mortars, etc. [7–9]. Significant progress in the development of compositions, the study of properties and possible areas of FGC application in industrial, civil and transport construction belongs to N.M. Krasnikov, X. Moren, A.M. Sheinin and other scientists [10-12].

An important role in the development of technology and the study of the performance characteristics of various types of fine-grained concrete is played by research conducted by Yu.M. Bazhenov, L.A. Alimov, V.V. Voronin, V.G. Batrakov, G.A. Dobrolyubov, A.V. Ferronskaya and others [13, 14]. It is rational to use FGC for the manufacture of reinforced concrete products during construction in areas where there is no crushed stone and gravel-sand mix. Various technological methods developed in recent years (the use of micro-fillers from the waste of the metallurgical, fuel and energy, and stone processing industries, chemical additives, etc.) [15, 16] make it possible to obtain fine-grained concrete with a cement consumption that does not exceed the requirements for ordinary heavy concrete with coarse aggregates. With the use of FGC, new effective thin-walled structures were manufactured, reinforced with steel woven meshes, or dispersed-reinforced with wire segments and fibers of organic and mineral origin.

A special type of FGC is used in building mortars: masonry, plastering, finishing, and repair mixes [17]. In such concretes, as a rule, the use of effective complex additives is mandatory; it makes it possible to reduce the water demand of the mix and concrete shrinkage. FGCs are very technologically advanced, because fine-grained concrete mixes are easily pumped by pneumatic pumps and have high uniformity and durability. Numerous studies [5] have shown that a fine-grained structure has many advantages, the main of which are:

- ❖ the possibility of obtaining FGC with a homogeneous finely dispersed high-strength microstructure;
- ❖ the possibility of forming products and structures by various methods: extrusion, casting, shotcrete, stamping, pressing, etc.;
- ❖ the possibility of obtaining products for various purposes with specified sets of properties;
- ❖ the possibility of obtaining special concretes, such as waterproofing, electrically conductive, decorative, fiber-reinforced concrete, reinforced cement, etc.;
- ❖ the possibility to widely use local raw materials and, as a result, lower cost compared to concrete with conventional coarse fillers;
- ❖ the multifunctionality, i.e. different types of concrete can be obtained with the same cement and aggregate, by varying the dosages of components of various additives and technological methods.

The modified FGC mix has a more homogeneous structure and is easier to process at various technological stages. This makes it possible to obtain products and structures for various purposes with the required performance. Fibrous micro-reinforcing fillers and modifier additives (super- and hyper-plasticizers, micro silica, metakaolin, fuel fly ash, and ash from burning rice husks, and local raw materials and industrial waste) are widely used to obtain fine-grained concretes with the desired properties [18]. In [5], a technological scheme for the preparation of FGC mixes for the subsequent production of modified fine-grained concretes using complex organomineral additives is given (Fig. 1).

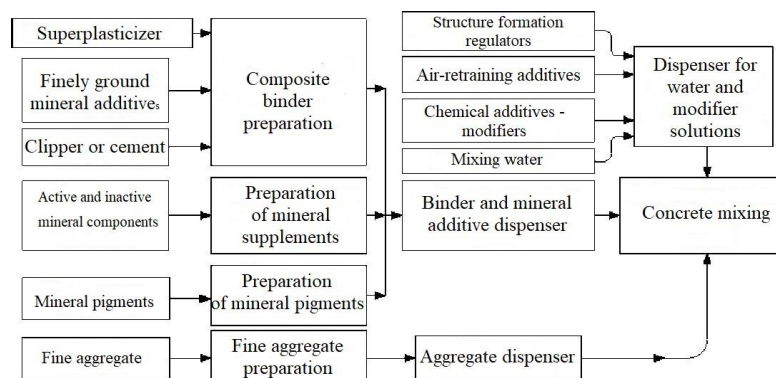


Figure 1 - Technological scheme for the preparation of fine-grained concrete mixes to obtain MFGC based on composite cement systems

To obtain modified fine-grained concrete, aggregates with a grain size of 0.14÷5 mm are used. Most often, natural quartz or artificial sand is used as aggregates [19]. According to the study in [20], fine sands improve the pore structure of fine-grained concretes. In addition, wastes from stone processing and the production of refractory materials, slags of dense and porous structure, expanded clay and perlite sand, pyrite cinders, etc. are used as fine aggregates [21].

As in coarse-grained high-strength concrete, it is possible to use in MFGC production various types of reinforcement and dispersed-fibrous micro-reinforcing fillers in the form of steel, polymer, carbon, alkali-resistant glass, and basalt fibers [21].

In recent years, MFGCs have become widespread in the construction of river and offshore hydro-technical structures [22-23], road and airfield pavements, products subject to bending, pre-stressed concrete under-rail structures, housing construction, erection of various modern structures, for example, long span bridges, skyscrapers, underground mini-cities, etc. (Tables 1 and 2).

Table 1 - World experience in the construction of long span bridges using MFGC

Bridge name	Construction site	Construction completion year	Span length, m	MFGC compressive strength, MPa
Willows	Toronto, Canada	1967	48.2	41.37
Houston	Texas, USA	1981	228.6	41.37
San Diego	California, USA	1969	42.7	41.37
Pasco-Kennewick Intercity	Washington, USA	1978	299.0	41.37
Hultington	Virginia, USA	1984	274.3	55.16
Nitta	Japan	1968	29.9	58.61
Fulkamitsu	Japan	1974	25.9	68.95
Akkagawa	Japan	1976	45.7	78.60

Table 2 - World experience in the construction of high-rise buildings using MFGC

Name of high-rise building	Construction site	Construction completion year	Number of floor	MFGC compressive strength, MPa
Texas Commerce Tower	Houston, USA	1981	75	51.71
SE.Finamcial Center	Miami, USA	1982	53	48.26
Royal Bank Plaza	Toronto, Canada	1975	43	61.47
Water Tower Place	Chicago, USA	1975	79	62.87
Columbia Center	Seattle, USA	1983	76	66.36
Interfirst Plaza	Dallas, USA	1983	72	76.84
311 S.Wacker Drive	Chicago, USA	1998	70	83.82
Two Union Square	Seattle, USA	1987	62	97.79

Using dispersed fibrous micro-reinforcing fillers, the “Bouygues Lafarge Rhodia” company (England) has developed a composition of high-quality fine-grained concrete, called “Ductal” with the following main characteristics [23]:

- ultra-high compressive strength;
- high axial tensile and compressive strengths, and the modulus of elasticity;
- high durability;
- good formability and ease of use;
- high quality of the resulting surface.

High-strength fine-grained concrete "Ductal" was used in the construction of the following buildings and structures (Table 3).

Table 3 - Buildings and structures erected using "Ductal" concrete

Name of structure	Country	Years of construction
Sherbrooke footbridge	Canada	1997
NPP "Cattenom"	France	1997 ÷ 1998
Bridge crossings over the Seonyu River	Korea	2001 ÷ 2002
Reina Sofia Museum	Madrid, Spain	2003
«Shepherds» Bridge	Australia	2003 ÷ 2004
NPP «Eraring»	Australia	2004
Papatoetoe Railway Station	New Zealand	2005

A large number of studies in the field of concrete, including fine-grained ones, are devoted to the use of micro silica [24] or highly active metakaolin as finely dispersed mineral additives with high pozzolanic activity, either individually or in a mix with finely ground ash and slag waste [25].

In [27], the possibility of replacing expensive and imported micro silica (in Vietnam) with ash in the composition of complex organomineral modifiers of concrete was substantiated; as a result, it was possible to obtain fine-grained concrete with a compressive strength of 40–60 MPa and high water resistance. In connection with the foregoing, it seems very promising to conduct experimental and theoretical studies aimed at improving the technology for obtaining MFGC, taking into account local raw materials and the operating conditions of products from MFGC. For the conditions of Uzbekistan, studies aimed to replace imported and expensive MFGC components with more affordable and cheap finely dispersed mineral additives from local secondary raw materials with high pozzolanic activity can be considered relevant. These types of additives include mechanically activated rice husk ash, crushed zeolite rock, fly ash from thermal power plants, etc.

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Rezyume: Maqolada mayda donali betonni bo'yicha ilmiy tadqiqotlar olib borgan olimlarning ishlari o'rganib chiqilgan. Mayda donali beton ishlab chiqarish texnologiyasini takomillashtirishga qaratilgan eksperimental va nazariy tadqiqotlar mahalliy xom ashyo va materiallarni, shuningdek, mayda donali beton buyumlarning ishlash sharoitlarini hisobga olgan holda o'rganiladi. Issiqlik elektr stansiyalaridan uchuvchi kulni superplastifikator bilan mexanokimyoviy faollashtirish natijasida olingan organomineral qo'shimchalar bilan mayda donali betonning tuzilishi va xususiyatlarini shakllantirish masalalari ko'rib chiqiladi. Ushbu turdagi qo'shimchalarga quyidagilar kiradi: mexanik faollashtirilgan guruch po'stlog'i kuli, maydalangan zeolit jinsi, issiqlik elektr stansiyalarining uchuvchi kuli va boshqalar.

Резюме: В статье рассматриваются работы ученых, проводивших научные исследования по обогащению мелкозернистого бетона. Изучены экспериментальные и теоретические исследования, направленные на совершенствование технологии производства мелкозернистого бетона с учетом отечественного сырья и материалов, а также условий эксплуатации мелкозернистых бетонных изделий. Рассмотрены вопросы формирования структуры и свойств мелкозернистого бетона с органоминеральными добавками, полученными в результате механохимической активации летучей золы тепловых электростанций суперпластификатором. К таким видам добавок можно отнести: механоактивированную золу рисовой шелухи, измельченные цеолитсодержащие породы, зола-уноса ТЭС и др.

Kalit so'zlar: Mayda donali beton, murakkab qo'shimcha, organo-mineral qo'shimcha, agregat o'lchami, tarkibi, portlandtsementlari, superplastiklashtiruvchi, yuqori mustahkam beton, superplastiklashtiruvchi moddalar, kremniy tutuni, metakaolin, uchuvchi kul.

Ключевые слова: мелкозернистый бетон, комплексная добавка, органоминеральная добавка, крупность заполнителя, состав, портландцементы, суперпластификатор, высокопрочный бетон, суперпластификаторы, микрокремнезем, метакралин, зола-уноса.

**THE ROLE OF MODERN THERMAL INSULATION MATERIALS
IN OPTIMIZATION OF ENERGY RESOURCES EXPENSES IN THE REPUBLIC OF
KARAKALPAKSTAN**

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Summary: *The article analyzes the main directions of energy saving. The ways of energy consumption reduction are determined. Various types of the latest energy-saving effective heat-insulating materials are considered.*

Keywords: *energy-saving technologies, unproductive heat losses; mineral wool, basalt fiber, foam glass, extruded polystyrene foam, foam plastics, cellular concrete.*

INTRODUCTION.

A radical increase in the energy efficiency of the economy and systemic energy saving measures is the central task of the energy strategy of the Republic of Karakalpakstan. One of the effective ways to reduce the impact of man on nature is to increase the efficiency of energy use - energy-saving technologies.

In our republic, more than a third of all energy resources in the country are spent on heating residential, office, administrative and industrial buildings. Therefore, all technologies and methods of energy saving will be ineffective without combating unproductive heat losses.

The increased operating costs in the thermal power industry require the search for new energy-saving technologies that are not related to central heating networks. The lion's share of energy consumption falls on housing and communal services. Energy saving is the main direction of Russia's energy policy in the current economic conditions, in construction and housing and communal services, energy saving is becoming the norm and a necessity. There are three main areas of energy saving. Firstly, this is a reduction in losses at the stage of heat generation and transportation - that is, an increase in the efficiency of TPPs, modernization with the replacement of uneconomical equipment, the use of durable heat-insulating materials in the laying and modernization of heating networks. Secondly, increasing the energy efficiency of buildings through the integrated use of thermal insulation solutions for external enclosing structures (primarily facades and roofs). And, thirdly, the use of heating radiators with automatic regulation and ventilation systems with a heat recovery function. Thus, energy-saving technologies allow us to solve several problems at once: save a significant part of energy resources, increase production efficiency and reduce the burden on the environment. Ways to reduce energy consumption:

- improvement of the level of architectural and planning solutions;
- increasing the thermal efficiency of building structures;
- development of fundamentally new engineering systems;
- use of non-traditional forms of energy.

The thermal protection of a building can be improved by:

- use of efficient heat-insulating materials;
- application of new design solutions;
- increasing the thermal protection of windows;
- multistage control system for engineering systems.

In solving the problems of energy saving, as well as for improving the comfort of premises, an important role is played by the insulation of building envelopes: external walls, ceilings, coatings, facades, basements, foundations, etc. When choosing a heater, it should be taken into account that the durability and stability of the thermophysical and physical-mechanical properties of the heat-insulating materials included in the construction of the fence are significantly influenced by many operational factors:

- sign-variable factor (winter-summer);
- temperature-humidity mode of "operation" of structures and the possibility of capillary and diffusion moistening of heat-insulating material;
- impact of wind and snow loads;
- mechanical loads from people walking, moving vehicles and mechanisms on the surface of the roof of buildings.

There is a wide variety of thermal insulation materials, which are classified according to the type of basic raw material, shape and appearance, structure, density, rigidity, thermal conductivity, flammability and purpose. The new standards have significantly increased the requirements for the thermal resistance of external walls, coatings and ceilings, according to which new construction, modernization and major repairs of buildings cannot be carried out without the use of effective heat-insulating materials. Consider the following types of insulation and their advantages: • Mineral wool and products made from it.

- Basalt fiber (mats, plates, tapes).
- Fiberglass insulation (glass wool, ISOVER).
- Foam glass (cellular glass).
- Extruded polystyrene foam ("PENOPLEKS").
- Poroplasts.
- Cellular concrete.

Advantages of basalt fiber boards:

- low hygroscopicity;
- good vapor permeability;
- resistance to rotting and biostability;
- do not give in to chemical influences;
- non-toxic;
- do not lend themselves to rapid aging;
- environmentally friendly;
- fireproof, fireproof and nonflammable;
- good thermal and sound insulation.

Isover is a heat-insulating material made of fiberglass. The material is characterized by high quality characteristics corresponding to the world level, and occupies a strong position in the domestic market of building materials. The volume of its use in Russia is more than 15% of the total volume of thermal insulation materials consumed in the country, including more than 40% of the total volume of thermal insulation products made of fiberglass. Mats and boards have a corrugated structure with a predominantly vertical orientation of the fibers, which gives them high compressive strength. In this case, the mats acquire anisotropic properties, namely, flexibility in the longitudinal direction and compressive strength, providing high operational reliability.

Advantages of foam glass:

- very strong material;
- waterproof;
- fireproof;
- frost-resistant;
- easy to machine, you can even drive nails into it;
- its service life is practically unlimited;
- rodents "do not like" him;
- it is biologically stable and chemically neutral.

Advantages of polystyrene foams:

- strength;
- high heat-insulating properties;

- low water absorption;
- inexpensive;
- easy to use;
- practically has no lower temperature limit of application

Advantages of extruded polystyrene foam:

- stronger than polystyrene;
- the lowest rate of water absorption;
- durability, does not collapse under the influence of the sun, an atmospheric precipitation;
- low thermal conductivity;
- inertness (does not react with most substances);
- non-toxic.

PENOPLEX is a new heat-insulating material. It is widely used in various areas of the national economy: civil and industrial construction, agriculture, refrigeration industry, when laying railways and highways, and building airfields. Expanded polystyrene boards "PENOPLEKS" are produced by the extrusion method, they are distinguished by high strength to the effects of loads in combination with moisture resistance and unique thermal insulation properties. The use of PENOPLEX boards in the construction of buildings and structures can significantly improve and speed up construction technology. Allows you to significantly reduce costs when creating new structures that meet the new requirements of building codes.

As a result of the study, various types of the latest energy-saving efficient heat-insulating materials were considered. Having studied their properties, advantages, comparative characteristics, we can recommend them for use in the construction of buildings and structures in the Republic of Karakalpakstan for wall insulation, flat reinforced concrete coatings, attic floors, ventilated facades, for technical insulation of various engineering systems.

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Rezyume: Ushbu maqolada energiya tejashning asosiy yo'nalishlari tahlil qilinadi. Energiya sarfini kamaytirish yo'llari aniqlangan. Eng yangi energiya tejovchi samarali issiqlik izolyatsion materiallarning har xil turlari ko'rib chiqiladi.

Резюме: В данной статье проведен анализ основных направлений энергосбережения. Определены пути снижения потребляемой энергии. Рассмотрены различные виды новейших энергосберегающих эффективных теплоизоляционных материалов.

Kalit so'zlar: energiya tejovchi texnologiyalar, samarasiz issiqlik yo'qotishlari; mineral jun, bazalt tolasi, ko'pikli shisha, extruded polistirol ko'pik, ko'pikli plastmassalar, uyali beton.

Ключевые слова: энергосберегающие технологии, непродуктивные потери тепла; минеральная вата, базальтовое волокно, пеностекло, экструдированный пенополистирол, поропласты, ячеистые бетоны.

УДК 374.6; 374

THE USE OF COMPUTER TECHNOLOGIES IN THE ELECTRONICS LABORATORY WORK

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Summary: *The article deals with the use of special software in the educational process, justified by the use of simulation software in a laboratory workshop on electronics in the preparation of students of electrical specialties*

Keywords: *Circuit diagram, electricity, simulation, electronic device, Multisim 14.0 software package, computer simulation.*

One of the stages in the preparation of students of technical specialties in higher educational institutions is the study of general professional and special disciplines, such as "Theory of electrical circuits", "Fundamentals of electronics" etc. The purpose of studying such disciplines is to form students' systematized knowledge, skills and abilities, develop creative abilities and the ability to formulate and study at the proper level the general theoretical problems of future specialization, develop and implement their knowledge in the field of engineering practice. The subject of study of these disciplines are the methods of analysis of electrical signals, the physical principles of operation of basic electronic circuits and circuits, issues related to the analysis of the operation of digital devices, electromagnetic phenomena and their application to solve problems in electronics, automation, computer technology, in the development of electrical devices that meet modern requirements.

In training, as a rule, traditional methods of laboratory work are used with the use of various hardware and technical means, such as electrical measuring instruments, special laboratory stands. To intensify and improve the quality of the educational process by reducing the time for preparatory operations, simulation software tools can be used to simulate complex processes and reproduce their essence on the screen in a visual graphic form. At the same time, the computer expands the possibilities of the educational process in a fundamentally new direction: it allows students to observe on the screen an imitation of complex processes hidden from direct observation, as well as control the simulated processes by changing the corresponding parameters of the model [1].

To date, there are a significant number of software products that allow mathematical modeling of physical processes occurring in electronic circuits and devices for various purposes, as well as calculating their characteristics. The most famous software packages include Matlab, Mathcad, Multisim and others. Such systems have a standard, intuitive interface, require a minimum of time to master them. In addition, unlike specially designed training programs, such programs have more extensive opportunities, accustom students to independent work and allow them not only to gain an understanding of modern electronic device development tools, but also to develop their creative potential. The experience of conducting laboratory work using Multisim 14.0 allows us to highlight the following advantages compared to the traditional method [2-3].

- providing automatic closed directed control of educational and cognitive activity of students;
- reducing the amount of time spent by students on the performance of all tasks of laboratory work, which makes it possible to receive a credit for this work within one lesson;
- the opportunity for each student to independently perform laboratory work, which contributes to a better understanding of the issues being studied;

- facilitating the activities of the teacher in managing the educational process during the laboratory session;
- the combination of virtual and real reality makes students widely use reference and scientific literature, teaches them to think and make decisions independently, stimulates self-education and allows them to reveal their creative potential;
- the ability to complete any decisions without large material costs, choose the best path, and only then implement it.

The use of Multisim 14.0 makes it possible to independently change and test the performance of new technical solutions, which contributes to the training of specialists corresponding to the current level of technology development [4]. The following is an example of a methodological development for performing a virtual laboratory work on the topic "Studying a zener diode". **Aim of work:** Zener Diode Study.

- Construction of the reverse branch of the current-voltage characteristic of the zener diode and determination of the stabilization voltage.

- Calculation of the current and power dissipated by the zener diode.

Devices: function generator, multimeter, oscilloscope, constant voltage source, zener diode, resistors.

Experiment. Measure voltage and calculate current through a zener diode.

We assemble the circuit (Fig. 1)

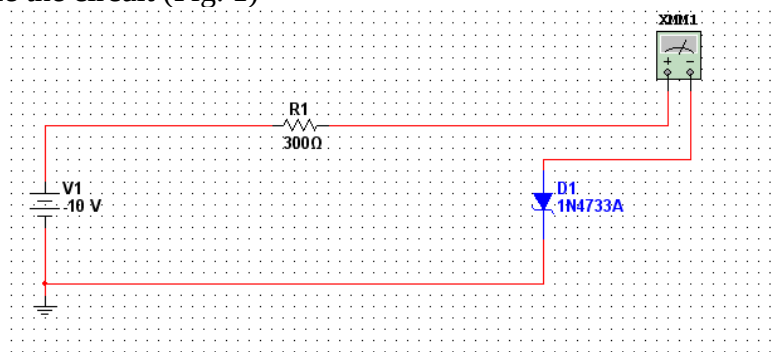


Figure 1.

- Run the program Multisim 14.0
 - Insert resistor (REZISTOR) $R=300$ Ohm
 - We introduce a zener diode 1N 4733A
- Open the Place Diode/Zener menu (Figure 2).

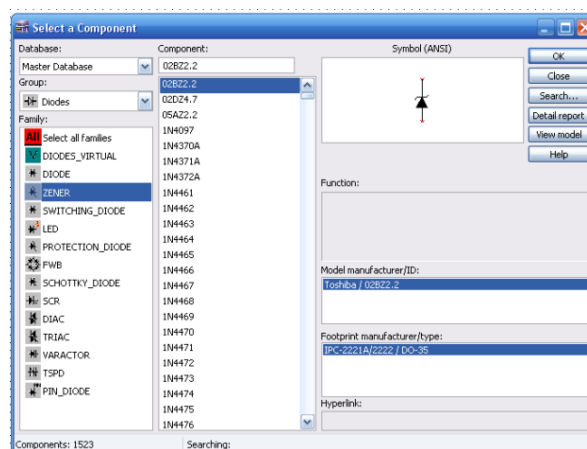


Figure 2.

The cursor will take the form of a graphic image of a zener diode. Place it on the working window.

d) Enter the multimeter (Multimetr) from the toolbar

e) We connect all the elements. To do this, click on the left mouse button and hold it, "draw" connecting the necessary poles of the elements.

Turning on the scheme.

By changing the EMF, we measure the voltage and current of the zener diode, fill in the table and build a graph on it. According to the schedule, we determine the stabilization voltage, the stabilization current and calculate the stabilization power.

Table 1

E, V	U, V	I, A
-30	-5,114	-82,955
-25	-5,108	-66,308
-20	-5,1	-49,666
-15	-5,09	-33,034
-10	-5,072	-16,428
0	0	0
4	4	0
6	5,03	3,235
10	5,072	16,428
15	5,09	33,034
20	5,1	49,666
25	5,108	66,308
30	5,114	82,955
35	5,118	99,606
40	5,122	116,259
45	5,126	132,914



50	5,129	149,57

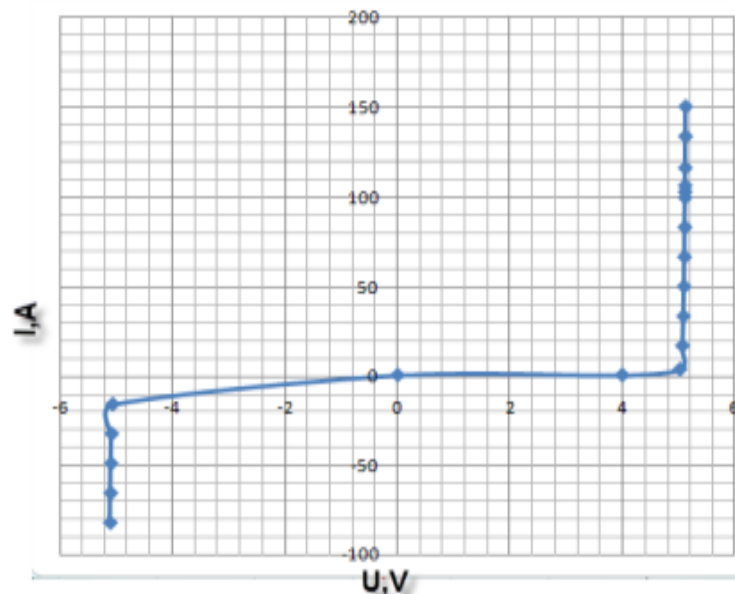


Figure 3. IV characteristic of a zener diode.

$U_{(min.st.)}=4,8\text{ В}; U_{(max.st.)}=5,3\text{ В}.$
 $I_{(st.nom)}=49\text{mA}; I_{(max.st.)}=178\text{mA}.$
 $P_{st.}=I_{st.}U_{st.}=0,24\text{ В}.$

The use of Multisim 14.0 in laboratory work allows you to study in detail the processes occurring in the devices under study, to understand the principle of their operation.

Moreover, students, having installed the program on their computer, can additionally study it at home during self-training, using teaching aids. All this contributes to obtaining good practical skills in working with the program and better mastering the discipline.

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5. Begmatov Sh.E., Elektrotexnika va elektronika-virtual laboratoriyalar. O'quv qo'llanma. – Toshkent: ToshDTU 2023. - 221 b.

Rezyume: *Maqolada elektrotexnika mutaxassisliklari talabalarini tayyorlashda elektronika bo'yicha laboratoriya praktikumida simulatsiya dasturlariga asoslangan maxsus dasturiy ta'minotni o'quv jarayonida qo'llash masalalari ko'rib chiqilgan.*

Резюме: *В статье рассмотрены вопросы применения специального программного обеспечения в образовательном процессе, обоснованный на использование имитационно-моделирующих программных средств в лабораторном практикуме по электронике при подготовке студентов электротехнических специальностей.*

Kalit so'zlar: *Printsipsial sxema, elektr, modellashtirish, elektron qurilmalar, Multisim 14.0 dasturiy majmuasi, kompyuterda modellashtirish.*

Ключевые слова: *принципиальная схема, электричество, моделирование, электронная устройство, программный пакет Multisim 14.0, компьютерное моделирование.*

SPECIFIC CHARACTERISTICS OF URANIUM ORES IN THE UPPER CRETACEOUS COGNAC DEPOSITS OF THE NORTH KONIMEKH URANIUM DEPOSIT

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Summary: *The article presents information about the results of studying the material composition formed in the Upper Cretaceous (K₂) Cognac strata of the North Konimekh uranium deposit located in the Kyzylkum region. Prospecting, appraisal and exploration at the North Konimekh uranium mine is an urgent problem, as it is in the focus of attention of many researchers.*

One of the methods for extracting uranium raw materials is the underground alkalization method. Currently, it is emphasized that this method is convenient, has high financial efficiency in the extraction of uranium raw materials, and is also one of the cheapest and most effective methods.

Keywords: *Uranus, North Konimekh, ore, material composition, mineralogy, raw materials, underground alkalization.*

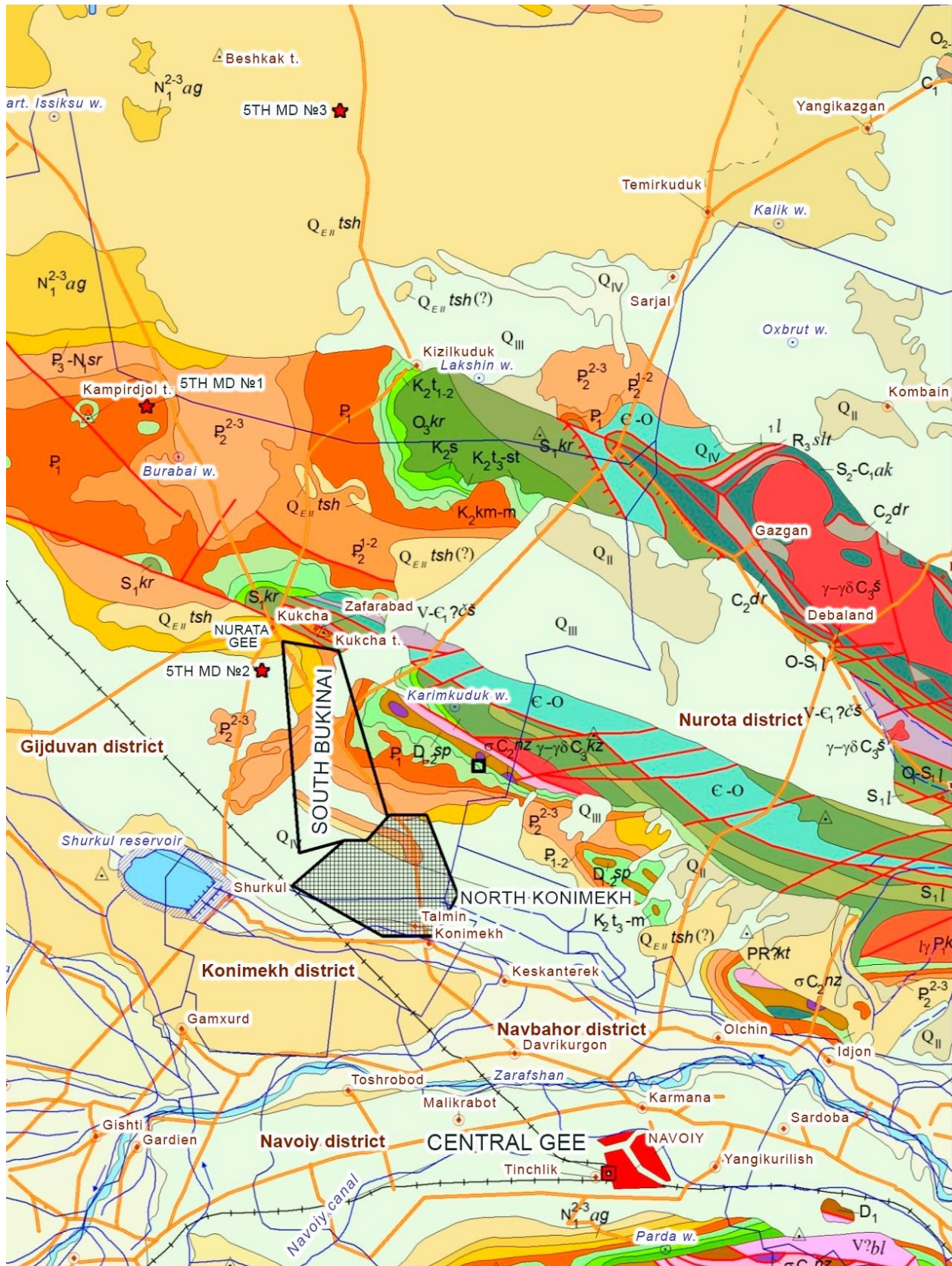
INTRODUCTION

Today, the need to search for radioactive and rare earth mineral deposits in the world is increasing year by year. In the decision of the President of the Republic of Uzbekistan dated July 14, 2022 No. PQ-319 "On measures to increase the volume of uranium mining, processing and transformation at the state enterprise "Navoiyuran" in 2022-2030" , as well as other regulatory and legal documents adopted in this field define important tasks in the search for mineral deposits [1].

In particular, the search and exploration of uranium-rich deposits, which is one of the raw materials necessary for industry, is now of great importance for the economy of Uzbekistan. The importance of modern methods of geology is very effective in determining the material composition of underground ore-forming deposits, studying their mineralogical-geochemical properties. The reason is that the traditional methods of mineralogical research were used in the study of the obtained materials: complete mineralogical analysis with description and classification of rocks under a microscope, minerals, their satellite elements, the most important accessory minerals of sand and clay. Microscopic study and description of light and heavy fractions of minerals (quantitative mineralogical analysis), as well as special research methods - phase analysis of X-ray radiation, mass spectral analysis, inductively coupled plasma to determine the amount of complex elements from, quantitative analysis of X-ray radiation for 6 elements, as well as selected samples for objective geochemical description of epigenetic zones for Fe and S, CO₂, Corg, P₂O₅, U⁺⁶, U⁺⁴ forms was also chemically analyzed.

North Konimekh mine In 1979, exploration works were carried out in the southern wing of the South Bukinay mine (L.A. Sininkiy) by Bukinay geological department No. 18 of the state enterprise "Kyziltepageologia". In 1979-1982, exploration and evaluation of the mine, preliminary exploration in 1983-1985, and detailed exploration of the mine were carried out on a large scale in 1986-1993. The description of this object is given according to the materials of Y.P. Tikhonov and L.A. Sininkiy [2].

As a result of geological exploration, the North Konimekh mine was formed as a large object. Until now, the North Konimekh mine is used as the main raw material base of "Navoiyuran" DK (Pic. 1).



Picture 1. Representative map of the North Konimekh uranium mine area (scale: 1:500.000).

According to the results of the conducted geological prospecting, wells were drilled in the defined geological sections of the 1.6-0.8x0.8-0.05 km length of the drilling network of the oxidation zones of the ore-forming layer in the North Konimekh mine. done by gluing. In the mining area, we can see that the regional movement of groundwater from the Tien-Shan orogenic region is in the northwest direction. In addition, large-scale works are being carried out in the area, some aspects of which were used in this article (D. Boriboyev).

Studies have shown that epigenetic barriers forming ore in the mine are the southwestern direction of the regional front in the Upper Cretaceous deposits. The main ore prospects of ore formation in the North Konimekh deposit are related to the border of layer oxidation zones in deposits of Turonian, Cognac, Santonian, Campanian and Maastrichtian horizons.

After studying and summarizing all the materials of the geological results of the mining area, Turonian, Cognac, Santonian, Campanian and Maastrichtian deposits are clearly separated from each other by sandstone and siltstone layers. Separation of these deposits from each other, one of the methods of geophysical research, is clearly shown that it is possible to separate them into layers by marking the boundaries of geophysical research (caratage) in wells and dividing them into parts. According to the core materials taken from the wells, it was observed that sandstones alternate with clay [3-4].

Below are the results of the study of the material composition and geochemical properties of rock minerals from the deposits of the Cognac (20 samples) layer of the North Konimekh field.

However, it should be noted that at the next stages of geological exploration, a large amount of mineralogical research was required for objective conclusions.

Based on work experience, selection and study of 10-15 mineralogical samples for each mineralization zone, which characterizes the ore zone of layer oxidation for each productive horizon, including rare earth element mineralization and rhenium zone at the contact of oxidized gray rocks. should be kept in mind.

The material for the study was obtained from duplicate core samples of drilling exploratory wells, and a sequence of unmineralized gray and limonitized rocks, as well as mineralized rock sequences, containing the following mineralization zones:

- uranium diffusion halo;
- diffusion halo of uranium and selenium;
- diffusion halo of selenium;
- uranium mines;
- rhenium mines;
- selenium mines.

Below are the results of studying the mineralogical-geochemical properties of uranium ores and the material composition of rocks and minerals in Cognac deposits (tables 1-2).

Material composition of rocks and minerals of the Cognac deposit

1th table

Mineral	Gray rocks						Limonite rocks		Reminder
	Without ore		The scattering halo of Uranus			Uranium ore	U diffusion halo	Without ore	
	Sand	Sandstone clayey, carbonated	Sand	Sandstone carbonate	Sandstone clayey, carbonated	Sandstone	Sandstone	Sandstone	
1	2	3	4	5	6	8	9	10	11
Quartz	<u>55.58-57.83</u> 56.72	<u>37.12-44.8</u> 41.56	<u>47.87-58.54</u> 54.34	<u>36.52-40.14</u> 38.68	<u>34.23-40.64</u> 37.43	<u>47.87-58.54</u> 54.34	<u>55.71-57.77</u> 56.54	<u>53.24-58.41</u> 57.67	Sand, Sandstone and accessory minerals of mudstones include zircon, garnet, <u>staurolite</u> , <u>tourmaline</u> , <u>amphibole</u> , <u>cysitis</u> , <u>dysten</u> , <u>ilmenite</u> , <u>epidote</u> , <u>rutile</u> , <u>sphene</u> , <u>barite</u> established.
Feldspars	<u>24.05-24.35</u> 24.2	<u>13.80-26.72</u> 21.12	<u>15.64-26.88</u> 23.78	<u>18.11-23.72</u> 21.35	<u>15.11-24.72</u> 20.46	<u>15.64-26.88</u> 23.78	<u>23.42-24.18</u> 23.8	<u>22.11-22.32</u> 22.24	
Lumpy rocks	<u>10.96-11.07</u> 11.02	<u>6.48-14.52</u> 8.57	<u>6.48-14.52</u> 8.57	<u>4.15-8.31</u> 5.84	<u>4.1-7.71</u> 4.92	<u>6.48-14.52</u> 8.57	<u>6.22-6.74</u> 6.48	<u>7.91-10.33</u> 9.02	
General fragmentary rocks	<u>91.05-92.84</u> 91.94	<u>49.87-62.28</u> 61.12	<u>81.77-93.82</u> 86.69	<u>63.33-67.65</u> 65.87	<u>54.44-66.68</u> 62.85	<u>81.77-93.82</u> 86.69	<u>84.95-88.69</u> 86.82	<u>85.89-89.18</u> 88.93	
Muscovite	<u>0.77-0.80</u> 0.78	<u>0.22-0.64</u> 0.38	<u>0.73-1.18</u> 0.93	<u>0.21-0.56</u> 0.35	<u>0.21-0.56</u> 0.35	<u>0.73-1.18</u> 0.93	<u>0.86-0.94</u> 0.9	<u>0.71-0.91</u> 0.84	
Chlorite	<u>0.02-0.02</u> 0.02	<u>0.06-2.77</u> 1.54	<u>0.03-0.22</u> 0.10	<u>0.06-2.95</u> 1.63	<u>0.06-3.41</u> 1.56	<u>0.03-0.22</u> 0.10	<u>0.63-0.63</u> 0.63	<u>0.01-0.22</u> 0.13	
Common micas	<u>0.79-0.82</u> 0.80	<u>0.37-3.51</u> 1.98	<u>0.82-1.40</u> 1.03	<u>0.37-3.51</u> 1.98	<u>0.39-4.66</u> 2.13	<u>0.82-1.40</u> 1.03	<u>1.49-1.57</u> 1.53	<u>0.88-1.12</u> 0.97	
Hydrolyzed	<u>2.40-3.82</u> 3.11	<u>10.44-19.13</u> 14.60	<u>1.81-7.82</u> 4.61	<u>10.52-18.41</u> 14.19	<u>11.34-18.56</u> 16.23	<u>1.81-7.82</u> 4.61	<u>2.06-4.56</u> 3.3	<u>3.12-3.71</u> 3.34	
Kaolinite	<u>1.77-2.35</u> 2.06	<u>4.16-7.95</u> 6.48	<u>1.54-5.39</u> 2.88	<u>4.26-7.56</u> 6.33	<u>4.6-8.63</u> 7.37	<u>1.54-5.39</u> 2.88	<u>2.33-4.13</u> 3.23	<u>1.64-2.74</u> 2.11	
<u>Montmorillonite</u>	<u>0.03-0.06</u> 0.04	<u>3.88-6.43</u> 5.18	<u>units -0.21</u> 0.07	<u>3.68-6.34</u> 5.16	<u>4.75-7.83</u> 6.12	<u>units -0.21</u> 0.07	<u>units-2.14</u> 1.07	<u>units-0.28</u> 0.11	

Common clays	<u>4.20-6.23</u> 5.21	<u>20.15-34.28</u> 27.21	<u>3.35-12.19</u> 7.56	<u>20.69-32.08</u> 26.38	<u>21.67-35.02</u> 27.64	<u>3.35-12.19</u> 7.56	<u>6.53-8.67</u> 7.60	<u>4.81-6.76</u> 5.56
Accessory minerals	<u>0.32-0.43</u> 0.37	<u>0.19-1.09</u> 0.52	<u>0.34-0.83</u> 0.60	<u>0.19-1.09</u> 0.52	<u>0.23-1.56</u> 0.74	<u>0.34-0.83</u> 0.60	<u>0.42-0.49</u> 0.45	<u>0.34-0.40</u> 0.36
Calcite	<u>1.17-1.31</u> 1.24	<u>1.05-3.21</u> 1.86	<u>0.94-1.58</u> 1.34	<u>1.05-3.21</u> 1.86	<u>1.65-12.44</u> 7.36	<u>0.45-19.2</u> 7.18	<u>0.70-5.46</u> 1.05	<u>1.06-2.20</u> 1.66
Dolomite	<u>0.10-0.11</u> 0.10	<u>0.12-3.18</u> 1.22	<u>0.27-1.26</u> 0.61	<u>0.12-3.18</u> 1.22	<u>0.15-2.78</u> 1.42	<u>0.27-1.57</u> 0.69	<u>0.25-1.25</u> 0.65	<u>0.66-2.37</u> 1.23
Anchorite	<u>units</u>	-	-	-	-	<u>4.62</u> 1.77	<u>1.8</u> 0.9	<u>1.94</u> 1.11
Common carbonates	<u>1.27-1.42</u> 1.34	<u>3.53-7.68</u> 5.08	<u>1.62-6.18</u> 3.72	<u>3.53-7.68</u> 5.08	<u>5.12-15.22</u> 7.18	<u>0.72-21.18</u> 10.95	<u>2.66-4.97</u> 3.81	<u>3.66-4.57</u> 4
Pyrite	<u>0.08-0.11</u> 0.10	<u>0.37-0.47</u> 0.42	<u>0.08-0.13</u> 0.10	<u>0.47-0.47</u> 0.47	<u>0.25-0.54</u> 0.38	<u>0.08-0.13</u> 0.1	<u>0.08-0.15</u> 0.11	<u>0.06-0.08</u> 0.07
<u>Phosphorite</u>	<u>0.12-0.014</u> 0.13	<u>0.38-0.43</u> 0.41	<u>0.07-0.45</u> 0.22	<u>0.12-0.54</u> 0.35	<u>0.38-0.50</u> 0.43	<u>0.07-0.45</u> 0.22	<u>0.12-0.33</u> 0.22	<u>0.21-0.29</u> 0.26
Uranium oxide	-	-	-	-	-	-	-	-
Iron hydroxide (goethite)	<u>0.08-0.10</u> 0.09	<u>0.07-0.10</u> 0.08	<u>0.04-0.16</u> 0.08	<u>0.07-0.10</u> 0.08	<u>0.07-0.10</u> 0.08	<u>0.04-0.16</u> 0.08	<u>0.86-1.24</u> 1.05	<u>0.79-0.91</u> 0.85
Number of samples	4	4	4	4	4	6	6	8

The mass of fine lenticular clay (particle size 0.005 mm and less) from hydromica is on average - 3.11-4.0% (1.81-7.82%), kaolinite - 2.06-3.23% (1.54-5.36%) and montmorillonite consists of 1.07% (from one grain to 2.14%). Carbonates average 1.34-3.72% (1.27-6.18%) in sands, dolomite - 0.1-0.61% (0.12-1.32%) and anchorite (one piece) is represented by

A high amount of carbonates in sands is not a favorable criterion for obtaining useful components. The presence of calcite naturally complicates this process. Carbonates occur in the form of irregular, diamond-shaped and diamond-shaped white and yellow small grains and their intergrowths. Pyrite occurs in the form of inclusions of small cubic and octahedral grains and crystalline-granular aggregates, in the form of phosphorite-light brown and dark brown bone

fragments in the intergranular space of 0.1-2.0 mm. Iron hydroxides (goethite) are formed during the oxidation of pyrite and other iron-bearing minerals. They occur as yellowish and brownish-yellow films, films and prisms, and in detrital grains and intergranular spaces.

Ore mineralization is low in sands. Mainly, the deposits are confined to silty sandstones and sandy siltstones. It is represented by uranium oxide (nasuran) in sandstones and siltstones, which is observed as black powdery and absorbent films and as smears on the surface of fissile grains in the most permeable rocks.

Geochemical characteristics of sands and sandstones are presented in Table 2. The amount of gross iron in sands is on average 0.8-1.39% (0.79-2.76%), black gross iron - 0.61-1.17% (0.6-2.36%), in sands Decreases to 0.22-0.26% (0.21-0.27%, 24-26% gross), iron 0.05% (0.02-0.08%, equal to 3-6%) gray in clays, limonitized sands increases to 0.57-0.60% (0.53-0.65%, gross 59-62%), iron sulfide averages 0.04-0.05% (0.03 -0.06%) in gray and limonitized sands.

Geochemical characteristics of rocks and minerals of the Cognac deposit

2th table

Component	Gray rocks				
	Without ore	The scattering halo of Uranus		Uranium ore	
	Sand and Sandstone	Sand and Sandstone	Siltstone	Sand and Sandstone	Siltstone
1	2	3	4	5	6
Fe gross	<u>0.79-0.81</u> 0.8	2.25	<u>0.84-2.76</u> 1.39	<u>2.31-3.93</u> 2.93	6.68
Fe ⁺² gross	<u>0.60-0.62</u> 0.61	1.9	<u>0.69-2.36</u> 1.17	<u>1.80-3.32</u> 2.37	5.87
Fe ⁺² soluble	<u>0.59-0.61</u> 0.6	1.67	<u>0.67-2.30</u> 1.1	<u>1.77-3.30</u> 2.33	5.76
Fe ⁺³ soluble	<u>0.04-0.05</u> 0.05	0.07	<u>0.02-0.08</u> 0.05	<u>0.05-0.07</u> 0.06	0.06
Fe sulfide	<u>0.04-0.05</u> 0.05	0.18	<u>0.04-0.06</u> 0.05	<u>0.17-0.22</u> 0.2	0.05
<u>Fe⁺² gross</u> Fe gross	<u>0.76-0.76</u> 0.76	0.84	<u>0.82-0.85</u> 0.84	<u>0.79-0.84</u> 0.81	0.88
<u>Fe sulfide</u> Fe gross	<u>0.05-0.06</u> 0.06	0.08	<u>0.02-0.05</u> 0.03	<u>0.04-0.09</u> 0.07	0.01
<u>Fe⁺² gross + Fe sulfide</u> Fe gross	<u>0.81-0.82</u> 0.82	0.92	<u>0.87-0.89</u> 0.87	<u>0.87-0.88</u> 0.88	0.89
<u>Fe⁺³ soluble</u> Fe gross	<u>0.05-0.06</u> 0.06	0.03	<u>0.02-0.05</u> 0.03	<u>0.01-0.03</u> 0.02	0.01
CO ₂	<u>0.6-0.7</u> 0.65	0.6	<u>0.8-3.0</u> 1.84	<u>0.7-3.0</u> 1.46	7.7
C _{org}	<u>0.12-0.15</u> 0.14	0.38	<u>0.13-0.31</u> 0.18	<u>0.43-0.45</u> 0.44	0.62

P ₂ O ₅	$\frac{0.06-0.06}{0.06}$	0.12	$\frac{0.07-0.25}{0.1}$	$\frac{0.15-0.18}{0.17}$	0.05
S _{gross}	$\frac{0.05-0.06}{0.06}$	0.21	$\frac{0.05-0.07}{0.06}$	$\frac{0.20-0.25}{0.23}$	0.06
U g/t	$\frac{4.9-5.9}{5.4}$	9	$\frac{17.2-19.2}{17.9}$	$\frac{15.6-19.0}{17.5}$	19.6
Th g/t	$\frac{4.7-5.2}{5}$	5.1	$\frac{4.9-6.5}{5.6}$	$\frac{3.6-7.5}{5.1}$	6.2
Se g/t	$\frac{7.2-7.5}{7.4}$	3.8	$\frac{<3-9.5}{4.9}$	$\frac{<3-5.9}{3}$	9.8
Mo g/t	$\frac{0.30-0.63}{0.47}$	0.3	$\frac{0.26-0.53}{0.36}$	$\frac{0.32-0.45}{0.38}$	0.82
Sr g/t	$\frac{8.9-8.9}{8.9}$	11	$\frac{9.4-17.7}{12.6}$	$\frac{9.0-19.0}{12.4}$	21
Re g/t	$\frac{71.7-77.2}{74.5}$	104	$\frac{120-257}{180}$	$\frac{100-159}{124}$	149
V g/t	$\frac{0.02-0.02}{0.02}$	0.06	$\frac{0.06-0.13}{0.1}$	$\frac{0.17-0.24}{0.2}$	0.26
Number of samples	$\frac{37.2-37.8}{37.5}$	74.5	$\frac{40.6-69.9}{47.8}$	$\frac{73.4-79.2}{74.9}$	74.9

Summary. The results of studying the material composition of rocks and minerals from Cognac deposits are presented in Table 1. Samples from Cognac deposits are fertile for uranium, but rhenium and rare earth element mineralization is not widely developed.

As can be seen from the results, the sands, which make up about 43% of the total number of samples, are similar to each other in terms of mineral composition.

The average amount of quartz in them is 54.34-57.67% (47.87-58.54%), feldspars 29.24-24.2% (15.68-26.88%) and lumpy materials 6.48-11.026% (6.48-11.026%), sands are dominated by detrital minerals that are resistant to alkalizing solutions, which is a favorable factor for underground alkalization. Micas (muscovite, chlorite) average 0.8-1.53% (0.79-1.57%), clay minerals 5.21-7.6% (3.35-12.19%), most in high quantities and in the form of mixtures. It is due to the presence of a large number of lumps, granules and pieces of clay material in the voids of the layer.

Auxiliary minerals (zircon, garnet, staurolite, tourmaline, etc.) 0.37-0.6% (0.32-0.83%), carbonates 1.34-4.0% (1.27-6.18%), gray sands contain pyrite 0.1% (0.08-0.13%), phosphorite - 0.13-0.26% (0.07-0.45%) and iron hydroxides (goethite) in limonitized sands average 0.85-1.05% (0.29%-1.29%).

In gray and limonitized sands, CO₂ is on average 0.65-1.96% (0.6-3.0%), Sorg - 0.14-0.18% (0.12-0.31%), R₂O₅ - 0.06-0.11% (0.06-0.11%) and tantalum - 0.05-0.06% (0.04-0.08%). Selenium in sands averages 3.2-7.6 g/t (3.0-9.5 g/t), thorium - 5.0-5.6 g/t (4.7-6.5 g/t), molybdenum - 0.35-0.47 g/t, yttrium - 8.9-12.6 g/t (8.9-17.7 g/t) and strontium - 74.5- 352 g/t (71.7-364 g/t).

The average amount of rhenium in sand is 0.02-0.13 g/t (0.02-0.13 g/t), vanadium is 37.5-47.2 g/t (37.2-69.9 g /t) constitutes.

CONCLUSION

As can be seen from the results, in addition to uranium, thorium, scandium, cobalt, rubidium, antimony, sum of rare earth elements and other elements are present in sands with higher Clark content than sandstones. Uranium, thorium, cobalt, tungsten and other elements are found in

siltstones in higher than average quantities. Layered oxidation zones in the southeastern part of Central Kyzylkum (Nurota and Zirabulak-Ziyoutdin mountains) are of regional importance. Surface water infiltration plays an important role in their formation. One of the uranium deposits formed due to such layered oxidation is the North Konimekh deposit.

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Rezyume: Maqolada Qizilqum hududida joylashgan, Shimoliy Konimex uran konining yuqori bo‘r (K_2) davri, konyak yarusida hosil bo‘lgan yotqiziqlar, hamda ma‘dan hosil qiluvchi yotqiziqlarning moddiy tarkibini o‘rganish natijalari haqida ma‘lumotlar keltirilgan. Shimoliy Konimex uran konida olib borilayotgan izlash ishlari, baholash va qidiruv ishlari ko‘plab tadqiqotchilarni e‘tiborida bo‘lganligi bilan dolzarb masala hisoblanadi. Uran xom ashyosini qazib olishning usullaridan biri, yer osti ishqorlash usulidir, hozirgi vaqtda mazkur usulni qulayligi, uran xom ashyosini qazib olishda moliyaviy jihatdan yuqori samaradorlikga egaligi, shuningdek, arzon va samarali usullardan biri ekanligi ta‘kidlab o‘tilgan.

Резюме: В статье представлены сведения о результатах изучения вещественного состава, сформировавшегося в верхнемеловых (K_2) коньячных толщах уранового месторождения Северный Канмех, расположенного в Кызылкумском районе. Поиски, оценка и разведка на урановом руднике Северный Канмех является актуальной задачей, так как находится в центре внимания многих исследователей.

Одним из способов добычи уранового сырья является подземный способ подщелачивания. В настоящее время подчеркивается, что этот способ удобен, имеет высокую финансовую эффективность при добыче уранового сырья, а также является одним из самых дешевых и эффективных способов.

Kalit so‘zlar: Uran, Shimoliy Konimex, Bo‘r, Konyak, ma‘dan, moddiy tarkib, mineralogiya, xom ashyo, yer osti ishqorlash.

Ключевые слова: Уран, Северный Канмех, руда, материальная композиция, минералогия, сырье, подземное подщелачивание.

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RESEARCH OF POWER SUPPLY SCHEMES USED IN CITY POWER NETWORKS

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Summary: *The article analyzes the internal power supply schemes currently in use in distributive power grids, which are the main structural element of the city power supply system. In modern conditions, issues of recommending, applying and building the optimal configuration of urban electricity supply are considered for the developed power supply schemes for electricity networks under development.*

Keywords: *optimal configuration, power grid, power supply scheme, electricity network.*

Introduction

Currently, the issue of providing quality and uninterrupted electricity to existing electricity consumers is considered important. The power supply consists of two parts. The first part is external power supply and schemes. Second internal power supply and schemes. External power supply refers to the range from the source of production to the head-lowering substation. Internal power supply refers to the range from a head-lowering substation to electricity consumers. In the case of internal power supply, the circuit boards should be simple and reliable. The complexity of the circuit in the power supply can affect the continuity of the power supply.

The construction of the city power supply using simple and reliable schemes serves as the basis for the construction of the optimal configuration of the city. This can happen through automation of design processes and remote control of circuits.

Problem statement

In the urban power supply system, the construction of technical and economic indicators and optimal configuration of power networks will depend on power supply schemes. Hence, it is necessary to build technical and economic models of electrical networks in accordance with their specific schemes. The analytical approaches carried out on the existing internal power supply schemes currently used in developed cities have shown that the construction of single-transformer transformer substation with a voltage of up to 1000 V and medium-voltage power schemes with a surface circuit will have the best technical and economic indicators, and the second and third categories will ensure the necessary reliability of electricity. At the same time, the automation of some first-category consumers (limited number and small capacity) is also provided.

However, the use of shallow circuit networks can be limited to a number of reasons such as [1-2].

In city power supply, the parameters of the electrical network are selected in a state dependent on the electrical load density. Application of large transformer substation ($S_{TS} > 1000$ kVA) at large density of loads is economically max compliant [6-9]. This can only be done in city conditions with a two-transformer transformer substation (2x630, 2x1000 kVA). The implementation of a two-transformer transformer substation justifies the application of two-trunk schemes of networks in terms of reliability and quality of power supply and in terms of overhead costs. In addition, if the consumers supplied from the line are equally located in the “right” direction from the transformer substation, and both semi-schemes come out of a single transformer substation, then it will not make sense to consider the scheme of the network, since in this case it will practically become a two-trunk schemes.

Taking into account the above analytical considerations, it will be necessary to determine the possible application of the circuit and two-trunk circuits with a voltage of up to 1000 V.

To do this, the limit values of the density of electrical loads are determined, while maintaining the technical and economic advantages of the circuit circuits (reducing the total cost due to reducing the consumption of non-ferrous metal in ensuring the necessary reliability of the power supply).

Let us assume that a voltage of up to 1000 V is connected to the surface line by loads of the same power, evenly distributed along the length (Fig. 1.).

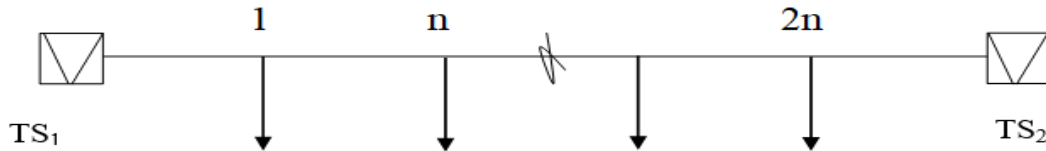


Fig. 1. Shallow line with a voltage of up to 1000 V.

In the mode after the accident, the allowable heating condition of the cables can be written:

$$2n \cdot P_o \cdot K_o \leq \sqrt{3} U_n \cdot I_a^{ma} \cos \varphi_l, \quad (1)$$

where P_o - the average unit capacity of the consumer, [kW]; I_a^{ma} - the permissible current in the post – accident mode, taking into account the possibility of overload to 30% of the cables, [A]; U_n - the nominal voltage of the network up to 1000 V, equal to 0,38 kV; K_o - the one – time coefficient of the load maximums of the line under consideration.

To calculate, suppose that the maximum loads of the line are concurrent, i.e. $K_o=1$.

The average unit load of a building can be expressed through load density as follows:

$$P_o = \frac{\sigma_b \cdot F_r}{n_b} = \frac{\sigma_b \cdot \Phi_b}{K_c}, \quad (2)$$

where σ_b - the load density quoted at the entrance to the building, [kW/km²]; F_r - the area of the district under consideration, [km²]; n_b - the number of buildings in the minor district; Φ_b - the average area of one building, [km²]; K_c - the construction coefficient, depending on the character of the building (number of floors, average area occupied by).

The value of the K_c coefficient can vary over a very large range. For example, for city old buildings – 0,5-0,7, for city districts with new buildings – 0,2-0,15.

Based on the analysis of the materials for the design of the power supply of modern residential buildings, it was found that the construction coefficient depends on the number of floors of the building and the average area occupied by the building [3-5] (Table 1).

Table 1

Building floor count	to 5	5-7	7-9	9-12	12-16
Average area occupied by the building, m ²	500	700	900	1100	12000
Construction coefficient	0,22-0,2	0,2-0,18	0,18-0,17	0,17-0,15	0,15-0,13

Using materials for designing the power supply of cities, the values of the specified accounting loadings for the cases in table 1 and the K_c for various modern buildings were determined. The correspondence showed that the value of K_c changes in a small interval (0,7-0,8), that is, it is assumed that $K_c=0,75$.

The K_c coefficient, showing the load relative to the transformer substation tire from the entrance to the building, indicates a decrease in it by 75%. This in turn [10] in line with the recommendations and design practices [11-12].

The permissible current of cables voltage of up to 1000 V in post-accident mode can be approximated by the following expression:

$$I_a^{ma} = 24,6 F_{lv}^{0,55}, \quad (3)$$

in this case, F - the cross – sectional surface of the cable line a voltage of up to 1000 V, [mm²].

Considering (2) and (3), after a certain modification (1) the expression takes the following view:

$$\sigma \leq \frac{6 \cdot F_{lv}^{0,55}}{n} \cdot \left(\frac{K_c}{\Phi_b} \right), \quad (4)$$

(4) inequality determines the area in which it is possible to use schemes to ensure the necessary reliability of the power supply of city consumers (Fig. 2.).

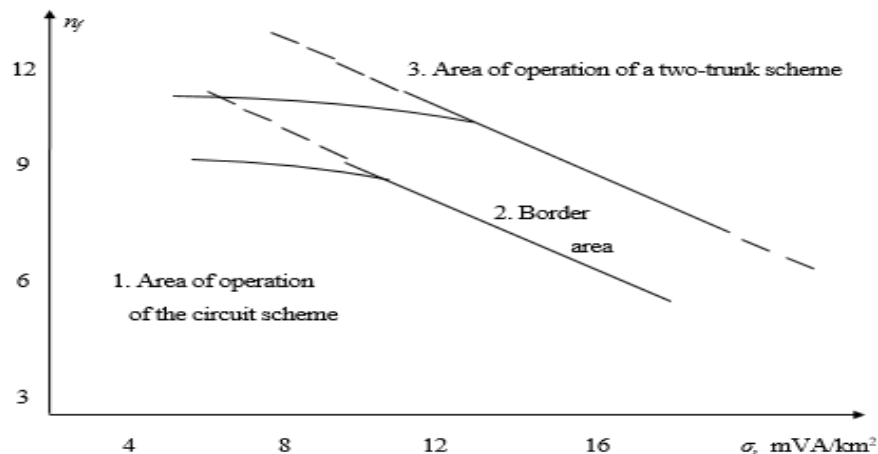


Fig. 2. Surface and two-trunk schemes a voltage of up to 1000 V scope of use.

An approximate determination of the average unit capacity of buildings and the density of electrical loads for different construction of the city determines the presence of a boundary area (2).

As can be seen from Fig. 2, for low-rise (up to 7-9) buildings, the application of a surface scheme in networks with a voltage of up to 1000 V at all load densities for load density 10-12 mVA/km² and $n_f \leq 5$ is effective, ensuring the required reliability of the majority of urban electricity consumers.

In the field of high load densities (3), in most cases, shallow circuit lines will not have economic advantages over a two-trunk scheme, at the expense of doubling the number of cables in most lines, while providing the necessary reliability. This is called the target range of two master network circuits with a voltage of up to 1000 V. In practice, in circuit schemes with a voltage of up to 1000 V, the load density for buildings above 9-12 floors will be 8-10 mVA/km² and higher. In this case, Circuit circuits with a voltage of up to 1000 V are not in

demand.

A quantitative analysis of the fields has been carried out for cases where the minimum number of connections to the line up to 1000 V is 2 and the maximum cross-sectional surface of the cables is 185 mm² (Fig. 3.). With an increase in the number of connections to the line, as well as when small cross-sectional surfaces are used, the range of targeted use of surface schemes becomes smaller.

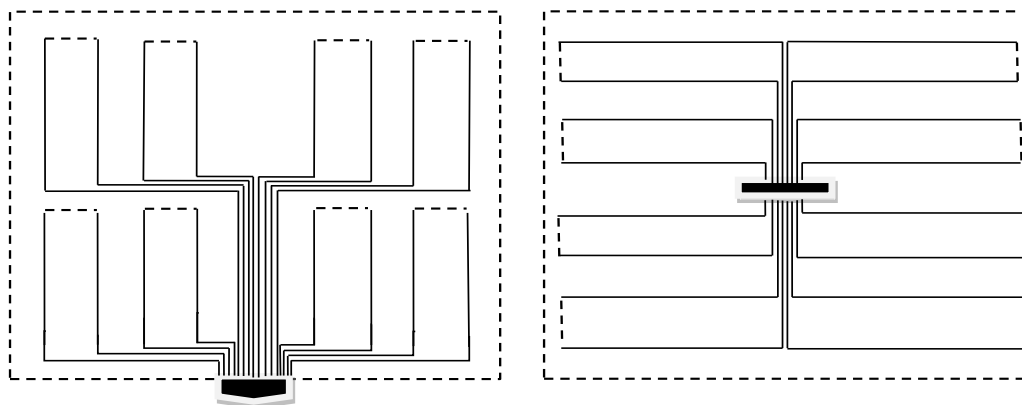


Fig. 3. Structures of distribution power grids for city areas.

Conclusion

Thus, optimization of urban distribution networks in the entire variation range of σ for low-rise buildings and load density up to 10-12 mVA/km² for buildings up to 7-9 floors should be carried out on the basis of a surfacing scheme. The use of two-trunk network schemes for multi-store buildings (above 9-12 skirts) in the entire change intermediate of σ and for buildings up to 9-12 floors with a load density of 8-12 mVA/km² and above is max consistent.

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Rezyume: Ushbu maqolada shahar elektr ta'minoti tizimini asosiy tarkibiy elementi bo'lgan taqsimlovchi elektr tarmoqlarida hozirda qo'llanilayotgan ichki elektr ta'minoti sxemalari tahlil qilingan. Zamonaviy sharoitda loyihalanayotgan elektr tarmoqlari uchun ishlab chiqilgan elektr ta'minoti sxemalarini tavsiya etish, qo'llash va bu orqali shahar elektr ta'minotining optimal konfiguratsiyasini qurish masalalari ko'rib chiqilgan.

Резюме: В данной статье анализируются схемы внутреннего электроснабжения, используемые в настоящее время в распределительных электросетях, которые являются основным структурным элементом городской системы электроснабжения. В современных условиях рассматриваются вопросы рекомендации, применения и построения оптимальной конфигурации городского электроснабжения для разработанных схем электроснабжения разрабатываемых электрических сетей.

Kalit so'zlar: optimal konfiguratsiya, taqsimlovchi elektr tarmoq, elektr ta'minoti sxemasi, elektr tarmoq.

Ключевые слова: оптимальная конфигурация, распределительная электрическая сеть, схема электроснабжения, электрическая сеть.

УДК 374.6; 374

METHODS OF TEACHING THEORETICAL ELECTRICAL ENGINEERING USING CIRCUIT MODELING PROGRAMS

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Summary: *Developed the use of simulation software Multisim 14.0 in a laboratory workshop on electrical engineering in the preparation of students of technical specialties*

Keywords: *transients, DC generator, switch, inductor, resistor, capacitor, oscillogram, millivoltmeter, damping factor.*

Currently, computer technologies are widely used in the educational process when setting up virtual laboratory work in electrical engineering and electronics courses. In this case, electronic circuit simulation programs are mainly used, such as Multisim 14.0, which has a convenient interface, an extensive library of components and is easy to use.

Expanding the capabilities of traditional teaching methods, programs for circuit simulation of analog, digital and analog-to-digital circuits allow during a laboratory workshop to draw up an equivalent circuit of devices using library components, simulate almost any electrical or electronic circuit, change the ratings of its elements with a performance check, show on the monitor are real waveforms of signals at any point in the circuit. It becomes possible to demonstrate simulated circuit errors and their influence on certain parameters of the electrical circuit.

The disadvantage of these computer programs is the impossibility of using a computer to conduct real studies of electronic circuits and radio components, which will negatively affect the knowledge of students and their understanding of what they are doing. At the same time, an ordinary computer in combination with auxiliary devices can be used as a powerful research laboratory. Using the software of an oscilloscope, signal generator, millivoltmeter, spectrum analyzers, and the microphone input of a sound card, you can perform a lot of real laboratory work without investing significant material resources [1].

As such classes show, many students show an increased interest in a laboratory experiment, which contributes to the achievement of a certain strength of knowledge. The following is an example of a methodological development for performing a virtual laboratory work on the topic "Investigation of transients in an RCL circuit when it is disconnected from a DC voltage source".

Aim of work: Investigate the transient process in the RCL circuit when it is disconnected from a DC voltage source.

Equipment: IBM-compatible computer with at least 486 processor modification, Pentium III or higher.

Exercise: assemble the circuit shown in Figure 1; set time and voltage parameters on channel A and B; get an oscillogram of the transient process; measure the amplitudes U_0 and U_1 and the period T ; calculate the oscillation period T and damping factor β ; compare the obtained theoretical and practical data; draw a conclusion.

In the electronic circuit simulation environment Multisim 14.0, the electrical circuit shown in Figure 1 was assembled and debugged. The circuit contains a DC generator V1, a switch J1, an inductor L1, a resistor R1 and a capacitor C1. Using the properties window for each element, parameters were set: a DC generator with a voltage of 200 V, a coil with an inductance of 1 H, a resistor with a resistance of 20 Ohm, a capacitor with a capacitance of 300 microfarads [2-3].

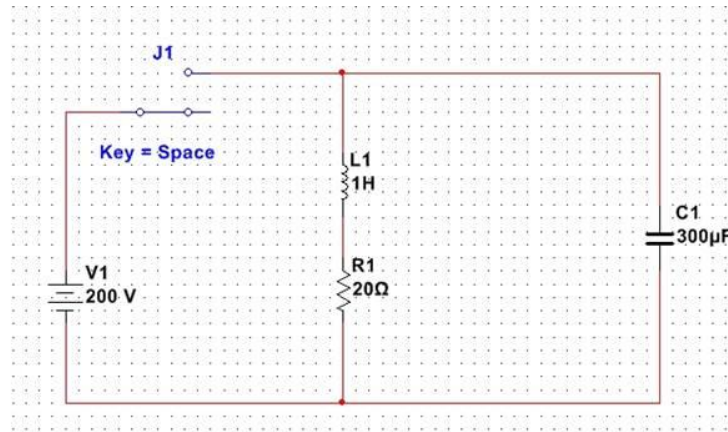


Fig. 1. Oscillatory RLC circuit

The discharge of a capacitor onto an inductor at a high quality factor of the circuit $2R < \sqrt{\frac{L}{C}}$ is described by a differential equation.

$$LC \frac{d^2 i}{dt^2} + RC \frac{di}{dt} + i = 0 \quad (1)$$

where i – current in RLC circuit;

L – coil inductance;

C – capacitor capacitance;

R – resistor active resistance.

From the solution of equation (1) for the voltage across the capacitor, we obtain the expression

$$u_c(t) = U_{C0} e^{-\delta t} \sin(\omega_{CB} t + \varphi)$$

$$\tan \varphi = \frac{\omega_{CB}}{\delta} \quad (2)$$

where U_{C0} – initial voltage across the capacitor.

To record the change in voltage across the capacitor over time, an oscilloscope was connected to the capacitor (Figure 2).

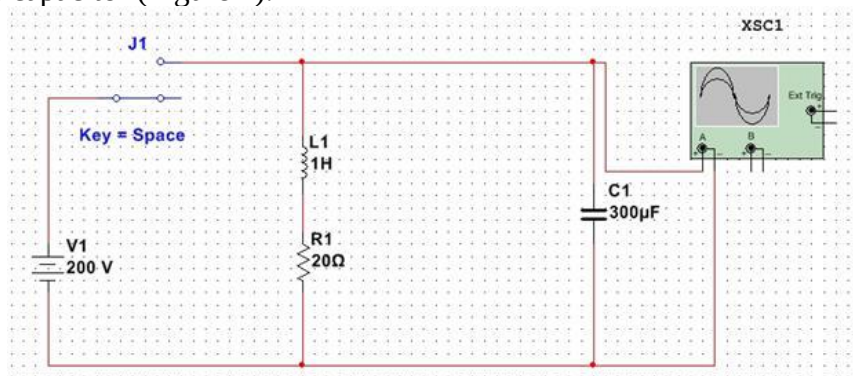


Fig. 2. Scheme for the study of transient processes in oscillatory circuits

An oscilloscope is a measuring device that is used to observe, measure and record the time and amplitude parameters of an electrical signal applied to its input. This makes it possible to study the oscillograms of transient processes that last for short periods of time. To do this, you need to set the scale of the oscillogram and press the pause button when the transient process is completed. According to the received oscillogram, it is possible to study all the processes occurring in the composed circuit, as well as to take the values of the amplitude and period of oscillations.

To obtain an oscillogram of the transient process when the oscillatory circuit is disconnected (Figure 2) from the voltage source, it is necessary [4]:

- open the oscilloscope;
- set the time equal to 100 m s,
- set the voltage on channel A to 200 V,
- set the voltage on channel B equal to 5 V;
- turn on the circuit, having previously closed the key on the oscillatory circuit;
- after 1–3 seconds, open the key with the Space key.

Figure 3 shows a graph of the voltages $u_c(t)$ on the capacitor versus time during its discharge.

The resulting oscillogram allows you to measure the amplitude values of the voltage for various times and the period of damped oscillations.

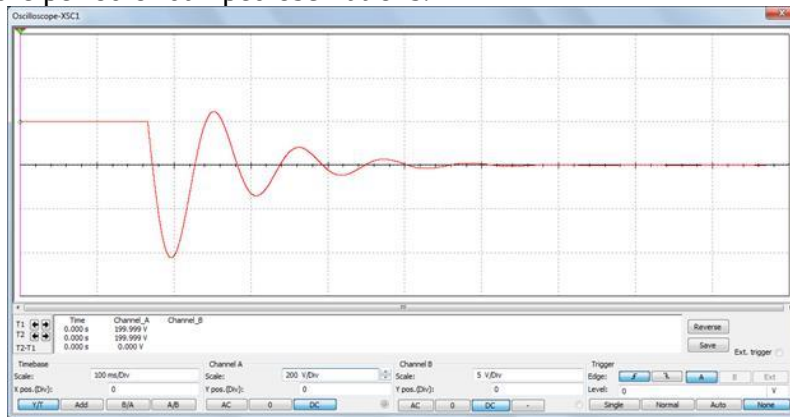


Fig. 3. Graph of the $U_C(t)$ curve

Waveform Processing Results:

- initial amplitude of the first oscillation $U_0 = 424,741$ B;
- the amplitude of the second oscillation after a period $U_1 = 140,689$ B;
- oscillation period $T = 110,922$ m c.

Based on the obtained amplitude values and the period of damped oscillations, the damping coefficient β .

$$U_1 = U_0 \cdot e^{-\beta T} \quad (3)$$

$$\beta = \frac{\ln \frac{U_0}{U_1}}{T} = \frac{\ln \frac{424,741}{140,689}}{110,922 \cdot 10^{-3}} = 9,961 \frac{1}{s} \quad (4)$$

In addition, the values of the attenuation coefficient, the frequency of natural oscillations of the circuit, the frequency of damped oscillations and the period were calculated.

The attenuation coefficient is calculated by the formula.

$$\beta = \frac{R}{2 \cdot L} = \frac{20}{2 \cdot 1} = 10 \frac{1}{s} \quad (5)$$

Formulas for Finding Frequency.

$$\omega_0 = \frac{1}{\sqrt{L \cdot C}} = \frac{1}{\sqrt{1 \cdot 300 \cdot 10^{-6}}} = 57,737 \frac{1}{s} \quad (6)$$

$$\omega = \sqrt{\omega_0^2 - \beta^2} = \sqrt{57,737^2 - 10^2} = 56,864 \frac{1}{s} \quad (7)$$

Formula for finding the period of one oscillation.

$$T = \frac{2 \cdot \pi}{\omega} = \frac{2 \cdot 3,14}{56,864} = 0,110439 s = 110,439 ms \quad (8)$$

To compare the results obtained from the oscillogram and those calculated using equations (5–7), deviations between the measured and calculated values of the parameters were calculated.

The absolute error is calculated by the formula

$$\Delta x = |x - x_{calc}| \quad (9)$$

where x – taken value from the waveform;

x_{calc} – true value calculated by formulas.

Relative error is calculated by the formula

$$\varepsilon = \frac{\Delta x}{x_{calc}} \cdot 100 \% \quad (10)$$

For the oscillation period, the difference between the measured and calculated values was 0.483 ms or 0.9%.

For the attenuation coefficient, the difference between the measured and calculated values was 0.039 1/s or 0.39%

The combination of laboratory practice on traditional laboratory benches with virtual laboratory work allows you to master the studied material in depth. It should be noted that when using virtual laboratory work, it is possible to study processes occurring over a short period of time, in particular, transient processes in electrical and electronic circuits. The study of such processes using traditional laboratory benches presents significant difficulties.

The National Instruments Multisim software environment considered in the paper allows you to combine the processes of developing electronic devices and testing them based on the technology of virtual instruments for educational and industrial purposes. This platform links test and design processes, providing the electronics designer with the flexibility of virtual instrument technology. The use of virtual laboratory work in conjunction with traditional work performed on laboratory stands allows you to show the effectiveness of the virtual laboratory practice, the high accuracy of the results and the speed of laboratory work.

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Rezyume: *Texnik mutaxassisligi yo‘nalishilarida talabalarni tayyorlashda elektrotexnika fanidan labratoriya praktikumida Multisim 14.0 simulyatsiya dasturidan foydalanish ishlab chiqilgan.*

Резюме: *Разработано использование имитационно- моделирующих программных средств Multisim 14.0 в лабораторном практикуме по электротехнике при подготовке студентов технических специальностей.*

Kalit so'zlar: *O'tkinchi jarayonlar, doimiy tok generatori, kalit, induktiv g'altak, rezistor, kondensator, ossillogramma, millivoltmetr, so'nish koeffitsienti.*

Ключевые слова: *Переходные процессы, генератор постоянного тока, переключатель, катушка индуктивности, резистор, конденсатор, осциллограмма, милливольтметр, коэффициент затухания.*

UDC: 621.316.1

**EVALUATION OF THE TECHNICAL CONDITION OF RURAL ELECTRIC
DISTRIBUTION NETWORKS 0.38-10 kV**

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Summary: The article carried out experimental studies of the power loss criterion on the physical model of the 0.38 kV network. Based on the results of the experiment, the loss criterion was calculated using two different formulas, and complete convergence of the calculation results was obtained. Mathematical calculations were also made to eliminate and reduce losses in the supply of electricity to rural consumers. The object of the study is the state of rural networks, in particular, electrical networks 0.38 ... 10 kV.

Keywords: electrical distribution networks, rural consumers, increase, power supply, line, reinforced concrete poles, wooden poles, current, insulation.

Introduction. In accordance with the strategy for the development of distribution electrical networks in the Republic of Uzbekistan until 2025, a set of tasks aimed at ensuring the reliability and efficiency of power supply to consumers and the quality of electrical energy. When solving the problems of power supply to rural consumers, new principles, technical solutions and means for distribution networks at the modern technically equipped level should be used [1-2].

Problem statement. During the operation of rural electric networks (REN), the task arises to ensure the necessary reliability of power supply to agricultural consumers. At the same time, the technical condition of rural electric networks is determined by the technical indicators of the state of electric equipment of networks (defects, damages) and the following terms of reliability theory are used to assess: reliability, durability, and others [3].

In this article, the object of research is the state of rural networks, in particular electric networks of 0.38 ... 10 kV.

First, redundant lines of 6-10 kV carried out the increase in the reliability of electric networks. As the practice of operating electric networks has shown, due to the fact that usually in existing networks the values of the wire cross-section decrease at the end of the line, it is impossible to ensure reliable power supply to consumers only by constructing backup lines. Therefore, the effectiveness of such an event is very low.

There is another way to improve reliability by building new 35-110/10 kV substations and corresponding development of the 35-110 kV network, as well as building new 10 kV lines, which lead to the downsizing of 10 kV lines. However, this method, ie. downsizing of 10 kV lines is a very expensive way to improve the reliability of power supply to consumers. At the same time, the efficiency of this method decreases significantly as the length and load of the line decreases.

Therefore, to improve the reliability of rural distribution networks, it is necessary to use modern approaches related to the use of the latest developments and materials in the construction, reconstruction and modernization of overhead lines (VL) [2,5].

For uninterrupted power supply of agricultural consumers with electricity, it is necessary to ensure the operable state of distribution electrical networks. The concept of "failure" is used to characterize the various states of electrical networks. A failure is the transition of an element from a healthy state to an unhealthy state.

Factors causing failure of distribution network elements are:

- climatic influences;
- aging of electrical equipment insulation;

- defects in installation and operation, etc.

To develop methods for determining and means of improving the reliability of electric distribution networks, it is necessary to study and analyze the causes of disruptions in the performance of these networks.

In rural distribution networks, the reliability of consumer power supply is mainly influenced by the reliability of 10 kV distribution networks, to which agricultural consumers are connected, and it provides power and backup of the 10/0.4 kV transformer substation.

According to the "Guidelines for accounting and analysis in energy systems of the technical condition of distribution networks with a voltage of 0.38-20 kV with overhead power lines", an assessment of the technical condition of rural distribution networks with a voltage of 0.38-10 kV should be carried out.

An assessment and analysis of the technical condition of 6-10 kV transmission lines of JSC "Hududiy elektr tarmoqlari" for 2016-2020 was carried out. [4,5]

As a result, it was found:

1. 50% of 6-10 kV transmission lines and 54% of 0.38 kV transmission lines are in need of major repairs or require complete replacement.

2. Up to 15% of the number of defective elements of the power line falls on bare wire. First of all, this is due to the impact on the wire of the environment: ice-wind loads higher than the calculated ones, atmospheric effects, etc.

3. 12% of the detected defects are wooden poles. These defects can be attributed to the aging of the support material caused by the impact of the environment on the wood, insufficient penetration of the supports in the ground, and lightning damage.

70% of all defects in 0.38 kV overhead transmission lines occur on branches from overhead lines to building inlets and they are associated with external influences, installation and operation defects.

The average frequency of emergency outages of a 10 kV line in 2020 is 7.4 shutdowns/100 km, and for various power systems this figure ranges from 19.8 to 2.0 shutdowns/100 km. With one emergency shutdown, unsupplied electricity averages 722.6 kWh.

Due to the fact that there is practically no initial information on the frequency of emergency shutdowns, it is difficult to determine this indicator for 0.38 kV lines. According to [5,7] in rural settlements, 0.38 kV overhead lines are 5 ... 7 times more damaged than 10 kV overhead lines. The reasons for the high damage rate of 0.38 kV overhead lines are:

- overhead lines are made mainly with aluminum wires, the reliability of which is several times lower than the reliability of steel-aluminum wire.

- 0.38 kV rural electrical networks are poorly equipped with automation and redundancy tools.

At the same time, lightning surges and ice-wind effects are the most severe in their consequences, which can lead to massive emergency shutdowns for a long time of a large number of consumers, regardless of the availability of backup power.

Approximately 13% of outages in distribution networks of 0.38-10 kV occur due to lightning surges. In this case, the number of outages is directly determined by the parameter of the given area, such as the intensity of thunderstorm activity.

If lightning discharges or thunder occurs, then the number of thunderstorm days and hours per year can characterize this parameter. The disadvantage of the accepted characteristics of this parameter is that the following are not taken into account: the duration and strength of the thunderstorm, its actual duration, and the number of discharges. That is, they only in the most general terms reflect the danger of thunderstorms for the operation of overhead lines.

Line operation experience shows that when a lightning discharge is closer than $4b$ (b is the line size), it directly strikes the line, and at distances up to $8-1011$ overvoltage, pulses are induced

in the overhead line. In the beginning, the cause of overvoltage is the flow of lightning currents through the affected object. Lightning current spreads in both directions along the struck wire during a direct lightning strike into the wires. With a direct lightning strike on the line, an overvoltage wave occurs, which covers the supports with weakened insulation (reinforced concrete, metal) or air gaps at the intersections of the lines, even at large distances from the place of defeat of the overhead line.

In addition, another type of overvoltage - internal overvoltage, significantly affects the reliability of the insulation of overhead lines.

The magnitude, form and duration of internal overvoltage depend on:

- from neutral networks modes;
- inductance and capacitance of electrically and magnetically connected sections of networks.

Internal overvoltage differ from lightning overvoltage in that the pulse duration does not exceed 100 μ A and, in case of arc faults on the ground, affect the insulation from 5000 μ A to several hours.

As a rule, in case of arc faults in networks with an isolated neutral, the magnitude of overvoltage does not exceed 3.2 Df. In rural electrical networks, they slightly exceed line voltages because large active resistances often limit them.

Under open-phase operating modes of network sections, overvoltage values reach very high values and are limited by the electrical strength of defective areas of section insulation. In this case, a section of the electrical network is often automatically turned off.

Ice-wind loads affect distribution networks of 0.38-10 kV and cause disruption of their work. At the same time, according to [1-5], such violations account for an average of 18.7% of the total number of causes of violations for distribution networks.

The wind pressure on the wires also affects the reliability of the supports and their mechanical strength and the wires covered with ice-frost deposits.

The occurrence of ice-hoar frost deposits create tension by an order of magnitude greater than the tension from the own weight of the wires, which causes an increase in wind loads due to an increase in the windage of the wires. If the air is highly saturated with moisture and the wind is blowing transverse to the line, then ice reaches dangerous dimensions already in 2-3 hours.

At sub-zero temperatures (below 0°C), wet snow on the wire freezes and a layer of ice snow firmly freezes to the wire. At the same time, the average volumetric mass of ice snow is 200 kg/m³. With winds, wet snow increases the resulting load on the wires and supports of the overhead line.

Vibration has a destructive effect on the contact connections of switching devices and transformers. The weakening of current-carrying contact connections leads to their burning and disruption of electrical contact. If the duration of the vibration action increases, then kinks and loosening of the fastening of the wires to the insulators are possible.

Based on the data of JSC "Hududiy ET", this article processes statistical information about the parameters of rural distribution lines of 0.38-10 kV. For rural distribution networks of JSC "Hududiy ET", a detailed study of the causes and duration of emergency outages of 6-10 kV overhead lines is being carried out. Mainly overhead lines structurally make the distribution networks of the Tashkent region. The length of cable networks is 4%. The total length of 6-10 kV overhead distribution lines is 758 km.

At BJI 0.38-10 kV, wooden (10%), wooden with reinforced concrete attachments (50%) and reinforced concrete poles (40%) are used. Overhead line insulators made of glass (55%) and porcelain (45%). At BJI 0.38-10 kV, steel-aluminum and aluminum wires are used.

The electrical circuit of 10 kV networks is radial (more than 85% are looped with disconnectors), 0.38 kV networks are main. The average length of one BJI 10 kV, taking into account the branches, is 30 km, the average length of its main part is 15 km, for V L 0.38 kV - 0.67

km. The average total power of transformers connected to one 10 kV line is 1900 kVA, and the average installed power of the transformer is 250 kVA. Operational mobile or repair teams carry out maintenance of distribution networks for agricultural purposes. Most agricultural consumers belong to the second category of power supply reliability.

Tables 2.1 and 2.2 show the processed statistical data on the causes and duration of outages in the distribution networks of 10 kV JSC "Toshkent Hududiy elektr tarmoqlari". The source of information was official information about accidents recorded in the operational and emergency logs of the RES JSC "Toshkent Hududy elektr tarmoqlari" given in the literature [5]. The available official reporting of energy enterprises contains only data on emergency shutdowns, causing a significant undersupply of electricity. In the study, a probabilistic-statistical approach was used, which allows the most complete consideration of the variety of random factors in electric distribution networks.

The observation period is 5 years, the average annual number of emergency shutdowns of the 10 kV line is 105 pcs.

Table 2.1 shows the main causes and duration of outages, and Table 2.2 shows the distribution of emergency outages by months of the year, indicating the elements that caused the outage.

The largest share is made up of shutdowns associated with wire breakage, damage to supports, breakdown and destruction of overhead line insulators. As follows from the given data in tables 2.1 and 2.2, the largest number of emergency shutdowns occurs due to wire breakage and lashing 40.7%. Emergency shutdowns due to failures of overhead line insulators amount to 20.1%. Shutdowns due to damaged poles -24.8%. Shutdowns for unknown reasons amounted to 11.4%.

Statistical data on the analysis of the causes of distribution network failures due to damage to wires, supports and insulators are given in tables 2.3, 2.4 and 2.5.

The analysis of the statistical data showed that the significant cause of accidents 26.8% is the high-speed wind pressure and ice-frost deposits. 24.2% of emergency shutdowns occur due to lightning activity, causing failures of all elements of electrical networks. Installation and manufacturing defects caused 8.6% of emergency shutdowns. The average number of emergency shutdowns per 100 km of line per year is 13.3 cases. The average duration of one emergency shutdown is 5.8 hours. The reasons that led to the breakage and lashing of wires are: unfavorable weather conditions (strong wind, ice) 27.9%, insulation damage 51.6%, knitting break 5.1%, lashing of wires 4.2%, falling trees 3.7%. All these damages can be eliminated by using self-supporting insulated wires (SIP) on 10 kV overhead lines, which are resistant to atmospheric influences and exclude the possibility of disconnecting the line when the wires are lashed. Failures of 10 kV overhead line insulators can also be eliminated by using insulated wires.

Table 2.1

Causes and duration of emergency shutdowns of 10 kV overhead lines

Reasons for shutdowns	Number of shutdowns		Duration of shutdowns			Undersupply of electricity			Total breaking power		
			Total		Average duration of one shutdown	Total		For one shutdown	Total		For one shutdown
	Pcs	%	h	%	h	kWh	%	kWh	kW	%	kW
Damage and destruction of supports	249	24,8	2225	37,3	8,9	252,6	35,3	1,01	295,4	26,0	12

Breakage and whipping of wires	409	40,7	2311	38,7	5,7	255	35,7	0,62	452,7	39,8	1.1
Breakdown and failures of insulators	211	21,0	1027	17,2	4,9	122,6	17,2	0,51	244	21,5	M
Other reasons	21	2,1	45	0,8	2,1	7,2	1,0	0,34	27,6	2,4	1.1
Reasons not established	115	11,4	359	6,0	3,1	77,2	10,8	0,67	117,6	10,3	13
Total:	1005	100	5967	100	5,8	714,6	100	0,71	1137,3	100	1,13

Table 2.3

Distribution of emergency shutdowns by months of the year

Reasons for shutdown	Total number of shutdowns		Including by months, pcs											
	pcs	%	January	February	March	April	May	June	July	August	September	October	November	December
Damage and destruction of supports	249	21,6	10	15	31	39	29	30	25	19	12	14	12	13
Breakage and whipping of wires	409	35,6	68	38	35	33	20	25	22	19	22	25	36	66
Breakdown and failures of insulators	211	18,4	17	16	11	14	24	36	28	17	13	13	12	10
Other causes (surges, collisions, falling trees, arrester failures, etc.)	21	1,8	1	1	1	1	3	2	3	4	2	1	1	1
Reasons not established	115	10	1	4	8	1	12	16	32	17	12	5	6	1
Total	1005		97	74	86	88	88	109	110	76	61	58	67	91
Percentage of the total		100	9,7	7,4	8,6	8,8	8,8	10,8	10,9	7,6	6,1	5,8	6,7	9,1

Table 2.3 shows that the amount of unsupplied electricity per year due to failures of 10 kV overhead lines with bare wires is 764.2 kWh in the republic. This value can be reduced by 377.6 kWh when using a 10 kV SIP overhead line by eliminating breaks, wire lashings and insulator failures, which will lead to a significant reduction in annual damage from undersupply of electricity due to probable failures of a 10 kV overhead line.

Results. According to statistical data, histograms (Fig. 2.1 - 2.4) of the distribution of

shutdowns and their duration by months of the year and hours of the day were constructed. As can be seen from the figures, the largest outage occurs in the winter-summer months. An analysis of the distribution of outages by hours of the day shows that most of the emergency outages occur during the daytime from 8 a.m. to 5 p.m. 2.3. From histogram 2.4, it can be seen that the maximum emergency outages in terms of duration also occur from 8 am to 5 pm. Therefore, the maximum outages in distribution networks occur at a time of the day when the consumer is in dire need of electricity and the damage from power outages is greatest.

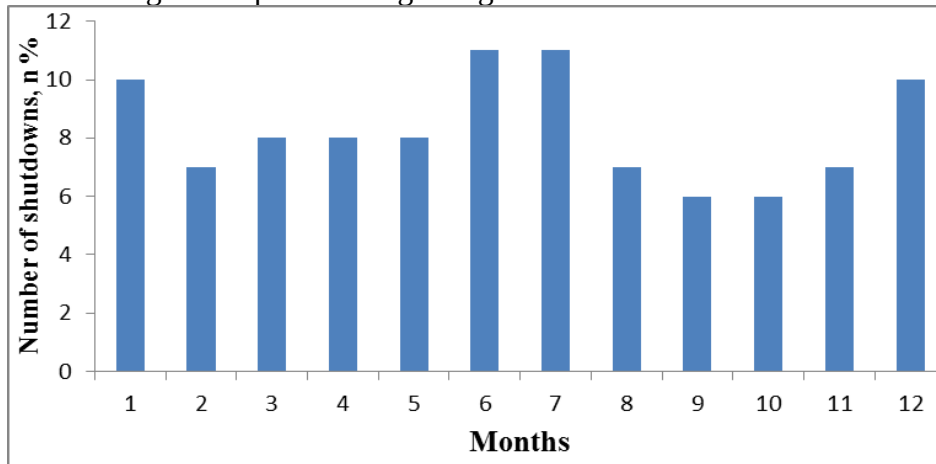


Fig. 2.1. Histogram of the distribution of the number of emergency shutdowns of 10 kV overhead lines by months of the year

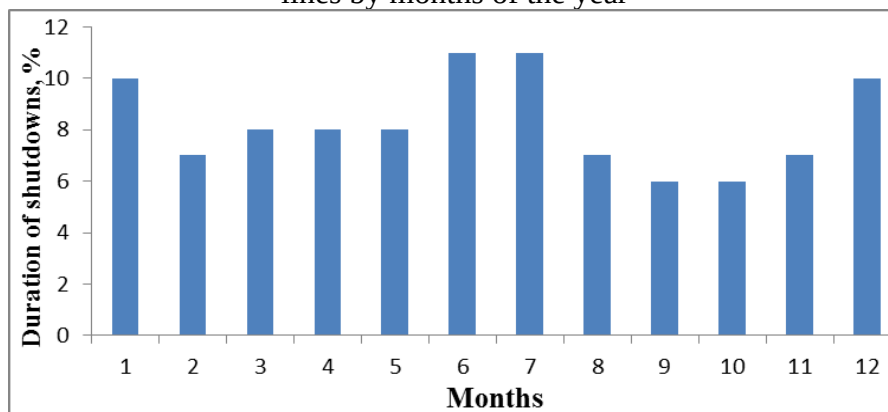


Fig. 2.2. Histogram of the distribution of the duration of emergency shutdowns of 10 kV overhead lines by months of the year

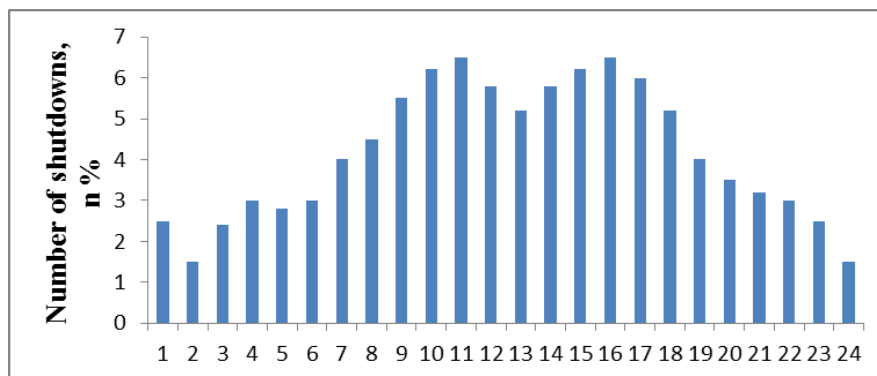


Fig 2.3. Histogram of the distribution of emergency shutdowns of 10 kV overhead lines by hours of the day.

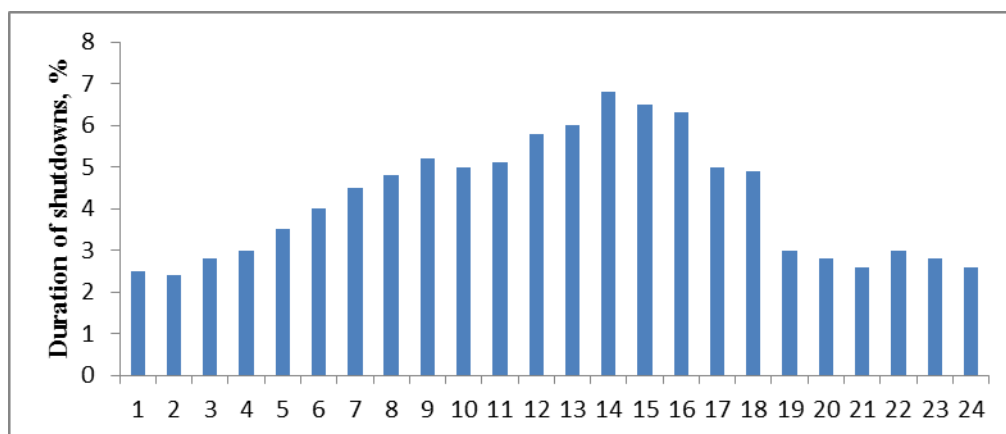


Fig. 2.4. Histogram of the distribution of the duration of emergency shutdowns of 10 kV overhead lines during the day.

Table 2.3.

Causes of damage to the wires of 10 kV overhead lines	Total number of shutdowns	
	Pcs	%
Atmospheric influences (strong wind, ice)	114	27,9
Insulation damage	211	51,6
Knitting break	21	5,1
Hook drop	19	4,6
Lashing wires	17	4,2
Falling trees	15	3,7
Reasons not established	12	2,9
Total	409	100

Table 2.4.

Causes of damage	Total number of oshutdowns	
	pcs	%
Lightning surge	85	40,3
Internal mechanical damage (overvoltage)	69	32,7
Poor installation	14	6,6

Atmospheric influences	16	7,6
Reasons not established	27	12,8
Total	211	100

Causes of damage to insulators of 10 kV overhead lines

Table 2.5.

Causes of damage to poles of 10 kV overhead lines

Causes of damage	Total number of oshutdowns	
	шт.	%
Lightning surge	110	44,2
Atmospheric influences	54	21,7
Poor installation	16	6,4
Physical aging	35	14,1
Vehicle collision	9	3,6
Falling trees	4	1,6
Reasons not established	21	8,4
Total	249	100

Conclusion. Thus, the technical condition of electric rural areas is characterized by a low level of reliability of power supply. According to this indicator, the weakest elements of the power supply system are distribution networks of 10 and 0.38 kV, which account for 60 ... 80% of all power shutdowns for rural consumers. The damage analysis of 10 kV overhead lines of JSC “Toshkent Hududiy elektr tarmoqlari” showed that the most defective elements of the 10 kV rural distribution network are insulators and bare wire. The number of shutdowns due to failures of these elements is -21.0% for insulators, -40.7% for wire. An analysis of the distribution of shutdowns by hours of the day showed that the largest part of shutdowns occurs during the daytime, when the damage from power shutdowns is of the greatest importance.

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4. Analysis of indicators of reliability and technical condition of distribution network facilities for 2015-2020. —T.: JSC “Hududiy elektr tarmoqlari”, 2021.
5. Generalization of operating experience BJI 0.38-20kV with insulated and protected wires.-T.: JSC “Hududy elektr tarmoqlari”, 2022.

Rezyume: Maqolada 0,38 kV tarmoqning fizik modelida quvvat isrofi mezonining eksperimental tadqiqotlari o'tkazilgani haqidagi natijalar keltirilgan. Tajriba natijalariga ko'ra, quvvat isrofi mezonini ikki xil formulalar yordamida hisoblab chiqilgan va hisoblash natijalarining to'liq yaqinlashuvi olingan. Qishloq iste'molchilarini elektr energiyasi bilan ta'minlashda yo'qotishlarni bartaraf etish va kamaytirish bo'yicha ham matematik hisob-kitoblar olib borilgan. Tadqiqot ob'ekti sifatida qishloq tarmoqlarining holati, xususan, 0,38 ... 10 kV kuchlanishli elektr tarmoqlari olingan.

Резюме: В статье проведены экспериментальные исследования критерия потерь мощности на физической модели сети 0,38 кВ. По результатам эксперимента рассчитан критерий потерь по двум различным формулам, получена полная сходимость результатов расчёта. Также произведены математические расчёты по устранению и снижению потерь при подаче электроэнергии сельским потребителям. Объектом исследования является состояние сельских сетей, в частности, электрических сетей 0,38...10 кВ.

Kalit so'zlar: taqsimlovchi elektr tarmoqlari, qishloq iste'molchilari, kuchaytirish, elektr ta'minoti, liniya, temir-beton tayanchlar, yog'och tayanchlar, tok, izolyatsiya.

Ключевые слова: распределительные электрические сети, сельские потребители, повышение, электроснабжение, линия, железобетонные опоры, деревянные опоры, ток, изоляция.

INFLUENCE OF MICROWAVE TREATMENT ON THE RELAXATION OF INTERNAL MECHANICAL STRESSES IN Pt-n-n+GaAs CONTACTS

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Summary: Based on the results of the experiment presented in this paper, it can be concluded that the relaxation of internal mechanical stresses as a result of microwave treatment of the Pt-n-n + GaAs test structure is carried out in a multilayer structure.

Keywords: processing, relaxation, internal mechanical stress, test structure.

As shown earlier in [1, 2], the relaxation of the internal mechanical stress (IMS) does not always lead to catastrophic degradation of devices and device structures. However, despite the rather detailed study of relaxation processes in semiconductor devices and crystals, including Pt-GaAs surface-barrier structures, carried out by K.A. Ismaylov et al. [3, 4] did not study the relaxation of IMS stimulated by microwave radiation. In this work, such an attempt was made.

For this purpose, before and after microwave treatment, the radius of curvature R of Pt-n-n+GaAs test structures, in which Pt 0.14 μm thick was deposited by the electron beam method, was measured on a P201 profilometer-profilograph. On the same structures, after each measurement of R, the phase composition of the metallization was measured by X-ray diffractometry on an X'Pert PRO MRD diffractometer, and on diode structures fabricated by photolithography using planar technology, the current-voltage characteristics were measured.

The profilograms were recorded from the side of the film.

Internal mechanical stresses (Table) were determined by the Stoney formula, in the approximation of the two-layer Pt-GaAs model

$$\sigma = \frac{E \cdot d^2}{6 \cdot (1 - \nu) \cdot R \cdot t} \quad (1)$$

where t is the thickness of the Pt layer equal to 0.14 μm; d is the thickness of the n⁺-GaAs substrate equal to 400 μm; R - bending radius; E - Young's modulus of the GaAs (100) substrate equal to 1.4·10¹¹ Pa; ν - Poisson's ratio of the GaAs substrate, equal to 0.27.

It turned out that as a result of microwave treatment with a frequency of 2.45 GHz and a specific power of 1.5 W/cm² for 1–5 s, the radius of curvature on different samples increased by a factor of 3–4 compared to the initial one. At the same time, after microwave irradiation, just as in [5], the parameters of diode structures improved (Table).

The profile of the initial structure was characterized by a small radius of curvature and a concavity of the surface. As a result of sample irradiation up to a total exposure time of 5 s, there was a clear trend towards an increase in the radius of curvature, and hence a decrease in internal mechanical stresses (Fig. 1, Table).

A detailed consideration of the data on the dependence of the IMS of the structure on the irradiation time indicates the nonuniformity of the relaxation processes in the sample. One of the reasons for this may be the presence of a real test structure, including a heavily doped substrate, an epitaxial film, and a transition layer at the film–metal interface and a Pt layer, i.e., a more multilayer structure than the two-layer model accepted for evaluations. The data of X-ray diffraction analysis confirm this assumption. Indeed, as can be seen from the data shown in Fig. 2, in the original sample, along with platinum, there is a PtGa₂ phase formed during the electron beam deposition of

Pt. This phase (see Fig.3 [6]), according to the Ga-Pt phase diagram, is formed at $T=153\text{ }^{\circ}\text{C}$. The near-surface layer of GaAs can be heated to such a temperature during electron-beam deposition of platinum, unless special measures are taken to limit the heating.

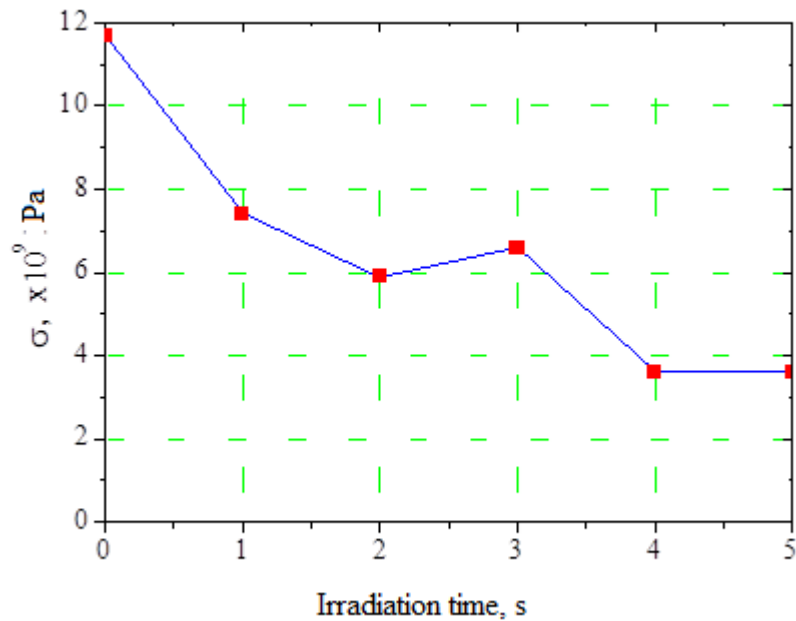


Fig. 1. Dependence of the value of IMS σ on the time of microwave processing of the Pt - n- n + GaAs test structure

Microwave treatment for 4s and 24s did not lead to a change in the phase composition in the Pt-GaAs contact, as well as the overall phase composition of the metallization, which includes, along with PtGa₂, a significant amount of platinum, which indicates the absence of any noticeable heating of the sample.

We also note that the PtAs₂ phase, which is often observed during the formation of platinum barriers to GaAs, was not detected in our case, since it appears at $T > 4000\text{ }^{\circ}\text{C}$ [7].

Table

Influence of microwave processing time on the radius of curvature R, the value of IMS σ of the test structure and the parameters of diode structures with a Schottky barrier Pt - n- n + GaAs

Struct parameters	Irradiation time, s					
	0	1	2	3	4	5
R, m	2.72	4.32	5.43	4.86	8.91	8.89
$\sigma \times 10^9, \text{ Pa}$	11.70	7.41	5.89	6.58	3.60	3.59
n	1.15	1.1	1.1	1.1	1.1	1.1
$\varphi_B, \text{ V}$	0.74	0.78	0.78	0.8	0.8	0.8
Jo, A/cm ² , at V=1V	$2.5 \cdot 10^{-6}$	$2 \cdot 10^{-7}$	$2 \cdot 10^{-7}$	$7.5 \cdot 10^{-8}$	$7.5 \cdot 10^{-8}$	$7.5 \cdot 10^{-8}$

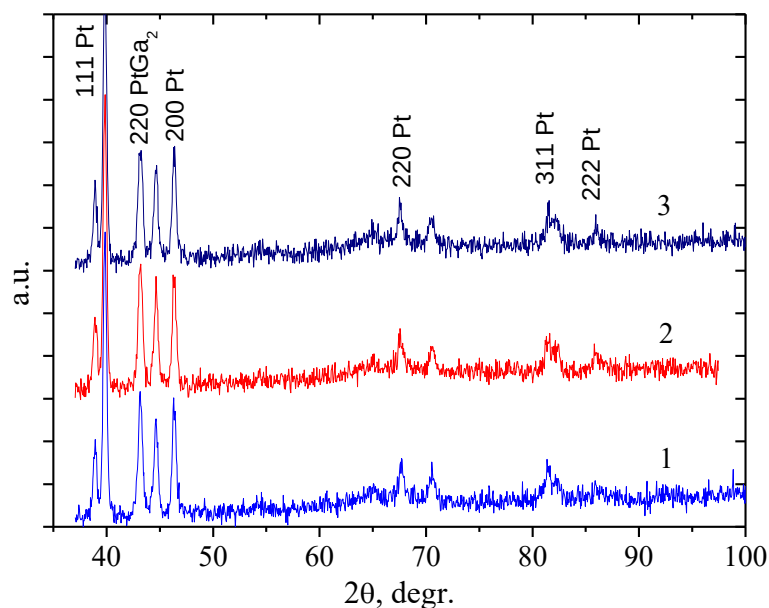


Fig.2. X-ray diffraction spectra of the Pt-n-n+-GaAs structure before (1) and after microwave treatment for 4 s (2) and 24 s (3).

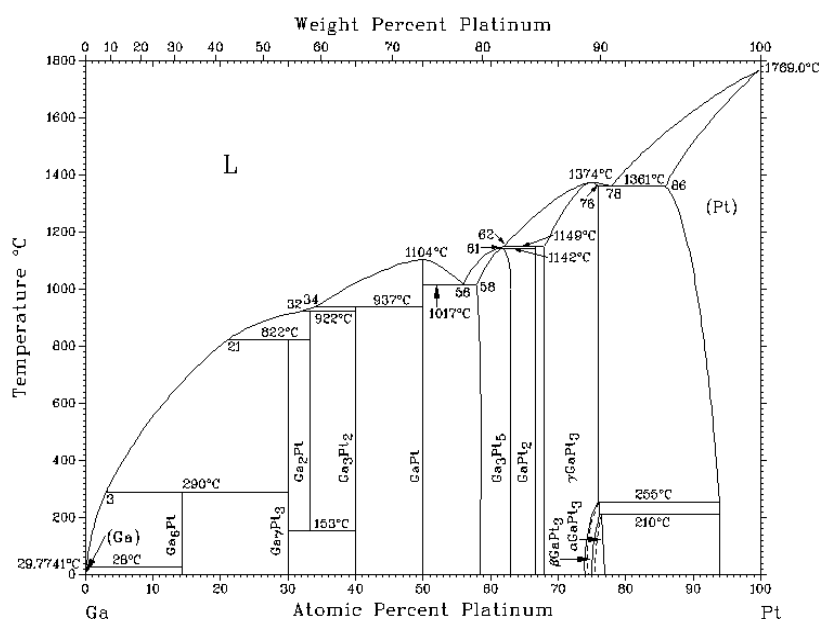


Fig.3. Phase diagram of the Ga-Pt system [6].

In this case, judging by the data of Auger electron spectroscopy, it is impossible to exclude the Pt mass transfer stimulated as a result of microwave processing and relaxation of the IMS through the transition layer in GaAs. This process, as well as the Pt mass transfer stimulated by laser radiation, forms a heavily doped thin p⁺ - GaAs layer in the near-contact region, which causes an increase and an associated decrease in the reverse current. We also note that, judging by our data, the relaxation processes in the system under study are not of thermal origin, the nature of which requires additional studies.

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Rezyume: *Bu maqolada olingan eksperiment natijalar bo'yicha xulosa qilish mumkin, Pt-n-n+GaAs test strukturasini mikro to'lqin bilan qayta ishlashdan so'ng ichki mexanik ko'chlanish, ko'p qatlamli strukturada yuz beradi.*

Резюме: *Исходя из результатов эксперимента приведенных в этой работе можно заключить, что релаксация внутренних механических напряжений в результате микроволновой обработки тестовой структуры Pt-n-n+GaAs осуществляется в многослойной структуре.*

Kalit so'zlar: *qayta ishlash, relaksatsiya, ishki mexanik ko'chlanish, testli struktura.*

Ключевые слова: *обработка, релаксация, внутренняя механическая напряжения, тестовая структура.*

EXPLORING THE FEASIBILITY AND ADVANTAGES OF INTEGRATING CLOUD TECHNOLOGIES IN EDUCATION

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Summary: *This paper explores the benefits of cloud technologies in education, including improved accessibility, collaboration, and cost-effectiveness. It discusses how the adoption of cloud-based tools and applications has transformed the traditional education system and made it more adaptable to the changing needs of students and educational institutions.*

Keywords: *cloud technologies, education, accessibility, collaboration, cost-effectiveness, security*

Introduction

The education sector has undergone a significant transformation in recent years with the advancement of cloud technologies. The emergence of cloud technologies has revolutionized the traditional education system, making it more efficient, accessible, and cost-effective. Cloud technologies have enabled students, teachers, and administrators to collaborate, communicate and access educational resources from anywhere in the world. In this paper, we will explore the benefits and challenges of cloud technologies in education.

Cloud technologies refer to the delivery of computing resources, including software, storage, and processing power, over the internet. This technology allows users to access data and applications from anywhere in the world, as long as they have an internet connection. The term "cloud" comes from the idea that these computing resources are stored on remote servers, rather than on a user's local device or network. Cloud technologies have transformed the way individuals and businesses access and use computing resources, making it easier and more affordable for them to leverage powerful computing capabilities without the need for expensive hardware and infrastructure. The emergence of cloud technologies has enabled the development of new services and applications, from virtual assistants to online education, that were not previously possible. Cloud technologies have become an essential component of modern technology infrastructure, enabling organizations to be more efficient, productive, and competitive.

Cloud technologies have revolutionized the traditional education system, enabling students, teachers, and administrators to collaborate, communicate, and access educational resources from anywhere in the world. Cloud technologies refer to the delivery of computing resources, including software, storage, and processing power, over the internet. Cloud-based educational tools and applications have become increasingly popular among educational institutions, teachers, and students, as they offer several benefits that traditional educational systems lack.

Benefits of Cloud Technologies in Education

The integration of cloud technologies in education has revolutionized the way students learn and how educational institutions operate. The adoption of cloud-based tools and applications has enabled educational institutions to provide more efficient and effective services to their students and staff. Cloud technologies have brought about numerous benefits, including enhanced accessibility, collaboration, and cost-effectiveness. These benefits have transformed the traditional education system, making it more adaptable to the changing needs of the students and the education sector. This paper will examine the benefits of cloud technologies in education, such as improving access to educational resources, facilitating collaborative learning, and reducing costs. It will also discuss some of the challenges associated with implementing cloud technologies in education and how educational institutions can overcome these challenges. Ultimately, this paper will highlight the

importance of cloud technologies in education and how they can help to shape the future of learning.

Accessibility: Cloud technologies have made education more accessible to students from all walks of life. Students can access educational resources, software, and applications from anywhere in the world with an internet connection. Cloud technologies have eliminated the need for students to be physically present in the classroom, enabling them to learn at their own pace and convenience.

Collaboration: Cloud technologies have enabled students, teachers, and administrators to collaborate seamlessly. Students can work together on group projects, share ideas, and provide feedback in real-time. Teachers can collaborate with other teachers and subject matter experts to develop engaging and interactive lesson plans.

Cost-effective: Cloud technologies have significantly reduced the cost of education. Schools and universities can now leverage cloud-based software and applications, reducing the need for expensive hardware and infrastructure. Cloud technologies have also enabled schools and universities to reduce their energy consumption, thereby reducing their carbon footprint.

Scalability: Cloud technologies have made it easier for schools and universities to scale their operations. As student populations grow, schools and universities can easily add new users, resources, and applications without worrying about the infrastructure needed to support them.

The adoption of cloud technologies in education has brought about a significant transformation in the traditional education system. The benefits of cloud technologies, such as enhanced accessibility, collaboration, and cost-effectiveness, have made it possible for educational institutions to provide more efficient and effective services to their students and staff. Cloud technologies have transformed the way students learn and how educational institutions operate, making them more adaptable to the changing needs of the students and the education sector. However, the integration of cloud technologies in education is not without its challenges. Educational institutions must address security, reliability, integration, cost, privacy, digital divide, and vendor lock-in concerns to ensure successful adoption and integration. Despite these challenges, the benefits of cloud technologies in education are undeniable, and they have the potential to shape the future of learning. Therefore, educational institutions must continue to explore and leverage cloud technologies to provide a better learning experience for their students and prepare them for the future.

Challenges of Cloud Technologies in Education

Security: One of the main challenges of cloud technologies in education is security. Educational institutions store sensitive student and faculty data in the cloud, making them vulnerable to cyber threats. Educational institutions need to implement robust security measures to protect their data from unauthorized access and data breaches.

Reliability: Cloud technologies are reliant on the internet, which can be unstable at times. Educational institutions need to ensure that they have a reliable internet connection to ensure uninterrupted access to cloud-based applications and resources.

Privacy: Another challenge of cloud technologies in education is privacy. Educational institutions need to ensure that they comply with data privacy laws and regulations to protect the privacy of their students and faculty.

Educational institutions face several challenges when implementing cloud technologies, such as security, reliability, integration, cost, privacy, digital divide, and vendor lock-in. To mitigate these challenges, educational institutions need to implement robust security measures, ensure reliable internet connectivity, plan for seamless integration, address privacy concerns, and provide equal access to all students. Additionally, educational institutions need to carefully evaluate the cost-benefit of cloud technologies and consider factors such as scalability, flexibility, and vendor support before making a decision. Overall, cloud technologies have the potential to revolutionize

the education sector, but careful planning and management are essential to ensure successful adoption and integration.

Conclusion

Cloud technologies have transformed the traditional education system, making it more accessible, efficient, and cost-effective. Cloud technologies have enabled students, teachers, and administrators to collaborate seamlessly and access educational resources from anywhere in the world. However, cloud technologies also present challenges such as security, reliability, and privacy. Educational institutions need to implement robust security measures, ensure a reliable internet connection, and comply with data privacy laws and regulations to ensure the safe and secure use of cloud technologies in education.

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Rezyume: *Maqolada ta'lim sohasida bulutli texnologiyalardan foydalanishning afzalliklari, jumladan qulaylik, hamkorlik va iqtisodiy samaradorlikni o'rganilgna. Shuningdek bulutga asoslangan vositalar va ilovalarning paydo bo'lishi an'anaviy ta'lim tizimini qanday o'zgartirganligi va uni talabalar va ta'lim muassasalarining o'zgaruvchan ehtiyojlariga moslashtirganligi muhokama qilinadi.*

Резюме: *В статье исследуются преимущества использования облачных технологий в образовании, включая удобство, совместную работу и экономическую эффективность. В нем также обсуждается, как появление облачных инструментов и приложений изменило традиционную систему образования и адаптировало ее к изменяющимся потребностям студентов и учебных заведений.*

Kalit so'zlar: *bulutli texnologiyalar, ta'lim, hamkorlik, iqtisodiy samaradorlik, xavfsizlik*

Ключевые слова: *облачные технологии, образование, доступность, совместная работа, экономичность, безопасность*

TOKEN-BASED AUTHENTICATION FOR WEB APPLICATIONS: ADVANTAGES AND PRACTICAL APPLICATIONS

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Summary: *The paper discusses authentication methods on web applications and their strengths and weaknesses. The four authentication methods covered in the paper are password-based authentication, multi-factor authentication, biometric authentication, and token-based authentication. Also considered the use of token-based authentication in web applications.*

Keywords: *web applications, authentication, password-based authentication, multi-factor authentication, token-based authentication, security*

Introduction

In recent years, the number of web applications has increased exponentially. With the rise of web applications, the need for security has also increased. One of the critical aspects of web application security is authentication. In this paper, we will discuss authentication methods on web applications and their strengths and weaknesses.

Authentication Methods

Password-based authentication. Password-based authentication is the most common authentication method used on web applications. It requires the user to enter a username and a password to gain access to the web application [1]. The strength of this method is its simplicity and familiarity to users. However, it has several weaknesses. Firstly, users tend to use weak passwords, making it easy for attackers to guess or crack them. Secondly, password reuse is a common practice among users, which means that if an attacker obtains a user's password for one website, they can use it to gain access to other websites where the user has used the same password [2].

Multi-Factor Authentication. Multi-factor authentication (MFA) is a method that requires users to provide two or more forms of authentication to access the web application. This method provides an extra layer of security beyond password-based authentication. The most common form of MFA is two-factor authentication (2FA), which requires users to provide something they know (e.g., a password) and something they have (e.g., a mobile device). The strength of this method is that even if an attacker obtains a user's password, they will still need access to the second factor of authentication [3, 4]. However, it may not be user-friendly for some users, and it can also be inconvenient if the user loses their mobile device.

Biometric Authentication. Biometric authentication is a method that uses biological characteristics to authenticate users, such as fingerprints, facial recognition, or voice recognition. This method provides a high level of security as the user's biological characteristics cannot be easily duplicated [5]. However, it can be challenging to implement as it requires additional hardware and software, and it may not be available on all devices. Additionally, there are privacy concerns regarding the collection and storage of biometric data.

Token-based Authentication. Token-based authentication is a method that uses tokens to authenticate users. When a user logs in, the server generates a token, which is then stored on the user's device [1]. The token is then sent with each subsequent request, and the server verifies the token to authenticate the user. The strength of this method is that it eliminates the need for the user to enter their password repeatedly, making it more user-friendly [2]. Additionally, it is less vulnerable to attacks such as cross-site scripting (XSS) and cross-site request forgery (CSRF) as the token is not stored in cookies. However, this method requires additional server-side

implementation, and the tokens need to be securely generated and stored to prevent attackers from gaining access to the web application [6].

Token-based authentication has several benefits compared to other authentication methods, including:

Improved Security: Token-based authentication can improve security by preventing attacks such as cross-site scripting (XSS) and cross-site request forgery (CSRF). Since the token is not stored in cookies, attackers cannot easily access it and use it to gain access to the web application.

User-Friendliness: Token-based authentication is more user-friendly compared to password-based authentication as it eliminates the need for users to enter their password repeatedly. Once the user logs in, the server generates a token that is stored on the user's device, which is then used to authenticate the user with each subsequent request.

Scalability: Token-based authentication is more scalable than other authentication methods as it does not require the server to maintain a session state for each user. This reduces the load on the server and allows for faster response times, making it ideal for high-traffic web applications.

Customization: Token-based authentication can be customized to fit specific use cases. For example, developers can set the expiration time of the token, restrict access to specific resources based on the token, and even revoke the token if necessary.

Better Performance: Token-based authentication can improve performance as it eliminates the need for the server to check the user's credentials on each request. Since the token contains all the necessary information to authenticate the user, the server can quickly validate the token and grant access to the requested resource.

We can use token-based authentication to create more secure web applications. Here is an example PHP code for implementing token-based authentication:

```
<?php
    $token = bin2hex(random_bytes(32));
    $_SESSION['token'] = $token;
    header('Content-Type: application/json');
    echo json_encode(array('token' => $token));
    if (
        !isset($_SESSION['token'])||
        !isset($_POST['token'])||
        $_SESSION['token'] !== $_POST['token']) {
        header('HTTP/1.0 401 Unauthorized');
        exit();
    }
?>
```

In this example, a token is generated using the `random_bytes` function, which creates a cryptographically secure random string of bytes. The token is then stored in the `$_SESSION` array and sent to the client as a JSON object. On subsequent requests, the server validates the token by checking that it exists and matches the one sent by the client in the request. If the token is invalid, an HTTP 401 Unauthorized error is returned. Otherwise, the request is processed normally.

Conclusion

In conclusion, there are several authentication methods available for web applications, each with its strengths and weaknesses. Password-based authentication is the most common but has several weaknesses, while multi-factor authentication provides an extra layer of security but may not be user-friendly. Biometric authentication provides a high level of security but can be challenging to implement and raises privacy concerns. Token-based authentication is user-friendly and less vulnerable to attacks, but it requires additional server-side implementation. Web application developers should carefully consider the authentication method used and the security

and user-friendliness tradeoffs before implementing it. In summary, token-based authentication provides improved security, user-friendliness, scalability, customization, and better performance compared to other authentication methods, making it an ideal choice for web application developers.

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Rezyume: *Maqolada veb-ilovalarda autentifikatsiya usullari va ularning kuchli va zaif tomonlari muhokama qilingan. Maqolada to'rtta autentifikatsiya usuli parolga asoslangan autentifikatsiya, ko'p faktorli autentifikatsiya, biometrik autentifikatsiya va tokenga asoslangan autentifikatsiyalar ko'rib chiqilgan. Shuningdek, veb-ilovalarda tokenga asoslangan autentifikatsiyadan foydalanish ko'rib chiqilgan.*

Резюме: *В статье рассматриваются методы аутентификации в веб-приложениях, их сильные и слабые стороны. В статье рассматриваются четыре метода аутентификации: аутентификация на основе пароля, многофакторная аутентификация, биометрическая аутентификация и аутентификация на основе токенов. Также рассматривается использование аутентификации на основе токенов в веб-приложениях.*

Kalit so'zlar: *veb-ilovalar, autentifikatsiya, parolga asoslangan autentifikatsiya, ko'p faktorli autentifikatsiya, tokenga asoslangan autentifikatsiya, xavfsizlik*

Ключевые слова: *веб-приложения, аутентификация на основе пароля, многофакторная аутентификация, аутентификация на основе токенов, безопасность*

MODERN COMPUTER TECHNOLOGIES IN THE FIELD OF CULTURE AND LIBRARY

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Summary: *The author considers the evolution of library communication technologies as a social institution that is part of the system of information resources of modern society. The author describes the communication technologies used by libraries in the Altai Territory, emphasizing that the course taken to create multifunctional cultural and leisure centers that will replace libraries will require the development of new communication technologies. These new technologies should target different groups of the population, creating a comfortable information space for them. All this, the author believes, requires the development of a new library model that ensures the further development of the communication capabilities of libraries in modern society.*

Keywords: *Communication technologies, library, information space, information resources.*

“Currently, the library contributes to the implementation of such goals of the state cultural policy as the formation of a harmoniously developed personality; creating conditions for the education of citizens; preservation of historical and cultural heritage and its use for upbringing and education; transmission from generation to generation of values, norms, traditions and customs traditional for society; creation of conditions for the realization of each person's creative potential; providing citizens with access to knowledge, information, cultural values”.

In modern society, against the background of information changes, the deepening social nature of librarianship is increasingly noticeable, reflected in new terminology and realities: the definitions “public library” instead of “mass library”, “user” instead of “reader” have been put into circulation. The interpretation of the unified library space has changed, which, “following the letter of federal legislation”, isolates the activities of scientific libraries, and therefore the field of functioning of public libraries requires study from new positions.

In this regard, the relevance and acuteness of the discussion about the object and subject of library science is associated with the emergence of a new substance that is not included in the activities of libraries - a virtual library, a virtual document, automated banks and databases, online access to information resources. From these positions, the theory of A.V. Sokolov about the worldview concept of social informatics as a single unifying principle for the information life of society. Without denying the value of specialized approaches, the scientist leads to the idea that a promising line in the institutionalization of information may not be associated with professionally limited forms of social institutions. (libraries, computer networks, national bibliography, etc.), but with what will appear as a result of the integration, but not the mutual absorption of these forms. During the period of the "manual" mode of information service, the introduction of the metatheory by A.V. Sokolov was not of particular interest, especially since the library space represented the type of institution that exhaustively accumulates information within one single country (National Library, national bibliographic repertoire, etc.). Modern communication technologies have curtailed and united the previously disparate processes of creating and distributing information (global computer network). Under these conditions, the library was struck off the list of information service institutions by the latest data. Within the framework of social informatics, it became possible to probe the real situation, to state the scientific crisis in the development of the sciences of the library and bibliographic cycle and to explain it. Its main task is to derive general laws, principles, methods of information services for society, the functioning of information systems, media and channels for transmitting information.

Libraries are currently unable to compete with commercial organizations that are gradually ousting them from the information services market. Hence, the desire of libraries to influence the

formation of the cultural and intellectual environment of the region is obvious. That is why the new vector of professional activity of librarians is aimed not so much at satisfying the needs of readers as at the selection of reading, promoting a more complete creative development of the book, including it in the life context of the individual. In professional publications of recent years "Library Science", "Library Science and Bibliography Abroad", "Scientific and Technical Libraries", "Library" theorists and practices of librarianship determine the purpose of library services - providing information for education, research, preservation of cultural heritage, intellectual recreation and intellectual development of the individual's potential.

The decrease in the number of institutions is explained by the implementation of measures to centralize the network of municipal institutions: at the first stage in the form of consolidation of institutions according to the sectoral principle with the transfer of powers of village councils to municipal districts; on the second - by creating a single legal entity in the districts-multifunctional cultural centers that combine a club-type institution, a library and a museum".

Currently, the development of libraries as centers of the information culture of civil society continues, firstly, based on the creation of a single integrated information space, including providing access to readers; secondly, advanced training of employees of cultural institutions and attracting young specialists to the industry and teaching them new communication technologies.

Thus, at present, it is necessary to form a new model of the library as an institution for the implementation of state cultural policy; improving the mechanisms of interaction between libraries and other institutions of civil society, which contributes to the expansion of the communication capabilities of libraries. This requires new approaches to the study of the role and significance of libraries in contemporary Russian society.

The modern historical stage in the development of society is the active introduction of information technology in all possible areas of activity. Social processes begin to obey the impact of the impact of technic society. Changes can be traced on all scales: external, political, economic and, of course, in the sphere of culture.

It should be noted that the issues of cultural development are of great importance today, including those affecting the development of human society. It permeates all aspects of human activity - from the basics of material production to the coverage of the main cultural and natural objects. Modern socio-cultural changes, which are now being experienced by a person of the 21st century, suggest new horizons for research on the development of culture in the context of the spread of information technologies.

University libraries carry out comprehensive automation, focusing primarily on building up and developing the technical base. At the same time, the technological content of the ongoing changes, which are important for determining the goals and solving the problems of each university library, is often not subjected to serious reflection. The creation of a single information space presupposes the existence of standard technological solutions, for example, in the formation and provision of full-text electronic resources by the university library. Information stored in digital form on external media or available online opens up new possibilities for providing the educational process. In the context of the implementation of information and communication technologies in the libraries of universities, there is a shortage of specialists in this field. The incompleteness of the regulatory framework has an impact on the adoption of technological decisions. This is the reason for the objective need to identify the directions for the development of technological subsystems of university libraries at the stage of information of higher professional education.

The use of technology in everyday life reveals the inner moral qualities of a person, demonstrates the level of his culture, increases the level of his freedom and responsibility. Computer technologies have not only become part of the culture of everyday life, but have also significantly transformed the human mentality, changed the attitude towards others and the culture of the individual as a whole.

Now studying scientific heritage, socio-political activities and acquaintance youth charity of our above-stated ancestors is considered one of the main urgent objectives of the modern intellectuals.

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Rezyume: Muallif kutubxona kommunikatsiya texnologiyalari evolyutsiyasini zamonaviy jamiyatning axborot resurslari tizimiga kirgan ijtimoiy institut sifatida ko'rib chiqadi. Muallif Oltoy o'lkasi kutubxonalari tomonidan qo'llanilayotgan kommunikatsiya texnologiyalarini ta'kidlab, kutubxonalarni almashtiradigan ko'p funktsiyali madaniy-dam olish markazlarini tashkil etishga qaratilgan kurslar yangi kommunikatsiya texnologiyalarini rivojlantirishni taqozo etishini ta'kidlaydi. Bu yangi texnologiyalar aholining turli guruhlariga yo'naltirilib, ular uchun qulay axborot maydoni yaratilishi lozim. Buning barchasi, muallif, zamonaviy jamiyatda kutubxonalarning kommunikatsiya imkoniyatlarini yanada rivojlantirishni ta'minlaydigan yangi kutubxona modelini ishlab chiqishni talab qiladi.

Резюме: Эволюцию библиотечных коммуникационных технологий автор рассматривает как социальный институт, входящий в систему информационных ресурсов современного общества. Автор описывает коммуникационные технологии, используемые библиотеками Алтайского края, подчеркивая, что взятый курс на создание многофункциональных культурно-досуговых центров, которые заменяют библиотеки, потребует развития новых коммуникационных технологий. Эти новые технологии должны быть ориентированы на различные группы населения, создавая для них комфортное информационное пространство. Все это, считает автор, требует разработки новой библиотечной модели, обеспечивающей дальнейшее развитие коммуникационных возможностей библиотек в современном обществе.

Kalit so'zlar: Kommunikatsiya texnologiyalari, kutubxona, axborot maydoni, axborot resurslari, texnika, evolutsiya.

Ключевые слова: Коммуникационные технологии, библиотека, информационное пространство, информационные ресурсы, техника, эволюция.

UNIQUE APPROACHES OF WRITTEN PATTERNS IN EMBROIDERY IN NATIONAL PATTERNS

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Summary: Today, in the analysis of the characteristic features of the national embroidery, which is diminishing, in the analysis of the manifestations of the Surkhan vox, there are images, inscriptions, and images representing the traditions of the Utra people, which have left a mark in the cultural heritages that have been mastered since ancient times. different compositions. Due to the modern connections between peoples and peoples, there are commonalities, similarities and some differences in the embroidery of the urn with inscriptions and its ornaments. Wide use of modern technologies and opportunities for their application to production, analysis of problem solving, elimination of excess losses are the main tasks of today's region.

Keywords: Embroidery, Nationality, painting, written embroidery, handicrafts, scientific approaches.

Introduction: The most common pattern in embroidery is the letter pattern. In particular, the edges of the items, the narrow borders separating the central area of the embroidery composition and the wide border, are mostly covered with a climatic pattern of different appearance. Climatic patterns are divided into two types in embroidery:

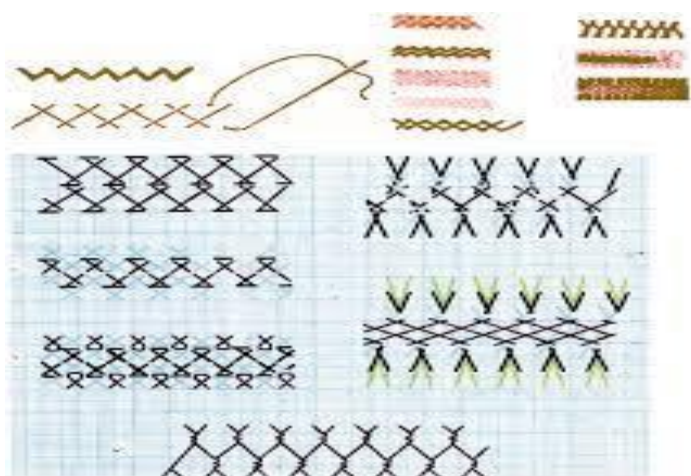


Figure 1. Initial views of written patterns

1. Ornamental items: suzana, pillow case, sandal bush, wall - sheet, ornament, etc. striped patterns.

2. Geometric rhombuses, zigzags, jingalas, tulkun, mavj, and basic and smart Uzbek script in the form of bayt, lavua, verse, ghazam in Arabic script, delimiting the perimeter of the central composition, the edge of the medrob, and the perimeter of the objects, repetitive palligraphic patterns. This pattern, which is the most common and is loved by the Chevars, mainly consists of repeating parts and serves both decorative and content functions. Each climatic record pattern is repetitive and consists of distributions.

Distribution - an indivisible, basic part of a climatic pattern, the thread is woven into a pattern composition in a path or plane with several repetitions. Sometimes the distribution is made in the form of a pattern composition in a straight or circular pattern. There are a lot of written motifs on embroidery items, yaktak, tagchoyshab, belt, epg, duppi. We can see this in the blue fabric

garment and the dark sapsar colored belt kept in the exposition of the Surkhandarya Museum of Literature and Art.

Therefore, because different peoples and different ethnographers lived side by side in Surkhan region, their embroidered items were prepared in their own way. Uzbek, Tajik, and Uyghur embroideries use similar embroideries, but they differ in some features of their embroideries and embroideries. If the flowers and their leaves in Uzbek embroidery are depicted close to the natural saw-shaped leaf, in Tajiks this saw-shaped leaf is distinguished by the size of the saw. In the image of flowers in the state of their appearance in nature, that is, a red flower is not expressed in the same red color, but in the image state based on sunlight, several types of red are used.

Uzbeks and Uighurs have the opposite, white, red, and yellow colors are sewn in the same color. In the embroidery of Uzbeks, the fabric background is clearly visible, the embroidery patterns and flowers are depicted symmetrically, and arranged in a harmonious manner. In Afghan embroidery, it is the opposite, where the full face of the fabric is covered with embroidery. Uyghur embroidery features images of women and floral scenes.

Cattle-breeding peoples often use the ram pattern as an embroidery ornament, even in their embroideries images of a ram's hoof, one side of a strong horn, consecutive triangles, consecutive circles, and flowers growing on the mountain are flowered. The embroideries of this valley are displayed in the exhibition at the Termiz Museum of Literature and Art. we can see in the finished embroidery item. Uzbeks, Tajiks, and Uyghurs use printed, ilmok, chain, Sanami, and walking stitches for embroidery, while cattle-breeding people use chain, ilm, and terskayshch stitches.

By the end of the 19th century, due to migration processes, the embroidery style of the Bulgarian, Tatar, Russian, and Ukrainian peoples, cross stitch, semi-cross stitch, was introduced. At the beginning of the 20th century, the peoples of the Surkhan region, due to ethno-cultural differences, mastered these stitches and began to use crest and semi-cross stitches for embroidery. In the period under study, embroidered ornaments and embroidery methods were enriched in embroidered items. Although there are some changes in the characteristics of the embroidered items due to these images, the patterns in the ornaments and the sewing methods retain their characteristics.

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Rezyume: Bugungi kunda kamayib ketayotgan milliy kashtachilikda o'ziga hos xususiyatlarning Surxon voxasidagi ko'rinishlarini taxlil qilishda qadimdan o'zlashtirilgan ma'daniy meroslarda iz qoldirgan, turli manzillarda bo'lgan oddiy xizmatchi va xunarmand aholi yashashini urab turgan muxitdan ko'rinishlar, yozuvlar, tasvirlar istiqomat qilgan utrar xalqning urf odatlarini ifodalovchi rang - barang yeo'rinishlar, turli xildagi kompozitsiyalar. Zamonaviy aloqalar tufayli xalqlardan - xalqlarga aloqalari bois kashta tikishda yozuvli kashtani urni va uning ornamentlarida umumiylik, o'xshashlik va bir-biridan farq qiluvchi ayrim jixatlar vujudga keladi. Zamonaviy texnologiyalarni keng qo'llash va ularni ishlab chiqarishga tadbqiq qilish imkoniyatlari, muommolarni yechish bo'yicha taxlillar, ortiqcha yo'qotilishiga barxam berish viloyatda bugungi kunning asosiy vazifasidir.

Резюме: Сегодня при анализе характерных черт национальной вышивки, которая сокращается, при анализе проявлений сурханского вокса встречаются изображения, надписи, изображения, представляющие традиции народа ютра, оставившие след. в культурном наследии, освоенном с древних времен, различные композиции. В связи с современными связями между народами и народностями имеются общие черты, сходства и некоторые различия в вышивке урны с надписями и ее орнаментах. Широкое использование современных технологий и возможностей их применения в производстве, анализ решения проблем, устранение сверхнормативных потерь – основные задачи сегодняшнего региона.

Kalit so'zlar: Kashtachilik, Milliylik, naqqoshlik, yozuvli naqishlar, xunarmandchilik, ilmiy yondashuvlar.

Ключевые слова: Вышивка, Народность, живопись, письменная вышивка, рукоделие, научные подходы.

CHARACTERISTICS OF THE SPECIFIC VEGETATION PATTERN IN NATIONAL AGRICULTURE

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Summary: *In the analysis of the appearance of the plant-like pattern in the national embroidery, which is declining today, the characteristic features of the patterns in the Surkhan vokha have left a trace in the cultural heritage of the people who have been mastered since ancient times. The color represents the traditions of the people of Utra, where ordinary servants and artisans live in different locations. images, various compositions. At the beginning of the XIX - the end of the XX centuries, due to the ethno-cultural relations between the peoples, the connections between the peoples in box embroidery and its ornaments, there are commonalities, similarities, and some aspects that differ from each other. Wide use of modern technologies and opportunities for their application to production, analysis of problem solving, elimination of excess losses are the main tasks of today's region.*

Keywords: *Vegetal patterns, nationality, embroidery, painting, ethnic features, carving.*

Introduction: The Uzbek nation has been engaged in farming since ancient times. He appreciated and respected a piece of land like the apple of an eye. In particular, Surkhan's respect for the earth is extremely high. From time immemorial, the interest in the "paradise garden" has caused people to strive to create a "paradise" in the place where they live. It is not for nothing that Surkhan's village is called "Jewel of Uzbekistan". Maybe that's why the image of beauty, gardens, blossoming flowers is the strength of women's hand-crafted flowers and the flawless dreams and desires of the embroideries. The people of the Surkhan region are considered to be the people known to the world for their sweet and sugary fruits. Heavenly gardens teach this earthly people to be creative and get inspiration from it. This gives the embroideries of women who live and embroider in this area even more charm and charm. It leads to the appearance of amazing scenes in them.

Patterns related to the world of animals and underwater plants. In Surkhandarya embroideries, the animal world, birds and animals, underwater animals are also used, although not as much as in Jarkurgan or Termiz embroideries, but they are used sparingly. Some elements of these images are used in the embroidery of the Surkhan vox. For example, to sew a picture of a bird, the feathers of the bird are sewn in different colors, and the tail and body are sewn in different colored silks. Knowing which kush is the kush being depicted, silks of that color were used. Various stitches were used to accurately describe the image on the embroidery. We witnessed this as a result of observation with field materials. The embroidery hanging on the wall of Sayida Khasanova's house is still being preserved. Twins are found in many fairy tales of the Uzbek people, they are depicted on trees, in water, in lakes. The embroiderers express the same scenes in their creations. The characters of these tales are imprinted in the works of women storytellers. Interest and love for them was also reflected in the traditional embroidery of the 19th century. Birds in fairy tales are depicted as heroes, flying from one world to another. In the hearts of embroiderers, Ona Semurug is an innocent bird, which is depicted as a kind savior who always helps people. This state is represented by images of animals such as pigeons, partridges, storks, and nightingales.



Figure 1. Plant pattern from Surkhan national embroidery

Item pattern. Among the flower and tree motifs of the 19th century, it is possible to find embroidery details such as pinok, kuzacha, oftoba, pinok, tsini, dastak, zanjira, etc. We can also see the pattern of these items in Surkhan, Jarkurgan, Termiz, Angor patterns. Geometric Patterns in embroidery belonging to the 19th century school of embroidery are very close to the pattern of medieval architecture and Turkmen and Iranian carpets. Patterns similar to external decorative patterns are often found in examples of Surkhandarya monumental architecture. Samples of Bukhara miniatures of the 15th - 16th centuries also helped master embroiderers as models and copies in creating embroidery. In the embroidery of the Surkhan Vakhsa, there are also geometrical images, just like in the embroidery of the Ancients. The circle, atana, triangle, rhombus, square, rectangle occupying the main place were the favorite motifs of embroidery artists.

Since ancient times, the worship of the luminaries of nature, respect and belief in them has led to the veneration of their images. The motifs of a single leaf in a circle and five leaves, which are often found in wall patterns of the city of Termiz (VII-VIII centuries), can be seen in Surkhan and Termiz suzanas. Such patterns can also be found in Surkhan's embroidery. One of the patterns noted by some art historians is called the "Minor" pattern. This is also shown in the research work of the art historian. The difference between the single image in this pattern is that the circle is depicted in a circle surrounded by flowers and cloths. Embroideries with this appearance can be found both in Surkhan Vakhsa embroidery and in Tashkent palaks. In other embroideries, images of plant-like flowers are placed inside the image of a circle. Sometimes images of single flowers are also taken. Such embroideries are completely stitched with printed stitches, the flower is depicted in different colors, the circle is depicted in different colors, that is, it is stitched. The above-mentioned rectangle, square, rhombus images are a symbol of pointing to the opposite side of the kurrai ground, and the patterns also serve as border borders of the embroidery. We know that in the architectural monuments of the 9th - 12th centuries, octagonal and hexagonal buildings were built. Many polygonal elements are found in the construction of mosques, which formed the basis of Islamic painting art. The abundance of geometrical shapes is also reflected in the embroidery decorations in the Minor, Kirq Kiz mosques in Surkhandarya (XII century) and the Tomb of the Termizians, as well as in the patterns on the front of the Jome mosques in Termiz. In the corners of the embroidery, in the arc-shaped part of the prayer mats and bed-sheets, we find triangular shapes, and in the upper part of the central square, we find arch-shaped shapes with sharp angles. The image of a triangle is used as a "talisman" in wall coverings and bedspreads. Images of a rectangle and a circle are also used in embroidery.

Draftsmen draw these images without dimensions, so they are not the same size in all embroideries. As a result of different processing of various details by master embroiderers, colors are achieved. The strong artistic taste of folk embroiderers can be seen in the placement of ornaments on the fabric. They do not excessively decorate the fabric, and at the same time, there is

no empty space. Simple geometric shapes will also have a mysterious and beautiful look in the hands of embroiderers. The color (background) of the embroidery fabric plays an important role in the charm of the pattern.

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Rezyume: *Hozirgi kunda kamayib borayotgan milliy kashtachilikda naqishlarning o'simliksimon naqshning o'ziga hos xususiyatlari Surxon voxasidagi ko'rinishlarini taxlil qilishda qadimdan o'zlashtirilgan aholi ma'daniy meroslarda iz qoldirgan, turli manzillarida bo'lgan oddiy xizmatchi va xunarmand aholi yashashini urab turgan muhitdan ko'rinishlar, tasvirlar istiqomat qilgan turar xalqning urf odatlarini ifodalovchi rang - barang tasvirlar, turli xildagi kompozitsiyalar. XIX asr boshlari - XX asr oxirlarida etnomadaniy aloqalar tufayli xalqlardan - xalqlarga aloqalari bois kashta tikishda va uning ornamentlarida umumiylik, o'xshashlik va bir-biridan farq qiluvchi ayrim jihatlar vujudga keladi. Zamonaviy texnologiyalarni keng qo'llash va ularni ishlab chiqarishga tadbiriq qilish imkoniyatlari, muommolarni yechish bo'yicha taxlillar, ortiqcha yo'qotilishiga barham berish viloyatda bugungi kunning asosiy vazifasidir.*

Резюме: При анализе появления растительноподобного узора в народной вышивке, который сегодня приходит в упадок, характерные черты узоров сурхан-вохи оставили след в культурном наследии народа, освоенном с древних времен. Цвет олицетворяет традиции народа Утра, где в разных местах живут простые слуги и ремесленники, изображения, различные композиции. В начале XIX - конце XX вв. в связи с этнокультурными отношениями между народами, связями между народами в шкатулочной вышивке и ее орнаментах обнаруживаются общие черты, сходства и некоторые аспекты, отличающиеся друг от друга. Широкое использование современных технологий и возможностей их применения в производстве, анализ решения проблем, устранение сверхнормативных потерь – основные задачи сегодняшнего региона.

Kalit so'zlar: Usimliksimon naqshlar, milliylik, kashtachilik, naqqoshlik, etnik xususiyatlar, chevarchilik.

Ключевые слова: Растительные узоры, народность, вышивка, роспись, этнические черты, резьба.

CALCULATION OF PARAMETERS OF ANCHOR-SPRAYED CONCRETE SUPPORT FOR VERTICAL WORKINGS

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Summary. In this paper, the calculation of the parameters of the support for the roof of the workings is carried out by well-known methods described in many publications. In relation to vertical workings, anchorage and sprayed concrete coating are used only when repairing or restoring trunks.

Keywords: Anchor support, sprayed concrete, mountain massif, radius of the zone, deformation properties of rocks, rock pressure, mining and geological conditions, rod, angle.

Currently, the anchor support of mine workings independently or in combination with concrete spraying is widely used in mining practice, especially when fixing horizontal workings. Calculation of the parameters of the support for the roof of the workings is carried out by well-known methods described in many publications [1-4].

In relation to vertical workings, anchorage and sprayed concrete coating are used only when repairing or restoring trunks. One of the constraining factors to the widespread use of this type of support in relation to the walls of vertical workings is the lack of reliable methods for calculating and optimizing their parameters. This article attempts to partially fill this gap. The length of anchors l is usually calculated based on the condition that it consists of three parts: l_z , - the length of the lock part of the anchor, which should be buried in the mountain range for the contour of a possible collapse on the well, ensuring the operability of the support; l_b - the length of the anchor coming to the zone of destroyed rocks; l_o - the length of that part the anchor, which is closed between the base of the cone of influence and the boundary of the zone of possible dislocations (Fig. 1).

$$l = l_z + l_b + l_o \quad (1)$$

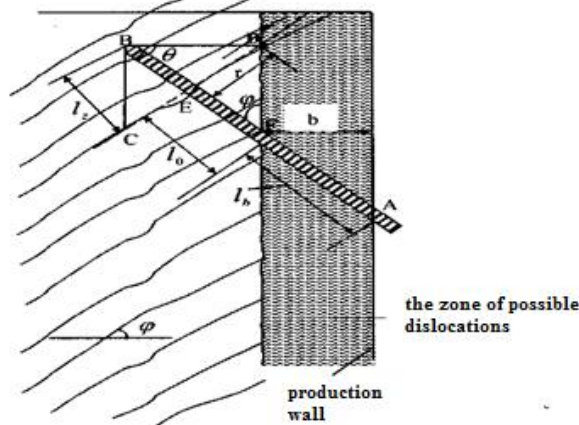


Fig 1.

The angle of influence of the anchor is denoted by θ , and the angle of stratification by φ . The radius of the zone of possible dislocations is denoted by b . Then from Fig. 1 it follows that:

$$b/l_b = \sin \varphi \quad (2)$$

The operability of the AB anchor is ensured if the volume of the cone of influence of the VSD completely fits in the zone of undisturbed rocks. In this case, there is also another EF zone, within which the radius of the cone of influence covers some part of the zone of possible dislocations. The length of the anchor falling on this zone l_o from the above scheme is equal to:

$$l_o = r / \operatorname{tg} \varphi \quad (3)$$

where r from the triangle BED we find:

$$r = l_z \operatorname{tg} \theta, \quad (4)$$

By $\operatorname{tg} \theta = \sqrt{2\lambda}$ where λ - the coefficient of lateral expansion, determined by the formula:

$$\lambda = \frac{\nu}{1 - \nu},$$

the expression in (3) for l_o will take the following form:

$$l_o = \frac{\sqrt{2\lambda}}{\operatorname{tg} \varphi} l_z, \quad (5)$$

Substituting the obtained expressions into formula (1) we will have:

$$l = \frac{b}{\sin \varphi} + \left(1 + \frac{\sqrt{2\lambda}}{\operatorname{tg} \varphi} \right) l_z, \quad (6)$$

The obtained formula, in contrast to the known ones, allows us to determine the length of the anchor, taking into account the angle of stratification and the coefficient of lateral expansion, and the deformation properties of the rocks containing the excavation.

Next, we will determine the length of the lock part of the anchor, where the support works on tension and is more dangerous in the sense of falling out. For the opposite wall, where the anchors are embedded in a direction perpendicular to the rock stratification, they will work on a slice. At the same time, the tensile strength of metal and reinforced concrete anchors is 4-5 times higher than their tensile strength limit.

The operability of the anchor will be ensured if, under the static action of some tensile external force on the anchor rod, rock destruction does not occur in the volume of the inclined cylinder $EDGL$, the base DE of which adheres to the base CD of the cone of the influence of the lock clock (Fig. 2).

The distance between the anchor belts in the vertical direction is denoted by - h , the gravity of the inclined cylinder is $EDGL$, through Q_v , the volume of the cylinder is V , the components of the force Q_v in the direction of the anchor through Q_v^a , in the perpendicular direction Q_v^n ; the friction force of rocks against rock through - F_{CT} ; the tensile strength of the anchor - $[\sigma_p]$

The volume of an inclined cylinder with an ellipse base with semi-axes $a/2$, $h/2$ and height b is equal to:

$$V = \frac{\pi abh}{4} \quad (7)$$

The horizontal anchoring step is $a = 2r$. In this case, the vertical anchoring step or the distance between the horizontal anchor belts is defined as:

$$h = \frac{r}{\sin \varphi}$$

The gravity of the rocks forming volume V is equal to:

$$Q_v = \gamma_c V = \frac{\pi}{4} \gamma_c abh, \quad (8)$$

where γ_c - the density of the wall rocks..

Based on (8), we find the tensile force of the anchor caused by the gravity of the rocks in the volume under consideration:

$$Q_v^a = Q_v \cos \varphi = \frac{\pi \gamma_c abh}{4} \cos \varphi \quad (9)$$

The friction force caused by the tensile force is defined as:

$$F_{cm}^v = f \cdot Q_v^a = f \cdot Q_v \sin \varphi = \frac{\pi}{4} f \gamma_c abh \sin \varphi \quad (10)$$

In addition to the influence of these forces on the anchor rod, it is also necessary to take into account the influence of the mountain pressure acting on a site equal to half of the side platform of the cylinder in question. The average radius of the cylinder cross-section can be assumed to be equal to $(a + h)/4$. Then half of the lateral area of the cylinder will be equal to:

$$S = \frac{\pi b}{4 \sin \varphi} (a + h)$$

and the rock pressure at this site, acting at a depth of H, is determined by the formula:

$$G = \frac{\pi b}{4 \sin \varphi} (a + h) \gamma_c H \quad (11)$$

The tensile force caused by the action of mountain pressure will be equal to:

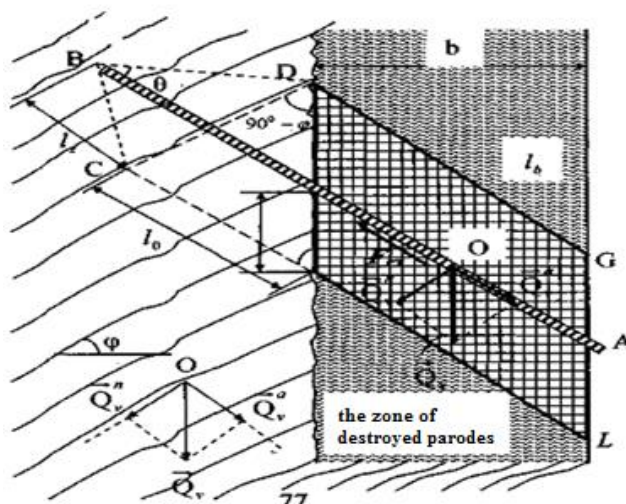


Fig. 2.

$$F_G^a = \frac{\pi \gamma_c b H}{4 \sin \varphi} (a + h) \cos \varphi \quad (12)$$

Taking into account (9) and (12), the total tensile force will be equal to:

$$F_r = \frac{\pi \gamma_c b}{4} \left[ah \cos \varphi + \frac{H}{tg \varphi} (a + h) \right] \quad (13)$$

The friction force caused by the action of rock pressure (11) is defined as:

$$F_{cm}^{\Pi} = f \frac{\pi b}{4} (a+h) \gamma_c H \quad (14)$$

Taking into account (10) and (14), the total friction force will be equal to:

$$F_{cm} = f \frac{\pi \gamma_c b}{4} [ah \sin \varphi + (a + h)H] \quad (15)$$

The resultant of the two forces (13) and (15) will have the form:

$$R = F_r + F_{cm} = \frac{\pi \gamma_c b}{4} (\cos \varphi - f \sin \varphi) \left[ah + \frac{a+h}{\cos \varphi} H \right] \quad (16)$$

The resulting force must be balanced with the tensile force on the base area $S = \pi \cdot r^2$ the cone of influence, taking into account the coefficient k_c of the lithotype of the wall rocks, i.e. we have:

$$\pi r^2 \cdot k_c [\sigma_p] \geq k_z R \quad (17)$$

where k_z is the stock factor, which should be greater than or equal to 2. From the triangle BCD we have:

$$\frac{r}{l_z} = \operatorname{tg} \Theta \text{ отсюда } r = l_z \operatorname{tg} \Theta$$

Then:

$$S = \pi \cdot r^2 = \pi \cdot l_z^2 \cdot \tan^2 \Theta = 2\pi\lambda \cdot l_z^2$$

Substituting the last expression and expression (16) into formula (17) we get:

$$\lambda k_c [\sigma_p] \cdot l_z^2 \geq k_z \frac{\gamma_c b}{8} (\cos \varphi - f \sin \varphi) \left[ah + \frac{a+h}{\cos \varphi} H \right]$$

Hence, for the length of the lock part of the anchor, we will have the final formula:

$$l_z \geq \frac{1}{2} \sqrt{\frac{k_z \gamma_c b \left[ah + \frac{a+h}{\cos \varphi} H \right] (\cos \varphi - f \sin \varphi)}{2\lambda k_c [\sigma_p]}} \quad (18)$$

If some additional force is applied to the end of the anchor, for example, the weight of mechanisms suspended from the support, etc., then formula (18) can be used as:

$$l_z \geq \frac{1}{2} \sqrt{\frac{k_z \gamma_c b \left[ah + \frac{a+h}{\cos \varphi} H \right] (\cos \varphi - f \sin \varphi) + Q_d \cos \varphi}{2\lambda k_c [\sigma_p]}} \quad (19)$$

where Q_d the amount of additional force.

Usually, the coefficient of friction of rock against rock is neglected. In this case, formula (18) can be used as:

$$l_z \geq \frac{1}{2} \sqrt{\frac{k_z \gamma_c b [ah \cos \varphi + (a+h)H]}{2\lambda k_c [\sigma_p]}} \quad (20)$$

The formula (19) obtained for the length of the lock part of the anchor is very different from the previously known similar formulas [2]. First of all, it takes into account the influence of mountain pressure, varying in depth. In its structure there is a factor of the angle of stratification with respect to the horizon and the coefficient of friction of rock against rock, leading to a decrease in l_z . In addition, the volume of the destroyed rocks in the anchor's zone of influence is taken as the volume of the cylinder, which more corresponds to the actual working conditions of the anchor.

Let's consider an example of calculating the parameters of the support for the mining and geological conditions of the Balpantau deposit in relation to the trunk № 11. The trunk was passed through rocks of medium strength ($f = 8$ on the scale of Prof. Protodyakonova M.M.), density of rocks $\gamma = 2,46 \text{ t/m}^3$, $\lambda = 0,25$, $k_c = 0,75$, $k_2 = 1,5$, $\sigma_p = 420 \text{ ts/m}^2$,

$H = 20 \text{ m}$, $a = 1 \text{ m}$, $b = 0,6 \text{ m}$, $h = 2 \text{ m}$, the anchor is installed horizontally through

1 m , and vertically through 2 m . The radius of the zone of possible dislocations is $r = 0.6 \text{ m}$, $\alpha = 60^\circ$.

Substituting these values into formulas (5, 20) we have $l = 1.36 \text{ m}$, $l_z = 0.47 \text{ m}$. The anchor length is assumed to be $l = 1,4 \text{ m}$.

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Rezyume: Ushbu ishda, kon lahimi shift qismini mustahkamlash parametrlarini hisoblash ko'plab nashrlarda yoritilgan qo'llanilgan usullar bilan amalga oshiriladi. Vertikal kon lahimlarida ankerli va sachratma betonli mustahkamlagichlar faqatgina stvollarni tiklash yoki tamirlaganda qo'llaniladi.

Резюме: В данной работе расчет параметров крепи для кровли выработок производится известными методами, изложенными во многих публикациях. Применительно к вертикальным выработкам анкерная крепь и набрызгбетонное покрытие применяются только лишь при ремонте или восстановлении стволов.

Kalit so'zlar: Ankerli mustahkamlagich, sachratma beton, tog' massivi, zona radiusi, tog' jinsining deformatsiyalanish hususiyati, kon bosimi, kon-geologik sharoitlar, sterjin, burchak.

Ключевые слова: Анкерная крепь, набрызгбетон, горный массив, радиус зоны, деформационных свойств пород, горного давления, горно-геологических условий, стержень, угол.

**ANIMATOR-ARTIST ORIGINAL-CREATOR OF SYNTHETIC
ART TYPE**

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Summary: *The animator must have not only artistic, but also acting skills. An animator is an artist who, using certain techniques and technologies, creates the illusion of a cartoon character or the action of a computer game. At the same time, the characters act, speak, experiment and show different emotions. The animator must describe all this using various professional techniques. The more lively and vivid the character is, the higher the quality of the animator's work.*

Keywords: *Animation, character, graphics, script, render, simulation, phase of rassomi, producer, cartoon.*

Animator artist — animation film artist. Currently, animators work in various fields: cinema, television, video games, advertising, the internet. When creating animation, various technologies are used, including drawings, puppet animation, three-dimensional graphics. These characteristics lead to significant differences between animators in specialization. Let's cite these differences for example.

Hand-drawn films animator artist - this is the profession of an artist, the tasks of which are the creation of drawings of the main stages (layouts) of the movement of a cartoon character and the identification of intermediate stages on the exposition sheet. The animator creates (animates) the action, performs the action between the layouts of the scene.

Phase artist - this is due to the profession of an artist in the field of animation, the creation of intermediate stages of the movement of a cartoon character between layouts. When creating phases, the phase designer must take into account the nature of the movement set by the animator in the main frames (layouts).

Character artist - an artist who creates a unique image of a cartoon character, carries out his further development and accompaniment in the production of an animation film. This includes the strokes in the steps:

- search for the image of the Hero ("find")
- period of the director (pre-preparation);
- character development (preparatory period);
- support in production (production period).

The artist must draw a hero, use three-dimensional graphics, puppet animation. This profession is very painstaking, so the artist must be very patient to finish off the image of the character.

Staging artist - designer animation is the main artist in film production. Together with the director, the production designer determines the visual style of the future work, controls and implements production.

Artist of circumstances (frame Master) - At the preparatory stage of production (director's period), the developer creates concepts of designer characters and wallpapers. Together with the director, he chooses supporting artists: a character artist, a background artist, and, if necessary, creates layouts (the main frame) based on the director's scenario.

In the preparatory period of production, the producer designer organizes and controls the work of creating backgrounds for the first scenes of the film, developing characters, preparing

preliminary layouts for the animator. During the production period, the production constructor organizes and controls production processes from drawing to pouring. At the same time, the animation and rough phase workshop are subject only to the production director. Depending on the volume of work in a particular animation film, the producer can be directly involved in creating a designer background, finishing director's layouts, developing characters.

Rendering artist - The rendering artist creates clean layouts (main shots) based on the images created by the animator. The task of the drawing artist is to give the cartoon character as much resemblance as possible to the image developed by the hero, without disturbing the animation.

Name of the profession - the animator is derived from the type of film art to which the artist belongs. Animation (Latin *multiplisatio* - multiplication) is based on the production ("reproduction") of a large number of frames, characterized by a slight shift in the rapid sequential appearance of the elements whose movement should be described.

In English - speaking countries and for some time in Russia is called animator (Latin *animatio*-animation), but these words are not completely synonymous. Animators do not include background artists, heroes, or plot artists, although they are considered animators when they participate in cartoon creation.

According to the well - known animator Fyodor Khitruk, the use of the terms animation animator is associated with the technology used before the introduction of classical hand-drawn animation-creating images using elements of characters superimposed on a sheet, which means applique (silhouette animation). In accordance with this word, the new art was called animation.

History of the profession - The first steps in animation were taken long before the appearance of the film. Places for photographing movement in a drawing began in the primitive era, continued in ancient times and led to the emergence of primitive animation in the first half of the 19th century. The further development of this technology, together with photography, led to the invention of the film camera.

In the first years after the appearance of the film, animation faded into the background, until it was James Stewart Blackton (1906) who released the animated cartoon "the phases of humor of interesting faces" and shot a puppet film. "Ballet" (1906) revived until the restoration of Alexander Shiryayev. The creators of the first cartoons have not yet been called animators, although in fact they were. In 1914, Winsor McKay creates the first cartoon character Gerty dinosaur in history with bright personal qualities. At the same time, a huge number of paintings drawn for the film required the invention of a new production technique, which for the first time led to the division of labor between the animator and the background artist. While McKay was drawing the phases of the dinosaur movement, the student he hired moved the outlines of mountains, lakes and trees in the sample to each sheet (at that time the celluloid film was not yet used).

Specialization of multipliers - The specialization of animators is primarily determined by the technology of animation. At the same time, some specializations can exist by any method of cartoon production, while others can be specific to a specific one and not in other cases. Also, the division into specialties is associated with the scale of production: in small communities, one artist can perform several technological operas. It should be noted that with the development of animation, the specialization of animators has become increasingly narrow.

Animator 3D graphics - creates animation fragments using computer simulation. When working on large projects, multipliers are divided according to revitalization objects. Dating:

- animators of characters working on the movement of living beings, dialogues, actions.
- special effects animators that deal with unusual effects and natural phenomena such as rain, snow, running water.
- background animators that control side effects, wallpapers, as well as those around them-cars, mechanisms and other non-static details.

Until recently, animation filmmaking was considered a unique skill of the artist. In recent decades, new computer technologies have made it possible to engage in cartoon creativity for everyone who is interested in it.

The main law of animation is to create the illusion of movement by shooting frames one by one. Otherwise, the author's imagination is not limited to anything, he can create characters and objects that never existed, bestowing them with unrealistic abilities and placing them in fantastic spaces. Nothing prevents him from creating his own technique and style of creating an image in a frame. There is no single template for creating animation videos. In the modern world, you will not find a person who does not like cartoons. The child begins to watch cartoons before learning to speak. Growing up, a person is constantly and everywhere faced with video content, but this is an animation format that attracts people's attention. Children's interest in cartoons instinctively affects, and only then a person thinks about whether the content is interesting to him or not. Many experts say that live photography in the video production industry is losing ground for computer graphics and motion design. Marketing research has shown that cartoons cause positive emotional responses in all adult viewers. Children will also like advertising cartoons. An interesting and funny plot of a cartoon with combined advertising can often be several times more effective than a regular advertising video. Modern culturologists consider animation to be an integral part of cinematography. However, when creating cartoons, the authors use not only the achievements of the film industry, but also the expressive possibilities of Fine Arts, Theater, Music. Animation has incorporated a variety of art forms and innovative technologies since its inception. Scientific discoveries in the field of optics, chemistry, physics have influenced and continue to influence the formation of characteristic features of animation.

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Rezyume: Animator rassom emas, balki aktyorlik mahoratiga ham ega bo'lishi kerak. Animator bu ma'lum texnika va texnologiyalar yordamida multfilm qahramoni yoki kompyuter o'yini harakati illyuziyasini yaratadigan rassom. Shu bilan birga, belgilar harakat qiladi, gapiradi, tajriba qiladi va turli xil his-tuyg'ularni namoyon qiladi. Animator bularning barchasini turli xil professional texnikalar yordamida tasvirlashi kerak. Xarakter qanchalik jonli va yorqin bo'lib chiqsa, animator ishining sifati shunchalik yuqori bo'ladi.

Резюме: Аниматор должен быть не только художником, но и актером. Аниматор — художник, создающий иллюзию движения персонажа мультфильма или компьютерной игры с помощью определенных приемов и технологий. При этом персонажи действуют, говорят, переживают и проявляют разные эмоции. Все это

аниматору приходится изображать с использованием различных профессиональных приемов. Чем ярче и ярче персонаж, тем выше качество работы аниматора.

Kalit so'zlar: Animatsiya, personaj, grafika, ssenariy, render, simulyatsiya, rassomchilik bosqichi, prodyuser, multfilm.

Ключевые слова: Анимация, персонаж, графика, сценарий, рендер, симуляция, фаза рассоми, продюсер, мультфильм.

AGLOPORITE BASED ON WASTE FLUORITE ORES

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Summary: *The article presents the results of studies on the production of porous lightweight material agloporite using waste from thermal power, chemical and fluorite processing industries. The chemical compositions have been determined and experimental charge mixtures have been prepared for the production of agloporite. Melting temperatures, swelling coefficients of each charge composition and technological properties of the obtained samples were established.*

Keywords: *building material, agloporite, industrial waste, flotation, chemical composition, mineralogical composition.*

Introduction. The issues of energy saving and saving natural resources become relevant every year. One of the effective ways to solve these problems is the use of industrial waste and secondary resources instead of natural mineral material [1–3].

Therefore, preliminary studies were carried out on the possibility of replacing valuable natural raw materials - highly plastic clays, which are in demand in the production of ceramic and porcelain products for various purposes, with local industrial waste: aluminosilicate flotation waste copper and fluorite concentrating plants, gray kaolin formed during the extraction of coal from the Angren deposit and as intensifiers of gas formation processes during charge expansion, inorganic waste from the chemical industry - solid waste from soda production and waste from fertilizer production - phosphogypsum

One of the building materials obtained exclusively with the use of waste as raw materials is agloporite, an artificial porous ceramic material obtained by sintering sand-clay materials on a grate in a sintering machine. Porization of raw materials during the production of porous silicate filler is achieved by removing water, burning out organic inclusions and other combustible substances, it should be emphasized that the use of raw materials characterized by intense swelling leads to the closure of air leakage channels. The melt formed at high temperatures dissolves quartz particles at depths e 10-20 mm, and carbonate inclusions up to 5 mm [4-8]

To address these issues, we have studied flotation waste fluorite processing production (FPP), ash and slag Angren TEPS, phosphogypsum, solid waste from the production of soda from the Kungrad soda plant and waste from coal mining (Table 1).

Table 1

Chemical composition of the initial raw materials

name of raw materials	Oxide content (wt.%)										LOI, wt.%
	SiO ₂	Al ₂ O ₃	TiO ₂	Fe ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	SO ₃	CaF ₂	
FPP waste	77.68	5.62	0.8	1.08	4.95	0.16	0.7	0.9	0.11	4.96	2.65
Angren secondary kaolin	62.26	18.95	0.41	1.87	1.91	0.53	0.12	1.11	0.12	0	12.72
Ash and slag	58.77	22.6	1.3	7.1	4.3	1	1.3	1.2	1.72	0	0.71
Phosphogypsum	10.43	0.42	-	0.15	28.78	-	0.04	0.04	40.5	0	19.64
Waste SWPS	1.1	0.4	-	-	48.1	4.2	-	-	3.8	0	42.4
Bentonite clay	59.24	15.53	0.99	6.09	1.96	1.71	1.49	1.87	0.14	0	10.86

To determine the optimal composition of the charge, the charge components of the porous filler were preliminarily crushed to a particle size not exceeding 0.1 mm. The prepared mixture was

mixed in the following ratios: FPP flotation waste - 50-80%, bentonite clay - 5-10%, ash and slag - 5-15%, coal - 6-8%, soda production waste - 5-10% and phosphogypsum - 5-15 % (Table 2.).

Table 2

Compositions of the studied raw materials for obtaining agloporite based on flotation waste FPP

Name of compositions	FPP waste	Waste SWPS	Bentonite clay	Phosphogypsum	Ash and slag	Coal mining waste (+100%)
F1	60	15	-	15	10	6
F2	65	10	5	15	15	8
F3	70	15	-	-	15	10
F4	70	10	10	10	-	8
F5	70	5	10	5	10	8
F6	75	5	10	5	5	8
F7	80	5	5	5	5	6

It is known that the technology for producing ceramic materials for various purposes involves heat treatment at high temperatures. Therefore, it seems necessary to determine the temperatures of the beginning and end of melting of the tested compositions in order to obtain a porous ceramic material. To do this, molded filler samples in the form of cones were preliminarily dried and then fired in a silicate furnace to the melting temperature according to the generally accepted method.

Analysis of the results of determining the temperature of the beginning and end of melting of the experimental mixtures (Table 3) made it possible to establish the regularities of the influence of the composition of raw materials on the decrease in the temperatures of the beginning and end of melting, the temperature range changes downward by 20-30°C.

At the same time, the melting interval in batches based on flotation waste of FPP is 50-75°C, respectively (Table 3). The addition of F5 flotation waste - 70%, bentonite - 10%, ash and slag 10%, as well as SWPS and phosphogypsum in the amount of 5% to the charge F5, reduces the temperature of the beginning and end of the melting of the complex charge. According to the test results (Table 3) compositions F4 and F5 can be taken as optimal.

Table 3

Temperatures of the beginning and end of melting of the compositions of samples based on flotation waste FPP

Name samples	T melting, °C		Temperature interval, °C
	Start	End	
F1	1195	1245	50
F2	1185	1235	50
F3	1180	1230	50
F4	1175	1230	55
F5	1150	1230	75
F6	1165	1330	65

Thus, the dependence of a decrease in the melting temperature and an increase in its interval on the amount of added bentonite clay was revealed, ash and slag and inorganic wastes, when the melting temperature of the samples changes from 1195 to 1165°C, and the melting range increases from 55 to 70°C.

For porous lightweight silicate materials, the swelling coefficient of the fired material is of particular importance. The expansion coefficient of the developed experimental mixtures with additives was determined as the ratio of the volume of the expanded granule to the volume of the semi-finished product granule. The volume of each grain of semi-finished expanded clay crushed stone and gravel is determined according to GOST 5978-12 [7, 9] and is calculated by the formula:

$$V = (\pi D^2/4)^h$$

The coefficient of swelling of clay raw materials is determined by the formula:

$$K_{\text{rev}} = d V_2 / V_1$$

where: V_1 is the volume of a granule (grain) of a semi-finished product placed in a kiln for firing, cm^3 ;

V_2 - the volume of the expanded granules of expanded clay gravel and expanded clay crushed stone, cm^3 .

Table 4

Swelling of batches based on flotation waste FPP

No. Blends	Optimal Swelling temperature, °C	Swelling coefficient	Swelling interval, °C
F1	1165	1.52	50
F2	1164	1.84	50
F3	1152	1.75	50
F4	1148	1.89	55
F5	1140	1.92	75
F6	1147	1.79	65

The test results (Table 4) showed that the coefficient of swelling in the studied compositions varies from 1.52 to 1.96 and indicates a high swelling of all mixture compositions. Particularly stand out compositions F 4 and F5, the swelling of which reaches up to 90% of the initial volume.

The degree of transformation into a porous light weight of the fired mixture is determined by the formula:

$$\alpha = (\gamma_0 - \gamma_i) / \gamma_0$$

where: degree of conversion; γ_0 - density of the initial granules, g/cm^3 ($\gamma_0 - 2.11$); γ_i - density of fired granules, g/cm^3 .

The method for preparing samples from experimental batches based on FPP flotation waste with clay and waste from various industries added in various ratios consisted in grinding their components, thoroughly mixing, mixing with water until a mass with a moisture content of 18-20% was obtained according to the requirements of GOST - 32496-2013 [10]. Spherical balls and cubes 10 mm in size were formed from the mixture prepared in this way, which were fired in a silicate furnace in the temperature range of 1100-1180°C and the exposure time at these temperatures was 5-15 minutes. It should be noted that two firing modes were used, the first was accompanied by slow heating of the samples from 25°C to the specified temperatures, and the second differed in that the test samples were immediately placed in a furnace heated to the specified temperatures.

Table 5

Physical and mechanical characteristics of fired samples at T = 1120 °C

Sample number	Minimum volumetric weight of fired granules, kg/m ³	Compressive strength, MPa	Water absorption
F1	1.21	0.18	14.63
F2	1.15	0.19	31.02
F3	1.07	0.23	12.77
F4	0.98	0.26	13.78
F5	0.93	0.28	13.02
F6	0.98	0.27	13.66

In the course of the conducted studies, it was found that the optimal firing mode for the synthesis of porous material based on FPP flotation waste with high technological properties was their sharp firing at a given synthesis temperature without preheating. The addition of FPP, clay, ash and slag, phosphogypsum and SWPS in various proportions to the investigated mixture with flotation waste, made it possible to obtain a material of composition F4 and F5 with high technological properties and - a bulk density of granules up to 0.93-98 kg/m³ and the strength of fired granules on compression up to 0.26-0.28 MPa at an optimum firing temperature of 1130-1140°C and a holding time of 10 minutes (Table 5).

Porous material using FPP flotation waste as the main raw material and a number of man-made waste added to ash and slag Thermal power plant, phosphogypsum and solid waste from soda production, and especially bentonite clay, has high technological properties, a very low bulk density and at the same time sufficiently high strength that meets the requirements of the M400 agloporite grade strength standard.

Thus, the results obtained made it possible to establish that the addition of clays - kaolin and bentonite, as well as waste to ash and slag, phosphogypsum and SWPS, to varying degrees, have a positive effect on reducing the temperature of the completion of sintering processes by 25-35°C, swelling and gaining strength due to the diversity of their chemical composition.

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Rezyume: Maqolada issiqlik energetikasi, kimyo va fluoritni qayta ishlash sanoati chiqindilaridan g'ovakli yengil material agloporit ishlab chiqarish bo'yicha tadqiqotlar natijalari keltirilgan. Kimyoviy tarkiblar aniqlangan va agloporit ishlab chiqarish uchun har xil tarkibli tajriba sinov namunalari tayyorlangan. Erish harorati, har bir tajriba tarkibining shishish koeffitsientlari va olingan namunalarning texnologik xususiyatlari o'rnatilgan.

Резюме: В статье приводятся результаты исследований получения пористого легковесного материала аглопорита с использованием отходов теплоэнергетического, химического и флюорит обогатительного производств. Определены химические составы и приготовлены опытные шихтовые смеси для получения аглопорита. Установлена температуры плавления, коэффициенты вспучиваемости каждого шихтового состава и технологические свойства полученных образцов.

Kalit so'zlar: qurilish materiali, agloporit, ishlab chiqarish chiqindisi, flotatsiya, kimyoviy sostav, mineralogik tarkib.

Ключевые слова: строительный материал, аглопорит, промышленные отходы, флотация, химический состав, минералогический состав.

TECHNOLOGY FOR THE PREPARATION OF ARTISTIC PAINTS AT HOME

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Summary: *In this article, we wrote briefly about the technologies for preparing paints at home. About the ratios of the binder composition of paints in small quantities.*

Keywords: *Paint, oil, watercolor.*

The term "Fine Arts" means a type of fine art that is used primarily for its aesthetic value and beauty, given its functional value. Beauty is not created by itself, but skillful master artists create with the help of the necessary materials and time. In Karakalpakstan, students in art schools, especially professional artists, use paint. The global problem is the lack of artistic quality paints, and their high cost, low quality of cheap dyes. Without the necessary materials, beauty is not created. Of particular importance are the colors of artistic paints. Colored paint pigments are obtained from plants, from minerals, iron oxides and salt. The quality of paints depends on the technology of preparation of the pigment in its composition. The price of the product will be much cheaper if it is made from available local materials.

This is due to the fact that in Karakalpakstan there are materials that are used as coloring pigments - ochre-like minerals, iron oxides and desert flora.

Artistic paints are divided into several types depending on the composition of dyes and their binders:

- watercolor
- gouache
- tempera
- oil paints
- acrylic paints
- pastel.

Watercolor and gouache paints have a dispersion composition. Ingredients: pigment, glue and water. Therefore, watercolors and gouache paints are classified as water-based paints. Watercolor and gouache are prepared in the form of dry, soft, pasty. In the table below, we show the composition of bonding paints.

Tempera is the first type of paint that appeared in Europe. The tempera of the present time has changed from the tempera of the old masters to the chemical composition. Depending on the composition of tempera, there are 5 types:

1. Egg.
2. Casein oil.
3. Acrylic.
4. Polyvinyl acetate (PVA)
5. Waxy oily.

When preparing egg tempera, the yolk of a chicken egg is used. The egg is diluted with water in a ratio of 1:3, white wine in a ratio of 1:2, and a coloring pigment, 1-2 drops of acetic acid, 2 grams of natural resin are added to the resulting emulsion. A coloring pigment and a phenol antiseptic are added to the emulsion prepared from natural or synthetic octane obtained from casein extracted from casein-oil tempera. [1.24].

Acrylic tempera is used for binding, especially water-soluble acrylic resin. This polymer is resistant to negative factors of nature, it is resistant to temperature changes, cold, sunlight.

Polyvinyl acetate tempera paint, water-based PVA. It has a brightening effect and dries quickly after even application.

Oil-wax tempera is more difficult to prepare than other temperas due to its chemical composition. For its manufacture, a mixture of various components was used, and natural beeswax, distilled water, organic resin, and vegetable oil were added to its composition.

Among the dyes that make up oil paint, the color paint with a large amount of oil is called oil paint. The durability of products used in the fine arts oil paints depends on the quality of the ingredients contained in it. An oil paint pigment is not a simple paste of a mixture of pigments, chemically speaking, its composition is a complex colloidal structure. An oil-dispersion medium, a pigment-dispersion phase, and a waxy resinous colloid were formed in it. But it cannot be said that this structure is optimal in all respects; it has been studied and improved by scientists and artists for years. The binders of oil paint and their chemical, physical relationships have yet to be explored and studied. We, the heirs of the fine arts, must follow in the footsteps of the artists of the past, so we must first learn and learn about its structure and connections. Therefore, it is necessary to pay attention to the quality and composition of the finished product.

As additives to oil dyes, artists of the 15th-18th centuries used vegetable oils (linseed, walnut), hemp resin, essential oils, and desiccants to preserve the most characteristic color characteristics. Desiccants are chemical catalysts that are added to dry quickly. Of the oils used linseed oil, nut oil. However, none of these preferences is optimal. Pistachio and flax seeds do not change their color, but dry out a little and form a film on the surface. Because of this, some of them would have to be redone. Linen dries quickly, like oil, but after drying, it begins to darken. The best way to clean it is bleaching chlorine earth. In other cases, it can be mixed with linseed oil in a ratio of 1:1. Balm and wax are added to the oil in certain quantities. It is made from resins such as mastic and contains 15% dammar resin. The waxes of the bees do not destroy the paint, give the paint a paste-like appearance and give elasticity to the paint layer. 5% wax can be added to the fasteners. Wax is diluted with turpentine, and if the wax itself is mixed, the wax separates after heating and cooling. The following technical requirements must be met for colored oil paints:

- Preservation of color under the influence of sunshine within three months, or under the influence of an ultraviolet within 100 hours.
- There should be no lumps of undissolved pigment in the paint.
- The paint should be applied to the ground at a temperature of 15-20 degrees in 3-4 days.
- Must have stickiness.
- The emulsified primer must be absorbed.

Acrylic paints are water-dispersed polyacrylates (methyl, ethyl polymers). This paint is of universal quality, it can be mixed with tempera and gouache. [2.45].

Pastels are colored powder pencils that can be used in painting. Pastels are divided into dry, oil and watercolor. They are prepared by pressing pigment, oil and glue.

Today's artists often use oil paints. In the past, artists made their own paints, and each artist created his own technology for the production of paints. In the production of art paints, the most important process is the grinding of a binder with a pigment to obtain a uniform finely grated paint paste. Grinding of oil paints is done manually - when it is required to grind a small amount of paint, and on special paint-grinding machines - for mass production. [3.67].

When working manually, they use slabs made of hard stone: granite, marble or porphyry. Its upper surface is well polished. The narrow cone chime is made from the same materials as the slab and has a very even and polished base. A small amount of pigment is poured onto the plate, a binder is added and mixed with a palette knife. The pigment mixed with oil is rubbed with a chime over the entire plate, moving it from top to bottom and from right to left and back; for better grinding, the chime is given a circular motion. From time to time, the paste is collected with a palette knife and rubbed again until a homogeneous, finely grated paint is obtained.

Manual grinding of paints on granite slabs allows the artist to carry out the technological process cleanly and accurately, and at the same time vary the composition of paints depending on

their needs, always having freshly prepared paints. The latter is very important for painters who use tempera paints.

At the same time, the artist studies the quality of the finished paint. When grinding on machines, three-roller horizontal paint grinders with granite or porphyry rollers are used.

Artistic oil paints are produced in a thickened form; the content of the binder in the paint varies depending on the oil absorption of the pigment.

The amount of oil required to obtain a uniform color paste of normal pastiness is called oil absorption.

Each coloring matter requires a certain amount of binder, so an arbitrary increase or decrease in its content in the finished paint has a negative effect on painting: with an excess of oil, the paint layer dries slowly, and with a shortage, it forms a brittle film.

The oil absorption capacity of art paints depends on many factors and, above all, on the ability of the pigments to be wetted by oil. A good colorful paste is obtained by grinding if the oil forms a surface layer of liquid around the pigment particles - a shell (oil film). Pigment particles, as it were, attract some of the oil molecules to themselves and form a liquid oil shell around the particles. Artistic oil paints are produced in a thickened form; the content of the binder in the paint varies depending on the oil absorption of the pigment.

The technology for making paints is not a complicated process, the first thing we need to make oil paint at home is a little oil.

The second thing we need is a pigment of the color you want to get. A pigment is a coloring powder, depending on the color it has a different composition, therefore the pigments and colors made on them are called differently. "Cobalt blue" - made on the basis of cobalts; there is "chromium oxide", zinc or titanium white, and a deep black color called "burnt bone" is made, as the name implies, by burning the bone. Sometimes impurities are added to this composition. For example, a desiccant to make the paint dry faster or a little wax for a matte effect, for greater transparency - a little turpentine or pinene. For glossiness - damar varnish. You can experiment with the ingredients to achieve different effects, but the main composition is always the same: oil and pigment. [4.34].

Now we need: glass and a glass pestle (if not, you can use a glass glass with a flat bottom). Do not use metal, as some pigments may react with it chemically. On the glass, we pour a small hill of pigment and pour a little oil. Then mix with a palette knife to a creamy consistency. Next, we grind the resulting mass with a glass pestle until all the grains and lumps are gone. Important! This should be done in a respirator, glasses and gloves, as some pigments have strong odors and inhaling them is dangerous to health. After mixing the mass, it is thoroughly ground with all pigment particles, and the resulting mass is stored in a container with a lid. This method will cost you less than buying in a store.

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Rezyume: Ushbu maqolada biz uyda bo'yoqlarni tayyorlash texnologiyalari haqida qisqacha yozdik. Kichik miqdorda bo'yoqlarning bog'lovchi tarkibining nisbatlari haqida.

Резюме: В этой статье мы кратко написали о технологиях приготовления красок в домашних условиях. О соотношениях связующего состава красок в малых количествах.

Kalit so'zlar: Bo'yoq, moy, akvarel.

Ключевые слова: Краски, масло, акварель.

TO PROVIDE INSIGHTS INTO THE ART OF CERAMICS AND TO INCREASE THE INTEREST OF STUDENTS AND YOUNG PEOPLE IN TEACHING THIS FIELD

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Summary: *In this article, it is thought about giving concepts in the field of applied art (art ceramics) to the students of higher educational institutions and in specialized art schools, and further increasing the interest of students and young people in studying this field.*

Keywords: *Pottery, ceramics, applied art, clay, pottery, educational process, intellectual, sculpture, tendency.*

Pottery is one of the oldest and most interesting crafts. But if earlier only masters could do it, now working with clay is open to everyone. Anyone can create their own creations while receiving a positive energy charge while shaping the clay. Ancient ceramics are decorated with magical decorations. Ceramics, soil (clay, kaolin) or inorganic substances obtained by cooking at high temperatures are considered mirror materials and products, produced in China, Central Asia, the Near East, and the Balkans. The main achievement of ancient Eastern ceramists was the invention of colored glazing. One of the main places in the history of the development of ceramics is occupied by the ceramics of ancient Greece. Ancient Greek pottery makes up a large part of the archaeological record because of its relative durability. Greek pottery, depending on the purpose, amphoras, lekifas, kilicas had different shapes. The vases are made of specially prepared quality clay.

According to its properties, clay should be soft, sticky, pliable and able to enter any shape. Red, brown and brown soil is selected for the preparation of such clay.

There are two types of soil: dry and oily. Oily soil is more moist than dry soil, has a higher grain size, is sticky, soft, has good leveling and finishing properties. To test the soil, it is placed in water, then its viscosity and plasticity are checked.

The methodical system of art and craft education helps to solve educational and developmental tasks aimed at forming and developing students' creative abilities, as well as mastering new methods, skills and technologies of artistic pottery production.

The methodological system model also includes conditions for the development of students' artistic abilities, for example:

- an educational direction focused on personality and mutual relations with students;
- introduction of students' individual creative activity process;
- introducing a motivational component;
- allocation of separate tasks to solve the figurative composition of artistic ceramics;
- the direction of technological process features for solving the figurative composition of decorative products in ceramics;
- study the basics of modern design.

In modern educational theory, the functions of teaching methods are divided into 2 groups. The first group is related to educational, educational and developmental goals. The second group of management training methods is related to stimulating, motivational, organizational and control. It is also necessary for personal observation, emotional vision, understanding, and learning.

In order to form the artistic abilities of students, it is necessary to take into account the latest trends in the development of modern artistic ceramics. The scientific principle includes the compliance of the content of the curriculum with the level of development of modern scientific thought, the accumulated experience in the technology of artistic ceramics.

The development of artistic and creative abilities such as visual memory, observation, figurative, abstract and constructive thinking helps to apply the principle of visualization. A professional interest is developed by observing, constructing and using the material's artistic forms and plastic and decorative qualities.

Clearly structured teaching materials, connections between teaching and visual aids, highlighting of key concepts and categories help to fully reveal the artistic and creative abilities of students.

The teaching concepts of ceramics should be based on "simple" to "sophisticated" and later lessons should use previously learned skills and techniques. This principle of systematic and consistent learning increases their creative activity in the course of activities aimed at developing artistic abilities. But this activity should be conscious. The motivational component of education is connected here. Necessary conditions for the development of creativity are the conscious and solid mastering of the technological features of the production of ceramic products, the principles of formation, plastic and constructive methods. To study the history of ceramic production, the specific features of the artistic and figurative language of the world's ceramic centers, as well as the modern development trends of ceramic art in order to develop and form the intellect of a ceramic artist who is able to think creatively in accordance with global trends in ceramic production. is necessary. The main principle is sufficient complexity of teaching. Taking into account the level of development of artistic abilities and intellectual characteristics, the level of development of higher mental functions helps the development of this principle.

Along with the development of creative abilities, an individual meaningful imagination appears, which is carried out by revising the material, its figurative and ideological content. Sculpting by hand, shaping on the potter's wheel, moulding, modeling, filling and casting in a plaster mold is complex work. Clays for ceramics are divided into "dry" and "oily". Pottery clay is plastic, the products made of it can be given any shape, but in order to create a work of artistic pottery at home, you need to prepare the clay, for which the source materials are diluted to the desired composition with sand, fireclay or clay with clean water.

Taking into account the temperament, year of study, level of preparation, level of development of artistic abilities allows to determine the direction of study for each student and to identify the stages experiencing difficulties. The following stages should be distinguished:

- creating a sketch in a 3D dimensional picture;
- compliance with the technological process in the formation of ceramic products;
- consistency of external and internal content;

At the first stage of creating a ceramic product, students (looking for a plan) use explanatory, descriptive and reproductive methods, problem-based teaching methods. Implementation of the idea at the stage of "Working with the material" requires the student to constantly improve knowledge, skills and abilities, study analogs (high samples of artistic ceramics), work with the material. It is also important to master the skills and abilities to transform a sketch from a flat image into a three-dimensional one. This is a problem of perception, and in order to transmit an image, all the smallest components and elements of the images must be kept in memory. These are contours, proportions, stylistic features, constructive building features, decorative elements.

Conducting classes in the form of lectures, conversations, practical exercises, the history of the emergence of ceramic art, the specific features of the construction of ceramic forms, the development of analytical and research exercises, and solving creative problems of each lesson helps to learn the language. The main attention should be focused on the improvement of simultaneously complementary abilities that ensure the most successful development of creative abilities of students. Focusing on individual-oriented interactions with students in their reading, creating a motivational need, allocating the tasks of solving the figurative content of ceramics to set

educational tasks, all this helps to realize the figurative content in students' works. In conclusion, research shows that a holistic approach to student motivation is the most effective and that the best results come from students who not only want to achieve high academic performance, but who are truly passionate about the subjects they are studying. The first step to change for the better is to understand your role and purpose. Remember, the teacher is a combination of various elements as a catalyst in chemical processes, the common goal is to accelerate the reactions of the educational effect with the available methods. Obviously, teachers don't have the ability to win Nobel Prizes for all students, but they have ways to impart knowledge and control the content of the subjects they teach. Education is structurally mobile and changing, so it will not be possible to fit all the relevant methods and tips for motivating students into one material: they will hardly fit into a standard volume of a textbook in summary. Some practices continue to produce results, while others quickly become obsolete. A potter can create unique things for himself or as a gift. It can be a beautifully patterned item, a brightly colored item, a vase with a geometric pattern, a mug that is perfect for kitchen design, and other modern ceramics. Use clay to express feelings beyond words. Pottery is also good for health, it helps to develop fine target skills of the hands as well as muscles and fingers.

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Rezyume: *Ushbu maqolada hozirgi oliy o'quv yurtlari talabalariga va ixtisoslashtirilgan san'at maktablarida amaliy san'at (badiiy kulolchilik) sohasi bo'yicha tushunchalar berish hamda talaba yoshlarni ushbu sohani o'rganishga qiziqishini yanada oshirish haqida fikr yuritilgan.*

Резюме: *В данной статье речь идет о даче понятий в области прикладного искусства (художественной керамики) студентам высших учебных заведений и в специализированных художественных школах, и дальнейшем повышении интереса студентов и молодежи к изучению этой области.*

Kalit so'zlar: *Kulolchilik, keramika, amaliy san'at, tuproq, sopol buyum, ta'lim jarayoni, intellektual, haykaltaroshlik, tendensiya.*

Ключевые слова: *Гончарство, керамика, прикладное искусство, грунт, гончарство, учебный процесс, интеллектуал, скульптура, направление.*

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TECHNOLOGY FOR OBTAINING GRANULATED PHOSPHOGYPSUM CONTAINING UREA

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Summary: *The article presents the results of studying the processes of obtaining slowly soluble phosphogypsum containing carbamide based on the melt of urea and phosphogypsum. With the studied ratios of carbamide : phosphogypsum = 100 : (0.5-5), the strength of the granules increases from the initial 2.53 to 4.25 MPa, the gyroscopic point increases from 58.4% to 68.3%, pH, porosity and dissolution rate granules decreases from 8.02 to 7.92, from 5.75 to 3.75, from 92.4 to 149.8 seconds/granules, respectively. It was also found that when phosphogypsum is added to the carbamide melt, the density and viscosity of the melt increase. The addition of 5 g of phosphogypsum per 100 g of carbamide melt at a temperature of 135°C leads to an increase in the density and viscosity of the melts from the initial 1.16 to 1.31 g/cm³ and from 2.56 to 3.67 cps. Microscopic examination showed that the addition of phosphogypsum to the carbamide melt leads to a decrease in the size of micropores and microcracks with a width of 1.62 to 1.14 microns. The possibility of obtaining phosphogypsum containing urea with a content of N from 43.97 to 45.56%, sulfur from 0.09 to 0.087% and CaO from 0.16 to 1.54%, as well as stopping the emission of ammonia from the finished product by adding phosphogypsum before carbamide melt granulation. On the basis of the results obtained, the optimal technological parameters and the principal technological scheme for the production of phosphogypsum containing granulated carbamide are proposed.*

Key words: *urea, phosphogypsum, melt, nitrogen, calcium, phosphorus, sulfur, viscosity, granule strength, mineral fertilizers, density.*

Introduction. Currently, carbamide is successfully used all over the world as a nitrogen fertilizer. It is used as a base fertilizer for top dressing, with immediate incorporation into the soil to prevent loss in the form of gaseous ammonia. According to [1], the world production of urea exceeds more than 200 million tons, and in Uzbekistan it is produced more than 650 thousand tons per year.

In industry, the synthesis of carbamide is carried out at a temperature of 458-468 K and a pressure of 19-20 MPa from liquid ammonia and gaseous carbon dioxide. During the synthesis of carbamide, a melt is formed, consisting of water, carbamide, carbamate, ammonium carbonates and ammonia. The melt is then subjected to distillation for thermal decomposition of carbamate and carbonates and the removal of ammonia and carbon dioxide not converted into urea, and the extracted aqueous urea is processed into a solid product by granulation. During urea granulation and evaporation at high temperature, one ammonia molecule is released from two urea molecules, resulting in the formation of biuret. The increased content of biuret in the fertilizer reduces the germination of seeds, inhibits the growth and development of plants. Therefore, according to [2] in the finished product, the content of biuret is allowed no more than 0.6% (highest) in grade A and 1.4% in grade B.

The formation of biuret is observed to varying degrees at all stages of the process. Favorable conditions for the formation of biuret are: removal of ammonia from the sphere of reactions; heat; prolonged exposure of concentrated carbamide solutions at high temperatures. The greatest influence on increasing the yield of carbamide and reducing the formation of biuret has an excess of

ammonia in the initial mixture against the stoichiometric amount determined by the molar ratio of $\text{NH}_3 : \text{CO}_2 = 2$. Excess ammonia reduces the harmful effect of water released in the process, and it binds water and thereby shifts the balance reactions of transformation of ammonium carbamate into urea. Therefore, the synthesis of carbamide is carried out in an excess of ammonia, the resulting product also contains free ammonia, when urea is produced, the resulting product is not immediately packed in bags, to remove free ammonia, carbamide is stored in a warehouse for a certain time before packaging. It should be noted that, at present, in all existing technologies for the production of carbamide, the final solution in the form of liquid urea still contains a small percentage of ammonia, which increases at the final stage of concentration, as a result of which 1 mol of biuret and 1 mol of ammonia are formed from 2 mol of urea. At the end of the curing stage, the resulting product contains a certain amount of free ammonia, which passes to the cooling air, and, therefore, enters the atmosphere, polluting it [3-6].

One of the aims of this work is to neutralize the ammonia present in the liquid urea obtained from the concentration section using phosphogypsum.

It should be noted that, in Uzbekistan, there are significant reserves of phosphogypsum, which continue to increase. In the course of activity of JSC "Ammophos-Maxam" more than 700 thousand tons are annually formed. phosphogypsum. More than 100 million tons of waste accumulated in the dumps. tons of phosphogypsum. In works [7,8] the main factors limiting the use of phosphogypsum, high hygroscopicity, various impurities are given, and possible options for its use are also considered. According to which, the main area of application of gypsum or phosphogypsum in agricultural production is the reclamation of solonchik soils. It is used to displace exchange sodium from the soil absorbing complex, which causes their unfavorable physicochemical, structural-mechanical and physical properties: increased peptizability of silt and soil mass, hardness of the soil crust, high soil density and low filtration capacity. The replacement of exchangeable sodium by calcium provides an improvement in the named properties of solonchiks and increases their fertility. The reaction product is sodium sulfate, a salt that is easily soluble and easily washed out of the soil, which also contributes to the coagulation of soil colloids. Gypsum casting remains the leading method of reclamation development of solonchiks, eliminating a whole range of negative parameters.

The work [9] shows a 50% decrease in soil solonchikity with the application of the full calculated dose of phosphogypsum (10 t/ha), an increase in calcium content, and the achievement of good water resistance. A significant improvement in the physical properties of the soil under the influence of phosphogypsum was also noted: porosity, content of water-stable aggregates, density. Provided an increase in crop yields by an average of 46%, including winter wheat - by 54%, fodder beet - by 31%.

The use of neutralized phosphogypsum on leached chernozem in rainfed farming contributes to solving an important agro-ecological problem, ensuring high efficiency of nutrients, recycling large-tonnage waste, using an environmentally friendly and highly effective ameliorant and phosphorus fertilizer. The introduction of UFG contributes to the stabilization of the reaction of the soil environment in the range of 6.2-6.5 units. pH and improvement of the calcium regime of soils. In the plow horizon of soils, depending on the dose of UFH, the calcium content increases from 30.6 to 35.1 meq/100 g of soil, the proportion of calcium from 79% to 89%. A positive effect on the retention of moisture in the soil was established, the moisture index of the night against the background of the introduction of UFH is higher by an average of 5.2-6.3%. The use of phosphogypsum in combination with mineral fertilizers was equivalent in terms of the effect on the nitrogen, phosphate and potassium regimes of the soil. The optimal dose of neutralized phosphogypsum, which contributes to the creation of better conditions for mineral nutrition, should be recognized as 4 t/ha. On average, over two years, the largest soybean grain yield of 27.5 c/ha was obtained, which is 20.6% more than in the control [10,11],

In many countries of the world, the method of liquid conversion of gypsum and phosphogypsum using ammonium carbonate to ammonium sulfate and chalk is used, the method includes the following technological stages: preparation of an ammonium carbonate solution; conversion of calcium sulfate with ammonium carbonate solution and crystallization of CaCO_3 ; filtering and washing the precipitate CaCO_3 ; capture and disposal of waste gases; processing the ammonium sulfate solution into a crystalline or granular product; drying calcium carbonate. In Uzbekistan, this process has been carried out on a pilot scale [12-14]. There is a technology for obtaining nitrogen-sulfur fertilizer based on carbamide and phosphogypsum [12]. According to which the initial components are mixed in a molar ratio of 1: (1-4), the mass is dried at 70-80°C and granulated at the same temperature in a rotating drum. The resulting fertilizers contain 14.3-29.8% N; 14.1-28.3% CaO; 8.2-15.3% S. The effectiveness of these fertilizers is not lower than the effectiveness of the original carbamide on soils provided with sulfur, and on soils with a lack of sulfur, they give an increase in yield by 49-94%. Nitrogen-sulfur fertilizers have the following advantages compared to the known ones: the need for plants in nitrogen and sulfur is simultaneously provided, nitrogen losses are sharply reduced during surface application of fertilizers compared to carbamide, the nitrogen utilization rate is increased, the degree of pollution of water bodies is reduced, the yield of some crops is increased and the content in them nitrates.

Based on the foregoing, in order to neutralize excess ammonia present in the carbamide melt and improve the physicochemical and agrochemical properties, as well as for the rational use of phosphogypsum, the processes of obtaining phosphogypsum containing urea based on the carbamide melt and phosphogypsum have been studied.

Phosphogypsum of the composition (wt,%) was used : $\text{P}_2\text{O}_{5\text{total}}$ - 0.71; $\text{CaO}_{\text{total}}$ - 33.46; CaO_{usv} - 15.92; CaO_{aq} - 11.26; $\text{SO}_{3\text{total}}$ - 47.98; $\text{SO}_{3\text{aq}}$ - 13.93; $\text{SO}_{3\text{aq}} : \text{SO}_{3\text{total}} = 29.03 \%$ and $(\text{NH}_2)_2\text{CO}$ brand A with a content of 46.3 % N. The experiments were carried out as follows: carbamide was melted in a metal cup on an electric stove, phosphogypsum powder no larger than 0.1 mm in size was introduced into the melt at 135-140°C at a mass ratio of $(\text{NH}_2)_2\text{CO} : \text{phosphogypsum} = 100 : (0.5-5)$, the temperature was maintained constant by heating, the melt was kept after dosing for 1–2 min with constant stirring until homogeneous, after which it was poured into a granulator, which is a metal cup with a perforated bottom, the hole diameter in which was 1.0 mm. The pump in the upper part of the glass created pressure and the melt was sprayed from a height of 35 meters. In this case, granules of phosphogypsum containing carbamide were obtained. Then the chemical composition and strength of the fertilizer granules were determined. The strength of fertilizer granules with granule sizes 2 - 3 mm was determined on an electronic device IPG-1M [15].

The nitrogen content was determined using a catalyst for the conversion of nitrogen in carbamide to ammonia by heating in a solution of sulfuric acid, followed by distillation and absorption of ammonia in an excess of a standard solution of sulfuric acid and back titration with a solution of sodium hydroxide in the presence of an indicator [2], and the content of biuret was determined by [2].

SO_3 was determined by precipitation in the form of barium sulfate [16], CaO content was determined by titration with a 0.05 N solution of Trilon B in the presence of the indicator flurexone.

The hygroscopic points of the initial and finished fertilizers were determined at 25 °C by the desiccator method [17]; the storage capacity of fertilizers was determined by the method [18].

Briquetting conditions: sample compression pressure with a load of 2.8 kg, temperature - 40 °C; the length of stay of the cylindrical cassette in the mold is 8 hours. The briquettes were tested for destruction using the MIP-10-1 instrument. The pH value of 10% aqueous solutions of initial and finished fertilizers was measured in an I-130M laboratory ion meter with an electrode system of

ESL 63-07, EVL-1M3.1, and TKA-7 electrodes with an accuracy of 0.05 pH units. The porosity value of fertilizer granules was determined by the volumetric method [19].

To do this, a certain volume of cryoscopic benzene (V1) was poured into a 25 ml burette equipped with a tap. Then, about 10 g of the sample was poured into it, and after 1–2 min, the volume changed in the buret (V2) was recorded. Then the tap was opened, the benzene between the carbamide granules was lowered into the second burette and its volume (V3) was measured. The porosity in % was calculated by the formula:

$$II = \frac{V_1 - V_2}{V_2 - V_3} \cdot 100$$

Also, in order to determine the rheological properties of the melts, their density and viscosity were studied at the above ratios (NH₂)₂ CO : phosphogypsum in the temperature range of 130-145 °C. The density was determined by the pycnometric method with a measurement accuracy of 0.05 rel. %, kinematic viscosity - using a glass capillary viscometer VPZH-1 with an error of 0.2 rel. % in the temperature range of 130-145 °C. For this, the mixture of the resulting product was ground. The resulting powder was introduced into a pycnometer and a viscometer, which were then placed in a thermostat filled with glycerol. The temperature in the thermostat rose to a predetermined value. In this case, the powder melted. The melt was kept for 1-2 minutes, then measurements were made. The rate of dissolution of sample granules in water was determined as follows. The fertilizer granule was lowered into a glass with 100 ml of distilled water, in which its complete dissolution was visually observed and recorded. Room temperature, tests five times. All results obtained are shown in tables 1-3.

Table 1.

Composition of phosphogypsum containing granular urea								
Mass ratio Carbamide : Phosphogypsum	N total, %	CaO total, %	P ₂ O ₅ total, %	S , %	SO ₃ total %	Free NH ₃ , %	Biuret, %	Moisture, %
Urea	46.2					0.029	1.40	0.16
Phosphogypsum		32.46	0.54	18.4	46.2			0.19
100 : 0.5	45.94	0.16	0.002	0.09	0.23	0.029	1.38	0.15
100 : 1	45.70	0.32	0.005	0.18	0.46	0.029	1.37	0.15
100 : 1.5	45.50	0.48	0.007	0.27	0.68	0.029	1.35	0.14
100 : 2	45.26	0.63	0.009	0.36	0.90	0.028	1.34	0.14
100 : 2.5	45.02	0.79	0.012	0.45	1.12	0.028	1.32	0.13
100 : 3	44.81	0.94	0.015	0.53	1.34	0.028	1.29	0.13
100 : 3.5	44.62	1.09	0.018	0.62	1.56	0.028	1.27	0.12
100 : 4	44.39	1.25	0.020	0.70	1.77	0.027	1.24	0.12
100 : 4.5	44.17	1.39	0.022	0.79	1.99	0.027	1.22	0.11
100 : 5	43.97	1.54	0.025	0.87	2.20	0.027	1.19	0.11

Table 2 .

Properties of phosphogypsum containing granular urea						
Mass ratio Urea : Phosphogypsum	Dissolution rate in water, seconds /granule	Other- granule capacity, MPa	pH (10% solution)	Tempe- ratura crista- lization °C	Hygros- mine cal point %	Poris- toast %
Urea	92.4	2.53	8.02	128	58.4	5.75
Phosphogypsum			6.13			

100 : 0.5	100.4	2.61	6.32	127.2	59.7	5.41
100 : 1	109.6	2.88	6.47	125.6	60.9	5.16
100 : 1.5	117.8	3.18	6.62	124.2	61.5	4.92
100 : 2	123.2	3.36	6.84	122.4	62.2	4.64
100 : 2.5	127.6	3.54	7.09	120.2	63.8	4.38
100 : 3	130.8	3.68	7.28	118.8	64.1	4.24
100 : 3.5	134.2	3.79	7.41	117.2	65.6	4.03
100 : 4	139.6	3.91	7.54	115.6	66.4	3.94
100 : 4.5	146.4	4.09	7.75	113.8	67.7	3.87
100 : 5	149.8	4.25	7.92	112.4	68.3	3.75

Table 3

Density and viscosity of the melt of fertilizers obtained by introducing into the urea melt phosphogypsum powder

Mass ratio Urea : Phosphogypsum	Density (g / cm ³), at temperature, °C				Viscosity (cPz), at temperature, °C			
	130	135	140	145	130	135	140	145
Urea	1.17	1.16	1.15	-	2.72	2.56	2.41	-
100 : 0.5	1.19	1.17	1.16	-	2.75	2.61	2.56	-
100 : 1	1.21	1.19	1.18	1.15	2.81	2.77	2.64	2.52
100 : 1.5	1.22	1.20	1.19	1.17	2.87	2.82	2.70	2.63
100 : 2	1.24	1.22	1.20	1.18	2.95	2.87	2.79	2.74
100 : 2.5	1.25	1.23	1.22	1.20	3.01	2.93	2.87	2.84
100 : 3	1.27	1.25	1.23	1.22	3.14	3.05	2.99	2.91
100 : 3.5	1.28	1.26	1.24	1.23	3.27	3.16	3.03	2.96
100 : 4	1.30	1.28	1.26	1.25	3.42	3.31	3.21	3.08
100 : 4.5	1.32	1.29	1.27	1.26	3.67	3.49	3.38	3.25
100 : 5	1.33	1.31	1.29	1.28	3.75	3.67	3.47	3.33

The data in Table 1 show that by mixing phosphogypsum with carbamide melt, granular phosphogypsum containing fertilizers with N content from 43.97 to 45.94%, sulfur from 0.09 to 0.87% CaO from 0.16 to 1.54 % were obtained. It can also be seen from the table that with an increase in the amount of phosphogypsum, the strength of the product granules increases. When changing the mass ratio of phosphogypsum to carbamide melt, the strength of the granules changes as follows: At a ratio of (NH₂)₂ CO : phosphogypsum 100: 0.5 - 2.61 MPa; 100: 2.5 - 3.54 MPa; 100: 4 - 3.91 MPa; 100: 5 - 4.25 MPa. The values of the hygroscopic points of fertilizers obtained at various mass ratios (NH₂)₂ CO : phosphogypsum according to the hygroscopicity scale are hygroscopic substances, and they are less hygroscopic than the original urea (58.4%). In fertilizers obtained at a mass ratio of (NH₂)₂ CO : phosphogypsum = 100 : 5 g , the hygroscopic point is reduced to 68.3%. It can also be seen from the table that, due to the addition of phosphogypsum, the pH of the phosphogypsum-containing carbamide at the studied ratios decreases from 8.02 to 7.92. In addition, it should be noted that the obtained fertilizer granules in the studied ratios when testing for caking under the conditions of the above method, caking of fertilizers was not detected, i.e. briquette and agglomerates were not formed. When processing phosphogypsum containing

carbamide melts into granular fertilizers, their rheological properties play an important role. In this regard, the density and viscosity of the melts were studied at the above weight ratios $(\text{NH}_2)_2\text{CO}$: phosphogypsum in the temperature range of 130-145 °C. The experimental data show that the value of density and viscosity mainly depends on the temperature and mass fraction of phosphogypsum introduced into the melt of urea. Both density and viscosity decrease with increasing temperature, and vice versa increase with an increase in the amount of phosphogypsum in the urea melt. An increase in the amount of phosphogypsum additive from 0.5 to 5 g per 100 g melt of urea at a temperature of 135 °C leads to an increase in the density and viscosity of the melts from 1.16 to 1.31 g/cm³; from 2.56 to 3.67 cpz.

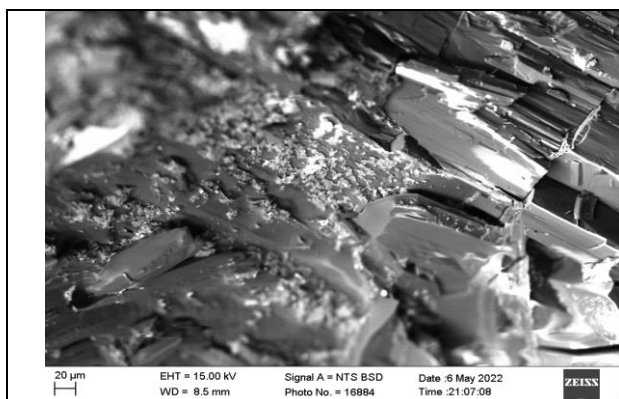
A similar pattern is observed at other temperatures. At the studied ratios $(\text{NH}_2)_2\text{CO}$: phosphogypsum and temperature ranges of 130-145 °C, all samples of carbamide phosphogypsum melts have sufficient fluidity, which creates favorable conditions for their granulation in the existing granulator without any special technological difficulties. It is known that the lower the solubility of carbamide granules in water, the slower nitrogen is released from the fertilizer in the soil, which shows its prolonged effect on the plant. So, if the complete dissolution of the production $(\text{NH}_2)_2\text{CO}$ granules is on average 92.4 seconds, then the introduction of phosphogypsum in the form of a powder into its composition in an amount of 0.5 to 5 g per 100 g of carbamide reduces the dissolution rate of the product granules from 92.4 to 149.8 sec (Table 2). One of the indicators of urea affecting the quality is the porosity of its granules. The porosity of pure $(\text{NH}_2)_2\text{CO}$ granules was 5.75%.

From table 2 it can be seen that the addition of $(\text{NH}_2)_2\text{CO}$ fine fractions of phosphogypsum to the melt leads to a decrease in porosity and the internal specific surface of the product granules. So, when changing the mass ratio $(\text{NH}_2)_2\text{CO}$: phosphogypsum from 100: 0.5 to 100: 5, the porosity of urea granules decreases from 5.75 to 3.75%.

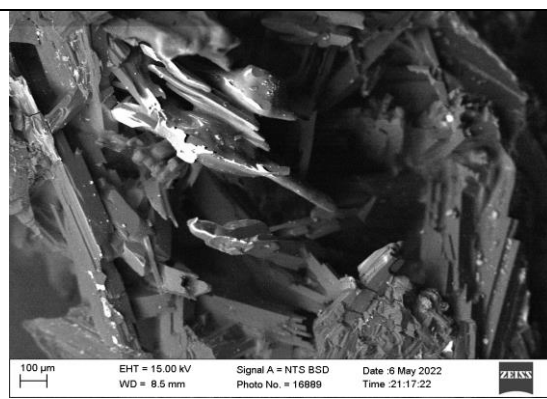
At the next stage of research, an electron microscopic study of carbamide granules and carbamide samples obtained with the addition of phosphogypsum at mass ratios $(\text{NH}_2)_2\text{CO}$: phosphogypsum = 100 : 5 was carried out. Microscopic studies were carried out using a scanning electron microscope REM-200. For viewing, the samples were pre-sputtered with silver in a VUA-4K vacuum station. Pictures 1 and 4 show an electron microscopic photograph of the surface of the granules and the cut of the initial urea granules (Figs. 1 and 2) and urea granules containing phosphogypsum (Figs. 3 and 4).

It can be seen from them that the granules of the original carbamide and phosphogypsum containing urea obtained on the basis of the melt of carbamide and phosphogypsum are almost identical on the surface, do not have pores and cracks. On the cut of the granules of the original urea in the center, there are obvious pores and microcracks, in contrast to phosphogypsum containing urea.

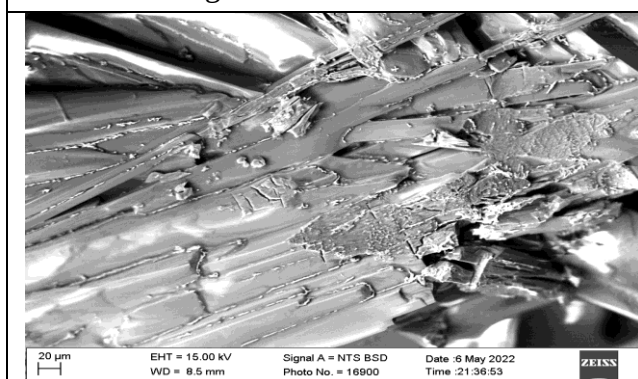
The length of microcracks in the original carbamide is 1.62 microns, and with the addition of phosphogypsum 1.14 microns. In addition, phosphogypsum containing carbamide is more monolithic than granules of the original urea. The results of the study and electron microscopy show that phosphogypsum added to the urea melt neutralizes free ammonia, as a result of which the porosity of the phosphogypsum containing carbamide is reduced than that of conventional urea.



Rice. 1. Electron microscopic photograph of the granule surface urea



Rice. 2. Electron microscopic photograph of the internal section of a carbamide granule



Rice. 3. Electron microscopic photograph of the surface of a granule of phosphogypsum containing carbamide



Rice. 4. Electron microscopic photograph of the internal section of a phosphogypsum containing urea granule

On fig. 5 and 6 show X-ray patterns of the original carbamide and phosphogypsum containing urea obtained at a ratio at a mass ratio of $(\text{NH}_2)_2\text{CO}$: phosphogypsum = 100 : 5 . X-ray analysis was performed on a computer-controlled XRD-6100 apparatus. On the X-ray pattern of the original carbamide there are bands 3.99; 3.62; 3.05; 2.82; 2.53; 2.42A ° belonging to carbamide. On the X-ray diffraction pattern of phosphogypsum containing carbamide obtained on the basis of urea melt and phosphogypsum (Fig. 6.), there are also diffraction bands with values of 3.94; 3.81; 3.57; 3.02; 2.80; 2.16A ° the corresponding gypsum and urea.

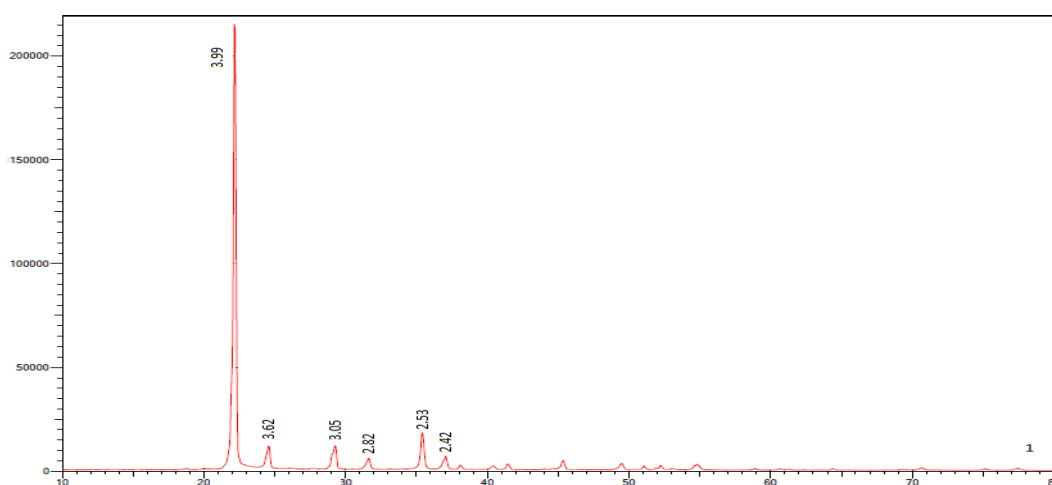


Figure 5. Radiograph of carbamide

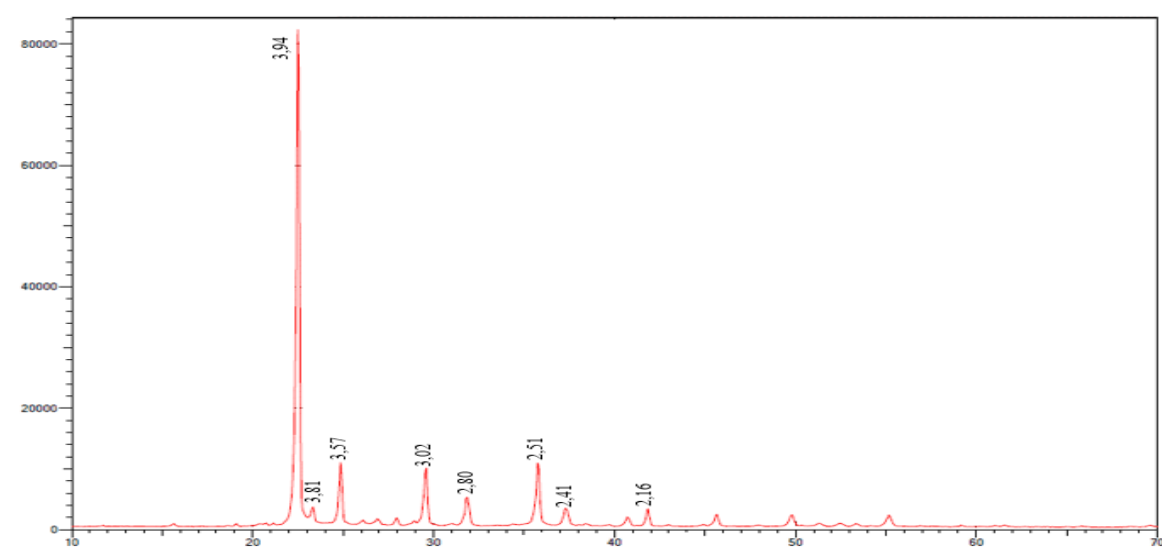


Figure 6. X-ray pattern of phosphogypsum containing urea.

Based on the results obtained, the optimal parameters for obtaining phosphogypsum-containing urea were established, the basic technological scheme and the material flows of production are drawn up. The technological process for obtaining phosphogypsum containing carbamide based on carbamide melt and phosphogypsum consists of the following main stages:

1. Grinding phosphogypsum;
2. Mixing of 99.7% urea melt with phosphogypsum;
3. Melt granulation and product cooling;
4. Packaging and storage of the finished product.

Optimal parameters for obtaining phosphogypsum containing urea:

particle size of crushed phosphogypsum, mm	less than 0.1 ;
phosphogypsum powder inlet temperature, °C.....	95-100 ;
concentration of urea melt, %	99.7;
weight ratio (NH ₂) ₂ CO : phosphogypsum	100 : 5;
temperature of the mixing process, °C	137-140;
duration of the process, min.....	4-5;
granulation temperature, °C.....	137-140;
pellet temperature after cooling, °C.....	40-50;

The principal technological scheme for obtaining phosphogypsum containing urea based on urea melt with the addition of phosphogypsum is shown in fig. 7. Obtaining carbamide melt is carried out according to the technology for the production of pure granular carbamide. According to this scheme, the urea melt (99.7% CO(NH₂)₂) after the evaporator (5.6) enters a special mixer (9) and phosphogypsum is simultaneously supplied there. At 137-140 °C, the mixture is stirred for 3 minutes, then the process is carried out according to the traditional scheme: granulation, cooling and packaging. According to which, the melt of phosphogypsum containing urea into the granulation tower, where it is sprayed through the granulator. At the bottom of the granulation tower there are metal cones through which air enters. Air is sucked into the tower by fans through holes in the lower part of the tower, cools drops of phosphogypsum containing urea melt falling towards it. Hardened granules from the bottom of the tower fall on the belt conveyor, then passing through the fluidized bed pellet cooling apparatus, it is transported through the belt conveyor and the elevator to the finished product warehouse. At the same time, the temperature of the chilled product in winter should not exceed 27 °C, and in summer it should be in the range of 45-50 °C. Thus, a technology

for producing phosphogypsum containing urea with the addition of phosphogypsum using the existing technological equipment for the production of carbamide is proposed. The material balance of obtaining 1 ton of phosphogypsum containing urea was calculated (Fig. 6).

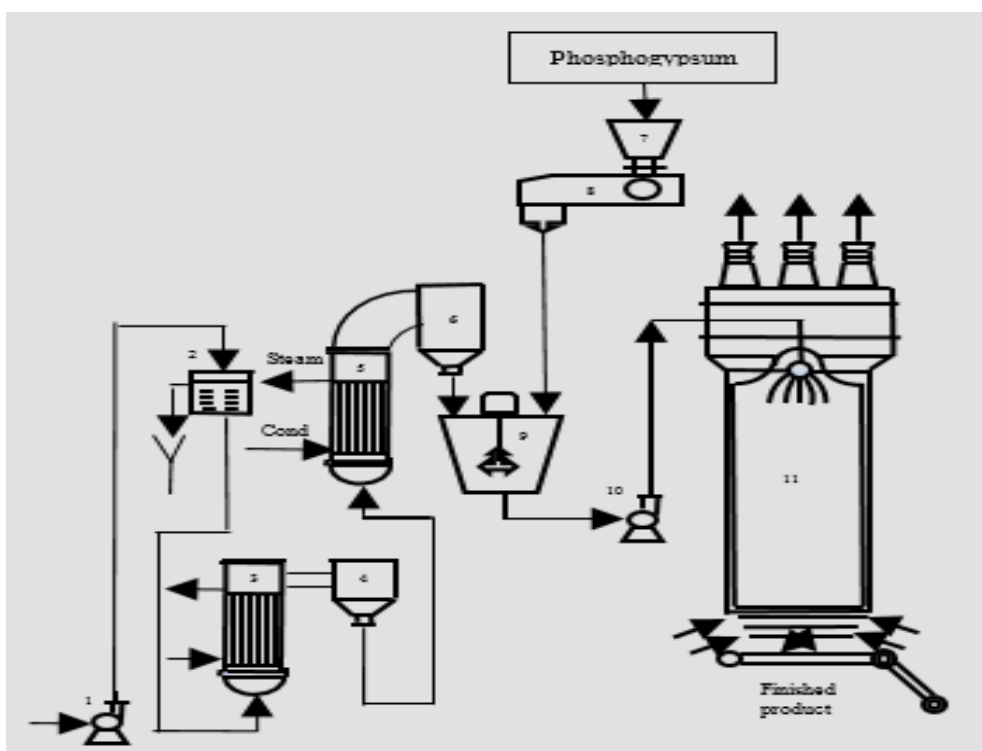


Figure 7 Principal technological scheme.

1, 10 - pumps; 2 - water seal; 3- evaporator (1-stage); 4 - 1-stage separator; 5- evaporator (2-stage); 6 - vacuum dryer; 7 - phosphogypsum bunker; 8 - dispenser; 9- mixer; 11 - granulation tower.

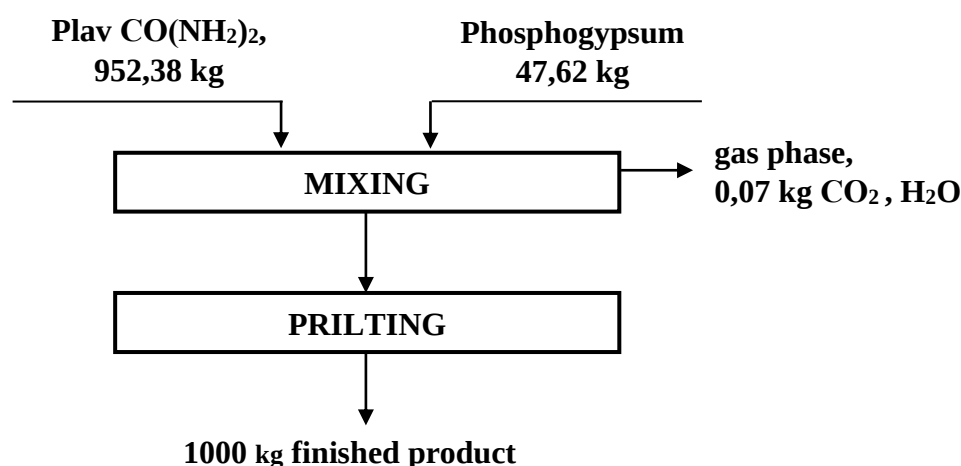


Figure 8. Material balance for obtaining phosphogypsum containing urea, mass ratio of urea to phosphogypsum 100:5.

Conclusion. Thus, the conducted studies on the production of granular phosphogypsum containing urea based on the melt of urea and phosphogypsum showed the fundamental possibility of obtaining phosphogypsum containing carbamide with sufficient granule strength and stopping the release of ammonia from the finished product. Granules of phosphogypsum containing urea

have a weaker solubility compared to pure carbamide, i.e. they will gradually give away nutrients, by reducing the rate of dissolution of fertilizer granules, nitrogen losses in the soil are reduced, phosphogypsum in the composition of urea increases its agrochemical efficiency, which help to significantly improve the agrochemical and agrophysical properties of the soil and increase its fertility.

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Rezyume: Maqolada karbamid va fosfogips asosida sekin eriydigan fosfogipsli karbamid olish jarayonlarini o'rganish natijalari keltirilgan. O'rganilgan nisbatlarda ya'ni karbamid : fosfogips = 100 : (0,5-5) granulalarning mustaxkamligi dastlabki 2,53 dan 4,25 MPa gacha, giroskopik nuqtasi 58,4% dan 68,3% gacha ko'tarildi, pH, g'ovaklik va erish tezligi 8,02 dan 7,92 gacha, 5,75 dan 3,75 gacha, 92,4 dan 149,8 soniya/granulalar mos ravishda pasaydi. Shuningdek, karbamid suyuqlanmasiga fosfogips qo'shilsa, suyuqlanmaning zichligi va qovushqoqligi oshishi aniqlandi. 135°C haroratda 100 g karbamid suyuqlanmasiga 5 g fosfogips qo'shilishi suyuqlanmaning zichligi va qovushqoqligini dastlabki 1,16 dan 1,31 g/sm³ gacha va 2,56 dan 3,67

срз гача ошishига олиб келди. Микроскопик текшириш шуни ко'rsatdiki, карбамид суууqlанmasига фосфогипс qо'shilishi mikrog`ovaklarni 1,62 dan 1,14 mikrongacha kichiklashishiga олиб келди. Olingan natijalar asosida tarkibida N miqdori 43,97 - 45,56%, oltingugurt 0,09 - 0,087% va CaO 0,16 - 1,54% bo'lgan fosfogipsli karbamidni olish va karbamid suyuqlanmasini donadorlashdan oldin fosfogips qo`shilishi tayyor maxsulotdan ammiak ajralib chiqishini oldini olishi ko`rsatilgan, shuningdek fosfogipsli donador karbamid ishlab chiqarishning optimal texnologik parametrlari va asosiy texnologik sxemasi taklif qilingan.

Резюме: В статье представлены результаты изучения процессов получения медленнорастворимого фосфогипсодержащего карбамида на основе плава карбамида и фосфогипса. При изученных соотношениях карбамид : фосфогипс = 100 : (0,5-5) прочность гранул повышается от исходного 2,53 до 4,25 МПа, гигроскопическая точка повышается с 58,4 % до 68,3 %, рН, пористость и скорость растворения гранул снижается от 8,02 до 7,92, от 5,75 до 3,75, от 92,4 до 149,8 секунд/гранул соответственно. Также выявлено, что при добавлении фосфогипса в плав карбамида плотность и вязкость расплава повышаются. Добавка 5 г фосфгипса на 100 г плав карбамида при температуре 135 °С приводит к повышению плотности и вязкости расплавов от исходного 1,16 до 1,31 г/см³ и от 2,56 до 3,67 сПз. Микроскопическим исследованием показано что добавления фосфогипса в плав карбамида приводит к уменьшению размеров микропор и микротрещин шириной от 1,62 до 1,14 мкн. Показано возможность получения фосфогипсодержащий карбамид с содержанием N от 43,97 до 45,56 %, сера от 0,09 до 0,087 % и СаО от 0,16 до 1,54 % а также приостановления выделения аммиака из готового продукта за счет добавки фосфогипса перед грануляцией плав карбамида. На основе полученных результатов предложена оптимальные технологические параметры и принципиальная технологическая схема получения фосфогипсодержащего гранулированного карбамида.

Kalit so'zlar: karbamid, fosfogips, suyuqlanma, azot, kalsiy, fosfor, oltingugurt, qovushqoqlik, granular mustahkamligi, mineral o'g'itlar, zichlik.

Ключевые слова: карбамид, фосфогипс, плав, азот, кальций, фосфор, сера, вязкость, прочность гранула, минеральные удобрения, плотность.

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**PRODUCTION OF SLOWLY DISSOLVING GRANULATED UREA WITH THE
ADDITIVE OF POLYACRYLAMIDE TO THE UREA MELT**

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Summary: *The article presents the results of studying the processes of obtaining slowly soluble carbamide based on the melt of carbamide and polyacrylamide. The results obtained showed that due to the addition of polyacrylamide at a mass ratio of $(\text{NH}_2)_2\text{CO}$: polyacrylamide = 100 : (0.1-3.0), the dissolution time in urea granules will increase by 8-15 times. In addition, at the studied ratios, the strength of the granules increases from the initial 2.52 to 5.10 MPa, the gyroscopic point from 58.4% to 72.3%, pH from 9.18 to 7.06 respectively. It was also found that at the studied ratios of adding polyacrylamide to the urea melt, the density and viscosity of the melt increase slightly. The addition of polyacrylamide 0.5 grams per 100 grams of carbamide melt at a temperature of 135°C leads to an increase in the density and viscosity of the melts from the initial 1.20 to 1.21 g/cm³ and from 2.62 to 4.53 cpz.*

Key words: *Carbamide, polyacrylamide, melt, nitrogen, dissolution, viscosity, granule strength, mineral fertilizers, density, dissolution rate.*

Introduction. Carbamide is the most concentrated basic nitrogen fertilizer, which is rapidly hydrolyzed in the soil. Features of nitrogen conversion cause relatively low efficiency of fertilizer nitrogen use and high losses, which reach 30% in the form of gaseous products, 10-15% due to leaching. Therefore, in order to solve the problems of reducing nitrogen losses, a method was developed for silicate coating of urea granules, and the effects of different forms of urea with a standard and silicate composition on the dynamics of the content of ammonia and nitrate nitrogen in the soil, the quality of tubers and the yield in potato cultivation were studied. A balanced supply of plants with nitrogen made it possible to obtain a potato yield when using carbamide with a silicate composition by 20.7% higher than the variant with standard urea and improve the quality of tubers, the level of nitrate nitrogen decreased by 27.5%, and the starch content increased by 10.8% [1].

The work [2], the dynamics of ammonia and nitrate nitrogen in the soil is shown; arable and subarable horizons. This agricultural technique made it possible to provide beet plants with nitrogen more evenly during the growing season and reduce losses from leaching and gaseous emission. A high effect was obtained from the use of encapsulated forms of urea with hydroquinone and catechol inhibitors, the yield of beet root crops was 41.55 and 43.28 t/ha, respectively. The use of encapsulated urea with inhibitors improves the quality of table beet roots, the level of nitrate nitrogen decreased by 32.7-39.1%, the amount of water-soluble sugars increased by 3.6-5.3%

The work [3] presents changes in the nitrogen fund of the soil under the influence of the systematic application of nitrogen by ammonia, nitrate and slow-acting forms of fertilizers. A significant increase in the content of total nitrogen in the soil was established when nitrogen fertilizers with prolonged release were applied in comparison with readily soluble forms of nitrogen fertilizers. Differences in the response of the nitrogen fund of the soil to the different nature of the release of nitrogen from fertilizers were manifested in their kinetics, the characteristics of which increased in the series from a slow-acting form of fertilizers to a fast-soluble one. Similar results were established for the quantitative and rate parameters of nitrogen immobilization of fertilizer

from a slow-acting form, the indicators of which significantly exceeded similar estimates for the size of nitrogen immobilization in the soil and the kinetic characteristics of this process.

The work [4] provides data that the coefficient of use of fertilizer nitrogen by plants in the field does not exceed 30-50%. From the soil in the form of gaseous products, 15-30% of fertilizer nitrogen is lost, immobilization in soil organic matter is 20-40%, and losses due to leaching of nitrates can reach 10% or more. Gaseous losses of soil nitrogen and fertilizers occur as a result of denitrification, ammonification and nitrification in the form of molecular nitrogen, its oxides and ammonia. Gaseous losses of nitrogen during fallowing of soddy-podzolic soil are 50% of fertilizer nitrogen and 50% of soil nitrogen, in crop rotation - 70% of soil nitrogen and 30% of fertilizer nitrogen, on virgin lands, on the contrary: 30% of soil nitrogen and 70% of fertilizer nitrogen.

It should also be noted that agricultural soils are the main source of nitrous oxide and nitric oxide (II). Nitrous oxide is a greenhouse gas that is also a parent compound involved in stratospheric ozone depletion. Due to the absence of precipitation in the upper atmosphere, the removal of nitrogen oxides is extremely slow, which contributes to their accumulation in this zone and changes in the spectral composition of solar radiation [5].

In modern conditions, ensuring food security is impossible without the use of mineral fertilizers. To meet the country's needs for high-quality mineral fertilizers, it is necessary to create new technologies that will contribute to their more efficient use. Based on this, the activities of scientists should be aimed at improving the efficiency of fertilizers of a given composition and properties.

It is known that, at present, carbamide is successfully used all over the world as a nitrogen fertilizer. It is used as a base fertilizer for top dressing, with immediate incorporation into the soil to prevent loss in the form of gaseous ammonia. According to the data of work [6], the world production of carbamide exceeds more than 200 million tons, and in Uzbekistan it is produced more than 650 thousand tons per year.

Experimental part. Based on the foregoing, in this work, we studied the processes of obtaining slowly soluble granular carbamide (SSGK) based on the melt of urea and polyacrylamide. To obtain MHA, $(\text{NH}_2)_2\text{CO}$ grade A with a content of 46.3% N and polyacrylamide grade A were used as the main component. The experiments were carried out as follows: urea was melted in a metal cup on an electric stove, polyacrylamide powder was introduced into the melt at 135-140°C at a mass ratio of $(\text{NH}_2)_2\text{CO}$: polyacrylamide = 100 : (0.1-3.0), the temperature was maintained constant by heating, the melt was kept after dosing for 1-2 min with constant stirring until homogeneous, after which it was poured into granulator, which is a metal cup with a perforated bottom, the hole diameter in which was 1.0 mm.

The pump in the upper part of the glass created pressure and the melt was sprayed from a height of 35 meters. This produced granules of polyacrylamide containing urea. Then the chemical composition and strength of the fertilizer granules were determined. The strength of fertilizer granules with granule sizes of 2–3 mm was determined on an IPG-1M electronic device [7].

The nitrogen content was determined using a catalyst for the conversion of nitrogen in carbamide to ammonia by heating in a sulfuric acid solution, followed by distillation and absorption of ammonia in an excess of a standard sulfuric acid solution and back titration with a sodium hydroxide solution in the presence of an indicator [8], and the content of biuret was determined by [8], the hygroscopic points of the initial and finished fertilizers were determined at 25°C by the desiccator method [9], the caking ability of fertilizers was determined by the method [10]. Briquetting conditions: sample compression pressure with a load of 2.8 kg, temperature - 40°C; the length of stay of the cylindrical cassette in the mold is 8 hours. The briquettes were tested for destruction using the MIP-10-1 instrument. The pH value of 10% aqueous solutions of initial and finished fertilizers was measured in an I-130M laboratory ion meter with an electrode system of ESL 63-07, EVL-1M3.1, and TKA-7 electrodes with an accuracy of 0.05 pH units.

Also, in order to determine the rheological properties of melts, their density and viscosity were studied at the above ratios $(\text{NH}_2)_2\text{CO} : (\text{NH}_4)_2\text{SO}_4$ in the temperature range 130-145°C. The density was determined by the pycnometric method with a measurement accuracy of 0.05 rel. %, kinematic viscosity - using a glass capillary viscometer VPZH-1 with an error of 0.2 rel. % in the temperature range 130-145°C. To do this, the mixture of the resulting product was ground. The resulting powder was introduced into a pycnometer and a viscometer, which were then placed in a thermostat filled with glycerol. The temperature in the thermostat rose to a predetermined value. In this case, the powder melted. The melt was kept for 1-2 minutes, then measurements were taken. The rate of dissolution of sample granules in water was determined as follows. The fertilizer granule was lowered into a glass with 100 ml of distilled water, in which its complete dissolution was visually observed and recorded. Room temperature, tests five times. All results obtained are shown in tables 1-3.

Table 1.

Composition of granulated carbamide with polyacrylamide additive

Mass ratio $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$	N, %	$(\text{C}_3\text{H}_5\text{NO})_n$ %	Biuret, %	Moisture, %
100 : 0	46.22		1.40	0.20
100 : 0.10	46.14	0.09	1.39	0.19
100 : 0.25	46.12	0.24	1.38	0.19
100 : 0.50	46.07	0.48	1.37	0.19
100 : 0.75	46.04	0.73	1.36	0.18
100 : 1.00	45.99	0.97	1.36	0.18
100 : 1.25	45.95	1.22	1.35	0.18
100 : 1.50	45.91	1.47	1.34	0.17
100 : 1.75	45.87	1.71	1.33	0.17
100 : 2.00	45.79	1.96	1.32	0.17
100 : 2.50	45.70	2.43	1.30	0.16
100 : 3.00	45.61	2.91	1.28	0.16

Table 2.

Properties of granulated carbamide with polyacrylamide additive

Mass ratio $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$	Granule dissolution rate in water, seconds/granules	pH (10% solution)	Crystallization temperature °C	Hygroscopic dot %	Granule strength		
					kg/granule	kg/cm ²	MPa
100 : 0	96	9.18	129	58.4	1.28	25.81	2.52
100 : 0.10	123	7.99	128,8	63.2	1.29	26.00	2.55
100 : 0.25	171	7.95	128,6	64.7	1.32	26.61	2.60
100 : 0.50	210	7.91	128,5	65.2	1.33	26.81	2.62
100 : 0.75	286	7.87	128.3	65.9	1.35	27.22	2.67
100 : 1.00	563	7.81	128.1	66.5	1.62	32.65	3.21
100 : 1.25	608	7.79	127.8	67.2	1.77	35.68	3.49
100 : 1.50	697	7.66	127.6	68.3	1.78	35.88	3.52
100 : 1.75	717	7.51	127.4	68.9	1.83	36.89	3.61
100 : 2.00	765	7.18	127.2	69.6	2.19	44.15	4.32
100 : 2.50	784	7.10	126.4	70.8	2.47	49.80	4.88
100 : 3.00	844	7.06	125.1	72.3	2.56	51.61	5.10

Table 3.

Density and viscosity of the melt of fertilizers obtained by introducing into the melt of urea polyacrylamide

Mass ratio $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$	Density (g/cm^3), at temperature, $^{\circ}\text{C}$				Viscosity (cPz), at temperature, $^{\circ}\text{C}$			
	130	135	140	145	130	135	140	145
100 : 0	1.21	1.20	1.19	1.18	2.69	2.62	2.42	2.28
100 : 0.10	1.21	1.21	1.20	1.20	3.43	3.22	3.06	2.81
100 : 0.25	1.21	1.20	1.20	1.19	4.28	4.05	3.83	3.54
100 : 0.50	1.22	1.21	1.21	1.20	4.69	4.53	4.38	4.34
100 : 0.75	1.22	1.21	1.21	1.20	8.36	7.99	7.67	7.60
100 : 1.00	1.22	1.21	1.21	1.20	8.66	8.59	8.40	8.19
100 : 1.25	1.22	1.22	1.21	1.21	10.39	9.89	9.23	8.59
100 : 1.50	1.22	1.22	1.21	1.21	11.88	11.14	10.95	10.65
100 : 1.75	1.22	1.21	1.21	1.21	13.09	12.06	11.65	10.97
100 : 2.00	1.22	1.21	1.21	1.20	14.60	14.41	14.13	13.83
100 : 2.50	1.22	1.21	1.21	1.20	16.02	15.67	14.87	14.23
100 : 3.00	1.23	1.22	1.22	1.21	22.68	20.71	18.15	16.76

The data in Table 1 show that by mixing polyacrylamide with carbamide melt, granular polyacrylamide containing fertilizers with N content from 46.22 to 45.61% and polyacrylamide from 0.09 to 2.91% were obtained. It can also be seen from the table that with an increase in the amount of polyacrylamide, the strength of the product granules increases. With a change in the mass ratio of polyacrylamide to urea melt, the strength of the granules changes as follows: At a ratio of $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$ 100 : 0.75 - 2.67 MPa; 100 : 1.5 - 3.52 MPa; 100 : 2 - 4.32 MPa; 100 : 3 - 5.10 MPa. The values of hygroscopic points of fertilizers obtained at different mass ratios $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$ according to the scale of hygroscopicity refer to hygroscopic substances, and they are less hygroscopic than the original urea (58.4%). In fertilizers obtained at a mass ratio $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n = 100 : 3.0$, the hygroscopic point is 72.3%. It can also be seen from the table that due to the addition of polyacrylamide, the pH of carbamide at the studied ratios decreases from 9.18 to 7.06. In addition, it should be noted that the obtained fertilizer granules in the studied ratios when testing for caking under the conditions of the above method, caking of fertilizers was not detected, i.e. briquette and agglomerates were not formed. When processing polyacrylamide-containing carbamide melts into granular fertilizers, their rheological properties play an important role. In this regard, the density and viscosity of the melts were studied at the above weight ratios $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$ in the temperature range 130-145 $^{\circ}\text{C}$.

Experimental data show that the value of density and viscosity mainly depends on the temperature and the mass fraction of polyacrylamide introduced into the urea melt. Both density and viscosity decrease with increasing temperature, and vice versa increase with increasing amount of polyacrylamide in the urea melt. An increase in the amount of polyacrylamide additive from 0.10 to 3.0 g per 100 g of carbamide melt at a temperature of 135 $^{\circ}\text{C}$ leads to an increase in the density and viscosity of the melts from 1.20 to 1.22 g/cm^3 ; from 2.62 to 20.71 cPz . A similar pattern is observed at other temperatures. At the studied ratios $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$ and temperature ranges of 130-140 $^{\circ}\text{C}$, all samples of $(\text{NH}_2)_2\text{CO} : (\text{C}_3\text{H}_5\text{NO})_n$ melts have sufficient fluidity, which creates favorable conditions for their granulation in the existing granulation tower without special technological difficulties. It is known that the lower the solubility of carbamide granules in water, the slower nitrogen is released from the fertilizer in the soil, which shows its prolonged effect on the plant. So, if the complete dissolution of production $(\text{NH}_2)_2\text{CO}$ granules is on average 96.1 sec., then the introduction of polyacrylamide in its composition in an amount of 0.1 to 3.0 g per 100 g of urea reduces the dissolution rate of the product granules from 96 to 844 sec. (table 2).

Conclusion. Thus, the conducted studies on the production of mellen-soluble carbamide based on the melt of urea and polyacrylamide showed the fundamental possibility of obtaining polyacrylamide containing carbamide with sufficient granule strength. Granules of polyacrylamide-containing urea have a

lower solubility compared to pure urea, i.e. they will gradually give away nutrients, by reducing the rate of dissolution of fertilizer granules, nitrogen losses in the soil are reduced, and as a result, polyacrylamide in the composition of carbamide increases its agrochemical efficiency.

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Rezyume: Maqolada karbamid suyuqlanmasi va poliakrilamid asosida sekin eriydigan karbamid olish jarayonlarini o'rganish natijalari keltirilgan. Olingan natijalar shuni ko'rsatdiki, $(\text{NH}_2)_2\text{CO}$: poliakrilamid = 100 : (0,1-3,0) massa nisbatida poliakrilamid qo'shilishi tufayli karbamid granulalarida erish vaqti 8-15 marta ortdi. Bundan tashqari, o'rganilgan nisbatlarda granulalarning mustahkamligi dastlabki 2,52 dan 5,10 MPa gacha, giroskopik nuqta 58,4% dan 72,3% gacha ortdi, pH mos ravishda 9,18 dan 7,06 gacha kamaydi. Shuningdek, karbamid eritmasiga poliakrilamid qo'shishning o'rganilgan nisbatlarida eritmaning zichligi va qovushqoqligi biroz ortishi aniqlandi. 135°C haroratda 100 gramm karbamid eritmasiga 0,5 gramm poliakrilamid qo'shilishi suyuqlanmalarining zichligi va qovushqoqligining dastlabki 1,20 dan 1,21 g/sm³ gacha va 2,62 dan 4,53 cpz gacha oshishi aniqlandi.

Резюме: В статье представлены результаты изучения процессов получения медленнорастворимого карбамида на основе плава карбамида и полиакриламида. Полученные результаты показали, что за счет добавки полиакриламида при массовом соотношении $(\text{NH}_2)_2\text{CO}$: полиакрилamid = 100 : (0.1-3.0) время растворения в воде гранул карбамида увеличится в 8-15 раз. Кроме этого при изученных соотношениях прочность гранул повышается от исходного 2,52 до 5,10 МПа, гироскопическая точка с 58,4% до 72,3%, pH снижается от 9,18 до 7,06 соответственно. Также выявлено, что при изученных соотношениях добавления полиакриламида в плава карбамида плотность и вязкость расплава незначительно повышаются. Добавка полиакриламида 0,5 грамм на 100 грамм плава карбамида при температуре 135 °C приводит к повышению плотности и вязкости расплава от исходного 1,20 до 1,21 г/см³ и от 2,62 до 4,53 сПз.

Kalit so'zlar: Karbamid, poliakrilamid, eritma, azot, erish, yopishqoqlik, granulalar mustahkamligi, mineral o'g'itlar, zichlik, erish tezligi.

Ключевые слова: Карбамид, полиакрилamid, расплав, азот, растворение, вязкость, прочность гранул, минеральные удобрения, плотность, скорость растворения.

**THE SYSTEM OF ECONOMIC AND STATISTICAL INDICATORS OF THE
STRUCTURE AND DYNAMICS OF INDUSTRIAL PRODUCTION IN UZBEKISTAN**

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Summary: *This paper discusses the problems and tasks of establishing an information base for statistical analysis of industrial production in the Republic of Uzbekistan. The final results of any study depend to a large extent on a properly analyzed initial set of indicators. Therefore, the set of indicators analyzed must meet certain requirements for such a system, such as consistency, comprehensiveness and appropriateness, among others. According to the authors, the best and most representative system should consist of the System of National Accounts (SNA) and operational business statistics, consisting of five groups of statistical indicators characterizing the structure, dynamics, direction, growth prospects and demand for industrial production. The main advantage of the resulting system is that the indicators used are widely available and accessible.*

Keywords: *system of statistical indicators; SNA; operational business statistics; industry; statistical analysis.*

A prerequisite for conducting any statistical analysis is to have a system of qualitative indicators. The system of statistical indicators is a set of interrelated and coordinated statistical indicators with a meaningful connection and a strict order structure aimed at solving a specific statistical task.

In our opinion, the system of statistical indicators in statistical analysis should meet a number of principles and criteria, which allows statistically to analyze the economic process depicted by it and completely to illustrate all its aspects. Also, the selected statistical indicators represent the description of all subjects of the studied process.

Indicators of the system describing the economic process in different dimensions or its different aspects should have the same methodological basis or be methodologically coordinated. Coordination makes it possible to use the studied indicators not only for direct interpretation, but also in combinations, as well as to compile various derivative coefficients of great importance for analytical purposes. Harmonization and coordination of definitions and classifications, on the basis of which various statistical indicators are calculated, allows to achieve coordination. In practice, indicators formed within the framework of existing systems based on these universally recognized principles and methodologies are used in the world community.

It should be noted that the globalization of the modern economy and special dependence of Uzbekistan's industry on demand of foreign markets require the analysis of the trends of the real sector of the country's economy in relation to global or at least European paces and directions of economic development. At the same time, advanced growth rates or decline rates of related sectors can be considered as a result of the industrial policy of the state. This makes it possible to make a real assessment of the effectiveness of the implementation of the strategy for the development of the real sector of the economy of Uzbekistan. Thus, for the countries that are the main trade partners of Uzbekistan, there is a need for restoring the value of most of the main indicators of the system and their openness.

In a word, the following main requirements for the system of industrial statistics indicators can be distinguished:

1. Availability of indicator value.
2. Completeness and content integrity.

3. Methodological coordination [1].

To date, a large number of different economic-statistical indicator systems have been developed, which allow to describe and evaluate socio-economic processes and programs in terms of quantity and quality. The main place among them is the National Accounts System, as well as operational business statistics. The System of National Accounts (SNA) is a statistical database that includes a comprehensive, systematic and flexible set of macroeconomic accounts used for research, analysis and policy development. Indeed, today it is difficult to overestimate the importance of the system of national accounts in the study of the economic life of society. In this case, SNA allows not only to assess the results of the economy, but also to forecast the values of macroeconomic indicators, to determine the level of influence of the decisions made by the state administration bodies on their dynamics [3].

The main task of SNA is to provide a comprehensive overview of the state of the national economy (production and consumption, sources of investments, income formation and distribution processes) in a simplified form.

SNA connects the most important macroeconomic indicators—the volume of production, the total incomes and expenses of various sectors of the economy and institutional units; represent the gross domestic product in all principal stages—production, distribution and use. SNA is a balanced system of indicators that has a common basis and strong interrelationships in the form of an internationally coordinated macroeconomic analysis methodology, representing a universally recognized system of research methods, classifications, definitions and concepts.

Organizations such as Eurostat, the Organization for Economic Co-operation and Development (OECD), the World Bank, the United Nations (UN) Statistical Office and the International Monetary Fund (IMF) are constantly working on the development of new standards. Currently, the SNA-2008 standard is used or introduced in many countries of the world. It is worth noting the consistency of new standards, and each new standard version is the continuation of the previous one and therefore provides the formation of comparable information [4].

Including SNA institutional sector accounts, consolidated and sectoral accounts, they provide information on the dynamics, structure and distribution of GDP at current and comparable prices, as well as indicators of prices, gross value added, structure and dynamics of production volume, etc. The main accounts, balance items and aggregates of SNA-2008 are shown in Tab.-1.

Table-1

Main accounts balancing SNA items and aggregates

№	Account	Item	Aggregate
1.	Current accounts		
1.1.	Production account	Added value	Gross Domestic Product (GDP), Net Domestic Product (SDP);
1.2.	Distribution and redistribution accounts	Balance of primary income, disposable income	Gross National Income (GNI), Net National Income (NNI), Property and Business Income (MTOD);
1.3.	Income use accounts	Savings	National savings
2	Accumulation accounts		
2.1	Capital account	Net lending / net borrowing	
2.2	Financial account		
2.3	Accounts for other changes in volume of assets and revaluation	Change in net capital value due to other changes in assets	
3	Balance sheets of assets and liabilities	Net cost of capital /change in net worth	National wealth

In general, a certain complete list of indicators recommended for publication and calculated within the framework of SNA is widely known and does not need a detailed description. It is only worth noting that within the analysis of industrial production, first of all, production accounts and income distribution and recalculation accounts are of interest. Most countries now calculate and publish at least output, intermediate consumption and gross value added (by industry and sector) and fixed investment as part of these national accounts. All this makes it possible to obtain macroeconomic data that can be compared between countries with a market economy with the help of SNA.

The concept of “business statistics” appeared in Europe 40 years ago, on May 30, 1972, with the adoption of the first directive No. 72/211/EES “On the coordination of actions in the field of statistics of industrial sectors”. Six years later, on February 13, 1978, Directive 78/166/EEC “On the coordination of activities in the field of civil construction” appeared.

In the future, with the strengthening of integration processes in the economic and political spheres of European countries, the need for standardized and comparable data on the development of the economy only grew, which led to the consistent creation of a number of regulations on the collection, processing and publication of statistical data related to business processes in the EU countries. As a result, this led to the consolidation of the legal framework for operational business statistics (OBS) in the 1997 EU statistical law (Legal framework for European statistics: The Statistical Law) and later to the creation of a directive on operational business statistics (Council Regulation 1165/1998). The main goal of the directive is to create general rules for the development of operational business statistics that can provide all interested users with a complete set of indicators necessary for the analysis of key business trends.

This rule applies to all types of market activities corresponding to C-E, F-O codes of the NACE (National Association of Corrosion Engineers) classification. OBS does not cover highly specialized sectors such as agriculture or forestry, as well as activities that are mainly focused on providing non-market services. Therefore, the indicators recommended for publication in applications for each of the sectors of the economy (industry, construction, retail trade, services), their measurement, level of detail, date and period of publication, etc. will be listed [5].

Like the System of National Accounts, operational business statistics are regularly improved, some of its rules are revised, and as a result commentaries on the rules and newly developed methodologies are regularly published. Currently, the main document on the development of OBS in the EU countries is the operational business statistics methodology – review and methodological guidelines.

In Uzbekistan, there is no separate methodology for calculating operational business statistics indicators, as well as separate legal documents and operating it. But it does not mean that there are no fast business statistics in Uzbekistan. A detailed comparative analysis of Eurostat methodologies and methods of calculating indicators published by the State Statistics Committee shows that most of the main indicator rules OBS are also calculated in Uzbekistan. The problem is that these statistics, as a rule, are not conducted in a targeted manner (on the basis of users in the business environment), but are often considered as preparatory material for the preparation of national accounts. This brings about a number of problems, such as a lack of some indicators. However, it does not make it impossible to use these indicators for statistical analysis and comparison with the indicators of other countries.

The selection of data for the creation of an effective system of statistical indicators in the analysis of the development of industrial production was carried out on the basis of a meaningful and methodological analysis of SNA and OBS indicators. This ensures the comparability and coordination of the indicators at the methodological level, and not the completeness of the reflection of all aspects of the industrial production of the resulting system (Table-2).

Table-2

System of statistical indicators of industrial production

№	Indicator	Form	Purpose of inclusion
1	Release	National currency, basic prices, absolute and relative values	Analysis of industrial structure, production and consumption
2	National currency		
3	Intermediate consumption		
4	Added value	Chain indices	Analysis of demand for industrial products from internal and external consumers
5	Price index		
6	Export, import of goods	United States dollars, absolute and relative values	
7	Industrial production index	Chain Economic Indices	Analysis of the dynamics of the physical volume of production
8	Number of employees		Analysis of medium-term trends in the industry and its individual sectors
9	Average wage		
10	Average hours worked		
11	Investments in fixed assets	National currency, absolute and relative values	Analysis of short-term trends in the economy of the Republic of Uzbekistan
12	Leading indicators of development	comparable prices	
13	Other indicators of macro statistics	Indices, absolute and relative values	

Thus, in order to analyze the development of industrial production, we recommend to distinguish the following group of indicators in the system of statistical indicators:

The first group: consists of statistical indicators of the structure of industrial production, which include production and services (GDP), intermediate consumption (IC) and gross value added (GVA).

The second group: includes statistical indicators describing the demand for industrial production. First of all, they include rapid business statistical indicators, in particular, the index of turnover of goods and the index of producer prices. Another block of this group is foreign trade indicators, in particular, export and import of goods and general foreign trade turnover according to customs statistics.

The third group: includes statistical indicators describing the development prospects of the network. This group includes indicators of the growth rate: the number of people employed in production, the average number of hours worked by one employee and the average salary.

The fourth group: an indicator of operational business statistics – industrial production index that describes the dynamics of the physical volume of industrial production.

Fifth group: intended for the analysis of short and medium-term trends of industrial production in Uzbekistan. It includes all the above Indicators plus key indicators of business and macroeconomic statistics: inflation, quarterly GDP (Q), national exchange rate, etc.

The resulting system covers a wide range of indicators for several processes observed in many countries (taking into account the analysis of individual industries), and therefore is large enough to require storage in the form of a dataset. Data sources of the UN, IHTT, Eurostat, as well as national statistical offices are used to supplement the system of statistical indicators with data. At

the same time, it should be noted that the values of individual indicators (in some observations) and the required forms (report) are not provided. To solve this problem, generally accepted statistical methods are used to fill in the missing data and to form indicators, including index indicators.

In general, the system of statistical indicators of national industrial production serves for a complete, qualitative and comprehensive analysis of the country's industry, and it is also considered sufficient for a broad statistical analysis of the industry of the countries on which the industry of Uzbekistan is significantly dependent.

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Rezyume: Ushbu maqolada O'zbekiston Respublikasi sanoat ishlab chiqarishini statistik tahlil qilish uchun axborot bazasini shakllantirish muammolari va vazifalari ko'rib chiqiladi. Har qanday tadqiqotning yakuniy natijalari ko'p jihatdan to'g'ri tahlil qilingan dastlabki ko'rsatkichlar to'plamiga bog'liq. Shuning uchun tahlil qilinadigan ko'rsatkichlar to'plami bunday tizim uchun izchillik, to'liqlik va maqsadga muvofiqlik kabi ma'lum talablarga javob berishi kerak. Mualliflarning fikricha, eng sifatli va reprezentativ tizim milliy hisoblar tizimi (MHT) va tezkor biznes statistikasi ko'rsatkichlaridan iborat bo'lishi va tarkibi, dinamikasi, yo'nalishlari, rivojlanish istiqbollari va sanoat mahsulotlariga bo'lgan talabni tavsiflovchi beshta statistik ko'rsatkich blokini o'z ichiga olishi kerak. Olingan tizimning muhim afzalligi - foydalaniladigan ko'rsatkichlarning keng qo'llanilishi va mavjudligi.

Резюме: В данной работе рассматриваются проблемы и задачи формирования информационной базы для статистического анализа промышленного производства в Республике Узбекистан. Конечные результаты любого исследования во многом зависят от правильно проанализированного исходного набора показателей. Поэтому набор анализируемых показателей должен отвечать определенным требованиям, предъявляемым к такой системе, таким как непротиворечивость, полнота и целесообразность и прочих. По мнению авторов, наиболее качественная и представительная система должна состоять из системы национальных счетов (СНС) и оперативной бизнес-статистики, включающих пять групп статистических показателей, характеризующих структуру, динамику, направление, перспективы роста и спрос промышленного производства. Основным преимуществом полученной системы является то, что используемые показатели широко распространены и доступны.

Kalit so'zlar: statistik ko'rsatkichlar tizimi; MHT; operativ biznes statistikasi; sanoat; statistik tahlil.

Ключевые слова: система статистических показателей; СНС; оперативная бизнес-статистика; промышленность; статистический анализ.

SCIENTIFIC AND THEORETICAL BASIS OF THE DEVELOPMENT OF INNOVATIVE SERVICES IN THE CONDITIONS OF AN OPEN ECONOMY

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Summary: *This article discusses the ways of innovative services in the service sector of the region in the conditions of an open economy.*

Keywords: *region, open economy, investment, innovation, infrastructure, service sector.*

In the conditions of open market economy, the development of innovative services is of great importance for the growth of the economy of the country and the region, as well as for increasing its competitiveness in the international trade of services. At a time when the majority of developed and developing countries' economy is made up of services, the share of services in the economy of the world and our country is also observed to increase year by year. One of the main reasons for this is the increase in production and consumption of services by the population, the liberalization of trade, the increase in the number of free economic zones, investment and, most importantly, the growth of innovative technologies. The service sector creates new jobs for the population without relatively large capital expenditures. It is one of the main priority sectors of the country's economy in terms of GDP growth, which ensures economic and social growth. President of the Republic of Uzbekistan Sh.M. As Mirziyoev noted, "The service sector is one of the biggest sources of employment for the population. Its share in the gross domestic product in our country is 35 percent. According to the analyzes of the International Labor Organization, a 1% increase in the service industry reduces the number of poor people by 1.5%.[1].

Although this rapid development of trade in services around the world depends on a number of factors, the most important of them is the development of services based on innovation and scientific and technical knowledge, and their share is increasing. Trade in services was difficult because it was directly related to the human factor, then the development of the digital economy based on knowledge eliminated a number of obstacles in the international trade of services and became the main impetus for the innovative development of the sector. The Internet, mobile communications, nanotechnology, and other intellectual technological innovations are making trade in services almost as tangible as trade in goods.

Increasing the share of foreign students from 1% in 2019 to 10% by 2025 and 15% by 2030 in the "Concept for the Development of the Higher Education System in the Republic of Uzbekistan until 2030"[2], and to increase the number of start-up projects included in the incubation and acceleration programs of the technology park of software products and information technologies in the "Digital Uzbekistan-2030" strategy for the international trade of programming services from 50 in 2020 to 700 by 2025, and to 2300 by 2030, as well as software products export from 10 million dollars in 2020 to 100 million dollars by 2025, that is, to increase 10 times and increase their share of the gross domestic product (GDP) in the information technology sector to at least 4%[3]planned as a strategic goal.

In the conditions of globalization, all the countries of the world with an open economy have their rightful place in international economic relations, have significant indicators in the export and import of goods and services, and are making a determined effort to increase their national economic efficiency. For countries that are trying to enter the international markets of services and do not have a sufficient share in the international trade turnover, the development of the service sector and its future development to the level of the standards of developed countries, and the emergence of internal and mainly external demand for these services, are of great importance in the development of their national economy. It is known from the experience of the international trade of innovative services of the developed countries of the world that they have achieved the current effective results through the successful establishment of the mechanism of international economic relations.

Innovation is an important factor of economic development, which is beneficial for all subjects of economic processes. Innovation is the basis of service and production efficiency, economy and, of

course, high quality indicators. Innovations help to improve the country's macroeconomic performance if it provides competitiveness for enterprises in entering markets. The basis of innovative development in the country is the focus on education, digital and knowledge-based economy, and free and open economic relations. Innovative services international trade is an important form of global economic relations in the current conditions of expanding open economic relations, and represents a high form of services between sellers, consumers and intermediaries of different countries.

At the current stage of the globalization process, in the conditions of the new Uzbekistan, the economic reforms carried out in the republic in the last five years have a significant impact on the development of international economic relations, especially the development of its rapidly developing international trade and services sector. Because no country, regardless of its desired ideology, culture, politics, social and economic systems, can effectively satisfy its population's needs for modern goods and services independently without widening international trade and services, wrapped in its own shell, and able to achieve long-term development. cannot be reached. Effective establishment of international trade relations mainly through the rules of the open economy, countries satisfy their needs for goods and services that they do not have the advantage of producing, or the production of which is inefficient at the level of existing capabilities and efficiently meet their needs while saving scarce resources and achieve rapid development of their national economy through export relations. One of the main pillars of establishing such international economic relations is the wide establishment of international trade in services with foreign countries and effective, priority innovative services.

As a result of the reforms carried out in our country in recent years and the implementation of an open economy, significant progress is being made in the development of the service sector, which is the main link of the tertiary sector, not limited to the direct use of the primary and secondary sectors of the economy, that is, agriculture or natural resources and their processing. In particular, there have been wide opportunities for the development of innovative directions of services and international trade of their products, as well as for increasing the volume of export of services. This ensures rapid development of the network in the near future[4].

The rich experience of foreign developed countries in the field of services and international trade of services, especially its innovative directions, shows that priority in national economic sectors is a means of rapid resolution of a number of economic and social problems, and it is necessary to use them as an important factor in the rapid development of the economy of our country.

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Rezyume: *Ushbu maqolada ochiq iqtisodiyot sharoitida mintaqaning xizmat ko'rsatish sohasida innovatsion xizmatlar ko'rsatish yo'llari muhokama qilinadi.*

Резюме: *В данной статье рассматриваются пути инновационного обслуживания в сфере услуг региона в условиях открытой экономики.*

Kalit so'zlar: *mintaqa, ochiq iqtisodiyot, investitsiyalar, innovatsiyalar, infratuzilma, xizmat ko'rsatish sohasi.*

Ключевые слова: *регион, открытая экономика, инвестиции, инновации, инфраструктура, сфера услуг.*

WAYS TO IMPROVE BENEFITS FOR CUSTOMS PAYMENTS

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Summary: *This article reveals the essence of the benefits provided from customs payments in the regulation of foreign trade of the Republic of Uzbekistan and their role in the development of the national economy. The benefits provided by the customs authorities from customs payments were also analyzed, and scientifically based proposals and recommendations were made to improve their application*

Keywords: *Customs payments, foreign economic activity, import customs duties, value added tax and excises, benefits, production modernization, exemption from customs duties, tariff benefits, customs benefits.*

Introduction

Comprehensive support for enterprises that import-substituting and producing competitive finished products in our country, modernizing the economy, stimulating technical and technological equipment, developing and reforming our economy in order to create an investment environment, achieve structural changes and deepen diversification, The development of small businesses, first of all, requires a lot of amount of funds. In this direction, tasks have been defined, and when they are fulfilled, participants in foreign economic activity are provided with a number of benefits on the basis of laws and regulations adopted in our Republic, and this, in turn, facilitates the reduction of funds. spent by subjects of foreign economic activity or direct them to other efficient activities.

At the same time, increased competition in the global and regional investment markets will create an even more favorable investment climate in the country, modernize production, adapt production to the requirements of the time, and stimulate the attraction of foreign investment for the implementation of projects. on technical and technological renewal, high-tech production One of the main issues is to create the most favorable investment environment for foreign investors making direct investments in development, to strengthen incentives to attract foreign investment and modern technologies to the regions of our republic, and to create a broad system of guarantees, privileges and benefits for foreign investors and enterprises with foreign investment.

In this regard, the Decree of the President of the Republic of Uzbekistan Sh. Mirziyoyev dated June 27, 2019 No. PF-5755 “On measures to further regulate the provision of tax and customs benefits” was adopted. Tasks were defined for further improvement of the country's investment environment, ensuring the implementation of the principles of fair competition and regulation of the practice of granting tax and customs benefits. [4].

At present, one of the main topical issues is the analysis from an economic point of view of providing benefits to participants in foreign economic activity in the country and determining ways to improve their efficiency.

Privileges from customs duties are considered one of the main advantages in customs, they significantly reduce the financial costs of participants in foreign economic activity in the implementation of international trade, create the basis for increasing the investment attractiveness of the country and increasing the country's foreign trade turnover. turnover, and also affect the volume of transfer of customs payments to the state budget.

Scientific Literature Review

Therefore, first of all, it is necessary to clarify the main content of the concept of benefits from customs payments, the procedure, grounds and need for their presentation. A number of scientists have studied the nature of benefits from customs payments and the mechanisms for their provision. their application.

In this regard, let's pay attention to the opinions of scientists who conducted research on the nature and procedure for applying benefits on customs duties in the literature. For example:

Authors Nurusheva L.K., Fadeeva O.V. in his study determined that "customs benefits are determined by customs legislation, the benefits of exempting goods from customs payments" [7].

According to M.G. Yenadarova, "there are many different classifications of benefits from customs payments. Traditionally, exemptions from customs duties are divided into two groups: tariff incentives and tariff preferences. When studying the system of preferences for the payment of customs duties, it is necessary to distinguish between the concepts of "customs-tariff preference" and "tariff preference".

Xalqaro savdodaghi tariff preferencelari deganda, bozhxona chegarasi orqali olib ytilayotgan tovarlarning kelib chikish mamlakatiga karab q'llaniladigan xamda barcha tovarlar yoki ularning alohinda turlariga nisbatan belgilanadigan belgilanadigan import va export bozhla zula imchash bozhini t'yi].

F. Rakhmatullayeva defined tax incentives as a category as follows: "Privileges are a set of methods, rights and obligations to fully or partially reduce the taxpayer's tax liabilities in the form prescribed by law in order to regulate the economy by the state and solve social problems." [9].

Thus, the provision of incentives can be considered as one of the methods for implementing the country's trade policy. An analysis of tariff incentives shows that imports and exports are benefits associated with the payment of customs duties, which are granted depending on the type of product and its destination.

Privileges and preferences give certain advantages, additional rights, and it is understood that a person is completely or partially exempted from the implementation of established rules and obligations, or the conditions for their implementation are facilitated.

Exemption from payment of customs duties - these are the benefits established by law for persons carrying out import operations, which are exempted from payment of customs duties when they import goods. If we analyze the Law on Customs Duties and Tax Benefits:

- The Constitution of the Republic of Uzbekistan establishes that benefits should be determined only by law and should comply with the principles of social justice. [1].

According to Article 296 of the Customs Code, according to this Code, other laws, as well as resolutions of the President of the Republic of Uzbekistan, it is established that legal entities and individuals can be provided with tariff preferences, benefits for the payment of value added. tax, excises and customs duties, tariff preferences.

In accordance with Article 298 of the Customs Code, it is established that benefits for the payment of value added tax and excise tax on goods transported across the customs border are provided in accordance with the Tax Code of the Republic of Uzbekistan. [2].

Согласно части первой статьи 75 Налогового кодекса Республики Узбекистан признаются преимущества, предоставляемые налоговым законодательством для отдельных категорий налогоплательщиков по сравнению с другими налогоплательщиками, в том числе возможность неуплаты налогов или их уплаты в меньших размерах. в качестве налоговых льгот. [3].

Based on the above benefits for the payment of customs payments - for certain categories of individuals and legal entities, or when moving certain goods across the customs border and when performing operations by customs authorities, regardless of the category of advantages of foreign economic activity, we can define this as exemption from customs duties.

Analysis and results

At the same time, the customs authorities control the granting of benefits for other payments established by the legislation and charged to the customs authorities. (Fig. 1)

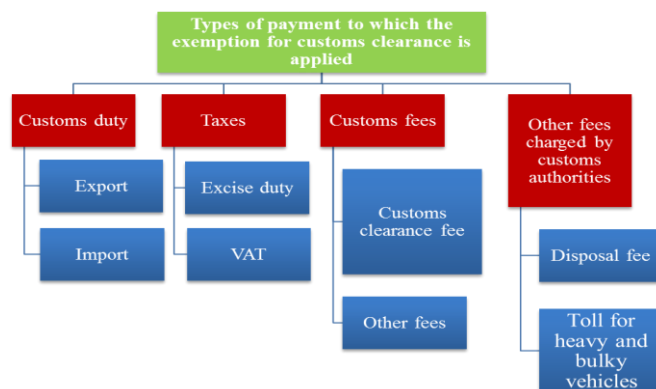


Figure 1. Customs duties and collection scheme for exemption from duties levied on customs authorities.

Regulatory legal documents on benefits for customs payments can be divided into two areas, namely: regulatory legal documents of a general nature; carried out on the basis of normative legal documents of an individual nature.

According to regulatory legal documents of a general nature, benefits for the payment of customs duties are applied on the basis of the Customs Code and the Tax Code of the Republic of Uzbekistan, and the benefits established by them are of an unlimited nature. In most cases, benefits for the payment of customs duties on the basis of normative legal documents of an individual nature are provided on the basis of Decrees, Resolutions and Orders of the President of the Republic of Uzbekistan in order to develop a certain industry, type of activity or organization.

In Table 1 below, normative and legal documents of a general nature on granting exemptions from customs fees are given.

Table 1

Regulatory legal documents of a general nature, reflecting the benefits for customs duties when importing goods into the Republic of Uzbekistan

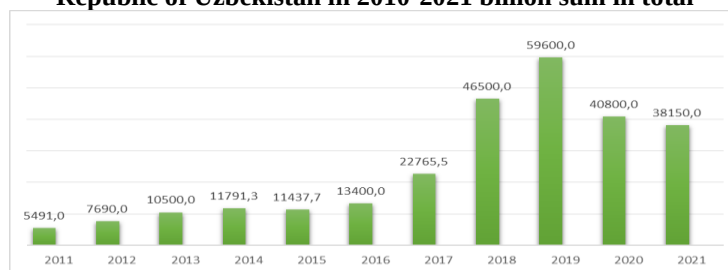
No	Types of customs fees	Legal document introducing benefits
1.	Exemptions from the customs fee for customs clearance	Customs Code of the Republic of Uzbekistan, Article 299.
2.	Benefits from import customs duty	Customs Code of the Republic of Uzbekistan, Article 297.
3.	Granting tariff preferences	300 of the Customs Code of the Republic of Uzbekistan .
4.	Benefits from excise tax	Tax Code of the Republic of Uzbekistan, Article 284.
5.	Benefits from value added tax	Tax Code of the Republic of Uzbekistan, Article 246.

(Source: Developed by the author based on regulatory documents)

We see that in 2011-2021, customs duty exemptions increased 7 times (Diagram 1), in these years, customs duty exemptions decreased from 68.7% to 53.4%, and the share of customs duties transferred to the state budget decreased from 31.3% to 46.6%.

1-диаграмма.

The amount of benefits for the payment of customs payments provided by the customs authorities of the Republic of Uzbekistan in 2010-2021 billion sum in total



(Source: Prepared by the author based on State Customs Committee(SCC) data.)

If we analyze the share of concessions granted by the customs authorities in the section of customs payments in 2018-2021, in 2018, 66.70 percent corresponded to the value added tax, 28.09 percent to the import customs duty, 5.10 percent to the excise tax, and 0.01 percent to the share of customs fees. In 2021, these indicators were 49.20, 50.72, 0.02 and 0.06 percent, respectively (Table 1).

During this period, we can see that tariff preferences and benefits from import customs duty are increasing, and benefits from value added tax are decreasing. Also, during this period, including in 2021, the cancellation of excise tax on 73 types of imported goods caused a sharp decrease in excise tax benefits.

Amounts of concessions given in terms of customs payments differ according to regulatory and legal documents in this direction, according to regions, enterprises, and categories of goods.

Table 2

The share of benefits granted by the customs authorities in the section of customs payments in 2018-2021. In percent.

Years	Total exemptions from customs duties	Import customs duty	Excise tax	Value added tax	Customs fees
2018	100.00	28.09	5.10	66.70	0.01
2019	100.00	32.29	5.30	62.40	0.01
2020	100.00	42.90	3.90	53.80	0.01
2021	100.00	50.72	0.02	49.20	0.06

(Source: Prepared by the author based on SCC data.)

To date, exemption from customs payments is regulated by more than 360 documents and a number of legal acts, the main part of which are documents providing for exemption from customs payments. Full and quick familiarization with such documents and the amendments made to them creates a number of difficulties and ambiguities for participants in foreign economic activity when studying about 400 legal documents.

Decree of the President of the Republic of Uzbekistan dated April 8, 2022 No. PF-101 "On further reforms to improve the business environment and create conditions for sustainable economic growth through the development of the private sector"[5]. According to him, from July 1, 2022, the customs determined that customs benefits will be provided only by the legislation of the Republic of Uzbekistan.

Based on the foregoing, since benefits are determined only by the laws of the Republic of Uzbekistan, it would be advisable to develop and introduce a draft law providing for benefits under a single customs tariff.

For example, in the decision of the Eurasian Economic Commission dated November 27, 2009 No. 130 "On the Regulations on the Common Customs Tariff of the Eurasian Economic Union", paragraph 7.1 consists of 54 subparagraphs, and this document is reflected as a single document reflecting tariff preferences[6]. All changes and additions to tariff preferences are reflected in this document itself. For reference: to date, this document has been amended and supplemented 65 times. Today, due to the high need to maintain special customs benefits in certain sectors and sectors, there is no possibility of completely abolishing these benefits. In order to create a relatively healthy competitive environment, eligible projects are not offered online through any websites or programs. For example, the auction system for granting concessions according to the "lowest concession - the highest result" scheme through a healthy and transparent competitive environment among all TIF participants who have the opportunity to implement a project (whether it be the service sector or construction) with the least number of special concessions has not been made at present.

Re-analysis of existing regulatory documents providing for the provision of customs benefits to individual enterprises and organizations, the creation of an optimal decision-making mechanism on the need to abolish or introduce less effective benefits, with regular analysis (every 6 months,

every year and according to the volume of applications received) conducting and analyzing the economic situation in the republic, the volume of intersectoral production at the enterprises of our country, to what extent this volume corresponds to the demand of the domestic market today, as well as the introduction of an online presentation of an auction form that makes it possible to use limited concessions depending on the number of importers or the volume of goods. As a result, it is possible to obtain information on the possibilities of using incentives in trade in goods or services in Uzbekistan in the current period. At the same time, it is proposed to clearly define the term for the intended use of benefits provided in parallel, and in case of failure to fulfill the established plan after the expiration of the period, introduce a procedure for collecting used benefits.

In conclusion, taking into account the above, the introduction of amendments and additions to the regulatory documents on benefits for customs payments serves to increase the effectiveness of benefits for customs payments and further increase the collection of customs payments.

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Rezyume: Mazkur maqolada O'zbekiston Respublikasi tashqi savdosini tartibga solishdagi bojxona to'lovlaridan berilayotgan imtiyozlarning mazmun-mohiyati va ularning milliy iqtisodiyotni rivojlantirishdagi o'rni ochib berilgan. Shuningdek, bojxona organlarida bojxona to'lovlaridan berilayotgan imtiyozlar tahlil qilinib, ularning qo'llashni takomillashtirish bo'yicha ilmiy asoslangan taklif va tavsiyalar berildi.

Резюме: В данной статье раскрывается сущность льгот, предоставляемых от таможенных платежей при регулировании внешней торговли Республики Узбекистан и их роль в развитии национальной экономики. Также были проанализированы льготы, предоставляемые таможенными органами от таможенных платежей, и сделаны научно обоснованные предложения и рекомендации по совершенствованию их применения

Kalit so'zlar: Bojxona to'lovlari, tashqi iqtisodiy faoliyat, import bojxona boji, qo'shilgan qiymat solig'i va aktsiz solig'i, imtiyozlar, ishlab chiqarishni modernizatsiyalash, bojxona to'lovlaridan berilgan imtiyozlar, tarif imtiyozlari, bojxona imtiyozlari.

Ключевые слова: Таможенные платежи, внешнеэкономическая деятельность, ввозные таможенные пошлины, налог на добавленную стоимость и акцизы, льготы, модернизация производства, освобождение от таможенных платежей, тарифные льготы, таможенные льготы.

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**THE ROLE OF CONSTRUCTION ORGANIZATIONS IN THE ECONOMY OF
UZBEKISTAN**

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Summary: *The article examines the role of construction enterprises in the economy, the contribution of the construction industry of the Republic of Uzbekistan to the gross domestic product, the volume of work performed in the field of construction by years. The number of people employed in the construction industry is presented in the charts.*

Keywords: *construction works, organization, gross domestic product, employed population, economics of construction.*

The construction industry plays an important role in ensuring stable and balanced growth rates in our republic. Because this industry is directly involved in the real implementation of investment intended for input into production and non-production areas of the national economy. The role of the construction industry is invaluable in the improvement, modernization, technical and technological renewal of the material and technical base of production and reproduction

Decree of the President of the Republic of Uzbekistan PF-6119 of November 27, 2020 on approval of the strategy for modernization, accelerated and innovative development of the construction industry of the Republic of Uzbekistan for 2021-2026 was adopted.

The construction industry plays an important role in creating the material and technical base of all sectors of the economy and meeting the needs of the population for the services of comfortable housing, social and engineering infrastructure, as well as cultural and leisure activities.

Among the sectors of the national economy of the Republic of Uzbekistan, the construction industry occupies an important place and importance not only as an area that forms the capital stock of the economy, but also in the implementation of structural changes taking place in the economy of the country, as well as urgent issues of the social sphere having various characteristics (demographic structure and its variability, high level of rural population, as well as housing and socio-cultural and everyday problems, insufficient provision of facilities, internal infrastructure, insufficient development of transport and communication facilities, et cetera)[1].

Construction is a separate independent branch of the national economy, designed for the commissioning of new, as well as reconstruction, expansion, repair and technical re-equipment of existing production and non-production facilities. The decisive role of the construction industry is to create conditions for accelerated development of the country's economy [2].

Construction work-construction, reconstruction of buildings and structures is the result of construction production as a complex of works on expansion, complete overhaul and current repair [3]. In the world economic literature there are also a variety of approaches to the definition of the term "construction", some of which we will consider.

Construction is the process of erecting a building or infrastructure and distinguished depending on the industry in that the industry is usually engaged in the production of similar products in large quantities for previously unknown customers, while construction is usually accompanied in a specific area of the client [4]. According to K.Chitkara, an Indian expert scientist in the field of construction, construction as a separate network accounts for 6% to 9% of the gross domestic product in developed countries and involves a process that begins with construction planning, design and financing and continues until the project is completed and put into exploitation [5]. Summarizing the fundamentally different definitions given to the term "construction" in the aforementioned republican normative documents and foreign literature, we thought it permissible to

cite the interpretation taken from the Oxford English Dictionary: "Construction is a general term meaning the art and science necessary to build an enterprise, system or object, derived from the Latin *constructio*, meaning "together" and "assembly" and from the old French word *construction* [6]. Based on this definition, construction can be divided into three sectors: construction, infrastructure, and industrial construction. In this case, buildings are used in residential, non-residential or commercial and institutional buildings, infrastructure construction includes the construction of large public facilities such as heavy machinery, dams, bridges, railroads, water supply, sewage, utility facilities, industrial construction consists of the construction of oil refineries, chemical technology, power generation and other production facilities [7].

It can also be classified depending on the method of construction work as follows:

- performance of construction work by the method of pudridders with the involvement of other construction and installation companies (customer, contractor);
- the method of farming, which is carried out independently, is the performance of construction work;
- performance of works by own forces by mixed method and construction of individual special facilities with the involvement of construction and installation companies;

Thus, construction is the process of erecting a building or infrastructure, which differs from activities performed in another field in which it is usually performed for a known customer and on land not owned by the construction company.

Even in our republic, the relations established in the construction industry in recent decades after independence have not always allowed to create effective competition. One of the main reasons for this is the process associated with the monopolization of construction enterprises formed by privatization and transformation into joint-stock companies on the basis of former state structures. It is worth noting that price competition in this situation is of an abstract and controlled character, with a few dominant construction and installation companies in a particular region determining both the prices and the timing and extent of their changes. On the other hand, other, smaller construction and installation companies, unable to resist such a situation, control their selling prices following the leaders. The downside of the situation is that markets operating according to this principle are far from the real market mechanism in which price competition practically disappears. Such an unfavorable competitive environment can have serious consequences: the interest in increasing the efficiency of production is reduced; there is no desire to find new ways to reduce production costs. Such factors make the construction industry extremely vulnerable. One of the main reasons for this uncompetitive market is the high level of corruption in enterprises engaged in construction work. According to some studies overseas, 10 to 30 percent of construction work is lost due to corruption. An investigation in the Canadian province of Quebec revealed widespread conflicts involving politicians, contractors and even organized crime gangs in bribery of contracts in the construction sector [4]. Over the years of independence we can see the growth of the share of construction in gross domestic product(GDP) (1-pic).



1-picture. Share of construction in gross domestic product(as a percentage) [5].

The construction industry's share of the country's GDP was 5.4 percent. In 2021, growth was 6.6 percent, an increase of 1.2 percent over 2010. The growth of construction in GDP was caused by the presidential decree of March 3, 2021, No. 6186 "on additional measures to ensure housing through the allocation of mortgages based on market principles." The decree provided for the construction of 33,114 apartments and individual housing units throughout the country. With the increase in the welfare of the population due to the completion of housing construction, it also affects the growth of gross domestic product in the construction industry of the region.

Effective implementation of tasks and activities outlined in the programs aimed at deepening the development, modernization and differentiation of the construction industry of our country, the formation of modern infrastructure, allows you to see that the volume of construction work is growing from year to year.

In 2021, the employed population was 13,538,900 million. Since then, the population employed in construction has been 1,350,800 million. Total employment was 10% of the population.



2-picture. Population employed in construction (thousand people) [6]

The population employed in construction in 2010 was 1033700. In 2015, that number reached 1,222,200, and in 2021 there were 1,350,800 people employed in construction. The population employed in construction increased by 317,100 compared to 2010.

Table 1.

**Number of enterprises and organizations working in construction
(As of January 1, in unit number)**

Years	2016	2017	2018	2019	2020	2021	2022	2023
Total	257758	268428	285531	323517	398133	475197	528929	592371
Construction	21173	22089	24118	29112	36199	40950	43695	46971

As of January 1, 2023, the number of businesses operating in the construction sector increased 1.6 times compared to the corresponding period in 2019.

According to statistics, the number of enterprises operating in the construction sector in 2019 was 29,112. In addition, the number of enterprises operating in construction was 36,199 in 2020 and 40,950 in 2021. Also, the figure was 43,695 in 2022 and 46,971 in 2023. In 2023, 8% of the total number of operating enterprises.

Thus, the growth of the construction sector has a multiplicative effect on the economy, as an increase in large-scale production in the construction sector ultimately leads to an increase in gross domestic product and stimulates the creation of new jobs, increasing the investment potential, as well as the welfare of the population.

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Rezyume: *Maqolada qurilish korxonalarining iqtisodiyotda tutgan o'rni, O'zbekiston Respublikasida qurilish sohasining yalpi ichki mahsulotda qo'shgan hissasi, yillar kesimida qurilish sohasida bajarilgan ishlar hajmi o'rganilgan. Qurilish sohasida band bo'lgan aholi soni diagrammalarda keltirilgan.*

Резюме: *В статье изучена роль строительных предприятий в экономике, вклад строительной отрасли в валовой внутренний продукт Республики Узбекистан, а также объем выполненных работ в строительной*

Kalit so'zlar: *qurilish ishlari, tashkilot, yalpi ichi mahsulot, band aholi, qurilish iqtisodiyoti*

Ключевые слова: *строительные работы, организация, валовой внутренний продукт, занятое население, экономика строительства.*

**THE VALUE AND SIGNIFICANCE OF THE DEVELOPMENT OF TOURISM ACTIVITY
IN OUR REPUBLIC IN THE ECONOMY**

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Summary: *Currently, developed countries are conducting a number of research studies on the impact of tourism on their economy, social sphere, ecology and other spheres. Cultural tourism is one of the more developed fields than other types of tourism. According it is no secret that the historical, ancient memory and visual arts rich in old, cultural and spiritual monuments in our country have attracted world tourists.*

Keywords: *Tourism, memorial, monument, firm, pictorial, cultural, sculpture, Uzbektourism, tour operator, business, electronic, accommodation, development, unitary, heritage, innovation and technology.*

Introduction. Tourism is considered one of the highly profitable and rapidly developing industries in the world economy, and occupies an important place in strengthening international socio-political, economic and cultural relations. In particular, it can be emphasized that this sector is the leader in the creation of labor-demanding industrial jobs, the number of enterprises is superior to the tourism sector, it plays a key role in the preservation of the natural and cultural environment and sustainable development, and it makes a significant contribution to ensuring the harmony of peoples and nations. Today, with its multifaceted structure, tourism has an active influence on all spheres of society's life. In the Republic of Uzbekistan, from the first days of our independence, the state support of the tourism sector, the creation of incentives for the enterprises engaged in this sector, as well as the formation of the infrastructure for the tourism sector, are being continued at a rapid pace.

The development of tourism at the same time includes a number of areas related to the provision of quality services to tourists, forming a unique industry of recreation, recreation and entertainment facilities. In 2016, the process of fundamental reform of the tourism sector of Uzbekistan began. Changes in the field of tourism are one of the strategic directions of the development of the national economy, which can ensure the rapid development of regions.

Improvement of tourism is required by the times, the head of our state is paying special attention to development of economy and improvement of people's well-being through the development of tourism in our country. The development of tourism at the same time covers a number of areas related to the provision of quality services to the tourists who come to our country, forming a unique industry of recreation, leisure, entertainment facilities [1].

Among them, one of the important directions of the reforms being carried out in our republic, the development of the tourism sector was defined as one of the most urgent tasks. On January 28, 2022, the President of the Republic of Uzbekistan approved the new state program of the development strategy of Uzbekistan for 2022-2026, and the new program consists of the 7th direction and the 100th goal. Including the 35th goal, new programs have been drawn up, paying great attention to the development of tourism activities: within the framework of the "Travel around Uzbekistan" program, the number of local tourists has increased to 12 million. and increase the number of foreign tourists visiting the republic to 9 million. It is possible to mention that the task has been defined as "delivering to people". Wide implementation of barrier-free tourism infrastructure in the main tourism cities of the country. By 2026, the number of people employed in tourism should be doubled to 520,000 [2].

He said that it is necessary to adopt a state program for the development of the infrastructure of tourism and cultural heritage objects and the effective use of more than 8 thousand

cultural heritage objects. Therefore, there is a lot of work to be done in this area, which indicates the need to fully use all opportunities in their development. According to statistics, 5,346,200 tourists visited Uzbekistan in 2018, and in 2019, this figure was 6,748,500. In the last four years, the number of foreign tourists visiting our country has increased 4 times. Among them are measures such as the new law "On Tourism", the concept of tourism development in Uzbekistan in 2019-2025, giving various benefits and preferences to businesses in the field of tourism, attracting and encouraging investments in this area, providing various benefits to foreign investors. The flow of tourists increased by 26.2% compared to the reporting period. It should be said that today, in addition to the development of historical, cultural and pilgrimage tourism, serious attention is being paid to the development of other types of this field, in particular, ecotourism [6].

Taking into account the decisions made by our government, it is appropriate to research and widely use these opportunities for the development of our country and the improvement of the population's well-being. Ecotourism is defined as one of the special types of this field in the new law "On Tourism". In addition, the decision of the Cabinet of Ministers "On measures for the development of ecotourism and improvement of the procedure for allocating land areas in water storage zones of reservoirs" was also adopted. In order to rapidly develop this direction, to put these laws and decisions into practice, the Department of Ecological and Agrotourism Development was established within the State Committee for Tourism Development. As a result of reforms launched in 2018-2020, Uzbekistan is achieving significant growth in the tourism sector. The number of international tourists has increased from 2.0 million in 2016 to 6.7 million in 2019 [4].

Special attention is being paid to the field of tourism in world studies. For example, currently developed countries are conducting a number of research studies on the impact of tourism on their economy, social sphere, ecology and other spheres. According to Russian scientists N. Morozova and M. Morozov, the modern tourism industry has undergone great changes with the introduction of new computer technologies. It is practically impossible for any organization to operate successfully in the tourist business market without using modern information technology. According to A. Abduvahidov, in order to show the tourism potential of our country to the world, in order to stabilize the international tourist flows, to make it free from seasonality, it is necessary to change the web pages that show our tourist potential through the Internet based on international experiences [3]. According to the reviewed experts, the development of the tourism sector has a direct impact on the development of the country's social, economic and political activities. Nowadays, it is necessary to show the country's tourism potential to the world based on the innovative ideas used by developed countries and by using the tourism potential that we have. The main goal of the State Committee for Tourism Development is to increase the effectiveness of its activities, to strengthen its role in attracting foreign investments to the tourism sector, and to develop access and domestic tourism.

Our republic has great potential in the development of ecotourism, entertainment and recreation, medical and health tourism. The most important aspect of ecotourism is that it first of all requires comprehensive development as a "pure ecological" industry with little negative impact on the environment. As a result of the analysis of the development of the tourism sector in our republic, it is shown that there are common problems in all regions of our republic, including the fact that there is insufficient information about our tourist resources for the population of our country in the development of ecotourism, and it is observed that the available resources cannot be used wisely [5].

In particular, the development of cultural heritage tourism and ecotourism gives a great impetus to the development of not only the economy, but also social and economic spheres. It is through the development of the ecotourism sector that there are opportunities to create jobs in the country, to promote social and political changes in our country, to increase the potential of the country's economy, to build new infrastructures in the regions, to increase the income of the

population and, most importantly, to increase the volume of foreign investments in the development of the ecotourism sector. Ecotourism alone is followed by representatives of culture, health, sports and social spheres, and some of them even provide services to tourists without knowing it. At the same time, the residents of the places visited by tourists are provided with work by showing their handicrafts and other services. It is planned to implement measures in the following main directions in the development of the tourism sector:

1. Improvement of national legislation and regulatory documents supporting the development of the tourism sector and the protection of the rights of consumers of tourist services;
2. Creating favorable conditions for the development of the tourism sector, effective use of economic resources to increase the role of the tourism sector in the economy;
3. Implementation of targeted measures to stimulate the activity of entrepreneurs and development and support of social tourism;
4. Strengthening of legislation on environmental protection, preservation of cultural and historical heritage by the state.

Conclusions

As a result of the analysis of the development of the tourism sector in our republic, it is shown that there are common problems in all regions of our republic, including the fact that there is insufficient information about our tourist resources for the population of our country in the development of tourism, and it is observed that the available resources cannot be used wisely. Cultural tourism is one of the more developed fields than other types of tourism. According it is no secret that the historical, ancient memory and visual arts rich in old, cultural and spiritual monuments in our country have attracted world tourists. Using the cadastral cards and plans created for use in our country, in order to develop the tourism industry and coordinate and control the work in this field, the national company "Uzbektourism" was established in our republic, and the work of the unitary enterprise of foreign economic trade and production of the republic "Uzbekturservis" was established again. is being conducted effectively. Of these, 561 business entities providing tour operator services have been established. In recent years, opportunities have been created for small business and private entrepreneurs to be created in our country, and small private tourist companies for receiving and sending travelers have been created.

In recent years, the changes in the field of tourism in our republic can be positively assessed. In particular, the number of visitors as tourists continues to grow year by year. According to statistics, 5,346,200 tourists visited Uzbekistan in 2018, and in 2019, this figure was 6,748,500. The flow of tourists increased by 26.2% compared to the reporting period. In 2020, 1 million 504 thousand foreign tourists visited Uzbekistan, and 1 million 800 thousand people were provided with travel. In 2021, this show was visited by 1 million 700 thousand tourists. In the next two years, "our country's tourism is one of the most seriously damaged sectors as a result of the global crisis caused by the coronavirus pandemic. The quick and high-quality solution of existing problems plays an important role in the development of tourism opportunities in Uzbekistan in the post-pandemic period [6].

To sum up, today in our country, great progress has been made and opportunities have been created in the field of tourism development and legal regulation by the state. In order to develop this industry, entrepreneurs were given great privileges and opportunities, which became the main factor of further development of the industry. At the same time, there are some shortcomings and unused opportunities, which it is important to eliminate and effectively use the positive experiences of developed foreign countries. There is a need to change the tourism industry in Uzbekistan through innovation and digitization.

As an untapped opportunity, it is necessary to develop medicine and ecotourism, sports and other areas of tourism. The world practice of tourism development shows that it is necessary to consolidate and strengthen the efforts of all participants in the public and private sectors in order to

turn this industry into a highly profitable sector. The development of international relations brings our people closer to other nations, which strengthens mutual friendship and cooperation. The increase of mutual cooperation serves the growth of foreign investments and tourism of our country.

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Rezyume: *hozirgi kunda rivojlangan davlatlar turizmning o'z iqtisodiyoti, ijtimoiy sohasi, ekologiya va boshqa sohalarga ta'siri bo'yicha bir qator ilmiy-tadqiqot ishlarini olib bormoqda. Madaniy turizm turizmning boshqa turlariga qaraganda ancha rivojlangan sohalardan biridir. Hech kimga sir emaski, mamlakatimizdagi qadimiy, madaniy va ma'naviy yodgorliklarga boy tarixiy, qadimiy xotira va tasviriy san'at jahon sayyohlarini o'ziga jalb etdi.*

Резюме: *В настоящее время развитые страны проводят ряд научных исследований, посвященных влиянию туризма на их экономику, социальную сферу, экологию и другие сферы. Культурный туризм является одной из более развитых сфер, чем другие виды туризма. "Не секрет, что богатая историческими, культурными и духовными памятниками наша страна, древняя память и изобразительное искусство привлекали туристов со всего мира.*

Kalit so'zlar: *turizm, yodgorlik, yodgorlik, firma, tasviriy, madaniy, haykaltaroshlik, O'zbekturizm, turoperator, biznes, elektron, turar joy, rivojlanish, unitar, meros, innovatsiya va texnologiyalar.*

Ключевые слова: *туризм, мемориал, памятник, фирма, изобразительный, культурный, скульптура, Узбектуризм, туроператор, бизнес, электронный, размещение, развитие, унитарный, наследие, инновации и технологии.*

УДК: 903.2 (903.01/ 903.21)

SPECIALIZED PALEOLITHIC WORKSHOP OF THE BARSA-KELMES DEEP (SOUTH-EASTERN USTYURT)

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Summary: *The territory of Uzbekistan is one of the richest ecumenes of the earth with stone-working workshops of the Stone Age. The article is devoted to a new interpretation of the stone-working workshop Esen 2, located on the shore of the Barsa-Kelmes depression of the Ustyurt plateau. The only available classification was developed by M.R. Kasymov and L.Ya. Krizhevskaya in the 70s of the twentieth century. This article is devoted to the history of the study of the flintworking workshops of Central Asia, as well as the new cultural and chronological classification and interpretation of the Esen 2 workshop.*

Keywords: *Paleolithic, flint-working workshop, Esen-2, specialized workshop, biface, cleavers (stone axes), migration wave.*

The region of Central Asia is one of the countries rich in stone-working workshops of the Stone Age. Most of these workshops are located in Uzbekistan. The discovery and study of stone processing workshops in our country dates back to the 60-70s of the 20th century [Kasymov, 1962. S. 18; Kasymov, 1972. S. 1-160; Okladnikov, Kasymov, Konoplya, 1965, S. 5-11; Kasymov, 1966. S. 28-34; Kasymov, 1963. S. 239-250; Kasymov, 1961. S. 62-64; Kasymov, 1964. S. 12. Kasymov, 1965. S. 30-39; Kasymov, 1970. Pp. 143-145; Kasymov, 1962. S. 19-27; Kasymov, 1967. S. 57-58; Kasymov, 1968. S. 52. Okladnikov, 1966. S. 40. Kasymov, Rostovtsev, 1969. P. 8; Kasymov, Krijevskaya, 1969. P. 265-268. Kasymov, 1962. P. 17]. Workshops of the early, middle and late Paleolithic and Neolithic periods were found on these lands. This situation makes it possible to observe the evolution of Stone Age workshops. It is known that the monuments of the Stone Age are divided into two large groups: spaces and stone-working workshops. The sites are hearths (sometimes remains of houses), kitchen waste, stone and bone objects, etc. will have leftovers.

The classification of Central Asian stone-working workshops was originally M.R. Kasimov and L.Ya. Krijevskayas it was carried out by the [Kasymov, Krijevskaya, 1969. S. 265-268]. When they classified the workshops of stone-working here, they predicted that "this classification is not eternal and that further research in the Central Asian regions may introduce changes and clarifications" [Kasymov, Krijevskaya, 1969. S. 265-268]. We found it necessary to cite the classification of Central Asian workshops developed by M.R. Kasimov and L.Ya. Krijevskaya.

They divided stonework workshops into two types: space-workshops and literal workshops. In turn, the space-workshops are divided into two groups: The first group includes finds located in the immediate vicinity of stone mines. The occupation of the inhabitants of such workshops consisted mainly of obtaining raw materials, primary and partly secondary processing of stones.

The second group of space-workshops differs from the first in that they are located far from the raw material mines. Residents of such workshops brought raw materials to their premises from outside and fully processed them here. A characteristic feature of both groups of workshop-sites is the presence of household items, which testify to the seasonal or permanent habitation of these places by people, along with primary worked stones. Workshops in the literal sense are characterized by the presence in them only of items related to the production of weapons. There are no signs of human habitation in these places. Such workshops are usually located near certain stone deposits suitable for making weapons. These workshops are divided into two types according to the nature of people's production activities: The first type are literal workshops - places where stones are primarily processed and rough pottery is polished. In these lands, in the Paleolithic and

Neolithic periods, raw materials were obtained by a simple or open method. Since the Neolithic period, raw materials have been obtained by digging pits, wells and mines. Unlike the first type, in the second type literal workshops, not only primary processing of stones was carried out, but also specialized (specialized) types of weapons were produced. According to the nature of processing certain weapons, monuments of this type are divided into several types of workshops where axes, scrapers, spear blades, etc. are made.

According to the authors, such "specialization" is characteristic of the Neolithic period. In the Paleolithic period, such workshops did not exist yet. This situation is explained not by the fact that the workshops of the Paleolithic period are not well studied, but by the fact that the level of social division of labor in the Paleolithic period was still in its infancy [Kasymov, Krijevskaya, 1969. S. 265-268]. During the Neolithic there was a great differentiation of production and this was associated with a more distributed and improved division of labour. This situation is reflected in the different categories of monuments. In the Paleolithic period, it is suspected that the space was workshops, "home" workshops or workshops of "specialized importance" [Kasymov, Krijevskaya, 1969. S. 265-268]. Although V.P. Although Lubin expressed the opinion that such workshops may have existed in the Muste period [Lyubin, 1965. S. 55-56]. By the Neolithic period, workshops take on a vivid appearance with all the social consequences of production processes in the form of intensive division of labor arising from them. This is reflected in exchange, which in turn leads to further development of the productive forces.

The Esen 2 monument is located on the Esen hill at the southern border of the Borsa-Kelmes basin of Ustyurt. He is E.B. Bijanov [Bijanov, 1979. S. 48] and A.V. It was discovered by the Vinogradovs in 1977 [Vinogradov, Bijanov, 1977. S. 522]. The area of this find is 90x40 square meters on a low flat hill. There are eroded deposits of heavily silicified limestone. A stone collection of 200 items was collected among the scattered fragments of this rock. About 15 of this collection are natural stone fragments, while the rest are unmistakable artefacts.

The industry of Esen 2 workshop it was fully studied by A.V. Vinogradov and published in his monograph "Drevnie okhotniki i rybovy sredneaziatskogo mejdurechya". The majority of the 15 finished stone tools found in the Esen 2 workshop are bifacially worked large and thinned almond-shaped pieces - bifaces. Most of them are fragments of bifas, and this condition determines the character of the monument, which is Esen 2 workshop. Their shape and size can be imagined by looking at the only intact biface preserved among the collected materials of 1977 (height 14.6 cm; width 7.7 cm; thickness up to 3 cm). In the preliminary data, Esen 2 materials were tentatively dated to the Late Paleolithic period [Vinogradov, Bijanov, 1977. P. 522]. Such dating is based on comparison with the materials of Central Kazakhstan. But these materials from Central Kazakhstan are not published enough and do not allow a full comparison with them. Based on the above comparative data, E.B. Bijanov dated the Esen 2 materials to the end of the Early Paleolithic or the beginning of the Middle Paleolithic [Bijanov, 1979. Fig. 3, 5]. Thus, Esen 2 and the Kazakh materials compared to it also require careful re-study [Vinogradov, 1981. p. 56].

A.V. Vinogradov did a great deal of research on Esen 2 materials. For the Esen 2 collection the dating proposed by E.B. Bijanov is based on comparison with the monuments in South Kazakhstan (Borykazgan, Tanirkazgan, etc.). It should be noted that there are more differences than similarities between the materials of the monuments compared above, and South Kazakhstan, especially the Karatog region, is characterized by completely different cultural and technical traditions [Alpysbaev, 1979. S. 189-190]. Bifas or hand grips do not play a significant role in this. In the articles of A.A. Alpysbaev, only one hand-pitcher (found in the Akkol site) from the Early Paleolithic finds can be cited here, and only this pitcher can be compared with Esen 2 bifas. Other materials from South Kazakhstan are typologically closer to chopping or double-sided flanged weapons. As a summary of the above-mentioned points, A.V. Vinogradov suggests dating the Esen 2 materials to the end of the Middle Paleolithic or the beginning of the Late Paleolithic rather than

to the Acheulean or Acheulean-Muste [Vinogradov, 1981. p. 57]. Printed materials of the Esen 2 monument carefully analyzed by L.B. Vishnyatsky [Vishnyatsky, 1996. P. 213]. According to him, the Esen 2 collection does not contain real nuclei and they are fragments of flint without any system. Almost half of the Esen 2 collection is made up of flint and their fragments. These are mostly small-sized uchirindis with a natural flat strike area and dorsums that are flaked in an irregular manner. About 15 flints of the set are plate-like in nature and on average they are 5-7 cm tall and 1.5-2 cm wide. Almost all of them are triangular in cross-section, in 50% of cases there are only 3 semi-primary plates [Vinogradov, 1981. Fig. 14, 2, 5]. None of the flint fragments have been retouched. Only a few stone fragments were retouched and 2-3 scrapers and 2 carved weapons were found. One of them is a retouched ankosh, and the other is a muzzle weapon formed using two ordinary ankosh [Bijanov, 1979. P. 71].

The most important group of objects for understanding the Esen 2 industry are bifaces. They make up a little less than a third of the collection. There are about 20 bifaces in the initial stage of development, and 42 bifaces near the completion stage. Unfortunately, it is possible to think about bifaces in the completed stage only by their fragments: 16 of them are distal, 10 are proximal, and 6 are medial and lateral fragments [Vinogradov, 1981. Fig. 14, 14]. But there are also whole copies of them. These bifaces are made from rock fragments. Judging by the few almost complete and whole bifaces of the Esen 2 monument, and their rather large fragments, it can be said that the masters who made them were as thin as possible, but wide and large (they are not less than 10-12 cm in height). In some cases, these bifaces are smoothed with retouches along the entire perimeter, but mostly they are formed with the help of flint fragments that completely or partially cover their surface.

Regarding the classification of Central Asian workshops, O.T. Ergashev's works in the study of Kokayaz 1-8 workshops are noteworthy. It was proved by him that Kokayaz workshops are specialized workshops of the Eneolithic period [Ergashev, 2013. P. 162].

Thus, the Esen 2 stoneworkshop can be considered a workshop specializing in the production of bifaces, rather than a "literal one" as the authors claim. After all, in Esen 2, the attention of the manufacturers is focused on the production of full bifaces. Other items in the kit can be considered waste products from the manufacture of these weapons. Nuclei are rarely found in the collection. It can be said that the activity in Esen 2 was focused only on the production of bifaces. Regarding the date of the monument, it can be said that, according to our modern technical-typological studies, some cleavers (stone axes) are found in the Esen 2 collection along with bifaces (a new technical-typological study of Esen 2 stone objects is the subject of another article). This situation, as well as the technique of processing materials and the level of preservation, indicate that the Esen 2 complex belongs to the pure Acheulean culture of the Early Paleolithic, and not to Muste. Based on A.P. Derevyanko's research [Derevyanko, 2017. p. 877], it can be said that Esen 2 communities belong to the second wave of migration from Africa (after the first migration of ancestors) or to the first wave of the Acheulean culture. The absence of Levallois technologies in the Esen 2 technocomplex confirms our opinion. It is known that after the representatives of this migratory wave entered Eurasia about 1.5 million years ago, they had two paths of development: There was a way of 1. Cultural development mixed with the communities of the local ancestral culture, or 2. Independent, that is, while preserving the Ashelian traditions. The materials from Esen 2 may be an example of an independently developed Acheulean culture of the second of the above-mentioned ways, that is, without spear weapons. Thus, in our opinion, Esen 2 is a workshop specializing in the production of biface weapons, which, unlike Neolithic workshops of this type, can be classified as "limited" to the needs of the manufacturing community, and not for exchange.

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Rezyume: *O'zbekiston hududi yer yuzining tosh davri toshga ishlov berish ustaxonalariga boy o'lkalaridan biridir. Maqola Ustyurt platosining Borsa-Kelmas botig'i sohilida joylashgan Esen-2 toshga ishlov berish ustaxonasining yangicha talqiniga bag'ishlangan. O'rta Osiyo ustaxonalarining yagona tasnifi XX asrning 70-yillarida M.R. Qosimov va L.Ya. Krijevskayalar tomonidan ishlab chiqilgan edi. Ushbu maqola O'rta Osiyoning tosh davri toshga ishlov berish ustaxonalarini o'rganilish tarixi hamda Esen 2 ustaxonasining yangicha tasnifi va talqiniga bag'ishlangan.*

Резюме: *Территория Узбекистана является одним из богатых ойкумен земли камнеобрабатывающими мастерскими каменного века. Статья посвящается к новой интерпретации камнеобрабатывающей мастерской Esen 2, расположенной на берегу впадины Барса-Келмес Устюртского плато. Единственная, имеющаяся классификация разработана М.Р. Касымовым и Л.Я. Крижевской в 70-годы XX столетия. Данная статья посвящена к историю изучения кремнеобрабатывающих мастерских Средней Азии, а также новой культурно-хронологической классификации и интерпретации мастерской Esen 2.*

Kalit so'zlar: *Paleolit, toshga ishlov berish ustaxonasi, Esen-2, ixtisoslashgan ustaxona, bifas, kliverlar (tosh boltalar), migratsion to'lqin.*

Ключевые слова: *Палеолит, кремнеобрабатывающая мастерская, Esen-2, специализированная мастерская, бифас, кливеры (каменные топоры), миграционная волна.*

DESIGNING AN INTERDISCIPLINARY DIDACTIC ENVIRONMENT IN THE PROCESS OF PROFESSIONAL EDUCATION (IN THE EXAMPLE OF TEACHING THE SUBJECT "INFORMATICS AND INFORMATION TECHNOLOGIES")

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Summary: *In this article, the absolutization of the classical methodical support forms (standards, curricula, textbooks on subjects, etc.) and the reflection of the achievements of pedagogical sciences (new theories, technologies), scientific and technical development, especially in didactic tools based on information technologies the need for methodical systems that fully reflect the integration of science and special education based on the informatization process of science education and new information technologies, methods and means of forming interest in teaching in an interdisciplinary integrated environment in the process of increasing the cognitive activity of students, in the process of professional education, the issues of revealing the content of the process of designing the interdisciplinary didactic environment of the subject "Informatics and information technologies" were discussed.*

Keywords: *integration, information technology, methodological support, didactic environment, design, professional training, motivation, individual activity, electronic didactic tool.*

INTRODUCTION. In the process of the world education system, raising the intellectual development of the younger generation to the next level in terms of quality, introducing innovative forms and methods of education into the educational process has taken an important place in the development of the society. In the current conditions of rapid development of science and technology, the demand and need for the development of industrial sectors in the world, competitive personnel training, and the need for creative specialists are increasing.

In today's period of rapid development, the science of "Informatics and information technologies" and a number of effective equipment related to it are becoming an integral part of our environment. In order to speed up the economy and development of our republic, the leadership of our country made several important decisions in this field. Including, Decree of the Resident of the Republic of Uzbekistan dated February 19, 2018 year PF-5349 "On measures to develop the field of information technologies and communications", PF-5847 dated October 8, 2019 year "On approval of the consortium for the development of the higher education system of the Republic of Uzbekistan until 2030" and PF-6079 dated October 5, 2020 year "On approval of the Digital Uzbekistan - 2030 strategy and measures for its effective implementation" Ensuring the implementation of the tasks stipulated in the decrees and implementing the experience of highly industrialized countries such as Great Britain, France, Germany, the USA, Israel, South Korea, the People's Republic of China and other developed countries are urgent issues. Decree of the President of the Republic of Uzbekistan PF-6108 dated November 7, 2020 year "On measures to develop the fields of education and science in the period of new development of Uzbekistan", Decree of the President of the Republic of Uzbekistan dated September 6, 2019 year PF-5812 "On additional measures to further improve the professional education system" [5], Resolution 187 of the Cabinet of Ministers of the Republic of Uzbekistan dated April 6, 2017 year "On approval of state educational standards of general secondary and secondary special, vocational education" and the Decree of the Cabinet of Ministers of the Republic of Uzbekistan dated August 7, 2020 year "On approval of normative legal documents regulating the system of continuous primary, secondary and secondary special professional education in the Republic of Uzbekistan" Based on the content of the priority tasks defined in the decisions 466, the development of professional training of teachers of "Informatics

and information technologies" based on modern requirements and revealing the content and essence of increasing students' interest in computer science is considered one of the urgent issues of today.

The experience of developed countries shows that as a result of the rapid development of society, the information environment and the labor market, the system of reproductive education did not meet the requirements of the time. Due to the sharp increase in the amount of information received, the knowledge that needs to be passed on to the younger generation in order to process this information and use it is also increasing. Today's teacher faces the problem of delivering the newest, latest information and information to the students, along with pre-planned knowledge, without increasing the class hours. Education focused only on acquiring knowledge remains a thing of the past.

RESEARCH METHODOLOGY. Conditions are being created to implement the tasks of modernization of the professional education process, to prepare the growing young generation for the activities of the 21st century information technology society. In this regard, information technologies become a decisive factor in the development of the level of knowledge of students of professional educational institutions, their intellectual potential, and their use skills. All these factors determine the competitiveness of students of professional educational institutions. The goal of modern pedagogical systems, which are currently being developed in accordance with new requirements for this field of education, determines the need to develop professional training for students of professional educational institutions with the help of modern didactic tools. The implementation of this process is directly related to the introduction of a new personnel training system in the professional education system. The integration of modern achievements of "informatics and information technology" sciences and advanced pedagogical experience is an important factor in the effective organization of this process. In the normative documents of the field of professional educational institutions, the task of creating a new educational and methodological support of the educational process based on the integral connection of general education subjects with vocationally oriented educational tools is emphasized.

The problem of creating a new methodological support of the professional education system is directly related to the formation of the educational environment of the educational institution. The effectiveness of the introduction of new didactic systems into the process of professional education is largely determined by the extent to which they correspond to the tasks of modernization of education. However, it can be said that at present, the period of formation of new integrated didactic environments in the science of "Informatics and Information Technologies" has not been completed, due to the fact that the classical structure of the educational process has been preserved in the teaching of the subject, orientation towards new modern pedagogical technologies is still weakly manifested. . The lack of sufficient qualifications of pedagogues in the organization of classes using didactic innovations or computer-based teaching technologies for students in their respective specialties is an obstacle to the effective organization of this process [4]. In the process of teaching subjects in the relevant specialties in professional educational institutions, there are significant changes in the direction of using a structural and technological approach that ensures the effective pedagogical functions of new didactic environments, methodological connection with the professional issues being mastered by students. there is a need. In this process, the model of creating innovative educational environments by strengthening the role of interdisciplinarity and introducing innovative educational technologies should reflect the content of education, the methods of its active development, the combination of general theoretical questions with special issues, and the use of innovative didactic technologies. This, in turn, shows the structural-technological approach, according to which the content of education is combined with teaching methods and technologies, giving priority to the ontological component of the educational process[1]. The analysis of educational and methodological products received by authorized institutions showed that these educational manuals form a unique conglomerate that is not focused

on comprehensive methodological support. The lack of a system of vocationally oriented educational materials prevents the development of a unified educational environment for specific academic subjects [8]. In addition, most of these sources perform illustrative functions in the educational process, because the content of the studied theories is manifested in the form of symbols with the passive role of the listeners. The practice of using modern didactic tools in the professional education system showed the existence of contradictions between the following in the context of the modernization of the professional education system:

- ❖ the need for new forms that systematically express the content of traditional educational and methodological support and general education subjects and vocational training subjects, as well as new educational technologies;

- ❖ the need to absolutize the classic forms of methodical support (standards, educational programs, textbooks on subjects, etc.) and to reflect in it the achievements of pedagogical sciences (new theories, technologies), scientific and technical development, especially in didactic tools based on information technologies ;

- ❖ the need for methodological systems that fully reflect the integration of science and special education based on the informatization process of science education and new information technologies;

- ❖ insufficiently developed methods and means of forming interest in teaching in an interdisciplinary integrated environment in the process of increasing students' cognitive activity.

Eliminating the above-mentioned contradictions, in turn, helps to solve the following urgent problems:

- the theoretical justification of the model of didactic environment created on the basis of interdisciplinary relations of subjects of general education and professional training and the humanitarian direction of the designed educational process;

- to design science systems that are integrated in the content and technology of the integral didactic environment of the professional educational institution;

- structural analysis of the content component of the subject "Informatics and Information Technologies" to determine the invariant components, to combine them based on this;

- Basing the content of the subject "Informatics and information technologies", the mechanism of integrating innovative didactic and new information technologies.

Taking into account the modern level of development of educational didactic tools in the field of professional education, the development of integrated didactic environments to support the educational process is a promising direction for the development of the educational system and the study of its scientific foundations. . At the same time, the process of designing subject didactic environments should not be carried out separately, but it is necessary to pay attention to this process as a component of an integrated pedagogical system. Modern didactic tools should reflect not only the structure and methods of providing educational information, but also the functions of managing students' educational activities and diagnostic processes [6]. Thus, the development of the necessary professional training of students of professional educational institutions in the subject of "Informatics and information technologies" with the help of modern didactic tools helps to solve the following urgent problems:

- interdisciplinary integration of subjects of general education and professional education from the subject of "Informatics and Information Technologies", the creation of innovative pedagogical product systems based on it has not been resolved;

- the need to apply qualitatively new models of educational and methodological support of teaching "Informatics and information technologies" in the process of professional education to the educational process;

- The need to strengthen educational potential by designing interdisciplinary didactic environments from the subject of "Informatics and information technologies" based on modern

achievements of pedagogy, special methods, as well as innovative processes of pedagogical practice;

- taking into account the principles and requirements of pedagogy, psychology, and based on the task of adapting students to the conditions of study, the need to ensure methodological consistency of the content of general and professional education subjects.

Solving the above urgent problems allows designing an interdisciplinary didactic environment in the field of "Informatics and Information Technologies" during professional education. The modernization of the professional education system should be aimed at the integration of fundamental educational courses with relevant courses and professional subjects, which will create conditions for the formation of the quality of students' systematic knowledge, the scientific way of thinking, their future professional adaptation and expands opportunities in this regard. This integration mechanism helps to create an interdisciplinary didactic environment in the field of "Informatics and Information Technologies". In turn, it reflects the components of the educational process of "Informatics and information technologies" in professional educational institutions. The theoretical model of the development of professional training of students of professional educational institutions in the field of "Informatics and information technologies" with the help of modern didactic tools is based on interdisciplinary and epistemological approaches and includes ontological, normative, methodological, diagnostic components. . At different stages of its formation, it is distinguished by its characteristics, expressed by its own content, methods and professionally oriented educational tools [2].

✚ The procedure for designing an interdisciplinary didactic environment for the professional education process of "Informatics and Information Technologies" consists of the following stages:

- ✚ justification of educational goals;
- ✚ analyzing, systematizing the content of the studied scientific theory and methodically changing it in accordance with the age characteristics of the students; approach; integration of its elements into epistemological cycle stages; determining the status of theory elements;
- ✚ determination based on interdisciplinary relations and regional issues of professional significance;
- ✚ justification of teaching methods and innovative didactic and computer technologies; development of practical materials for level diagnosis of knowledge according to the complex model of systematic knowledge.

The construction of the ontological component of the development of the professional training of students of professional educational institutions in the field of "Informatics and information technologies" with the help of modern didactic tools implies different levels of mastering the scientific content, the questions of related and specialized disciplines of these theories of mastering reflected in the order of level differentiation in connection with.

The methodological component of this process determines the set of teaching methods and technologies of "Informatics and information technologies" based on the uniqueness of the content and stages of development of scientific knowledge with the priority role of research and problem methods. The design of an integrated didactic educational environment based on interdisciplinary and structural-technological approaches in "Informatics and Information Technologies" provides the following pedagogical conditions:

- effective development of students' training based on their professional activity in the relevant specialty and the interdisciplinary content of the subject "Informatics and Information Technologies" based on modern didactic tools;
- development of students' intellectual abilities and information culture, as well as improvement of teachers' methodological training;

- optimal combination of traditional forms of educational activity with new educational tools; to strengthen the motivational potential and humanitarian orientation of educational tools;
- to more effectively solve the problems of students' adaptation to specific conditions of education in the professional education system.

CONCLUSION. In the process of professional education, first of all, clarification of the concept of "interdisciplinary didactic environment" contributes to the integration of ontological components of general education and professional education based on interdisciplinary and epistemological principles. The model of the interdisciplinary didactic environment provides a theoretical justification that reflects the main components of the organization of the educational process based on interdisciplinary and epistemological principles, as well as the integration of the content of general education and professionally oriented education. The model of formation of systematic knowledge in the subject "Informatics and information technologies" is changed based on the stages of the genesis of scientific knowledge and allows to develop the professional training of students, to differentiate their knowledge in this subject and to diagnose knowledge based on a systematic approach.

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Rezyume: Ushbu maqolada klassik metodik ta'minot shakllarini (standartlar, o'quv dasturlari, fanlar bo'yicha darsliklar va boshqalar) mutlaqlashtirish va unda pedagogika fanlari (yangi nazariyalar, texnologiyalar), ilmiy-texnika taraqqiyoti yutuqlarini, xususan axborot texnologiyalariga asoslangan didaktik vositalarida aks ettirish zarurati, fan ta'limining axborotlashtirish jarayoni va yangi axborot texnologiyalari asosida fan va maxsus ta'limning integratsiyasini yaxlit aks ettiruvchi uslubiy tizimlarga bo'lgan ehtiyoj, talabalarining kognitiv faolligini oshirish jarayonida fanlararo integratsiyalashgan muhitda o'qitishga bo'lgan qiziqishni shakllantirish usullari va vositalari, professional ta'lim jarayonida "Informatika va axborot texnologiyalari" fanini fanlararo didaktik muhitni loyihalash jarayonining mazmunini ochib berish masalalari yuzasidan fikr yuritilgan.

Резюме: В статье абсолютизация классических форм методического обеспечения (стандарты, учебные планы, учебники по предметам и др.) и отражение достижений педагогических наук (новых теорий, технологий), научно-технических разработок, особенно в дидактических средствах на основе по информационным технологиям потребность в методических системах, в полной мере отражающих интеграцию науки и специального образования на основе процесса информатизации естественнонаучного образования и новых информационных технологий, методов и средств формирования интереса к обучению в междисциплинарной интегрированной среде в процессе повышения познавательная деятельность студентов, В процессе профессионального образования обсуждались вопросы раскрытия содержания процесса проектирования междисциплинарной дидактической среды предмета «Информатика и информационные технологии».

Kalit so'zlar: integratsiya, axborot texnologiyalari, metodik ta'minot, didaktik muhit, loyihalash, kasbiy tayyorgarlik, motivatsiya, individual faoliyat, electron didaktik vosita.

Ключевые слова: интеграция, информационные технологии, методическое обеспечение, дидактическая среда, проектирование, профессиональная подготовка, мотивация, индивидуальная деятельность, электронное дидактическое средство.

THE LIFE OF THE CITY OF NUKUS IN MEMOIRS AND MEMOIRS CANDIDATE OF HISTORICAL SCIENCES

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Summary: *The article based on memoirs and memoirs tells the life of the inhabitants of the city of Nukus. The authors of memoirs and memoirs tell the formation of the city of Nukus, as the capital of Karakalpakstan, the condition of dwellings, food, the construction of roads and buildings, the life of citizens.*

Keywords: *life, memoirs, history, construction, everyday life, entertainment, living conditions.*

In recent years, the topic of the daily life of the population on the basis of memoirs and memoirs in Russian historiography has acquired particular severity and significance for researchers. The reason for this is the bias that has existed for a long time in historical science towards studying only national issues. Memoirs and memories allow you to clearly imagine the cultural space of the city, as well as to reveal the originality and characteristic features of the socio-cultural appearance of Nukus. So, for example, studying memoirs on the history of Karakalpakstan, we found a lot of information that cannot be found on the pages of archival documents or periodicals. The study of the everyday life of different aspects of the city of Nukus is necessary, since the seemingly insignificant details of the life of representatives of different social groups, in fact, play an extremely important role in attempts to reconstruct leisure, life, work in a particular historical era. Memoirs and memories are rich in details of everyday life, give an idea of housing conditions, clothes, nutrition, leisure of the population. Back in the past, Nukus was the focus of researchers, especially from members of various expeditions organized by the Russian government. In 1713, Peter I, in order to strengthen ties with Khiva, eliminate the barrier established by the Khivins on the branch of the Amu Darya flowing into the Caspian Sea, thereby blocking the path south for Russia (this area was very convenient for Russia to enter this region), as well as for exploration of gold and other fossil deposits, an expedition was organized under the leadership of the Kabardian prince Bekovich-Cherkessky, consisting of more than 650 people. The expedition began from Astrakhan, passed through Ustyurt, Urga, Karaumbet, Aibuyir, Khojeili to Khiva. The materials of this expedition mention the Nukus fortress (Nukus Russian fortress) and the Shorsha settlement. It is still not certain how long Shorsha lasted, on the site of which Nukus was later located. According to the memory of K. Ayimbetov, in 1925 there were 3-4 farms in Nukus. These were small farms of the Urals (Ural Cossacks), consisting of 2-3 people. Hero of Uzbekistan T. Kaipbergenov in his memoirs wrote that "in the post-war years, Nukus was not yet multi-storey, nor crowded and asphalt could not boast either. In those years, there were more green fields in it than in other places. And in general, outwardly, it rather resembled a large aul than the capital city "[1.123.].

In his memoir, I. Shagilov writes that 1953-1954, the construction of the city of Nukus was just beginning. At the place where the institute is now located (now the building of the Medical Institute. Approx. authors) there was a corn field, behind the house in which we lived - a medical school, an airport and dense thickets. [5.126].

Despite the fact that Nukus has been the capital of Karakalpakstan since 1932, the city still did not resemble the capital, recalls Gulaysha Esemuratov. In those years, there were only 3 houses in Nukus, one of them is two-story. On the first floor there was a store number 3, on the second floor there were people from the "government." The second house - store number 6 was called. That store initially sold fabrics. Later, it turned into a haberdashery, perfume was sold there. The third house is the unfinished building of the Pedagogical Institute.

There were no other large structures in the city. Mostly small houses. In the 50s, Nukus had one hospital. It was located near the pedagogical institute (now emergency). In this hospital and gave birth and other diseases were treated. Those who were in the hospital could hear the voices of newborn children. Everything was in one place.

Starostina Fayna Nikolaevna, an excellent student of public education in Uzbekistan, who graduated from a pedagogical school in the Mariel Republic (Russia) in 1953, was sent to Karakalpakstan due to a lack of teaching personnel in Uzbekistan, recalling how she arrived in Nukus and the first impression of what she saw says, "1953 On August 2, 100 graduates of our school left for Uzbekistan. The composition was formed in Kazan. Arriving in Tashkent, we were sent to Nukus. On the ferry across the Amu Darya River, Chard drove. From the memoirs of Gulaysha Esemuratova "We moved to Nukus from Chimbay in 1945. This was due to the transfer of the Chimbay Institute to Nukus, where the elder brother of Yesemuratov Aytzhan was a senior teacher at the institute. We had nowhere to live in Nukus. The family of Myrzagali Daribaev (the author of the story "Munlardin Biri," who died in 1943 as a result of a plane crash) - wife Mamyk and daughter Roza Daribaeva, lived in Nukus on Budyonny Street in a five-room house. This is a street that is now located near the bazar. So they rented out two rooms to us. There is no water supply. I am pleased with the large one, taking a rocker, dragging water from Kizketken. Nukus is dusty, an asphalt road was then rare. As soon as you go outside, you immediately drown in dust. A big problem in Nukus was getting firewood for heating. To collect firewood, dry branches and dried dogwood, gathering with neighboring girls and boys went to the outskirts of the city (now this is the place where 24 and 25 micro districts are located). There were many grazing camels. When the camel raised its head, we ran in fear. This was due to the difficult post-war situation. Food is in short supply. The sale of bread is limited. There is a card system. The seller gives out bread according to the number of people in the family. If I am not mistaken, at that time 400 grams of bread were given out per person. The problem with meat is even more severe. As I noted, on the outskirts of the city, shepherds grazed camels and other cattle. In the case when the animal gets sick and is about to die, it was stabbed, and the meat was sold. Even such meat was snapped up, bought by those who had time. As far as I remember, the most difficult were 4-5 years after moving to Nukus. Going to school was hard in both winter and summer. In the summer you drown in dust, books, notebooks are all dusty. In winter - dirt, from the cold the writing ink froze. The best dish at that time was mashaba. There is not enough firewood. From the memoirs of Fayna Starostina "Husband Sabir Utepov born in 1930, early lost his father, mother, Ulbi Mazhitova was the daughter of Seyfulgabit Mazhitov, one raised children. Sabir from the age of 13 began working at the Stanislavsky Nukus Theater, in a dance group. Then the theater was located near the Pushkin school. The post-war years were long, difficult years. There was not enough food, clothes. Post-war years, artists were given special attention, they were given government rations. 400 grams of bread were given out every day, and Sabir sold 200 grams of bread and bought butter.

I remember well during the time of Khrushchev (1953-1964) in stores there was no flour to get bread, got out of bed at 4-5 in the morning, took queues. What hunger does not teach, lack. We women managed to brew semolina, put eggs there and baked buns. Now, thank God people live well. Do not stand in a long queue for bread and milk.

If we talk about everyday affairs, recalls Zhalgas Sultabaev, until the 70s the money is inhabited. The first time I saw money was at 13, in 1961. In the districts, money was not seen at all. In rural areas there was an exchange - "barter." Our father, having visited a jugara (sorghum) bag on a horse, went to the Chimbay bazar, where he exchanged it for sugar, butter. People squeezed out sesame oil themselves. Cotton oil sold in stores did not like the population.

From the memoirs of Gulaysha Esemuratova in the 50s, there were many students in the city of Nukus. All the young are a period when many aspired to learn. The life of the students was even more difficult. The institute hostel was not heated in winter. The rooms are cold. This situation is

well outlined in the verses of Ibrahim Yusupov "Tick Tour, Tick Turada Socky" ("You say to stand on the" stand at attention "- there are my socks"). It was so cold in the room that the socks removed from their feet were smoking.

We learn day and night. In those days, there is no lamp, there is no candle either, even if there is a lamp, they do not give it at night with a candle, they extinguish it. In stores, queue after lamp, if it is possible to purchase, and then with battle. There is no candle at home. If the younger brothers, playing, hit the walrus, it immediately crashes. There is no walrus, even if there is in the store - expensive. The youth of those years have a desire to study, a desire to move forward, but not everyone had opportunities. Our Karakalpak people experienced the most difficult post-war years and hunger saw poverty. If we turn to free time for people, then at that time everyone worked, it was difficult to find unemployed people. In the 60s, people do not have TVs yet. In the evening, people, having dinner and taking with them all their household, closing the door with a lock, and it happened that they did not close, went to the park. On the site of the museum. I.V. Savitsky used to be a large park - Victory Park. Everyone meets in the park, all entertainment is also here. Inside the park was a summer theatre. Concerts were held there every day. There were about 1,000 places in the theatre. People did not fit into this summer theater and watched concerts, performances, films, climbing the trees around the theatre. They said that there is no such theatre throughout the Union. Tickets to the cinema had to be bought in advance, otherwise you will not get to watch the film. Indian films were especially popular among the population [6. 49]. In addition to the theatre, the park had a dance floor, a beer room [Ansatbaev N].

Kunnazarov recalls that "after the war years, the city of Nukus gradually began to recover. Over the year, the number of assortments of goods in stores increased by the year. People, seeing on the shelves of stores who did not know things before, began to use them in everyday life. Until the 60s, the city population bought flour for kilos on their wages and spent the rest of money on dairy products. Now, having got rid of all this, people began to visit shops often. If earlier they bought meat for one kilo, leaving half of the parts smoked on salt, now the population has begun to purchase refrigerators. Potatoes, which then cost 16 kopecks, were filled with all the counters, from district bazars to rural shops. The second grade of flour stopped buying. Women began wearing dresses made of staple. Wealthy families could afford to buy a radio. Some parents bought their children a bike.

Those who used to use and put chests made by Karakalpak craftsmen in a place of honor, now switched to modern furniture. Women who were used to covering walls with materials began using carpets. In the post-war years, it was difficult to build a dwelling in Nukus, and if you built, it was difficult to find firewood for heating, especially since winter was harsh in those days "[2.126].

In the late 1950s and early 1960s, young people, especially those who considered themselves modern, wore bell trousers and shirts with Ukrainian collar ornaments in summer. In autumn and winter, a long coat. A cap with a visor was put on the head. Some of them wore pigtails, some of them collected hair on the back of the head in a bun. The fashion to collect hair in a high bun appeared later. It was extremely rare among local residents for girls with hair cut or loose on their shoulders. Previously, cut or loose hair was considered a bad man. In the old days, Karakalpak women let their hair down in the event of the death of her husband [4.33]. The memoir source is aimed generally at the circle of the general reader, which is explained by the enormous of the latter to memoirs. All this testifies to the "strong" side of memoirs as a historical source and leads researchers to increasingly turn to them for information. In our example, these stories help to feel the atmosphere of the city of Nukus of that time, to better understand everyday life, features of life and morals of citizens.

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Rezyume: *Xotira va xotirasiga asoslangan maqola Nukus shahri aholisining hayoti haqida soʻz yuritadi. Xotira va xotira mualliflari Qoraqalpogʻiston poytaxti sifatida Nukus shahrining shakllanishi, uy-joylar holati, ovqatlanish, yoʻl va binolar qurilishi, shahar aholisining hayoti haqida soʻz yuritmoq*

Резюме: *В статье на основе воспоминаний и мемуаров раскрывается быт жителей города Нукуса. Авторы воспоминаний и мемуаров рассказывают становление города Нукуса, как столицы Каракалпакстана, состояния жилищ, питание, строительство дорог и зданий, быт горожан.*

Kalit soʻzlar: *hayot, xotira, tarix, qurilish, kundalik hayot, koʻngiloqlar, turmush sharoitlari.*

Ключевые слова: *быт, мемуары, история, строительство, повседневность, развлечение, жилищные условия.*

THEORETICAL BASIS OF THE DEVELOPMENT OF YOUTH'S MORAL CULTURE

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Summary: *Developing the moral culture of youth has always been the basis of the spiritual existence of mankind. In the article, we focused on the philosophical-theoretical problems of the development of moral culture. Today, the strategic goal of Uzbekistan is to raise a generation with high moral culture. This goal encourages the elimination of negative, destructive factors and the increase of positive, creative factors necessary for the formation of an ethical environment. Family environment is an environment created by parents and children living in the same conditions and entering into mutual economic, legal, reproductive and spiritual-moral relations. Situations specific to all families represent a common feature, and certain family customs represent an individual feature.*

Keywords: *motivation, nihilization, duty, morality, altruistic, egoistic, pride, mentality, conformism, individualism, marginality.*

The uniform progressive development of all processes in social practice depends on the nature of the moral culture of society. Philosophical and sociological studies have noted the dependence of economic, ecological, political, legal and other processes on the nature of moral culture formed in society. "...In social life, - Aristotle wrote, - it is absolutely impossible to act without being a person with certain moral qualities." [1: 296] The events of everyday life always confirm that a person's humanity and citizenship, the presence or absence of patriotism in him largely depends on his moral positions.

Moral orientations and habits of people have no small influence on the course of economic processes. The main signs of moral culture, such as the attitude of people to work, the level of development of their sense of duty and responsibility, the moral assessment of poverty and wealth in society, and the tendency of people to conflict, directly affected the process of economic development. The idea that the economic relations of society depend on the moral direction of people is expressed in the works of philosophers (Aristotle, D. Locke, T. Hobbes, J. J. Rousseau, etc.). Many humanistic thinkers (D.S. Likhachev, A.D. Sakharov, etc.) associate the country's economic well-being and political stability with the rise of the moral culture of its people.

In recent decades, the interdependence of the moral culture of the population and its activities in the field of nature use has become increasingly acute. Leading ecologists point out that in the process of using the resources of our planet, putting personal interests ahead of public interests can completely destroy the ecological condition. The immoral attitude of man to nature is in the relationship between man and nature "led to the character of the transition from symbiosis to parasitism." [2: 23]

Life observations and medical conclusions show that altruists, as a rule, have a long life, while egoists and conflicted people, on the contrary, need psychological and medical help. It is impossible to imagine such an area of people's life outside the influence of their moral culture. It is under its influence that the motives of people's behavior, the quality of their work, and the emerging self-evaluation criteria are formed. Summarizing the importance of moral culture for society by K. Kasyanova: one can agree with his opinion that "... all other political, social and material achievements can exist only on the basis of moral culture". Moral culture is a historically formed system of traditional, established, strict, normative relations between people. Elements of moral culture appear in the form of customs, rules of behavior, customs established in a certain society.

A person's moral culture is his active ability and is reflected in different levels. The lowest level is the perception of moral culture by young people through imitation. The second level of

moral culture is to take into account public opinion, they implement moral instructions based on feelings of pride and shame. The third level of human moral development is self-evaluation and regulation, reliance on conscience and moral needs.

Moral culture is formed when young people begin to perceive the moral standards generally recognized by the society. "In Kantemir's opinion, personal example plays an important role in human education, not advice and training. If the advice and teachings are contrary to the behavior, all the good (virtuous) lessons in the child's heart will not leave a mark like water in a sieve." [3: 446] The moral culture of young people is formed in the following stages: young people witness general moral principles and form them in their perceptions and imaginations; at the next stage, the culture of moral thinking and the ability to think morally are formed; at the next stage, the culture of feelings - the ability to empathize, the culture of pity and help is formed; at the next stage, the culture of behavior, that is, knowledge about moral principles is transferred to the norm of daily actions; the last one is that morality is manifested in culture, that is, in the relations of behavior.

The moral culture of the society has developed in an evolutionary way directly related to the development of mankind, and it is the moral development that has led people to be different from other living creatures. As our free democratic, civil society develops in our country, moral and ideological threats to it remain. These are manifested in the following: firstly, as a result of the negative impact of the globalization process, some interested forces promote the vices of moral base under the guise of "mass culture" and thereby try to confuse people's moral consciousness; secondly, incitement to fanaticism and missionaryism in the guise of religion; thirdly, to impose a foreign way of life alien to our national way of life and mentality with malicious intent; fourthly, there are attempts to attack the foundations of national morality. All this shows that the "struggle is still going on in the ideological landfills" and in order to eliminate these negative situations, it is necessary to further improve the ideological environment of our society and increase its importance in personal education. In this sense, the ideological environment is a systematic set of ideological, spiritual, moral, social and legal relations in a particular society.

If a person's spiritual ability or mental ability is the priority, harmony will be broken and maturity will not occur. Therefore, I.A. Ilin put forward the concept of harmonious development of mental and spiritual ability. He argues that the spirituality of a person and society is seen in their moral maturity, and such maturity is manifested in the following. In man, conscience, justice, goodness, religion are freedom, and in society, humanity, family, patriotism, nationality, upbringing.

In the formation of moral culture, as a phenomenon related to the spiritual and spiritual world of the people, it is the basis for the new composition of social and moral values in the society, in which the union and harmony of individuals and professional persons has an important place. Because society is "an organized collection of individuals." [4: 64] In this sense, the individual component plays an important role in the formation of moral culture.

The family environment is the primary basis of the moral culture of society. Because moral education is the main issue in families. "According to the laws of Solon, if the father did not teach his son a trade, if he was indifferent to the son's growth into a useful person, the son could not give merit to the old father. Solon's law against idleness was a positive event both from the social and educational point of view." [5: 89] The role and role of the family in the development of a person's life and livelihood, especially the young generation, is incomparable. If we look at the history of our people, the most valuable traditions: honesty, truthfulness, honor, modesty, kindness, hard work, etc., all human qualities were formed, first of all, in the family. A family is a group consisting of a couple, their children, their closest relatives, in other words, a household, that is, a micro environment. The role of the family in forming and improving the unique spirituality of the nation is incomparable. The purest and purest feelings of a person, the first life concepts and imaginations are formed in the family. Moral concepts, criteria and views that define the child's character, nature

and worldview, the foundations of holy qualities such as goodness and goodness, nobility and kindness, honor and respect are established in the family. “That is why respect for parents, which appears in the family environment, and a deep understanding of the duty of lifelong indebtedness to them, is the basis of human qualities and family relations, the spiritual world of the family.” [6: 52-53].

In the family, not only the healthy lifestyle and moral relations in a certain micro environment play an important role, but also moral tasks such as management, control, guidance, and punishment are performed in it. So, the place and role of the family environment in the formation of the moral culture of the young generation is huge. “The family is the appearance of a social group with a socio-historical character and a certain structure” [7: 17] In the definition given, it is emphasized that the family environment is important in the formation of youth culture and moral maturity, while I.A. Ilin emphasized that the family has an important place in the micro environment and that a person is educated in the spirit of patriotism, nationalism, and patriotism in the family.[8: 276]

“Spiritual and moral purification, faith, honesty, piety, honor, kindness and other important human qualities do not come by themselves. At the bottom of everything is education” [9: 432] I.Karimov clearly defined the priority of the strategic direction regarding the issue of the spiritual and moral environment of the society and attitude to the future. “So that the growing young generation realizes that it is possible to achieve a perfect career only in the process of diligent struggle to develop the skills to live within the framework of the laws and moral norms of the society in which it has to live.” [10: 162-163].

The neighborhood atmosphere is characteristic of the historical and cultural experience of our people. It is a community of people united by a common way of life, values, traditions, and customs, consisting of dozens and hundreds of family associations, and acting as a means of intermediate systems in the integration of the micro environment into the macro environment.

For example, in Western philosophy, the solution to any problem is sought from interests. In the chain of interests, economic interest is of primary importance. Such an approach has led to the weakening of moral principles such as humanity and goodness. As a result Western Europeans have forgotten the existence of the inner, moral, spiritual world of man. Russian scientists L.P.Meshennikova and Y.V.Popov say that in the civilization achieved by Western Europeans, love has been replaced by prostitution, friendship by calculation, and help to loved ones by charity. In today’s Western world, the vices of individualism, egoism, conformism, marginality, cruelty have become personality traits.

Eastern peoples live in peace and harmony. Human honor, reputation, personality, dignity, conscience are considered the basis of this historical and cultural paradigm. And moral requirements require to complete the series of values by themselves, to logically put one after the other. Respect for parents, mutual respect of siblings, harmony between people and relatives, harmony between neighbors are placed in a certain sequence, according to the level of appreciation, in a certain form as a moral value. Violation of the order of values leads to the destabilization of society and the state.

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Rezyume: Yoshlarning axloqiy madaniyatini rivojlantirish azaldan insoniyatning ma'naviy mavjudligining asosi bo'lib kelgan. Maqolada biz axloqiy madaniyatni rivojlantirishning falsafiy-nazariy muammolariga e'tibor qaratdik. Bugun O'zbekistonning strategik maqsadi yuksak ma'naviyatli avlodni tarbiyalashdan iborat. Bu maqsad salbiy, buzg'unchi omillarni bartaraf etish va axloqiy muhitni shakllantirish uchun zarur bo'lgan ijobiy, ijodiy omillarni ko'paytirishni rag'batlantiradi. Oila muhiti - ota-onalar va bolalar bir xil sharoitda yashab, o'zaro iqtisodiy, huquqiy, reproduktiv va ma'naviy-axloqiy munosabatlarga kirishadigan muhitdir. Barcha oilalarga xos vaziyatlar umumiy xususiyatni, ayrim oilaviy odatlar esa individual xususiyatni ifodalaydi.

Kalit so'zlar: motivatsiya, nigilizatsiya, burch, axloq, altruistik, egoistik, mag'rurlik, mentalitet, konformizm, individualizm, marginallik.

Резюме: Развитие нравственной культуры молодежи всегда было основой духовного существования человечества. В статье мы сосредоточили внимание на философско-теоретических проблемах развития нравственной культуры. Сегодня стратегической целью Узбекистана является воспитание поколения с высокой нравственной культурой. Эта цель способствует устранению негативных, деструктивных факторов и увеличению позитивных, созидательных факторов, необходимых для формирования этической среды. Семейная среда – это среда, созданная родителями и детьми, проживающими в одинаковых условиях и вступающими во взаимные экономические, правовые, репродуктивные и духовно-нравственные отношения. Ситуации, характерные для всех семей, представляют собой общую черту, а определенные семейные обычаи — индивидуальную черту.

Ключевые слова: мотивация, нигилизация, долг, мораль, альтруизм, эгоизм, гордыня, менталитет, конформизм, индивидуализм, маргинальность.

**THE ROLE OF SPIRITUAL AND MORAL VALUES IN STRENGTHENING THE
FAMILY INSTITUTION**

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Summary: *The ethno-cultural and national institutions, the way of life, the national system of values that have been formed over the centuries are drawn into the whirlwinds of the processes of globalization taking place in the world. The system of socio-family-human relations, in which the existential existence of countries, peoples and people is manifested, in particular the institution of family-marriage, is subject to the conflict of global processes and changes. On the one hand, the fact that marriage rites have not lost their ontological and existential character as a factor in the self-preservation and reproduction of mankind, and on the other hand, today in the world, under the conditions of processes called “the second demographic transition (bifurcation), there are such negative situations as a sharp decrease in the number of official marriages, official registration of same-sex marriages, and an increase in the diversity of family configurations indicate the relevance of research in this area.*

Keywords: *family, marriage, morality, value, ritual, tradition, demographic transition.*

Introduction

The role and role of the family in the life and everyday life of a person, especially in the growing up and moral maturity of the younger generation, is incomparable. Family traditions, values and customs shape a child's personality. The most important thing is that through the school of family life, children understand and feel the demands of society. If we look at the history of our people, the most valuable traditions: honesty, truthfulness, honor, shame, modesty, kindness, diligence, etc., all human qualities were formed first of all in the family.

Literature analysis and methodology

Therefore, it is necessary and important for every citizen, every future specialist, from the younger generation to the elderly, to know what a family and marriage are, their essence, purpose and significance.

Values are everything that is important for a person and humanity: freedom, peace, justice, social equality, enlightenment, truth, goodness, beauty, material and spiritual benefits, traditions, customs, etc.

Values associated with life, lifestyle, language, culture, spirituality, customs and traditions, past and future of a particular people, nation, people are national values. Values associated with a person, his activities, lifestyle, faith, meaning of life, manners, beauty, are personal values. Values are an important factor in raising an ideal person.

The “Avesta” outlines advanced ideas about the importance of the family as a source of health and improvement of a person, as well as a sacred place, equal responsibility of husband and wife for the stability of the family. For example, Ahura Mazda, the god of goodness and virtue, asked Zaradushtra, the protagonist of the work: “Which corner is the most respected on earth?” Does his cattle and dogs live well if his house is full of delicacies. if his wife and children live well, if his faith is stable in his house, if his fire burns, and if other things are in abundance, then this is a respectable treatment”.

In “Avesta” special attention is paid to the importance of family and marriage for the future of mankind, as well as for the development of society. We can see important insights into a young man's marriage and a woman's marriage and parenting. It states: “If a man has the ability to procreate, but does not marry, he will be branded or forced to walk with a chain around his waist.” Sometimes they put a person in a bag and beat him.

In Avesta, relatives are forbidden to create a family with each other. This was done so that the blood of the people and the clan remained pure, and the generation - impeccable. It is recommended that families with many children receive a certain amount of state benefits, especially women who have twins deserve encouragement.”

Farabi understands the concept of happiness as the achievement of happiness in marriage. According to him, “since the essence of humanity is the achievement of true happiness, a person will achieve happiness if he turns this goal into his highest idea and desire and uses all the possibilities in this way” scientist said that the family plays an important role in becoming a good-natured, generous and intelligent person. He argues that a person cannot achieve their goals without a family.

Describing the image of a mature person enlightened by his knowledge, Farabi says: “Whoever says that he has not learned wisdom, let him start from a young age, let him be healthy, have good morals and manners, let him succeed in his word. may he be protected from evil deeds, may he know all the laws and charters. , let him be knowledgeable and eloquent, let him respect scholars and wise people, let him not spare his wealth from knowledge and knowledgeable people, let him have knowledge of all real material things.

From these reflections, it can be seen that Farabi paid special attention to the education and upbringing of young people so that they become perfect people, especially intellectual and moral education. According to him, knowledge, enlightenment and good morals should be embellished, otherwise the expected goal will not be achieved, the child will not mature.

The epic “Alpomish” can be called a “commentary” on the ancient marriage rites, traditions, secrets and taboos of the Uzbek people. The conditions set by the girl in the Alpomysh epic represent an ethnopsychological phenomenon in the form of a custom that takes place before ancient marriage rites. Already now in the Romitan, Zhondor, Gijduvan districts of the Bukhara region.

In Nurabad, Pastdargom, Ishtikhon districts of Samarkand region, in Chirakinsky, Shakhrisabz districts of Kashkadarya region during the marriage ceremony, the girl’s father burns the future groom with an ax “on Drov-kunde”.

According to researchers, the conditions that a girl puts on a guy go back to ancient traditions associated with “marriage”, real events and incidents in public life. Also, the ancient roots of traditional ideas about the Bahadir girl are also associated with the real attitudes of the matriarchal way of life. According to V. Verbitsky, the heroic epics of the Altai Mountains contain information about the test of courage, dexterity and strength of the groom, symbolic competitions between the groom and the bride. According to him, some Altai peoples have “baiga” (race).

Among their peoples, it meant “wedding” and “wedding ceremony.” For example, in the Altaic version of the Alpomysh epic, it is mentioned that there were 3 conditions for marriage. Competition condition: “whose bow and arrow will hit directly; whose horse is stronger; who has more strength”, i.e. “archery”, “race”, “struggle” is expressed in terms.

In fact, there were places where marital relations had to be given double attention. In particular, when choosing a girl for boys, an important role was played by the mother, aunt or married sister of the young man. Particular attention was paid to the role of a girl in her family, that is, to be able to cook food, be able to bake bread, be able to sew clothes, as well as the girl's health. Marriage does not regulate the intimate relationship between a boy and a girl, but also imposes moral conditions, such as household chores, possession of household items, not extinguishing the fire of the hearth.

Ancient religious ideas about traditional family marriage ceremonies can be divided into 3 groups:

1. Rituals and customs associated with the birth and upbringing of children.
2. Religious beliefs in the wedding ceremony.

3. Archaic religious ideas about mourning rites.

Conclusion

One of the important features that distinguish one nation from another is its rituals. A ceremony is a life event with symbolic acts that are accepted by the public. Events that are held in connection with important turning points in a person's life are called family rituals.

The traditions associated with the life of people are somewhat more fanatical and conservative than socio-political traditions. The rituals associated with birth, marriage and death are not only mental, but also emotional and spiritual milestones, many of which are rooted in ancient beliefs and religious beliefs.

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Rezyume: *Asrlar davomida shakllangan etnik-madaniy va milliy institutlar, turmush tarzi, milliy qadriyatlar tizimi dunyoda kechayotgan globallashuv jarayonlari girdobiga tortilmoqda. Mamlakatlar, xalqlar va odamlarning ekzistensial mavjudligi namoyon bo'ladigan ijtimoiy-oila-inson munosabatlari tizimi, xususan, oila-nikoh instituti global jarayonlar va o'zgarishlarning ziddiyatiga duchor bo'ladi. Bir tomondan, nikoh marosimlari insoniyatning o'zini o'zi saqlab qolish va ko'payish omili sifatida o'zining ontologik va ekzistensial mohiyatini yo'qotmaganligi, ikkinchi tomondan, bugungi kunda dunyoda ikkinchi darajali deb ataladigan jarayonlar sharoitida. demografik o'tish (bifurkatsiya), bunday salbiy holatlar yuzaga keladi, rasmiy nikohlar sonining keskin kamayishi, bir jinsli nikohlarning rasmiy ro'yxatga olinishi, oila konfiguratsiyasi xilma-xilligining kuchayishi bu boradagi tadqiqotlarning dolzarbligidan dalolat beradi.*

Резюме: *Сформировавшиеся веками этнокультурные и национальные институты, образ жизни, национальная система ценностей втягиваются в вихри происходящих в мире процессов глобализации. Система социально-семейно-человеческих отношений, в которых проявляется экзистенциальное существование стран, народов и людей, в частности институт семьи-брака, подвержена конфликту глобальных процессов и изменений. С одной стороны, тот факт, что брачные обряды не утратили своего онтологического и экзистенциального характера как фактора самосохранения и воспроизводства человечества, а с другой стороны, сегодня в мире, в условиях процессов, называемых второй демографический переход (бифуркация), возникают такие негативные ситуации, как резкое снижение числа официальных браков, официальная регистрация однополых браков, увеличение разнообразия семейных конфигураций, свидетельствуют об актуальности исследований в этой области.*

Kalit so'zlar: *Oila, nikoh, axloq, qadriyat, marosim, an'ana, demografik o'tish.*

Ключевые слова: *Семья, брак, нравственность, ценность, ритуал, традиция, демографический переход.*

A SYSTEM OF QUALITIES THAT FORM STUDENTS' SENSE OF PATRIOTISM WHEN TEACHING HISTORY

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Summary: *The article discusses the stages of forming a sense of patriotism among students through teaching history, the principles of selection and presentation of educational material, teaching such knowledge and skills as how to work with the information provided, how and where to look for information.*

Keywords: *patriotism, history lessons, concepts on the topic, interpretation, development of students' thinking, national history, teaching methods, independent work, search, comparison, comparison, ancestral history, directions, stages*

Introduction. In the process of raising patriotism in a student, it is necessary to first form mandatory personal qualities, which together form a patriotic attitude to the country, help to form patriotism. The content of the history subject is also being improved in higher education. Textbooks are also adapting to expand students' thinking and develop their skills to work independently. After all, "in order for our youth to become independent thinkers, have high intellectual and spiritual potential, become people who are equal to their peers on a global scale in any field, and become happy, our state and society must use all their strength and we will mobilize our possibilities", - it is emphasized that history education has the urgent task of educating the youth of our country to be logical thinkers, with high national pride, independent thinkers.

The search for new approaches and concepts in the teaching of national history does not mean a complete revision of all research burdens of the past, falsification or concealment of particular events and facts. On the contrary, students should be given assignments to clarify multiple-choice information about history. It develops the student's ability to work independently. Information - (lat. informatio - explanation, statement) - information about persons, objects, facts, events, events and processes, regardless of the form of their description, is transmitted and stored with the help of conventional symbols. The future teacher of history as a professional should master two types of activity: research - in the field of history, teaching - in the field of knowledge of the historical past as a means of personal development. Here we will consider the problem of interdependence of history as a subject and study it as a subject in student development.

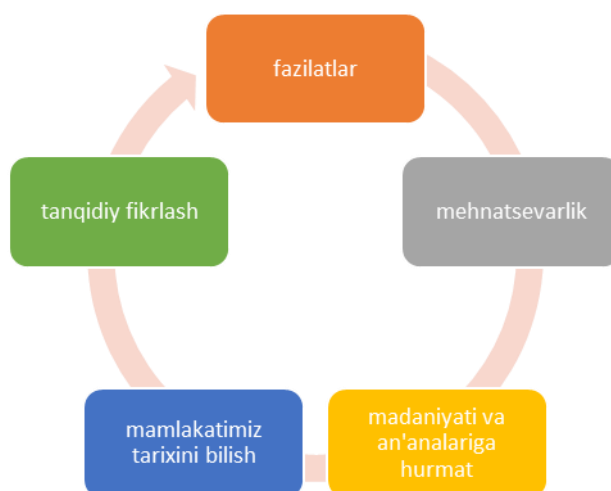
Taking into account this approach, the objects of activity of a professional historian and a history teacher are different. History as a science studies the historical process of the development of society. History is a human science, studying the past of society as a process created by people, the result of which is related to human activity and human subjectivity. The subject "History" provides students with historical experience as the value of human behavior in various life situations, moral/immoral attitude to various aspects of human life. A history teacher engaged in the renewal of history teaching acts as a researcher.

In recent years, various modern methods and methods have been actively used in the history teaching methodology. Scientists have summarized the traditional methods, divided them into four, and clearly indicated the methods and their methods.

But the main task of the history teacher is to develop the personality. The teacher shapes the historical consciousness of the young generation and their sense of patriotism. Another activity of a history teacher is research related to updating the basic and procedural aspects of modernization of history education. Modernization is aimed at increasing the quality of historical training and successful socialization of the child.

Educational, educational and developmental tasks and the goals of teaching history for the purposes of teaching history are mastery of students; systematized knowledge about the historical process in the world and the formation of ideas about the place of Uzbekistan in it, through which it is possible to educate students about the achievements of national and world culture, a socially active and creative person, a citizen of the Motherland and a patriot.

This includes self-control, discipline; diligence; initiative; compromise; spirituality; culture; tolerance; respect for the history, culture and traditions of our country; critical thinking; qualities such as moral responsibility are very important. But patriotism is more manifested in the following qualities:



The implementation of the experimental part of the work on determining the pedagogical conditions of patriotic education of university students was carried out in the following directions:

- development of a hierarchy of pedagogical goals for the formation of students' patriotism;
- choosing the appropriate content of the educational process in accordance with pedagogical goals;
- development of methods of formation of components of student patriotism.

During our experience, diagnostics of the educational process allowed us to identify a set of pedagogical conditions that help to form and develop a patriotic attitude among students, to determine the level of orientation to the value of students, criteria and components of control and evaluation.

By pedagogical conditions, we mean an important component of the pedagogical process, which includes the content, methods and organizational forms of education and training, and therefore is directed to the relationship with the inner world of the student. When developing pedagogical conditions for the education of patriotism of university students, it is necessary to take into account that the pedagogical process is a specially organized purposeful interaction of teachers and students aimed at solving educational tasks, because three important features are distinguished in it:

- the goal of the pedagogical process, which is considered as a multi-level event based on educational goals;
- interaction as an exchange of activities with a material, technological and management basis;
- the result expressed in the assimilation of the experience accumulated by mankind as a result of the interdependence of its four elements: knowledge, including the methods of performing actions; skills and abilities; experience of creative activity and experience of emotional-value and voluntary attitude to the surrounding world.

We rely on the concept of patriotism education and its final result - patriotism, given in defining the system of pedagogical conditions. It is also necessary to take into account the structure of the educational process of the university in the conditions of humanization of education.

So, the pedagogical conditions for education of patriotism of university students in the conditions of humanization of education determine the following:

- updating the humanitarian aspects of humanitarian subjects of the cycle;
- implementation of developing and nurturing education based on patriotic values;
- applying a holistic approach to the development of a patriotic personality;
- creating an educational environment aimed at the formation of national identity.

The selected conditions are interrelated and mutually conditioned. Of all the above conditions, we mean only the fourth one, because national identity is closely related to national feelings.

Studies show that the national identity of a person is represented by a multi-level system combining cognitive, axiological, emotional, regulatory and voluntary levels of mastering national culture, history, science, art, religion, folk pedagogy. It is impossible to fully form national consciousness without love for the motherland, one's people, responsibility for the fate of the Motherland, feelings that are important for national pedagogy.

In the conditions of globalization, the image of the Motherland as an object of patriotism is actively built using information and communication technologies, local cultural traditions and marketing strategy preservation technologies, it includes not only the idea of itself and its community, but also its internal projection filled with perception outside the nation-state community. Motherland is starting to be seen as a brand with a certain economic potential, political image and cultural heritage. Therefore, patriotism today should include the presentation of national cultural heritage, traditions, language, cultural values using modern information and communication technologies, which should be positioned as the best and irreplaceable factor. Not only the historical memory, but also the positive image of the nation today and the future has a significant influence on the education of patriotism among the students of the higher educational institution.

History as a science is one of the important parts of the modern education system, it helps to form historical memory and historical consciousness. The variety of events, events and processes that have taken place as an object of historical study represents the progress of human development from primitive times to the present day. The role of history in the formation of a student's personality is very important. Taking into account the accumulated experience of mankind, he prepares him for life in a changing world, educates a citizen and patriot of his country, and turns him into a person who respects the culture and history of other nations. The decisive factor in this process is the formation of personal qualities.

In the conditions of today's globalization, even in the higher education system, students' feelings of patriotism and belonging cannot be said to be sufficient. Methodists also want to train history teachers, so confronting students with the methodology of teaching history leads them to a new problem - when history is viewed as a tool, it can lead to this result. First of all, it is necessary to solve the issue of the role of history teaching in the professional training of a history teacher.

In this regard, the study of history in educational institutions is aimed at fulfilling the following tasks:

- to understand the knowledge of the historical process necessary for students to analyze the current stage of the development of society and diagnose their own life;
- to understand the value and uniqueness of the cultures of the peoples of the world;
- development of values and personal beliefs of students based on the ideas of humanity and patriotism, principles of citizenship, understanding of the rule of law in society, substantiating the existence of rights, duties and responsibilities of everyone through historical examples, etc.

As a conclusion, it should be said that history should be taught in integration with literature and film art in order to develop patriotic feelings in students. In addition, if a lesson is organized using illustration materials, audio and video materials, and historical items related to the topic, patriotism is formed in students and future history teachers. This feeling that they have will be passed on to their students in the future, and the ground will be prepared for the education of a whole generation of patriots.

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Rezyuyme: *Maqolada tarix fanini o'qitish orqali o'quvchilarda vatanparvarlik tuyg'usini shakllantirish bosqichlari, o'quv materialini tanlash va taqdim etish tamoyillari, berilgan ma'lumotlar bilan ishlash, ma'lumotni qanday va qayerdan izlash kabi bilim va ko'nikmalarni o'rgatish masalalari muhokama qilinadi.*

Резюме: *В статье рассматриваются этапы формирования чувства патриотизма у школьников через преподавание истории, принципы отбора и подачи учебного материала, обучения таким знаниям и умениям, как работать с предоставленной информацией, как и где искать информацию.*

Kalit so'zlar: *vatanparvarlik, tarix saboqlari, mavzu bo'yicha tushunchalar, izohlash, o'quvchilar tafakkurini rivojlantirish, milliy tarix, o'qitish metodikasi, mustaqil ish, izlanish, qiyoslash, qiyoslash, ajdodlar tarixi, yo'nalishlar, bosqichlar.*

Ключевые слова: *патриотизм, уроки истории, понятия по теме, интерпретация, развитие мышления учащихся, отечественная история, методика обучения, самостоятельная работа, поиск, сопоставление, сопоставление, история предков, направления, этапы.*

AN ARTIST WHO REFLECTS THE MAGIC OF NATURE IN COLORS

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Summary: *In three articles, the work of master paintbrush artist Urol Tansikbayev is discussed. In addition, information on the analysis of the artist's works stored in "Urol Tansikboyev House-Museum" in Tashkent and other cities is given.*

Keywords: *Updates in art, House-Museum, landscape, color, work, miniature.*

The young generation, who are just stepping on the threshold of art, should have information about the mature stages of art, they should always remember about the ups and downs of the creative path they have passed. Art is a combination of different directions, among them, the art of painting, which gives aesthetic pleasure to a person, revives the memories of his past and present, is understandable for all peoples, i.e. does not need translation. To become an artist, first of all, a person must have a pure heart, unique thoughts, ideas and, of course, great talent. Because in this area, colors enter the language: forms come to life. Urol Tansikbayev is one of the mature representatives of such fine art, the founder of the landscape genre, the master of nature, the master of the brush. He was one of the first artists with a truly patriotic spirit who turned to European culture, mastered European avant-garde methods, and formed a bright personality with a unique worldview.

His works have not lost their value even today. If we talk about the creative path of the artist, the spirit of that time is felt in each of his creations. From the first years of his work, he had his own style and direction. If we observe Urol Tansikbayev's works from the twenties to the end of the thirties, one can notice his hidden aspirations. The first exhibition of the artist was shown in the club of the factory where he worked. Due to many factors, Tansikbayev began to step towards the avant-garde direction. One of the reasons for this was the memories of the museum he visited when he went to Moscow to improve his qualifications. The idea of combining the impressions of modern European fine art seen in the museum and the avant-garde methods with the traditional parts of the East appeared, which served as a new school of skills for the artist. The atmosphere of discussion and exhibitions, working side by side with artists such as A. Volkov, M. Kurzin, A. Nikolayev, A. Podkovirov, who are twenty years older than Tansikboyev and have a clear direction as a creator responsibility opened opportunities for bold research and free creativity for the young talent to realize his inner ideas. From this time on, personal research and striving towards an independent choice of direction will begin.

Starting with "A.Toshkentboyevning portreti", Tansikboyev used motifs of European fine art of the 19th - 20th centuries in most of his works created in the period up to the middle of the 30s. The viewer can feel them in the compositional solution of the work. O`. Tansikboyev revealed the direction of impressionism, which is an important step for every modern artist, through this century. got. Interested in divisionism ("Karvon"), in his works close to Cézanne and Cubism ("Pushti manzarada yigitcha shakli", "Xojikent") and paintings ("Hovuz bo'yida", "Eski shahar burchagi") in the visual art of post-impressionism The role of color enhancement ("Qizil kuz") and Fauvism ("Bog'da peshin") was successfully developed. As a student, Urol Tansikboyev conducted research on visual arts procedures and ways of their development. In 1927, he created two works that showed his artistic essence: one ("A. Toshkentboyev portreti") - impressionism and the other ("O'zbek portreti") - filled with oriental ornaments, Uzbek spirit. After the 1934 exhibition of Uzbek works of art held in Moscow and Philadelphia, it was called "O'zbek rangshunosligining cho'qqisi". Over the years, his tendency to depict realistic landscapes began to show more strongly in his works. He conveys the idea of man and nature through his works. Art critics say that Urol

Tansikboyev completely changed the Uzbek landscape art due to his creative research. The uniqueness of his works is that each work has a scale. Even if you enlarge them and look at them from a distance, the landscape is beautifully embodied. Urol Tansikbayev's creative path, like other founders of art in Uzbekistan, coincided with difficult and difficult years, that is, when there was a war and other dramatic events in the world. The artist did not ignore them, but was able to sing their faith in the beautiful pages of art. He adequately responded to the difficult issues of his time, and the best works of the artist are evidence of the skills of a famous master in the history of national culture. Urol Tansikbayev was mainly a lyrical artist. In each of his works, there is boundless love for his beloved country. With this love, he painted a magnificent image of the landscape of Uzbekistan. He also performed a number of works as a public figure. "The portrait of Alisher Navoi", created in 1940, occupies a special place in his work. In the years of the Second World War, he created the works "Vahshiyning yo'li", "Ozod qilingan yerlarda", "Partizan ayol", "Qoplonbekda kuz", "Tungi sug'orish", 15 canvases, which embody the landscapes of the Zonajan region. created series of works like

Later, the landscape took the leading place in the artist's work. "Noon. Among them are his works such as "Peshin. Ovqat payt", "G'o'za sug'orish", "O'zbekistonda bahor"". His works such as "Yangi yerda", "Tog'da kuz", "O'zbekistonda mart", "Kattaqo'rg'on suv ombori", "Bo'stonliqda bahor" "Tog'dagi yaylov" are new achievements of visual art. was welcomed as a painter, but his paintings "Chorvoq qurilishida", "Mirzacho'l kanali" and a number of other paintings made him known as a skilled artist, a singer of nature. Tansikbayev's perfect development is confirmed by his works of those years, 1951 - "Ona yer" and "Issiqko'l oqshomi". The sights such as "Toxiatosh" and "Sirdaryo" are noteworthy. Urol Tansikboyev is one of the artists who made a complete change to the visual art of Uzbek landscape studies. The best scenes, especially "Qayraqum GESida tong", show universal human quests. In the 1960s and 1970s, the artist was able to create a freer interpretation of the previous work with a monumental combination, intense color harmony, which seems to embody the spiritual searches of the 1930s. "Angren-Qo'qon tog' yo'li", "Pomirdagi Qoraqo'l", "Belesda. Qirg'iziston", "Oloy Vodiysi", "Oqshomda Panj" canvases capture emotions through nature, like a wide letter sent back to freedom. Urol Tansikbayev's artistic experience is understood in the artistic essence of the period in which he lived and created. In those years, modern Uzbek fine art was on the threshold of formation, and it was the first swallow. In these processes, artists such as P. Benkov, A. Volkov, M. Kurzin, N. Kashina, A. Nikolayev have a special place, because they defined the high level of the national school through their work.

Urol Tansikbayev left a rich and colorful legacy. His works are not only in the famous museums of our country, but also in the world - the Tretyakov Gallery, the State Museum of Oriental Culture, the gallery in Almaty.

In order to perpetuate the memory of the artist, the house where he lived and worked was turned into a museum and is currently functioning as a house museum. This memorial house-museum was opened in 1981 and included a workshop, a hotel, a bedroom, an office, a porch, and a porch where various flowers and plants can be seen. Today, the museum exhibits more than 400 works by the artist. A memorial workshop was opened in 1976 in memory of the great artist living in this house. It contains an exposition of the artist's creations, documentary materials about the artist's life and work, easels, tables for paints, photographic documents and copies of the artist's works stored in foreign museums.

Art is an activity related to human emotions, and the role of the creator in its emergence through emotions is incomparable. That is why the world of art is wide and diverse. It is the ability to convey ideas and feelings through colors, paints and lines that has been successfully and effectively expressed in the painting principles of fine art. Therefore, in the work created by the artist, we can understand the period of his life, environment and lifestyle. Great artists and their

creations are a legacy of art history. Uzbekistan is one of the countries where the art of Uzbekistan has developed over the centuries, taking its place and traditions.

As a result of centuries, years, and different traditions, the art of painting has experienced ups and downs over the years. But since the 20th century, in the history of the art of Uzbekistan, a unique style and a local direction have been combined, and its sharp creators have appeared in the world of art. It was from the first or second half of the 20th century that a fundamental turn was made in the work of artists and artistic processes. The creativity of the artists, who seal the image of our unique country, has been burning brightly. One such artist is O'. Tansikbayev. The artist's creativity and the works he created were able to rise to the level of development. His works, whether portraits or landscapes, were warmly received by his fans. Because there was reality in it. In the artist's drawings, one can see a strong person who has overcome life's difficulties. For this reason, it is necessary to give full information about Tansikbayev's work to the young generation, to future artists who are stepping into creativity, to teach the history of the creation of each of his works, the methods of using colors. The artist especially used several types of blue, which became a characteristic feature of the works created in the 80s.

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Rezyume: Ushbu maqolada mohir mo'yqalam sohibi O'rol Tansiqboyev ijodi uning yaratgan asarlari xususida so'z boradi. Bundan tashqari Toshkent shahridagi “O'rol Tansiqboyev uy-muzeyi”da va boshqa shaharlarda saqlanayotgan rassomning asarlari tahlili borasida ma'lumotlar berilgan.

Резюме: В данной статье рассказывается о творчестве мастера живописи Урола Тансикбаева. Кроме того, приводится информация по анализу произведений художника, находящихся в «Доме-музее Урола Тансикбоева» в Ташкенте и других городах.

Kalit so'zlar: San'atdagi yangilanishlar, uy muzey, manzara, rang, asar, miniatyura.

Ключевые слова: Обновления в искусстве, дом музей, пейзаж, цвет, произведение, миниатюра.

**THE ROLE OF STRATEGIES IN THE SUSTAINABLE DEVELOPMENT OF INDUSTRY
IN THE REPUBLIC OF UZBEKISTAN**

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Summary: *The article examines the role of strategies in the sustainable development of industry in the Republic of Uzbekistan and the main directions of industrial development in the context of globalization. The strategy of industrial development of the Republic of Uzbekistan has been defined.*

Keywords: *Development strategy, industry, economic potential, organizational and economic mechanism of industrial development.*

Introduction Uzbekistan's dynamic and sustainable development of industry is considered a priority in the implementation of a policy of structural transformation and modernization of the country's economy.

Uzbekistan has made significant progress in carrying out major reforms in all sectors of the economy. In his address to the Oliy Majlis and the people of Uzbekistan on 20 December 2022, President Shavkat Mirziyoyev emphasized: as a result of large-scale and effective reforms, the country's gross domestic product exceeded \$80 billion for the first time. \$8 billion of direct foreign investment was attracted into the economy of Uzbekistan, and exports reached \$19 billion. Every day new areas and sectors appear in the economy of the republic [2].

The main part. According to the Development Strategy of New Uzbekistan for the years 2022-2026 there are plans to increase the share of industry in the structure of the economy, further modernize it diversification by transferring it to a qualitatively new level, advanced development of high-tech industries with high added value based on the deep processing of local raw materials. Development and reforming of the industry for years of independence has been carried out within the policy of macroeconomic stability, structural and institutional reforms, ensuring sustainable economic growth. In this strategy it is planned to continue implementation of the industrial policy aimed at ensuring stability of the national economy, increasing the share of industry in the gross domestic product and increasing the volume of industrial production by 1.4 times. Further liberalization of the leading industries and the economy and completion of the transformation processes. Liberalization of the market for energy resources and natural gas with the establishment of guarantees of social protection, broad attraction of private investment in the sector, and the introduction of social norms of consumption to protect the vulnerable segments of the population. Ensuring an uninterrupted supply of oil products to sectors of the economy and the population. Establishment of clusters of the copper industry with the aim of creating a basis for doubling the output of copper and other copper-based products as well as the production of \$8 billion worth of products. Development of the chemical and gas-chemical sectors, increasing the level of processing natural gas from 8 to 20 percent and the volume of output of chemical products to 2 billion U.S. dollars. Further development of cooperation and increasing the level of localization in the automotive industry with a 1.4 times increase in production and a 2 times increase in exports. Establishment of an industrial cluster of agricultural machine building in Chirchik. Doubling the production of construction materials. Doubling the output of the textile industry. Development of leather and footwear industry and increasing production volume in the sector by 3 times. Threefold increase of pharmaceutical industry production and bringing the level of provision of domestic market with domestic medicines up to 80 percent. Doubling the production of high added value products in the electrical industry and increasing exports by 3 times. Increasing the production volume of furniture products by 2.8 times. Implementation of the food industry development

program. Development of industrial cooperation between major industrial sectors and regional enterprises. Widespread implementation of programs to increase labor productivity in industries [1].

The growth rate of Uzbekistan's economy slowed from 7.4% in 2021 to 5.7% y/y in 2022, and GDP in nominal terms was 888.3 trillion sum or \$80.4 billion⁶ (\$69.6 billion for 2021). This GDP dynamic was roughly in line with the 2018-2019 pace, when the economy grew 5.5% to 6.0% annually. Agriculture (+3.6% y/y), industry (+5.2% y/y) and construction (+6.6% y/y), and services (+8.5% y/y) contributed positively to GDP growth in 2022. Production growth in agriculture was supported by positive dynamics in animal husbandry (+3.4% y/y) and crop production (+3.8% y/y). The average growth rate of the agricultural sector over the last four years was 3.4%, and 3.6% in 2022 was slightly less than 4.0% in 2021. Since 2017 the share of the agricultural sector in the economic structure has decreased from 28.7% to 23.5%. Manufacturing (+5.3% y/y) provided the main support for the country's industry amid more subdued growth in mining (+2.1% y/y). The mining industry saw declines in natural gas production (-4.0% y/y), gas condensate (-2.8% y/y) against growth in oil production (+1.8% y/y) and coal (+5.9% y/y). Growth dynamics in industry averaged 4.9% over the last 4 years and was uneven, with a growth rate of 5.2% in 2022 matching the 5.0% growth rate in 2019. Industrialization of the national economy led to an increase in industry (not including construction) of 18.8% in 2017 to 24.8% in 2022. The growth rate in construction shows an annual decline from 22.9% in 2019 to 6.8% in 2021 and 6.6% in 2022. The share of construction in Uzbekistan's economy has increased from 4.8% to 6.3% in the last 6 years. In services, the growth rate was 8.5% y/y, down from 9.5% y/y in 2021, but markedly higher than the 2018 rate of 5.7% y/y and the 2019 rate of 6.7% y/y. Relatively high growth rates in the services industry in 2022 came from increases in trade services of 9.3% y/y (+13.6% y/y in 2021), transportation and storage of 14.7% y/y (+17.8% y/y in 2021). The information and communication industry output growth rate in 2022 was set at 24.6%, which is higher than in 2020 (+24.3% y/y) and slightly less than in 2021 (+27.3% y/y). The share of services output in the country's GDP has increased from 36.2% to 38.7% over the past four years [8].

Along with quantitative and qualitative positive shifts in the sustainable development of industry in Uzbekistan, there are a number of systemic problems that need to be addressed. These include:

- the presence of structural disproportions related to a relatively insufficient level of industry's contribution to economic development, based on the country's natural and economic potential (in industrialized countries the share of industry in GDP exceeds 40%);
- disequilibrium between the growth of production in the fuel industry and the expansion of the mineral and raw material base;
- the insufficient organization of production from raw materials to finished products with a transition to a full cycle of deep processing of nonferrous metals, chemical raw materials, cotton fiber, vegetables, fruits, grapes and other agricultural products
- a threat to the country's technical and technological security (the share of mechanical engineering in total industrial output is 15.4%, the threshold being not less than 20.0%);
- high level of state presence in the assets of large industrial enterprises, joint-stock companies and other structures, as well as the existing share of small business (29,5 %) in the industry does not meet the requirements of today;
- insufficient use of the scientific and innovation potential, which creates conditions for the technological lag (the level of spending on R&D in the GDP is 0.3%, while in industrialized countries this indicator is 2.0%-3.0%, and the share of high-tech products is only 1.6%, which is much lower in developed countries of the world);
- inter-regional differentiation in the production of industrial products reaches 6.0 times, and at the level of regions more than 100 times, which negatively affects the socio-economic development of regions, especially in rural areas.

The second important area of systemic problems, the lack of effective development of industry. This is a high level of physical deterioration of basic production assets (50.0% on average), which has a negative impact on the competitiveness of manufactured products. Decreases the level of competitiveness of industrial enterprises, inefficient use of material and raw material resources. (material intensity). Thus, the level of capital intensity, material intensity and energy intensity of industrial production is 2.0-3.0 times higher than the level of developing countries.

Among the social aspects of the sustainable development of industry, it should be noted its insufficient contribution to employment through the development of labor-intensive industries, the qualitative mismatch between the demand for labor and its supply. The structure of personnel training in professional colleges and higher educational institutions does not correspond to the needs of developing industries, especially high-tech industries [3].

Organizational and economic mechanisms requiring further improvement include: the lack of a single body of state regulation of sustainable industrial development; macroeconomic regulators to ensure the stability of the national currency, tariff and fiscal instruments; the need for a transition to a management system in industry, taking into account international standards.

It should be noted that Uzbekistan has favorable conditions and prerequisites for sustainable industrial development.

The most important factors and prerequisites for the sustainable development of industry in the future are the potential demand for products on the domestic and world markets. First of all, these are sectors of the raw materials sector: non-ferrous metallurgy, oil and gas and agro-industrial complex, which are characterized by competitive advantages[6].

In order to ensure a balance between the products produced and the corresponding raw material base for the period 2022-2026, a program for the reproduction of mineral resources has been developed. An increase in reserves and resources, more than 35 types of minerals, including gold, silver, uranium, copper, lead, zinc, rare metals, iron, manganese, coal, natural gas, oil, potash, phosphorus stones, inert materials with competitive advantages is envisaged.

First of all, human potential forms domestic demand, as well as becoming in demand to ensure sustainably high rates of industrial development, through the creation of new high-tech jobs and solving the most acute social problem of employment.

The reduction of specific costs of energy and material resources and, accordingly, the cost of production is an important reserve for sustainable development of industrial production. Calculations show that a decrease in resource intensity by 8.0 % will contribute to an additional increase in production by 5-6 % in energy intensity, by 1.0 % in material intensity, and by 10 % in capital intensity.

The potential of deepening the processing of raw materials and localization of production on the basis of local resources is a significant reserve for the growth of processing industries. According to calculations, an increase in the processing level of cotton fiber by 1.0 % gives an opportunity to increase the production volume of the textile industry by 3.5 %, respectively, the processing of fruits and vegetables will provide an increase in the production volume of the food industry by 4.1 % [9].

Thus, it is many times more profitable to export finished products made from cotton. From 100 kg of raw cotton you get 35 kg of fiber, and from it 3000 meters of fabric. With the average price of 1 kg of cotton fiber in the world market 1.1-1.2 dollars, the yarn from it is valued at 2-5 dollars, and the price of the finished product increases by 1.5-3.0 times. Here there is a tenfold increase in the cost of production and profit.

In the future, the most advanced positions will belong to the innovative potential of industry activation. For Uzbekistan, the optimal strategy for the use of innovation potential is a combination of borrowing and adaptation of foreign advanced technologies with the formation of its own national system of development and implementation of innovative industrial products.

The main objective of Uzbekistan's industrial development strategy is to improve efficiency in the domestic and foreign markets and to ensure its sustainable development. The main objectives of this goal are: strengthening energy, food and technological security of the country; balancing the mineral resource base with increasing production capacity; effective use of existing comparative competitive advantages; increasing competitiveness by encouraging resource conservation; developing export-oriented and high-tech industries; creating a set of interconnected industries from raw materials to finished products; and getting ahead of the improvement of the organizational and economic mechanisms for the sustainable development of industrial production.

Officially, the government of the country has defined targets for the development of industry until 2030. This is an increase in the share of industry (including construction) to 40.0% of GDP. The implementation of special programs aimed at the development of the chemical industry, processing of non-ferrous and rare metals, hydrocarbon raw materials, textile, leather and footwear, pharmaceutical industry, processing of fruit and vegetable products and the development of production of construction materials has a more long-term character.

As calculations show, the output of petrochemical products with high added value could be increased 3.2 times by 2030 with the development of new types of products, non-ferrous metal products 2.2 times, ferrous metals 2.3 times, chemical industry products 3.2 times. In-depth processing of cotton fiber, fruits and vegetables using modern technologies will increase the textile and light industry by 5.6 times by 2030, fruit and vegetable products by 5.7 times. [6].

The planned structural shifts in the production of industrial products are aimed at: further development of high-tech industries; improvement of efficiency and competitiveness; expansion of finished goods in high demand on the world market; active involvement of foreign direct investment; improvement of mobilization of organizational and economic mechanisms of sustainable development[5].

The implementation of the goal and tasks of sustainable industrial development is largely associated with the further liberalization of the economy, the development of institutional and structural reforms, improvement of regulation, including corporate governance; broad introduction of effective forms of attracting investment and mobilizing the potential of entrepreneurship; improvement of the macroeconomic climate and business environment, increasing the quality of training and retraining; stimulation of regional development.

From the part of the legislative and legal support of sustainable development of industry it is advisable to constantly monitor them and increase the effectiveness of the functioning of various organizational forms of enterprise associations (associations, unions, joint stock companies, holding companies, corporations, etc.) in order to clearly differentiate their functions and tasks, the division of responsibility for property management, the degree of state participation in these processes.

At present, such organizational zones as industrial zones and centers in the regions of the country have not been properly developed in the republic in order to stimulate the expansion of small industrial productions based on the rich natural-economic potential. For creation and effective functioning of industrial zones and centers it is necessary to create the most favorable regime for domestic investors. These are tax, customs and credit privileges, creation of production infrastructure facilities (roads, electricity supply of labor and social security to attract young graduates of vocational colleges, higher educational institutions, primarily to work in industrial high-tech industries, at the expense of state subsidies [5].

Conclusions. It seems advisable to develop a special roadmap for the systematic training and retraining of young people for work in industrial enterprises, especially high-tech ones, by introducing various incentive mechanisms (remuneration and working conditions, continuous training, career development, internships abroad, social security, etc.) to balance supply and demand for highly qualified and engineering personnel.

Ensuring the sustainable development of industry in the future requires paying special attention to the integrated development of territories where the main factors and conditions for the location of industrial enterprises are concentrated. In this regard, it is necessary to outpace the build-up of industrial potential in underdeveloped regions and rural areas, create a special fund for the development of industry in certain territories, and strengthen the capacity of local budgets.

It seems expedient within the framework of improvement of macroeconomic mechanisms to further stimulate and target sustainable development of industry:

- elaboration of the scheme of development and placement of productive forces of Uzbekistan for the long-term perspective;
- drafting a long-term strategy for the development and location of industry, taking into account energy, food and technological security;
- ensuring a balanced and sustainable monetary, fiscal and foreign economic policy; effective use of the reserves and potential of investment and structural reforms.

Creation and development of public and private institutions to support and stimulate the sustainable development of industry.

In general, ensuring the priority task of sustainable industrial development. Uzbekistan requires the implementation of a set of measures to create favorable legislative, institutional, macroeconomic conditions and prerequisites for foreign and domestic entrepreneurs.

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Rezyume: Maqolada O‘zbekiston Respublikasi sanoatining barqaror rivojlanishidagi strategiyalarning roli va globallashuv sharoitida sanoatni rivojlantirishning asosiy yo‘nalishlari ko‘rib chiqiladi. O‘zbekiston Respublikasi sanoatini rivojlantirish strategiyasi belgilandi.

Резюме: В статье рассматривается роль стратегий в устойчивой развитии промышленности Республики Узбекистан и основные направления развития промышленности в условиях глобализации. Определены стратегия развития промышленности Республики Узбекистан.

Kalit so‘zlar: Rivojlanish strategiyasi, sanoat, iqtisodiy salohiyat, sanoatni rivojlantirishning tashkiliy-iqtisodiy mexanizmi.

Ключевые слова: Стратегия развития, промышленность, экономический потенциал, организационно-экономических механизм развития промышленности.

**THE REASONS AND TASKS OF THE EMERGENCE OF THE CONCEPT OF
TRANSHUMANISM**

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Summary: *Humanity and its fellow creatures strive to lead a prosperous life, to adhere to a healthy lifestyle, and to bring their value and benefits to every sphere of activity. Humanistic ideals are considered the basis for progress. In postmodern society, the radical form of humanism - the concept of transhumanism - emerged as a result of scientific progress. This article provides a socio-philosophical analysis of the reasons for the emergence of this concept and its tasks.*

Keywords: *transhumanism, posthuman, nano, cognitive, civilization, gerontology, physiological, euthanasia, antipaternalist, humanism.*

In the current day, the transhumanism concept, which envisions a prosperous lifestyle for humans, infinite freedom, and eternal life goals, is gaining popularity. As a result of the high achievements of science, the synthesis of nano, biological, information, and cognitive technologies is leading to the creation of a new type of human (transhuman) for society. The futurological concept of transhumanism is characterized by the increasing measurement of humans in cultural, social, and natural processes. Therefore, today, scholars are not discussing the replacement of anthropogenic civilization, which created the basis and ultimate goal of all international, state, social, economic, ecological, political, and other programs with technogenic civilization. With this in mind, the concept of progress, which is synonymous with science and technology, is now filled with a humanistic meaning. As the President of the Rim Club in the 1970s, A. Pechchei wrote: "The right to develop and promote such changes should only be given in the context of the benefits for humans and their ability to adapt socially," [1: 239].

In the 20th century, for the first time on a wide scale, the place and importance of human beings in the development of modern civilization began to be understood. This is reflected in the rapid development of democratic institutions (incorporating social processes), ecological movements and programs (fighting for a living environment and the preservation of humanity), and the globalized thinking of humanity (leading to an increase in individual and collective responsibility for human fate).

Society's attitude towards the individual is undergoing sharp changes. As a human being and in the current state of his nature, he is forming the basis of new global concepts in social theory, civic law, and political programs, reflecting the necessary and objectives of anthropogenic civilization in the future.

The biosocial entity known as human differs fundamentally from other living beings in the world by being aware of its limited lifespan. In other words, among the other living beings in the world, only humans are aware of their finite time on earth. Today, humans seek to extend their lives, to enhance their existence, and to fulfill their desires and aspirations. They live with ever-changing hopes and dreams, and understand that not all of their aspirations may be fully realized.

In terms of the cultural history of humanity, a person has always sought to enrich their life, to give it more meaning, and to extend it as much as possible. If there were no opportunity for eternal physical life, they searched for ways to live spiritually and to overcome death from a moral point of view, seeking different methods and approaches. In other words, a person always lives with the feeling of not being satisfied with life. This situation continues to this day.

The feeling of not being satisfied with life, on the one hand, serves as a powerful motivator for creative activity and, on the other hand, helps to develop various abilities, skills, and talents in a person. Each person creates the content of their own life in this very state.

A person wants to realize all their hopes and aspirations through society. However, society has changed over time. In other words, the life of a person and their way of life is closely related to society, which is influenced by various historical conditions. Given the changing historical conditions, the relationship between a person's life and society is a vital mechanism that emphasizes the harmony between personal and social benefits. If personal interests do not coincide with social benefits, then the conflict between an individual and society becomes more acute. Such conflicts can lead to a person's alienation from society. In other words, the increasing conflict between an individual and society indicates the beginning of alienation. That is precisely why people have longed for social justice norms, democratic principles of governance, and the need to eliminate conflicts between individuals and society for centuries.

A person's life is not just about expressing their own desires, hopes, and needs for their own benefit, but always emphasizes the interests of the community, the nation, and the people. The famous Russian writer Lev Tolstoy [3: 369] referred to this as "the bestiality of a person" who thinks only about their own interests, without thinking about the interests of the community, the nation, and the people. The meaning and essence of human life has always been at the center of philosophical thinking, especially the question of life and death. The achievements of science and technology are now addressing all aspects of human life, and the field of gerontology (dealing with the structure of the human organism and extending lifespan issues) is currently addressing the issues of aging, which means that radical changes are occurring today in prolonging human life, and people are constantly accumulating new information every day, every hour.

The essence and meaning of human life is not just about realizing one's own hopes, dreams, desires, and needs for oneself, but it is also always intertwined with the interests of one's society, nation, and all of humanity. With the changing social environment, human aspirations and desires also change. Thus, this change forms the basis of the content of human life. Therefore, how long a person should live, how they should live, and why they should live are questions that humanity always seeks to answer.

The experience of historical progress indicates that the ability to live as long as possible, why to live according to humanistic ideals, and the ability to adhere to national and universal human values, skills, and competencies are inherent in human nature. These virtues, specific to human nature, are also related to the social environment in which they live, especially to their spiritual potential, biological and physiological conditions. In other words, the spiritual potential of human beings is intertwined with their physical state.

Therefore, the meaning of human life is directly related to the optimistic and realistic state of mind. The issue of human mortality is one of the problems that causes various debates and discussions among the current generation. In particular, the issue of the right to die is a topic of debate in scientific and social circles. The issue of voluntarily ending one's life is also subject to various opinions and discussions. For example, religious views strongly prohibit suicide and emphasize the importance of valuing one's life. In accordance with Islamic teachings, a person who takes their own life is not even given a funeral prayer. According to Christian teachings, such people are denied a proper burial.

Human life is closely related to an optimistic and realistic attitude towards the meaning of life. The issue of human death is one of the problems that are causing various debates and discussions among the current generation. In particular, the issue of the right to die is causing various discussions in the scientific community. Even in the case of the issue of voluntary euthanasia (the Greek word for painless), various discussions and debates are increasing.

Supporters of euthanasia are called antipaternalists. According to antipaternalist views, the right to die cannot be given to a person, and this right should be formalized by a special law. According to this law, the person who decides to end their life should not harm others in the process. If a person's decision to end their life harms others, it contradicts ethical norms.

Paternalism supporters, on the other hand, see a person's decision to end their own life as contrary to universal ethical norms. They see human life as sacred. From the above arguments, we can conclude that the culture of recognizing death in humans is a historical necessity. Human life, its intellect, and spiritual values are directly related to realism. The philosophical and religious perspectives of humanity have always been essential in the evolution of the concept that "there is no eternal human being in the world. Death is inevitable. Immortality is the result of human goodness, leaving a good name." However, in the developed European countries, research has begun to produce inconclusive results on extending human life and preventing aging. This led to the emergence of the "Transhumanism" idea. It is a worldview based on understanding scientific achievements and trends, and envisages the use of advanced technologies that allow for the eradication of suffering, aging, and death, as well as significant improvement of personal physical, mental, and cultural abilities.

The term "Transhumanism" was coined by Rachel Huxley in her research on the idea of human advancement and its increasing possibilities. Modern transhumanists define this concept as a process of overcoming human nature and progressing towards a new level of quality. The notion of a "Transhuman" was defined by futurologist F.M. Esfandiari (alias FM-2030) as follows: a transhuman is a model of transition between the present-day human and the post-human of the future, similar to Nietzsche's concept of the intermediate stage between the ape and the superman. According to him, the post-human of the future will possess highly advanced intelligence and superhuman abilities.

The authors of the project claim that in the future posthumans will have "implants" directly connected to them with proper technical devices. This will give them the ability to find, receive, and extend information according to their desires and wishes. Posthumans will be genderless and will multiply through biotechnology. They will exist not only in biological form but also in technological, informational, and digital form. Therefore, the transhumanist theory is one of the main directions of contemporary Western science and philosophy.

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Rezyume: Insoniyat va uning tengdoshlari farovon hayot kechirishga, sog'lom turmush tarziga amal qilishga, faoliyatning har bir sohasiga o'z qadr-qimmatini va foydasini keltirishga intiladi. Gumanistik ideallar taraqqiyotning asosi hisoblanadi. Postmodern jamiyatda fan taraqqiyoti natijasida gumanizmning radikal shakli – transhumanizm tushunchasi vujudga keldi. Ushbu maqolada ushbu kontseptsianing paydo bo'lish sabablari va uning vazifalari ijtimoiy-falsafiy tahlil qilinadi.

Резюме: Человечество и его собратья стремятся вести благополучную жизнь, придерживаться здорового образа жизни, приносить свою ценность и пользу во все сферы деятельности. Гуманистические идеалы считаются основой прогресса. В постмодернистском обществе в результате научного прогресса возникла радикальная форма гуманизма - концепция трансгуманизма. В данной статье проводится социально-философский анализ причин возникновения данного понятия и его задач.

Kalit so'zlar: transhumanizm, posthumanizm, nano, kognitiv, sivilizatsiya, gerontologiya, fiziologik, evtanaziya, antipaternalizm, gumanizm.

Ключевые слова: трансгуманизм, постчеловек, нано, когнитивный, цивилизация, геронтология, физиологический, этаназия, антипатерналистский, гуманизм.

**THE IMAGE OF A CONTEMPORARY IN THE PORTRAIT GENRE OF UZBEKISTAN
AND KARAKALPAKSTAN**

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Summary: *This article describes the works of artists of Uzbekistan about the image of a person, the topical problems in the education of young people, such as self-knowledge, the formation of the phenomenon of human knowledge, the study of man as an external aesthetic, spiritual and aesthetic, moral and social value are considered.*

Keywords: *aesthetics, arts, morality, self-knowledge, perfect person, psychology*

In modern educational policy, the most important task in the education and upbringing of a new generation is proclaimed - the formation, development and improvement of the personality of students on the basis of a modified content, especially during extracurricular time, with an appeal to national and universal values, including moral and aesthetic ones, with the active use of innovations in pedagogical practice [1. S. 34-49].

The portrait genre in the visual arts, especially in painting, can be called humanistic. For example, the portraiture of Uzbekistan - it is obvious the relationship between the aesthetics of art and morality, art and aesthetics-ethics - goodness, duty, the meaning of life, happiness, love, etc. The aesthetic and moral experience is reflected in the artistic form, artistic means, the moral and spiritual-aesthetic ideal of a person is "propagated". Portrait painters anticipate the formation of a new person, beautiful in appearance, spiritually rich, the formation of new human relations and socio-psychological types. In the portrait painting of Uzbekistan and Karakalpakstan, a concrete-real person is shown with his external-aesthetic, socio-psychological and individual-special appearance. A great pedagogical effect in this regard can be produced by such works of contemporary portrait painters of Uzbekistan and Karakalpakstan as: A. Abdullaeva - "Portrait of the national master T. Arslankulov", "Portrait of Khamid Alimdzhan"; T. Oganessova - "Portrait of the sculptor Makarov"; I.V. Savitsky - "Evening", R. Charyeva - "Portrait of the artist Basharov", K. Saipova - "Portrait of Zaure", "Evening on the Amu Darya", D. Turenliyazov "Doctor" and others. painting of Uzbekistan as the highest beauty in nature, moral and social value. Very significant are the portraits of the painters of Uzbekistan.

In the process of studying the portrait painting of Uzbekistan and Karakalpakstan, the following is emphasized:

1. Interest in a person, his physical beauty and spiritual wealth.
2. A person in all his humanity, the uniqueness of physical beauty, spiritualized by the originality of character, psychological state, way of thinking, content, strength of moral character; portraits of great public and social resonance, glorifying the greatness of deeds, the height of thoughts and aspirations, the nobility and heroism of a person, perpetuating the images of people worthy of imitation.
3. The best portraits in modern painting of Uzbekistan and Karakalpakstan: portraits of the great representatives of the culture of the Uzbek people; simple workers; modern intelligentsia, a creative person - national creative youth; self-portrait works of artists; women in portraits by contemporary artists [4; C. 146].

Thus, in the portraits of A. Abdullaev, R. Akhmedov, K. Saipov, Zh. Kuttymuratov, Zh. a certain personality. National-aesthetic flavor and ethnographic psychologism can be seen in the works: "Portrait of an Uzbek" by U. Tansykbaev; "Artist's grandfather" B. Hamdami; "Gulaiym" by J. Kuttymuratov; "Spring" Zh. Izentaev; "Self-portrait" by A. Siddiki; "Portrait of folk master T. Arslankulov", "Portrait of K. Niyazov" by A. Abdullaev and others. In them, elderly Uzbeks and

Uzbek women sitting in the oriental custom in traditional national attire with accessories and household items characteristic of the Uzbek and Karakalpak people, then a close-up of the ethnographically expressed appearance of the person being portrayed, etc. The national creative youth is especially outwardly expressive and inwardly spiritualized in the portraits of A. Abdullaev, U. Tansykbaev, A. Tashkenbaev, K. Saipov, Zh. Izentaev and others.

"Portrait of People's Artist Yunus Rajabi" by N. Kuzybaev: with a clear psychological description, internal emotional state: a wonderful composer-melodist, a soulful singer, a brilliant musician, an expert on Uzbek musical folklore, depicted in moments of inspirational creativity. This state is clearly manifested in the face, in the look, posture, gestures. Externally collected, restrained, unhurried, calm, sedate, but internally emotionally tense, in a creative state, which is clearly manifested in the face, in the look. The creative mood is displayed, which is so clearly visible on the appearance and character of the composer. This is helped by the composition: the artist looks at the person portrayed as if from below, which gives monumentality to the image. In addition, the color scheme is somewhat restrained and the tonal development is rich. In the portrait, the ideas and means of its implementation are surprisingly unified. A person in the portrait painting of Uzbekistan appears in all his richness of the spiritual and aesthetic - intellectual, moral world. Portrait painting of Uzbekistan and Karakalpakstan is a mirror of the flourishing of the human personality, to which the works of A. Abdullaev, U. Tansykbaev, I.V. Savitsky, K. Saipov, D. Tureniyazov, Zh. Yusupova, A. Tashkenbaeva, I. Kazakov, Kh. Valieva and many others. artists. This is a demonstration of a natural phenomenon-unity and correspondence of the physical and spiritual beauty of a person - a Human!

Portrait works by T. Oganessov. Among the portrait works of T. Oganessov, a special place is occupied by those in which the worker is depicted. The artist depicts him at his workplace: "Shepherd": a youthful, strong old man in a squatting position - it's more convenient to relax, gain new strength; "Portrait of Islamov": an old man endowed with the gift of humor, a joker with a lively character; "Smith": an elderly man, but with an unquenchable spark of youth, lively humor; "Portrait of an Actor": energetic, temperamental, assertive character, ebullient nature. The images in the portraits of T. Oganessov are beautiful, deeply meaningful people, spiritually noble, wonderful in their labor exploits. Therefore, for their depiction, the artist finds a noble-beautiful palette, so subtly expressing the character and mood of the depicted [2; C. 134].

Finally, the external and internal beauty of Uzbek women in the portrait painting of Uzbekistan: "Rakhima" by Ch. Akhmarov - the charm of youth and beauty, deep content, restraint of feelings; "Portrait of Zulfiya" by Ch. Akhmarov - simplicity and elegance, charm, femininity, deep poetry, sincerity; a modern Uzbek woman with her wealth and beauty of the inner world, with self-esteem; "Girl from Surkhandarya" by R. Ahmedov is the image of a lively, cheerful, funny and sly girl. The image-ideal, which is sung in folk dastans, legends, fairy tales. Uzbek women in the portrait painting of Uzbekistan are truly outwardly beautiful, purposeful, obsessed with significant thoughts and deeds, free, happy in work, search and daring [3; C. 123].

Summarizing the above materials, we need to remember that, "Man is an organic and inseparable unity of his spiritual-aesthetic, bodily-aesthetic and external artistic and expressive essence, a unity that receives the most complete embodiment as a result of the comprehensive development of the personality" (B.T. Likhachev) [3; C. 18-19], that high morality plus an active life position are factors in the development and formation of a whole personality, perfectly harmonious.

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Rezyume: *Mazkur maqolada O'zbekistondagi tasviriy san'at vakillarining inson obrazi aks ettirilgan asarlari aks ettirilib, ular orqali yoshlarni axloqiy va estetik ruhda tarbiyalashning samaradorligiga erishishning metodik aspektlari va ko'rsatmalari berilgan va o'quvchilarni axloqiy-estetik tarbiyalash jarayonida qadriyatga yo'nalganlikni rivojlantirish orqali insonning buyukligini anglatishga doir texnologiyalarni takomillashtirish mazmuni yoriyib berilgan.*

Резюме: *В данной статье описаны произведения художников Узбекистана об образе человека, приведены конкретные рекомендации, изложено общеметодическая памятка учителю по формированию нравственно-эстетического облика современника и выяснено совершенствования содержания и дидактической обеспеченности технологии развития ценностной ориентации у учащихся в процессе нравственно-эстетического воспитания.*

Kalit so'zlar: *estetika, tasviriy san'at, odob-axloq, o'zini-o'zi anglash, komil inson, psixologiya.*

Ключевые слова: *эстетика, искусства, нравственность, самопознание, личность, психология.*

THE STUDY OF ORAL HISTORY OF KARAKALPAK PEOPLE

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Summary: *This article discusses the study of the history of Karakalpakstan and the importance of oral history in it.*

Keywords: *oral literature, history, folklore, stories, epics, myths, epic works*

The people of Karakalpak are one of the peoples of Central Asia and have many ancient material and cultural heritages. Since ancient times, large cities have appeared in Karakalpakstan such as Tupirak kala, Koy Kirilgan kala. These cities were one of the centers of economy and culture. During the Middle Ages, world-famous scientists lived and worked in Karakalpakstan. One of them was Al Khorezmi, algebra and other sciences were born and developed under his name in the 8th century. Beruni, the great encyclopedist and scientist of Central Asia, lived and worked in the ancient place of Khorezm. He did amazing work in the field of many natural and social sciences. The people of Karakalpakstan have a wonderful spiritual and cultural heritage.

Oral literature is very valuable. Noted historian N. I. Kostomarov (1817-1885) studied folklore poems as a historical source. His candidate's dissertation was entitled "About the history and meaning of Russian folk poetry ". In this work, he paid great attention to folklore sources. And he became more interested in folklore sources, ethnography, and topics related to the history of the population. [1;23]

The past is closely connected with the present day. Existence begins with the most important problems: political, social, personal. Even errors and mistakes are shown as "the key of wisdom, all of them have a place in history." The Russian historian Beshtujev-Ryumin in his essay on population saw the process of gathering historical knowledge in ancient Russian memories. He considered these topics worthy of special research.

Beshtujev-Ryumin, in the middle of the 19th century, pointed out four types of historical works: classical, aesthetic history, subjectivity, philosophical and scientific history. Historians write history by recreating things, interesting images.

Our science of history looks at these cultural treasures in terms of historical sources. As we know, many historians consider the epic of the population as a historical source.

In the 19th century, the field of folkloristics was especially developed, and its object was historical traditions along with folk art. However, the historians paid special attention to the historical documents, and began to use folkloric stories to connect them with the history of the people. They paid attention to the mythic and poetic method of folklore poems and did not rely on historical information. Great progress has been made in the historical issue of folklore works in the universities of the United States of America [2;38-39]

During the development of the human society, people are always looking at their past and remembering the lessons of the past. All the peoples of the world have this quality. People are indifferent to the happenings around them. A series of stories, songs, and stories about the events have been created.

Therefore, history is the events in the society, the happenings, the life of the people, the daily life, the dreams of the future, and the visions of the past. Before written history appeared, oral history appeared. According to the opinions of some historians, there are many poems, epics, fairy tales, and other popular genres that have come down to our days. In these works, along with the presentation of real events and imaginary ideas, these works are not often included in the history lessons taught in universities and pedagogical institutes.

The people of Karakalpak have their rich national history, and the unity, ideas, past and future of the Karakalpak people have been raised in a comprehensive and attractive manner. Most of them have not reached our time.

When we study the historical thoughts and historical data of the national literary works, we can't help but pay attention to the tradition of the Karakalpak people, which has been transmitted from generation to generation. Folkloric works of art, especially epic works of art, originate from the life of the people, where there are spiritual veins of the life of the people. Poets of the population preserved rich spiritual wealth and passed that wealth from generation to generation. Their writings were strongly influenced by the rich oral historical stories of the people. Both the content and the theme of his works of art were based on the forms that were popular among the Karakalpak people. The historian, who satisfied the people's longing for the old history, took the politically important events from the population, who themselves had a wealth of historical knowledge.[3;43-46]

When we see that the cultural heritage of each nation is closely connected with the political-economic historical life of the left nation, the history of the oppression of the Karakalpak people is reflected in their literary works. It would be difficult to know Karakalpak people without the heroic stories of the Karakalpak people, genealogies, the historical poems of the people, the great wealth of the people, without the historical poems placed by the author.

The historical roots of the epics have many interesting features. This is an example of S.P. Tolstov, S.K. Kamalov, I.T. Sagitov, T.A. Zhdanko, L.S. Tolstova's article is also a reference to the reviews.[4;189]

A. Zhdanko, doctor of historical sciences, author of several books on the history of the Karakalpak people, paid attention to the Karakalpak epos "Forty Girls" and emphasized its scientific importance. He said: "So far, I haven't studied the epos "Forty Girls" in depth. Such articles exceed its scientific value in the deep, historical-ethnographic nature.

Karakalpak and the heroic saga of the Uzbek people, especially the "Alpamis" saga, are among the historical treasures that provide information about the historical life of the nation in the 18th century and since then. As in Central Asian republics, Central Asian peoples, mostly Uzbeks, Kazakhs, Karakalpak peoples, appeared among the Konirat peoples, and it is necessary to highlight the signs of the cultural heritage of these peoples.

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Rezyume: *Bu maqolada Qoraqalpog'iston tarixining tadqiq etilishi va unda og'izaki tarixning ahamiyati haqida so'z etiladi.*

Резюме: *В данной статье рассматриваются исследования истории Каракалпакстана и значение в ней устной истории.*

Kalt so'zlar: *og'izaki adabiyot, tarix, folklor, hikoyalar, dostonlar, miflar, epic asarlar.*

Ключевые слова: *устная литература, история, фольклор, рассказы, былины, мифы, эпические произведения.*

**INNOVATIVE MECHANISMS FOR DEVELOPING MORAL CULTURE AMONG
YOUTH AGAINST AMMORALITY IN INFORMATION SOCIETIES**

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Summary: *The ongoing social processes in the world are changing the natural-scientific view of the world, and various ideological struggles and theoretical controversies are becoming apparent. As a result of such activities, it is becoming increasingly important to develop social-philosophical thinking to cope with the ever-evolving challenges. Additionally, it is of great importance to ensure that the moral culture of the younger generation keeps pace with the times, as well as to promote spiritual culture through critical thinking, and to strengthen integral human development.*

Keywords: *ammorality, globalization, information society, moral culture, values, national identity, customs and traditions, culture.*

The development of the IT sector, scientific and artistic progress, and changes in the economic sphere have affected the activities of young people and led to an increase in the role of national mass media, as well as the emergence of new mechanisms for transmitting information within society. "At present, some political forces in the world are trying to impose their nationalist goals on the Uzbek people, and these processes are threatening universal values, traditions, and customs. Some forces in the global arena are using this fact to achieve their own goals," says the article. Therefore, it is necessary for every citizen to be constantly vigilant and for young generations to learn about various national goals and aspirations, as well as to promote national mentality and philosophical worldviews through their activities.

The global trends require young people to accept important cultural information and enhance moral values, which, in turn, includes the following aspects:

- promoting cultural values through the interests of young people in information technology and introducing them to all aspects of society;
- improving the spiritual development of young people and creating favorable conditions for their involvement in the labor market with the provision of moral and aesthetic qualities;
- shaping the national social environment in the areas where young people are active, with a focus on national identity, and creating conditions for young people to participate in the social life of different levels.

Today, in the field of information technology, young people are striving to harmonize social and moral ideals with social life, based on philosophical views. "Without identifying the spiritual and cultural traditions, national customs and values of our people, without revealing its uniqueness, without introducing new innovations in the educational life of many peoples, without representing its achievements on the world stage, and without taking full advantage of all opportunities, to educate young people with intelligence, morality, diligence, and knowledge" [2: 93] serves this purpose. This creates a favorable environment for young people to actively participate and become more active and self-sacrificing in society.

In recent years, with the widespread dissemination of information in society, the formation of a more public-oriented dialectic of interaction has led to the emergence of organizations and management systems that are more oriented towards community participation, which in turn has initiated changes in the activities of young people. Young people who are shaping the most important characteristics of the developing society in the 21st century have begun to face many global issues that require their attention. In the philosophy of the modern world, "by forming a new

style of thinking, we also light up the way forward, and in the process of education and upbringing, we instill new goals, based on the foundations of our own thinking." [3: 27] It can be seen that by developing independent thinking in the fields of knowledge, it is possible to ensure diversity in society and to create global movements with new models.

Today, in the process of globalization, the world is being rejuvenated from its core values and national ideology. The fact that values have become universal, moral principles are widely applied, the advent of new information technologies, the influence of innovation on youth, and the growing interest of young people in reality are positive developments. The mechanism of enhancing spiritual values in the practical activities of young people is being studied from a national perspective. Such philosophical thinking has been constantly evolving throughout history. Because "spiritual values that govern society have evolved, changed, and developed over time. Starting from ancient times, the nation has elevated and elevated universal and national values, contributing to the development of society." [4: 25] From this point of view, young people should perform a crucial role in maintaining national and contemporary tasks. In their activities, young people should have spiritual qualities and content, and every action should serve the innovative changes demanded by modern society and be consistent with moral principles and national culture. Therefore, young people need to understand their most important spiritual qualities, develop their leadership skills, and create the necessary conditions for their scientific and research capabilities to flourish.

The promotion of innovative goals plays an essential role in implementing the recommendations in the educational system in Uzbekistan. Furthermore, in today's world, there is a growing need for young people to benefit from non-traditional methods of learning. "In the current era of globalization, the adoption of educational measures depends on the extent to which innovative approaches are used. According to a prepared scenario, students, who are the primary subjects of these measures, will participate and determine the outcome of the event either as a social actor or merely a performer." [5: 68] Therefore, it is essential to pay attention to the ethical values of young people in their educational activities. This contributes to their development of social and philosophical thinking and allows them to contribute to the achievement of their ancestors' accomplishments.

In general, with regard to the globalization processes, the following points are important in promoting cultural development among young people.

1. It is necessary to develop active measures, particularly in applying the moral values of young people to social life in order to combat the world's increasing problems. It is necessary to philosophically analyze general theoretical issues of spiritual matters and instill patriotism and the ability to understand and overcome negative tendencies in the hearts of each succeeding generation.

2. It is necessary to promote philosophical-cultural thinking methods by creating a systematic approach to solving the problems in the world, especially those that relate to young people. This approach should involve scientific research into the cultural values of youth and the means of communication that allow young people to understand and communicate with representatives of different nationalities. This is important in promoting a favorable social and national environment for the spiritual development of young people.

3. In society, it is our social responsibility to instill moral values in young people, protect their national identity and religious beliefs, and strengthen social interaction, with the help of new approaches. Our mission is to educate the youth in a respectful and civilized manner, in order for them to become responsible citizens who contribute to the welfare of society. In this process, it is important to promote the moral values that are necessary for social life, and to encourage young people to embrace them and integrate them into their daily lives.

4. Globalization is having an impact on the moral values of young people in today's world. As a result, there is a growing need to analyze global issues in a way that is relevant to their moral education. Consequently, many mass media outlets are focusing on global issues, including climate

change, which is becoming increasingly important. Moreover, the influence of music, various genres of films, and attractive fashion trends that affect young people's worldview is growing, and this is shaping their perception of the global environment. Therefore, it is necessary to protect young people from the influence of this amoral world.

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Rezyume: *Dunyoda kechayotgan ijtimoiy jarayonlar dunyoga tabiiy-ilmiy qarashni o'zgartirib, turli g'oyaviy kurashlar, nazariy tortishuvlar yaqqol namoyon bo'lmoqda. Bunday tadbirlar natijasida doimiy ravishda o'zgarib turadigan muammolarni yengish uchun ijtimoiy-falsafiy tafakkurni rivojlantirish muhim ahamiyat kasb etmoqda. Qolaversa, yosh avlodning ma'naviy-axloqiy madaniyatini zamon bilan hamnafas bo'lishini ta'minlash bilan birga, tanqidiy fikrlash orqali ma'naviy madaniyatni yuksaltirish, insonning uzviy kamolotini mustahkamlash muhim ahamiyat kasb etadi.*

Резюме: *Происходящие в мире социальные процессы меняют естественнонаучное мировоззрение, становятся очевидными различные идеологические борьбы и теоретические споры. В результате такой деятельности становится все более важным развивать социально-философское мышление, чтобы справляться с постоянно меняющимися вызовами. Кроме того, большое значение имеет обеспечение того, чтобы нравственная культура подрастающего поколения шла в ногу со временем, а также развитие духовной культуры через критическое мышление, усиление целостного развития человека.*

Kalit so'zlar: ammorallik, globallashuv, axborot jamiyati, axloqiy madaniyat, qadriyatlar, milliy o'zlik, urf-odat va an'analar, madaniyat.

Ключевые слова: аморальность, глобализация, информационное общество, нравственная культура, ценности, национальная идентичность, обычаи и традиции, культура.

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.*

Keywords: *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, Khivot 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.*

**REPORTAGE AND INTERVIEW GENRES ARE THE MOST APPROPRIATE WAY TO
PRESENT INFORMATION WHEN COVERING ASIAN NEWS ON CNN**

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Summary: *This article analyzes news related to Asian countries are analyzed from the point of view of the genre. The opinions of scientists on the genre of reportage and interviews are presented, as well as commented, non-commented and thematic reports of the reportage are revealed. An example from the CNN report is given for each item. In addition, the genre of the interview and its monologue, dialogue, casual, one-on-one, memoir and telephone interviews were determined, as well as interviews given on CNN were analyzed.*

Keywords: *report, interview, annotated, unannotated and thematic report, monologue, dialogue, casual, one-on-one, review, telephone interview.*

Reportage is an immanent (internal) natural property of television. [1] Accordingly, reportage is the most widespread, effective and leading genre of TV journalism. The term "reportage" comes from the French word "reportage" and the English word "report", which means "to report". The common root of these words is the Latin word "reporto". It means to give information, to tell, to describe, if you look from the point of view of the term used in journalism. Therefore, those who prepare a report are called TV journalists and reporters. The term appeared in the middle of the last century, but even before its appearance in the periodical press, there were messages containing elements of a reportage. In the newspaper and on the radio, the correspondent has to "draw" the story with words, so the description is the main function in the creative activity of a newspaper and radio correspondent. As a type of reportage, a journalist is a direct witness of the event and describes the atmosphere, scenery, mood of people, the course of events (in words or video) so that the person who read the report, through the radio waves, everyone who has heard and seen on television will have a more complete idea of the news and briefings that have been given so far.

Of course, radio and TV reports differ from the genre of the press in their differences. In press reports, aspects of events, the situation, the mood of people, etc. are mainly transmitted verbally: the journalist must find out the main news in the events. In his subsequent observations and, naturally, in describing events, he touches on this new aspect, which attracts more attention to aspects.

In TV journalism, the situation is different: TV cameras allow you to observe life itself; and a TV journalist looks at an event through the eyes of a viewer (more precisely, viewers see events through the eyes of an operator and a reporter). As a result, since the descriptive function is performed by cameras, the reporter only gives explanations. Tells about the unclear circumstances of the events.

Therefore, on the one hand, there is no contradiction in the fact that life itself is reflected in various forms in television reports. It is as close to reality as possible, objectively illuminated by its essence, on the other hand, an important feature of the genre is that the event is a subjective perception by a reporter. In most cases, the journalist participates as a witness, and sometimes becomes a participant in the reflected action.

The main form of using reports is what can be called broadcasting (live or recorded) an uncomplicated speech or event. Unannotated reports (or broadcasts) are used live on the air of the most important socio-political or cultural events, where everything that happens arouses the interest of the audience. This includes meetings of the country's highest legislative bodies, press conferences of local and foreign government representatives with common interests, sports competitions where comments are kept to a minimum. Finally, the broadcast of some concerts and performances to some extent fits the genre of unannotated television reporting. CNN channel on YouTube, operating since October 2, 2005 - <https://www.youtube.com/@CNN>, today has 15 million regular viewers, and the number of viewers (as of 04/29/2023) is 13 740 480 138 people [2]. Online broadcasts of the transition have been hosted by video materials for 5 years, and to date, 12 [3] unannotated live videos have been uploaded to the channel.

The longest report without comments was 6 hours 30 minutes 19 seconds (Trump impeachment hearings - Marie Yovanovitch)[4], and the shortest was 1 hour 26 minutes 42 seconds about Gordon Sondland's full opening remarks to House Intelligence Committee | Public impeachment hearings [5].

Mostly on the air (live or recorded) political events of American life are covered at political rallies, elections and other topics. One of them is The arraignment of Donald Trump [6], "Donald Trump, the first former president in history to face criminal charges, will be arraigned after being indicted by a Manhattan grand jury" broadcast on April 4, 2023 for 3 hours, 1 minute, 15 seconds. It shows how the president leaves his residence, speaks in court and returns. If drones show traffic on the street, then ordinary cameras are used inside the building.

In a commented report, the reporter becomes an active person along with cameramen, directors and sound engineers. As a rule, he remains behind the scenes throughout the program, but the plot often appears before him on the monitor screen with the help of the director and cameraman. For the viewer, the reporter is an eyewitness, he is a person who is more aware of what is happening on the other side of the screen. The reporter is the "guide" of the viewer and helps to understand the essence of what is happening on the screen with his lively, imaginative speech, comprehensive knowledge of the material, emotional reaction to what is happening. In addition, there is also a type of reportage that a TV journalist can create himself. This method is called a "trigger situation". In such reports, a hidden camera is often used. Since reporting on events studies the function of information-thematic (problematic) - often cultural, educational and socio-pedagogical - life in various forms, the genre of reporting is transitional and solves the tasks characteristic of analytical journalism.

Thematic reports on the life of Asian countries on CNN were prepared mainly about natural phenomena, their lifestyle, values, the reaction of people living in the region to existing problems. For example, a 9-minute 35-second report by CNN international correspondent Selina Wang on the topic "See moment that shocked CNN reporter during interview deep in rural China" [7].

The report begins with how ordinary villagers celebrate the Lunar New Year. This ceremony is held together by residents of Jiangxi Province, located in Southern Gueda, located between the mountains. The journalist also visited the houses and visited the house of Sanjay, one of the local peasants. He amuses himself with a drink and rice bread. "Drinking alcohol is the biggest part of celebrating an event here," the journalist says in a voiceover.

CNN international correspondent Selina Wang, in a 1 minute 45 second report, says that about 1,000 people have been living in wooden houses in the area for hundreds of years. He admits that chickens and ducks are bred for food and that their voices can be heard in the area.

One of the migrants who came to the area for work enters into a conversation with Lee Deke. He says he sells oranges and buys sweets for his children in exchange for his salary. After 2 minutes and 24 seconds, the report provides information about a second family traveling to Guangdong Province, 500 miles away. Mr. Yang, the head of the family, works away from his family throughout the year. "If I leave when my children are young, they will have already left by the time I come. I'll be glad to see them. My eldest daughter waits for me all night without sleep on the day of my return. When I come, he greets me with hugs," says Mr. Yang. Grandparents take care of their grandchildren while their son goes to work. The report says that this is also one of the traditions of typical Chinese families. Also, at 3 minutes 51 seconds of the report, a woman is mentioned who weaves ribbons with national motifs on a machine. China is one of the countries most affected by the Covid-19 disease. The journalist wants to know the opinion of people on this topic. One of the doctors from the hospitals of the nearby area (his face was broadcast on the air) says that all the villagers are vaccinated, but they have symptoms and signs of the disease, but they do not know that they have covid and take it. like a common cold. He adds that residents of the region never take a test to detect the disease.

Also at 5:06 of the report, it was shown that three and then six civil servants were waiting for the journalist at a distance, and their every movement was recorded by their phone cameras. In addition, one government representative is reportedly watching them from the hotel where they are staying.

In order to determine the situation with Covid, he drove 2 hours and went to a state hospital in a neighboring province. The off-screen text mentions that the hospital is almost empty, and the available

patients are not panicking. One of the relatives of recently recovered patients (at his request, we will not write the name) says that he was admitted to the hospital with a fever and recovered, and also received vaccinations during quarantine.

Local government officials openly harass. They even take away the girl who agreed to give an interview at the 7th minute of the report. But there were families who suffered from covid-19 infection in the region because they could not afford treatment.

One of the traditions of the Lunar New Year is the slaughter of a pig. It is reported that his meat kebab business is currently flourishing. The report ends with a celebration at the home of a woman named Sanjaya. All family members gather there, everyone prepares the fabric themselves. It is said that it is very difficult to cook, and it causes pain in the neck and back. Xiao Qing, who works at a cosmetics factory 500 km away from her family, sits at home and knits gauze, her current job is good. People love us," he said in an interview with a journalist. Parents are also proud of their daughter. because he always sends his income home to help. Since the ability to communicate with people is one of the necessary conditions for the professional activity of a journalist, more than 80 percent of the material is obtained through personal communication based on relationships with interlocutors, meetings with experts, creative search, which indicates this important aspect. Interviewing in journalism is a unique art that does not tolerate restrictive rules. According to Indian professor K. M. Srivastava, everyone knows that interviews are considered the main method of obtaining information in journalism. The journalist collects information mainly by asking [8].

The interview also has its own rules. When organizing an interview with an expert, the journalist first of all chooses the topic of the interview. Every interview requires careful preparation. American scientist Brian S. Brooks compares a reporter who begins an interview without perfect preparation with a student who passed the final exam without preparation.

Each interview has a given topic. It is necessary to study and analyze various books, sources, speeches in newspapers and magazines, Internet information. Choosing an interviewer also requires a lot of research. Finding out information about his work, if it is relevant to the topic, about his personal life will prevent a lot of unnecessary questions and answers during the interview. It also helps in creating questions on the chosen topic. If the questions are focused on a specific topic, then the level of knowledge of the topic by the journalist is visible, and the interviewer retains respect for himself. This respect, in turn, prevents the interviewer from providing false information. It also encourages the interlocutor to provide reliable information and establish a sincere and open dialogue.

"An interview is the response of a specific person (group of people) to journalistic questions of public interest. We emphasize that an interview is not only a genre, but also a way to obtain information for a report, essay and other materials," scientist Valentin Voroshilov described this genre [9]. Sometimes journalists start a topic with extensive information that tires both their interlocutors and others. Here, British journalist David Randall said: "An interview is not a process in which you express your opinion, demonstrate your talent and have a heated discussion. However, the questions should be short, concise and clear." said [10]. Although an interview is the easiest way to get information, a journalist should determine the purpose of the interview and study the character based on the interests of the audience and their own capabilities. The most important lesson here is that a creative person can prepare good TV materials, specializing in the field, genre and topic of interest to him. Interviews in the US media are divided into types. They are as follows[11]:

Interview monologue - the chosen interlocutor is asked a question and he answers the questions in detail. This is a whole text, not divided into questions and answers. It begins with a brief description of the subject of the conversation and who is speaking.

Interview-dialogue is a conversation consisting only of questions and answers. The journalist asks additional questions, not limited to the main questions prepared by him. Asks the interlocutor to clarify some questions, express his personal opinion on the problem under discussion, provide additional evidence and examples, remember the names of people, names of cities, etc. The full text of the conversation is given.

Informational interview - important parts of the interview are given, and the answers can be shortened. In the example below, one of the natural phenomena is an earthquake. In it, the interviewer gives basic information on the topic. The interviewer is limited to short questions and is less involved in the process.

A casual interview is a type of interview in which the interviewer asks to record the process on radio or television before the conversation begins.

A one-on-one interview is a type of interview in which the interviewer communicates directly with the respondent.

A flashback interview is a type of interview in which the interviewer asks the respondent about what happened at some point in the past.

Telephone interview - getting answers to the interviewer's questions over the phone.

Interviews about the public life of Asian countries are also being prepared and broadcast on CNN. One of them was prepared from the largest trauma hospital in the earthquake zone of Turkey (CNN reports from largest trauma hospital in the Turkish quake zone)[12], which was broadcast on February 29. In this 2-minute, 48-second report, CNN Chief Medical Correspondent Sanjay Gupta entered the largest trauma hospital in the earthquake zone in Turkey and met with the Chief of Staff of the Dr. Adan Research Center. Suleiman Chetinkunar's 15-second interview turns into a dialogue. In an interview, the specialist says that patients arrive in critical condition, and there are not enough medicines for everyone. In addition, it is noted that most patients have a traumatic brain injury.

Currently, this hospital provides care to more than 5,000 patients. Surgical operations are being carried out, the last 7 days have been performed on Berman, he is in serious condition, the journalist said in a stand-up. The second interviewer was a 27-year-old woman on kidney dialysis who was taken by helicopter. In an interview, Nilai Fansa, a mother of three girls, said that at first she only heard the sound of an earthquake, and then her house collapsed. The youngest child was also taken to the hospital. Their condition will improve within 14 hours.

"An interview is a long and tedious exercise during which you do not hesitate to ask questions in order to get answers to your questions or understand the topic you are covering," David Randall, a journalist and editor from England. [13] One of the interviews, which does not shy away from asking such questions, was published on April 20, 2023 under the heading: The wife of a Kremlin critic spoke after her husband's 25-year imprisonment (Wife of Kremlin critic speaks out after husband's 25-year jail sentence)[14]. Evgenia Kara-Murza, the wife of Vladimir Kara-Murza, a prominent Russian human rights activist and Kremlin critic, vowed to fight for her freedom after being jailed in Russia, in a 6-minute, 16-second report, talking to CNN after serving her sentence. 25 years in prison. In an interview, the wife of Kremlin critic Vladimir Kara-Murza said that the sentence of 25 years in prison handed down to him by a Russian court on Monday is a recognition of his effectiveness and shows that the authorities are afraid of him.

Evgenia Kara-Murza talks at a Washington Post event about her conviction for treason and other crimes. The prosecutor's office also accused him of slandering the Russian military after he spread deliberately false information about what Moscow called a "special military operation" in Ukraine. "I understand that this sentence is a high recognition of Vladimir's efficiency," she said online at the event, accompanied by her husband's lawyer. - He has repeatedly proved that he will not back down from his opinion, that he will not give up the fight, that he will not betray his country and his ideals, that he will continue the fight.

Vladimir Kara-Murza 41years old and father of three with Russian and British passports, is an opposition politician who has opposed President Vladimir Putin for years and lobbied Western governments to impose sanctions against Russia and some Russians for human rights violations. "This phrase shows that he is very feared and very hated for his constancy, bravery and amazing courage," he added. On April 4 of this year, CNN's Christie Lu Stout reported on CNN's program "Experts: A Popular Chinese shopping app can Spy on Users" [15] that the Chinese shopping app Pinduoduo bypassed user protection. report your claims about malware that can be used to change settings, read private messages and retrieve user data.

The app is one of the most popular shopping apps in China, selling clothes, food and more to more than 750 million monthly users. But, according to cybersecurity researchers, it can also bypass the protection of users' mobile phones to monitor activity in other applications, check notifications, read private messages and change settings. Once installed, it is difficult to remove it. While many apps collect user data, sometimes without explicit consent, experts say e-commerce giant Pinduoduo has taken data privacy and security breaches to a new level.

During the detailed investigation, CNN interviewed half a dozen cybersecurity teams from Asia, Europe and the United States, as well as numerous former and current employees of Pinduoduo.

Mikko Hippenen, chief researcher at the Finnish cybersecurity firm WithSecure, said: "We have never seen such a basic program try to increase its privileges to access things that they are not supposed to. This is very unusual and very bad for Pinduoduo." — he said in an interview at 1 minute and 12 seconds of the report. In conclusion, it should be noted that the genres of reporting and interviews contribute to enriching the news with additional information and more detailed disclosure of the topic. That is why, TV journalists working in the information genre effectively use these genres.

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Rezyume: Mazkur maqolada siyo davlatlari hayotiga oid yangiliklar janr nuqtai nazaridan tahqil qilinadi. Reportaj va intervyu janri haqida olimlarning aytgan fikrlari keltiriladi va reportajning sharhlangan, sharhlanmagan va mavzuli reportajlar ochib beriladi. Har bir fikr uchun CNN telekanalida berilgan reportajlardan misol keltiriladi. Undan tashqari, intervu janriga va uning monolog, dialog, tasodifiy, yakkama-yakka, xotiralash va telefon orqali intervyularga ta'rif berilib, CNN telekanalida berilgan intervular tahlil qilinadi.

Резюме: В данной статье новости, связанные с азиатскими странами, анализируются с точки зрения жанра. Представлены мнения ученых о жанре репортажа и интервью, а также выявлены комментированные, некомментированные и тематические сообщения репортажа. По каждому пункту приводится пример из отчета CNN. Кроме того, определены жанр интервью и его монолог, диалог, случайные, один на один, мемуарные и телефонные интервью, а также проанализированы интервью, данные на CNN.

Kalit so'zlar: Reportaj, intervyu, sharhlangan, sharhlanmagan va mavzuli reportaj, monolog, dialog, tasodifiy, yakkama-yakka, xotiralash va telefon orqali intervyu.

Ключевые слова: репортаж, интервью, аннотированный, неаннотированный и тематический репортаж, монолог, диалог, случайный, один на один и интервью по телефону.

**ANALYSIS OF THE METHODS USED IN THE CONTINUOUS
EDUCATION OF A HIGH SCHOOL TEACHER**

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Summary: *The article presents an analysis of techniques that can be recommended for use in the process of continuing education by teachers of higher education. The features of the content and procedural content of the proposed methods are due to the task of value optimization of the professional development of the teacher by means of his education.*

Keywords: *continuing education, higher school teacher, optimization of professional development, axiological support, methodology "Psycholinguistic questionnaire", frame technologies, projective methodology, methodology "Value reconstruction of professional life experience", methodology "Analysis of illusory effects".*

Introduction.

Currently, the educational process in higher educational institutions of Uzbekistan requires constant improvement, as there is a change of priorities and social values: scientific and technological progress is increasingly recognized as a means of achieving a level of production that best meets the ever-increasing human needs, the development of spiritual wealth of the individual. Therefore, the current situation in the training of specialists requires a radical change in the strategy and tactics of training at the university [1].

Currently, the education system is undergoing a period of modernization. In these conditions, the quality and effectiveness of the educational process become priorities.

The main part.

Activation of axiological resources of continuing education of a higher school teacher in the purposeful promotion of a professional to the ideal of a new type requires the search for the most appropriate educational forms and methods for this task. The conceptualization of this search led to the definition of axiological support for the professional development of a higher school teacher by means of his education as an integrative axiological and pedagogical condition for the desired activation [2].

We will analyze several methods that can be used in the process of professional development of a higher school teacher.

The "Psycholinguistic questionnaire" technique, where teachers are asked to respond to a certain set of stimulus words. As part of the implementation of various teacher training programs, the following words can be included in such a questionnaire: profession, higher education, work, professional team, science, scientific activity, student, I am in the profession, professional and personal development, management, self-government, professional everyday life, life. As a result, you can get a certain set of associations ("joy of discovery", "dull everyday life", "difficulties",....), which are distinguished by a bright emotional coloring, which allows you to emotionally label the greatest tension in the system "professional life of a university teacher", in one or another aspect of it.

The use of frame technologies in the work of advanced training has also proved its effectiveness. Frame methods of organizing the content of education are increasingly being used today in the framework of obtaining knowledge. At the same time, the possibility of achieving the greatest effect of understanding through the design of the content of education in symbolic images is actualized.

The key difference between the approach used in working with a teacher is the use of frame technologies as a tool for the joint construction of the content of education.

Axiologization and application of frame technology techniques allows not only to present a very extensive information array containing information and knowledge about various value aspects of teacher professionalization. This technology (its elements) makes it possible to optimally determine the dominant connections in the system "professional life of a teacher", as well as to "retain" the identified connections in the process of understanding and constructing the professional's relationship with himself, the world and other people.

As practice has shown, it is advisable to use such frame technologies as:

- construction of the proposed meaningful elements of flowcharts;
- structuring the proposed information array into a frame-frame;
- text filling with the content of a frame – a logical semantic scheme;
- information saturation of a linear matrix containing voids;
- meaningful filling of a multidimensional logical-semantic matrix (its elements);
- addition of logical-structural schemes presented to the teacher with missing blocks, connections, correlations; filling in algorithm frames; designing scenario frames.

In addition to the methods of frame organization of the content of education in the framework of advanced training, the "Writing Together" technique has proved its effectiveness, which belongs to the category of projective techniques that involve giving a person the opportunity to structure or interpret a particular projective material in accordance with his system of images of the world, himself and his relations with the world. The essay created as a result of this technique is similar to the life and value world of a professional, and, as a result, allows you to make certain judgments about the content of these worlds. This technique is a development of the proposed I.G.

The mineral method of "Writing an essay together" [4], and in axiological accompaniment is used mainly as a stage in the formulation of a professional and personal mission. By means of this technique, teachers create an essay "My professional credo". The main advantages of the technique are:

- its compact nature, which makes it possible to implement a number of pedagogical tasks in a short period of time;
- its coordination and semantic nature, which determines the possibility of providing individual semantic content of the same value positions of the essay.

The methodology is a system of symbols-stimuli consistently offered to teachers (quotations, unfinished sentences, aphorisms, oppositional statements, etc.). For example, the following set of stimuli is offered to students of advanced training courses in the form of multimedia presentation slides:

1) Credo- (from Latin credo – I believe, I believe). My professional faith is based on the fact that ... ;

2) In my profession, I am particularly attracted to: the possibility of scientific creativity; the opportunity to introduce students to the heights of human thought; the opportunity to communicate with fellow scientists; other...

3) As a scientist, I feel able to solve many problems: ... ;

4) I will be satisfied if at the end of my professional life I can say ... ;

5) Perhaps my main professional beliefs are: ... ;

6) In one phrase, I can formulate my professional credo as follows:

As a result, the teacher creates his own text "My professional credo". Then all the essays are presented by the authors and are perceived without appreciation by the audience. And as a result, a plenary polylogue is organized: "Professional credo: why does a university teacher need it?". The methodology of "Value reconstruction of professional and life experience" with the writing of texts containing an analysis of life or professional events that are significant for a professional. A

mandatory step is categorical analysis and content analysis of the submitted texts. The texts are not signed. This allows you to exchange works after writing and start analyzing the received text. And then, in the mode of plenary discussion, hear the analysis of your event in the mode of minimal injury to the professional "I" of each of the teachers present.

The method "Analysis of illusory effects" was developed on the basis of the ideas of V.A. Popkov [5] and involves the search (detection) of such professional events, which are characterized by the visibility of incorrect (planar, mono-aspect) perception by a professional of a particular professional situation. For example, in the context of understanding the content of such a type of professional relationship with a specialized area of reality as the design of lectures and seminars. Teachers are invited to participate in the problem seminar "Effective forms of teaching students: myths and reality".

During the seminar, teachers discuss video fragments of their colleagues' classes. The group analysis focuses, for example, on the necessity and validity of formulating a lecture plan. At the same time, through the efforts of the andragog-axiologist, the attention of teachers is focused on the illusion of the obvious significance of this stage of the lecture in its traditional representation.

The methodology of "Value self-structuring". Developed by F. Melges psychotechnics of self-futuring, described by V.S. Khomik [6], is based on visualization by a professional of his own future possibilities.

The leading condition for the effective use of this technique (any of its elements) is the developed imagination of a professional, the ability to easily produce visual images, so using it in full is very individual. Within the framework of axiological support, axiological and pedagogical transformed elements of this psychotherapeutic practice are used, which meet the task of clarifying the temporal perspective of professional actions within the framework of the formation of a value-time perspective of professional life.

The leading prerequisites for the use of value self-structuring are: vague ideas of teachers about the prospects of their life path; unformed image of their professional future; excessive orientation of a professional to the expectations of others. The methodology of value self-structuring was developed based on the analysis of the program aimed at promoting the formation of students' self-image as a professional [7]. Value self-structuring as a method of axiological support is a training involving the following sequence of actions:

- 1) mental transfer of oneself to a professional future with a vivid detailed elaboration of an imaginary image;
- 2) representation of the image of the sphere of professional activity in the future (those changes that have already happened in the future, those problems that still remain, etc.);
- 3) "embedding" the created image of the "I" and the professional future into a well-developed image of the sphere of professional life with the allocation of the most successful (satisfying) aspects of their own professional life;
- 4) visualization of yourself in the future with the elaboration of minor details for liberating the imagination;
- 5) clarifying the constructed image of "I am a professional" with knowledge about my own characteristics (personality traits, abilities, etc.) in the mode of updating my "positive" characteristics by recalling success situations;
- 6) visualization of the image of their relationships in the professional community with emphasis on the existing experience of effective interactions;
- 7) visualization of alternative models of future professional life activity with their ranking by degree of preference.

Conclusion.

All these methods incorporate all the variety of value-oriented pedagogical, pedagogical, psychological, acmeological methods and techniques. The presented methods can be adapted to

specific educational tasks while maintaining a strategic focus on value-driven optimization of the professional development of a teacher by means of education.

It is very important that they can be used in the context of continuing education of professionals of various ages, professions, statuses, interests, preferences.

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Rezyume: Maqolada oliy ta'lim o'qituvchilari tomonidan uzluksiz ta'lim jarayonida foydalanish uchun tavsiya etilishi mumkin bo'lgan texnikalar tahlili keltirilgan. Taklif etilayotgan usullarning mazmuni va protsessual mazmunining xususiyatlari o'qituvchining kasbiy rivojlanishini uning ta'limi orqali optimallashtirish vazifasi bilan bog'liq.

Резюме: В статье представлен анализ методик, которые могут быть рекомендованы для использования в процессе непрерывного образования преподавателями высшей школы. Особенности содержания и процессуального содержания предлагаемых методик обусловлены задачей ценностной оптимизации профессионального развития педагога средствами его образования.

Kalit so'zlar: uzluksiz ta'lim, oliy maktab o'qituvchisi, kasbiy rivojlanishni optimallashtirish, aksiologik qo'llab-quvvatlash, "Psixolingvistik so'rovnoma" metodologiyasi, ramka texnologiyalari, proyektiv metodologiyasi, "Kasbiy hayot tajribasining qadriyatni qayta qurish" metodologiyasi, "Xayoliy effektlarni tahlil qilish" metodologiyasi.

Ключевые слова: непрерывное образование, преподаватель высшей школы, оптимизация профессионального развития, аксиологическое сопровождение, методология «Психолингвистический опросник», фреймовые технологии, проективная методология, методология «Ценностная реконструкция профессионального жизненного опыта», методология «Анализ иллюзорных эффектов».

TYPES AND FEATURES OF EMOTIONAL TENSION IN YOUNGER SCHOOLCHILDREN

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Summary: *The article analyzes the emotional tension in younger schoolchildren. Based on the theoretical analysis, it was concluded that the emotional tension of younger schoolchildren is expressed in the following parameters: distrust of people, depression, withdrawal into oneself, anxiety towards adults, hostility, anxiety towards children, lack of social normativity, hostility to peers. The article presents the results of studying the indicators of emotional tension in boys and girls of primary school age.*

Keywords: *emotional tension, primary school students, stress, depression, anxiety, level.*

Introduction.

The tasks set by the Republic of Uzbekistan for the country's entry into the number of competitive countries of the world have radically changed the requirements for education, significantly increasing its expected contribution to the modernization of society and highlighting the educational sector as a priority of socio-economic development. The strategic direction of the development of education in the republic is the creation of favorable conditions for the formation of a highly educated, competitive personality with an ethical attitude to the world, a creative type of thinking, a developed ideological culture, while preserving its uniqueness, uniqueness. This determines the need to develop a paradigm of humanization of education in the context of socio-psychological, cultural mechanisms of human development, which is more in line with the needs of modern society.

This approach ensures the realization of a new attitude of society towards man as a unique phenomenon and provides the individual with much more opportunities to harmonize relations with nature, the socio-cultural environment and himself than the traditional education system could provide. The leading principles of education are: reliance on self-development, the activity of the student himself, represented as a subject of educational activity; personal approach.

The main part.

The importance of identifying optimal socio-psychological, cultural mechanisms of personality formation is increasing. The study of emotional tension is actualized in connection with the implementation of the state educational standard of primary general education in the Republic of Uzbekistan [1]. Here the requirements for the results of students who have mastered the basic educational program of primary general education are established. Due to the specifics of transformations in the field of education, psychological support of the educational process is actualized, which consists in creating a psychologically comfortable atmosphere of the educational space, which is provided by focusing on the individual characteristics of the emotional and mental states of younger schoolchildren.

An analysis of research on this topic has shown its relevance. In the work of E.N. Arbuzova, it is noted that the formation of the motivational sphere, volitional regulation of behavior, self-esteem, worldview is a natural continuation of the early emotional development of a child [2]. Based on the opinion of E.N. Arbuzova, in this paper, under emotional tension, we will consider the emotional state of a younger student caused by various factors of the educational process. Based on this point of view, the main parameters of emotional tension are highlighted: distrust of people, depression, withdrawal into oneself, anxiety towards adults, hostility, anxiety towards children, lack of social normativity, hostility to peers.

The logic of analyzing the results of studying the emotional tension of younger schoolchildren is reflected in the stages: processing of primary data of diagnostic work; studying the severity of indicators of emotional tension in boys and girls of primary school age; qualitative processing of the results in terms of determining differences in indicators of emotional tension.

The emotional tension of younger schoolchildren is expressed in the following parameters: distrust of people, depression, withdrawal into oneself, anxiety towards adults, hostility, anxiety towards children, lack of social normativity, hostility to peers [5].

In boys, a pronounced indicator is "distrust of strangers", which manifests itself in anxiety, shyness, and in girls – in behavioral features (easily becomes "nervous", cries, blushes if asked a question). The indicator "depression" in boys is expressed in an emotional state (depression, apathy, etc.), and in girls in behavioral manifestations (loses interest in academic work, impatient).

The indicator of "withdrawal into oneself" is expressed in boys as follows: younger schoolchildren avoid contact with people. In girls, this indicator is reflected in isolation, shyness. In girls, a pronounced indicator is "anxiety towards an adult", which manifests itself in uncertainty in actions, excessive communicative activity [4].

Boys have a pronounced indicator of "anxiety towards children", which is manifested in the fact that a younger student in various situations plays certain social roles, most often the role of a "hero". In girls, behavioral features are manifested in clowning, defiant behavior, egocentrism, bragging, imitation of media personalities.

The indicator "lack of social normativity" is expressed in the fact that boys are not interested in learning activities. Girls are not interested in learning activities, performs educational tasks only under strict control, avoid contact with the teacher.

The indicator of "restlessness" in boys is manifested in the following: impatience, inability to work. Girls are characterized by impatience, weak perseverance, avoidance of long-term and painstaking work.

The indicator "emotional tension" is pronounced in both groups: boys show anxiety, disorganization, lack of contact with classmates; girls – in increased anxiety, sudden mood changes.

Conclusion.

Thus, emotional tension in boys and girls of primary school age has its own specifics, namely: the difference in emotional tension is manifested in the severity of the following indicators: depression, anxiety towards adults, distrust of new people, emotional tension; in girls, a pronounced indicator is "anxiety towards an adult", which manifests itself lack of confidence in actions, excessive communicative activity), and in boys – "distrust of new people", which manifests itself in anxiety, shyness. The indicator "depression" in boys is expressed in an emotional state (depression, apathy, etc.), and in girls – in behavioral manifestations (loses interest in academic work, impatient).

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Rezyume: Maqolada kichik maktab o'quvchilaridagi hissiy taranglik tahlil qilinadi. Nazariy tahlilga asoslanib, kichik yoshdagi maktab o'quvchilarining hissiy tarangligi quyidagi parametrlarda namoyon bo'ladi degan xulosaga keldi: odamlarga ishonchsizlik, tushkunlik, o'ziga chekinish, kattalarga nisbatan tashvish, dushmanlik, bolalarga nisbatan tashvish, ijtimoiy normaning yo'qligi, ularga dushmanlik. Maqolada boshlang'ich maktab yoshidagi o'g'il va qiz bolalarda hissiy zo'riqish ko'rsatkichlarini o'rganish natijalari keltirilgan.

Резюме: В статье анализируется эмоциональное напряжение у младших школьников. На основе теоретического анализа сделан вывод о том, что эмоциональная напряженность младших школьников выражается в следующих параметрах: недоверие к людям, депрессия, уход в себя, тревожность по отношению к взрослым, враждебность, тревожность по отношению к детям, отсутствие социальной нормативности, неприязнь к сверстники. В статье представлены результаты изучения показателей эмоциональной напряженности у мальчиков и девочек младшего школьного возраста.

Kalit so'zlar: hissiy taranglik, boshlang'ich sinf o'quvchilari, stress, depressiya, tashvish, daraja.

Ключевые слова: эмоциональная напряженность, младшие школьники, стресс, депрессия, тревожность, уровень.

THE ROLE OF SCIENCE IN YOUTH EDUCATION

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Summary: *This article focuses on concerns related to young people's education because they are the future of our nation and on how they develop skills and acquire knowledge. It is also examined if the challenges of fostering the environment essential for young people to advance their knowledge and understanding of science, guiding them toward a profession, and assisting them in making a career decision have attained the status of state policy.*

Keywords: *education, training, science, knowledge, educational system, spiritual maturity, youth policy, spiritual environment, family education, perfect person, profession, "Master-Apprentice" system, factor, manners.*

Any nation's historical progress is influenced by how much attention is given to the youth's education and future. According to this perspective, one of the top priorities for Uzbekistan's policy is the issue of young. The statement made by President Sh. Mirziyoev that "The greatest wealth in the world is the knowledge acquired at a young age and the acquired profession is a skill" is not without foundation. In fact, it is crucial to give science instruction a lot of emphasis in young people's education. Scientist Munavvar Khor Abdurashidkhanovtn wrote in his book "Adibus-Soniy" that "Science is learning from those who know what they do not know". Human baby is born with no knowledge; he enters the world without even the most basic skills, like the ability to distinguish between good and bad or between white and black. He has gained knowledge incrementally, and now knows everything. We wouldn't know anything today if our parents, grandparents, elders, and teachers hadn't shared what they knew with us. Children of humans must therefore ask questions and learn what they don't know from those who do, in order to try and grasp the valuable and useful thing known as science. A person's mind can be opened up to science, which also enhances wisdom, discloses what a person doesn't know, and makes him happier and more respectable in society. [1:2]

The educational system's integration of education and raising ensures not only the state's intellectual development but also each person's spiritual growth. It's critical to remember that knowledge sectors are where our future is generated; in other words, the education and parenting of our children today will have an impact on the future of our country [3:61].

Giving young people a subject they are interested about while teaching them science can help them develop useful knowledge and abilities. According to the Bayit:

Science is the best craft there is,
And deaf and dumb is preferable to ignorant.
Ignoramus will die in disgrace
Everyone will be sick of ignorant [1:2].

According to bayit, a person must pursue education in the sciences in order to maintain his humanity. He must also learn his trade and excel in it. Therefore, learning science, professions, and crafts should be done in the quest of human happiness. People who are intelligent and scientific will always have a place. Our kids will undoubtedly contribute to the advancement of society in the realms of knowledge and science.

The character of our children as they mature will determine their future and the future of our world. Our primary objective is to establish the environment necessary for young people to advance their knowledge of science [4].

It is clear to all of us that the development of our country, its future and prosperity are in the hands of young people who are educated and educated based on the ideas of national independence. In our country, great attention is paid to youth, and the symbolic content is embodied in the Law of the President of the Republic of Uzbekistan on September 14, 2016 "On National Policy Concerning Youth", and in a country where more than half of our people are young people, the national policy

concerning youth to make the young generation mature and perfect, intellectually gifted, they have a firm position, they are not indifferent to the reforms that are being implemented in our country, they are ready for everything for the future of our country, they are goal-oriented, they are strong-willed, they are patriotic. , education as perfect human beings is a necessary factor for our nation to take a place among the most developed countries in the world.

These considerations are now extended to university students as well as our younger generations, who are growing up in pre-schools. Although it is not difficult to educate the younger generation to read and write, we still learn these skills from our first instructor.

If learning to read and write is a child's initial step toward knowledge acquisition, then there are a ton of advantages to reading and writing for you. There is a distinction, as we are all aware. Perhaps there is a growing gap between those without tongues and ears. The rationale is that a non-speaker is capable of performing all kinds of tasks that require speaking ability. With these motions, even a deaf person can acquire a single word. However, a lot of people are unable to perform the tasks that readers and writers can. Everyone should, at the absolute least, be able to read and write.

One piece of legislation has been created in our nation specifically to address children's education. The issues of helping young people find the correct career and making that choice have advanced to the level of national policy. The "master-apprentice" system has been formed, and pedagogues, teachers, and mentors play important roles in helping pupils and students learn a profession or craft. The "Master-Apprentice" system enables young people to allocate their free time effectively, receive free education in a variety of settings, including sports and arts and crafts schools that align with their passions, and create an opportunity to learn a trade. They also aid in the development of scientific experience and skills, such as enhancing professional skills.

There is nothing higher than art and science, according to Hakim Socrates. There is no ornament more lovely than good, and there is no foe more hateful than evil [2:18].

People in our society hold scientists in high regard. They make an effort to raise their children not just to be intelligent but also to be ideal human beings. We naturally comprehend that a person's humanity is tied to both his and her human attributes and to the information and abilities they possess. One thinker said:

- What fault, bad habit does everyone cover up? - he asked.
- Dryness, - answered the thinker. He asked again:
- What good craft hides all faults?
- Generosity, - said the thinker [2:19].

A different function for family education is played in developing young individuals with strong human qualities. Parents should closely monitor their children's behavior in the home and foster a moral environment. The mind of the kid is shaped under the impact of this spiritual environment, and the child's worldview broadens. The upbringing of children is influenced by every aspect of the family. If the family has established Eastern-recognized raising ideals, that is a parent's accomplishment. Plato said, "Don't limit your children's science and literature to your own science and literature, prepare them for the future, because they don't belong to your time, they are the people of the future." The utmost joy of humanity is, of course, to raise children as "son of my nation" in our families as our own children.

Our society's major objective is to educate a perfect, mature individual.

It is true that "Education cannot be separated from training, and training cannot be separated from education - this is an Eastern point of view, an Eastern philosophy of life"[3:44]. It is important to comprehend Georg Hegel's statement that "The light has narrowed from the East" as a critique of the family-based education of those in the East. The family is the starting point for education and scientific learning.

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Rezyume: *Ushbu maqolada davlatimiz kelajagi bo'lgan yoshlar ta'lim-tarbiyasi qaratilgan e'tibor, ularda bilim olish va ilm o'rganishga ko'nikmalarini hosil qilish masalalari ko'rib chiqiladi. Shuningdek, yoshlarning o'z bilimi va ilmini ko'tarishi uchun zarur shart-sharoitlar yaratish, ularni kasb-hunarga yo'naltirish va kasb tanlash masalalari davlat siyosati darajasiga ko'tarilganligi tahlil qilinadi.*

Резюме: *В этой статье основное внимание уделяется проблемам, связанным с образованием молодых людей, поскольку они являются будущим нашей нации, а также тому, как они развивают навыки и приобретают знания. Также рассматривается вопрос о том, приобрели ли проблемы создания среды, необходимой для развития молодыми людьми своих знаний и понимания науки, статус государственной политики, а также помощь в принятии ими профессионального решения.*

Kalit so'zlar: *ta'lim, tarbiya, ilm, bilim, ta'lim tizimi, ma'naviy yetuklik, yoshlar siyosati, ma'naviy muhit, oilaviy tarbiya, komil inson, kasb-hunar, "Ustoz-shogirt" tizimi, omil, odo-axloq.*

Ключевые слова: *образование, обучение, наука, знания, система образования, духовная зрелость, молодежная политика, духовная среда, семейное воспитание, совершенный человек, профессия, система «мастер-ученик», фактор, манеры.*

THE INTERFERENCE OF NATIVE LANGUAGE IN LEARNING ENGLISH

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Summary: *In acquiring the second language, students use their first language knowledge as a base in attempting to learn a new language. They face some difficulties in acquiring the second language by using their native language (Uzbek). This article deals with the description of interference and its type of grammar interference that face in learning foreign language (English) by Uzbek Learners.*

Keywords: *language interference, grammar, tenses, plural form, suffix.*

Introduction:

Today in the process of globalization the demand for the study of foreign languages is increasing. Nowadays in each country the English language are taught as an international language. Of course, this language is currently being taught in our country as an international language from primary classes. Because It has become a modern requirement and is implementing the service of the key to success of a representative of each industry. But learning English is not as easy as it seems. Just as all languages have their own rules of law, English also has few rules of law in its phonetic and morphological aspects. Its sentence structure and sounds are very different. According to investigations, most learners face some difficulties in learning English because of their language differences.

English language belongs to Indo-European languages family. Uzbek language belongs to the Altay-Turkic family [2]. They are different languages and their sentence structure is also totally different. If we translate a sentence from English into Uzbek, the structure and the meaning of the sentence will change.

In this article we try to compare the two language phenomena on the grammatical level of the English and Uzbek languages, the aim of this short investigation is to show the differences of the two being contacted languages and interference in learning the target language. We use the term interference taking into account its initial meaning and its use in teaching process.

Interference – the first evidence of its appearance as a linguistic is from the first quarter of the 20th century, in Epstein's work on multilingualism [4]. Language interference is the effect of language learner's first language on their production they learn. Interference can be in any aspects of language such as grammar, vocabulary, pronunciation, intonation, and so on. The development of the concept of linguistic interference within the framework of the theory of language contacts was carried out by U.Weinreich, E.Haugen, V.Rosenzweig, V.I.Belikov and L.P.Krysin. Interference mistakes affect all language levels; phonetic, morphologic, syntactic and lexic. The present work is devoted to comparing the morphological aspects of Uzbek and English languages. The problems of finding ways to solve morphological difficulties in the study of the (foreign language remains one of the leading problems in the methodology of teaching foreign languages). At the same time, researchers repeatedly have established the dependence of the learning of a foreign language on the degree of kinship between a native language (L1) and a foreign language (L2). If the languages L1 and L2 are closely related languages, then the percentage of mistakes made by students is minimal with the acquisition of a closely related language; in this case a question of positive linguistic interference [3]. But as Uzbek and English languages are not related and do not have similar categories, it shows negative linguistic interference. The following are examples of the negative interference caused by the native (Uzbek) language while learning English; tenses and plural noun.

Tenses;

As M.Absamadova and E.Khayitova said in her scientific research „Firstly, there are 16 active forms of tenses in English language, whereas, only 3 tenses in Uzbek language; Present, Past and Future tenses. In Uzbek language, Perfect tenses, Continuous tenses and Perfect Continuous tenses do not exist. Therefore, students use mostly Simple Tenses while they translate from Uzbek into English” [1].

For example;

If students want to say;” He has just from school”, The students think it would be like “He just came from school”. But they don’t realize that the form and meaning of this sentence is Present. Such kind of errors can be made in other tenses too.

Past;

He had come to the airport by five o’clock (Correct form)

He came to the airport by five o’clock (Incorrect form).

Future;

She will be doing her homework at 10 o’clock tomorrow (Correct form)

She will do her homework at 10 o’clock tomorrow (Incorrect form).

Nouns;

We know that to make a plural form in Uzbek, we add the suffix “lar.

Kitob-Kitoblar,

Qiz-Qizlar.

In English Grammar they add the suffix “s” to the noun to form the plural form.

Car-Cars,

Food-Foods.

But in some cases, if the letter of the noun ends with “x”, “ch”, “sh”, “x”, “z”, “ss”, we add them s or etc.

Box-Boxes,

Dish-Dishes.

Even in English grammar there are incorrect nouns with the base without adding any suffix.

Mouse-Mice,

Goose-Geese.

If we compare this grammar rule, the differences is very big. Since Uzbek grammar has only the suffix “lar”, the students will think that they can make plural by adding the suffix „s”. Consequently, they forget the above rules.

Conclusion:

Within this article we conclude that the learners whose native language is Uzbek have to pay attention to the such kind of grammar interference. With the help of this, they begin to overcome or face less difficulties in acquiring the English language.

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Rezyume: Ikkinchi tilni o'zlashtirishda talabalar birinchi til bilimlaridan yangi tilni o'rganishga harakat qilishda asos sifatida foydalanadilar. Ular o'z ona tilidan (o'zbekcha) foydalanib, ikkinchi tilni o'zlashtirishda ma'lum qiyinchiliklarga duch kelishadi. Ushbu maqolada O'zbek O'quvchilari tomonidan chet tilini (ingliz tilini) o'rganishda yuzaga keladigan interferensiya va uning grammatik aralashuv turlari tavsifi ko'rib chiqiladi.

Резюме: При изучении второго языка учащиеся используют свои знания первого языка в качестве основы для изучения нового языка. Они сталкиваются с некоторыми трудностями в овладении вторым языком, используя свой родной язык (узбекский). Данная статья посвящена описанию интерференции и ее вида грамматической интерференции, с которой сталкиваются при изучении иностранного языка (английского) изучающими узбекский язык.

Kalit so'zlar: til interferensiyasi, grammatika, zamon, ko'plik shakli, qo'shimcha.

Ключевые слова: языковая интерференция, грамматика, времена, форма множественного числа, суффикс.

TEXT IMPROVEMENT AND LITERARY INTEGRITY IN ERKIN VAHIDOV'S LYRICS

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Summary: *The problem of originality and artistic integrity in Erkin Vahidov's work is put forward in the article. The basis of artistry in E.Vahidov's work is proven by scientific and theoretical views in literary studies.*

Keywords: *Erkin Vahidov, artistry, text, lyrics, theory, poetry, image, poem, feeling.*

The poetic structure of each text is considered a unique aesthetic center that separates the worldview of a certain creator, and on its basis, the accuracy of subjective experience shines. The level of depiction of life depends on the combination of taste and level. The dimension of reality transferred to the psyche becomes the criterion of specificity in analysis and attitude. A deep understanding of the enigma of existence grows out of an artistic-aesthetic need. The full and complete expression of the essence is grafted to the potential of true talent. The text is the main criterion that determines the unity of poetic speech and the logic of creativity. In it, the uniqueness of the individualization of the artistic speech, the need to form an original expression, and the collection of the image are determined. In the poetic observation, which combines vivid imagination and subtle observation, the style renews the content, the network of meaning opens the way to the change of the idea. The essence grafted to the feeling compacts the range of personal issues-problems, the system of thought and imagination, and a stable socio-spiritual mood:

Tabiat qonuni,
Qayda bor qirg'oq,
Bilmadim, fanda ne bois omillar,
Sharqiy sohillardan hamisha tikroq,
Balandroq bo'ladi g'arbiy sohillar[1,79].

Erkin Vahidov's poem "East Coast" (1979) consists of 21 stanzas. A great literary interpretation, raised to the level of a creative program, is "an image of reality in action. The poet does not draw us into observation, does not put the reader in danger as a spectator of terrible events. On the contrary, like the poet, we also become participants in the reality being described". Lyrical expression begins with the usual philosophy of mind. The contrasting relationship defined by the author "east coast-west coast" determines the intensity of poetic perception. From the height of the universal humanity, he faces "the earth spinning in a whirlwind of pains", he says that vigilance is the demand of the times, but "as long as there is injustice and oppression in the world, as long as there are complications and oppression in the world" the eternal struggle between goodness and evil will never stop! Throughout the text, the comparison of the two coasts moves within a logical context. In the poetic lines, where image and analysis constantly alternate, a strong knot management is prominent. The logical statement "western shores will always be steeper and higher than eastern shores" depicts the tragedy of humanity divided into two. While the author seeks to expand the philosophical scope of life conflicts, he directs the reader's attention to the dangerous situation in the world. The tension of the struggle against a huge social pain fills the reader with thoughts:

Nogoh gumburlaydi Xayfon osmoni,
Yuragin changallab qolar bir ayol.
U sharqiy sohilning bitta qurboni,
Tiriklayin topgan yosh joni zavol[1,84].

The feeling of belonging to all mankind makes the poet deeply saddened. Although the fire of war has died down, tragedies are still happening in every corner of the world. The sad part is that the poor, oppressed people still suffer. As a result of the artistic illustration, two concepts (east coast-west coast) are cut off from their meaning network and rise to the level of symbols of goodness and evil. Therefore, "the word in the poem has a strong relationship with other words - it is either equal to another word, contradicts it, or is subordinated to it, or... meaning occurs when a word is added to a word. Because, the collision of words with words is a bong, its sound evokes concepts, objects, scenes, comparisons in our imagination, disturbs the silence of the mind". The author both describes and evaluates the dimensions of reality through detail and commentary. In the form of speech, the attitude of the creator, observation, analysis and observation are integrated. Melody and rhythm are tools that fill the creative imagination; spiritual expression further expands the capacity of understanding and meaning. The synthesis of wonder, pleasure, and anguish characterizes the nature of literary interpretation. The dying woman in the poster is just "one victim of the East Coast," but she's not the last! "Young people are suffering" in every corner of the world! The author repeatedly conveys that vigilance and awareness are the requirements of the times by means of tragic painting:

Dunyoda bor ekan nohaqlik, zulm,
Dunyoda bor ekan asorat, jafo.
Jangdamiz, bir boshda bor bitta o'lim,
Sharqiy sohillarda jonimiz fido[1,84].

The poem "East Coast" was written forty years ago. Its ideological center is determined by the mood of the time. If we consider the meaning of time, it becomes clear that the model of literary interpretation is a product of blind faith. The phase of cold relations under the conditions of the former Soviet Union divided the world. However, the logic of the poem glorifies a healthy belief that stands above any ideology. According to him, human destiny does not fit into any standard. The fate of mankind, glorified as the ruler of the universe, the axis of the earth, is "more complicated than what is written in many books!" (Abdullah Arif). "The restless fiery heart" - in the eyes of the poet, the star of justice shows the way to mankind. So, "as long as there is injustice, tyranny, as long as there is trouble and suffering in the world," the struggle will continue:

Hamon qit'alarda yo'qdir sukunat,
Hamon jabhalarda uyg'oqdir g'anim.
Jafokash dunyoda, azaliy qismat,
Sharqiy qirg'oqdadir mening vatanim[1,86].

The warmth of the lines creates portals in the heart of the reader. The spiritual criterion is centered in the spiritual experience caused by the conflict of the poet's faith and will and rough reality. There is a strange freshness in the literary interpretation that moves from perception to creative philosophy! It summarizes the position of the author who stands on the side of goodness and justice. "You are a selfless soldier in the path of truth, so your residence is the eastern coast" is based on the feeling of trust in human will! The pitiful fate of the people torments the lyrical hero with a flood of sufferings that pass quickly in the imagination in the manner of film montage. The tragedy of mankind, whose eyes are filled with a cruel heart, the fact that there is still no peace in the way of life of a human being who cannot get rid of suffering, increases the anxiety even more.

The uniqueness of the poetic structure in the poem "East Coast" is determined by the poet's ability to logically connect images and imagination. It is nourished by the depth of observation of the way of expression, which arouses both the nature of the creator and the feeling of the reader. The outward-inward sign embedded in each clause enlivens the conflicts of reality in action. In it,

the aesthetic ideal and the spiritual criterion are equal to each other, in it the nature of the creator and the consciousness of the reader enter into dialogue, in it the interpretation and analysis quickly change places, in it the weight of the spiritual experience resulting from the anguish of the heart increases, in it there is a sharp divergence of imagination and life beliefs. It becomes clear, it is practically confirmed that vigilance and awareness is the demand of the time.

In general, in the analysis of the poetic text, Erkin Vahidov controls the expressiveness of the expression and the spread of the image by the poetic flow of the idea. Determining the full essence of creative personality goes back to the centralization of the basis and auxiliary means. Additional perception perfection, firstly, indicates a unique independent mental image, and secondly, the mood of the feeling serves a bright, impressive, deep understanding of the idea. An idea is a logical conclusion that grows out of observation and analysis skills in the text. The materialization of the poetic state requires an analysis of the expression and an examination of the psyche. Showing the national feeling in the combination of feeling and action indicates the nature of the concept. For example, a special form of speech creates a difference of a certain national size. Designation of the aesthetic center of reality is connected with the process of transferring the imagination to the creative worldview as a whole; the discipline of the artistic cells of the text harmonizes the image and poetry. The task assigned to each sign, sound, tone, and meaning strengthens the creator's nature, creates the depth of literary interpretation while ensuring fluency of emotional absorption. Creative attitude determines its level of quality. In it, the eloquence of the poem and the impressiveness of feeling ensure the integrity of the literary essence. Synthesis of tone restored in emotional perception and observation evidenced in creative logic defines its nature. A subtle flood of passion creates creative worldview integration, which is a combination of deep thinking, definition-description, and high awareness process, movement of form and shift of meaning. It is precisely with the gaze of the artist that the echo of the soul waves on the scale of the concept, which is polished and enriched creatively.

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Rezyume: *Maqolada Erkin Vohidov ijodidagi o'ziga xoslik va badiiy yaxlitlik muammosi ilgari surilgan. E.Vohidov ijodidagi badiiylik asoslari adabiyotshunoslikda mavjud ilmiy-nazariy qarashlar bilan dalillagan.*

Резюме: *В статье ставится проблема оригинальности и художественной целостности в творчестве Эркина Вахидова. Основа художественности в творчестве Э.Вахидова доказана научно-теоретическими воззрениями в литературоведении.*

Kalit so'zlar: *Erkin Vohidov, badiiylik, matn, lirika, nazariya, poeziya, obraz, she'r, his-tuyg'u.*

Ключевые слова: *Эркин Вахидов, артистизм, текст, лирика, теория, поэзия, образ, стихотворение, чувство.*

DISTANCE LEARNING IN THE HIGHER EDUCATIONAL INSTITUTIONS

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Summary: *The article deals with the basic concepts and characteristic features of distance learning. The advantages and disadvantages of distance learning in universities are discussed, the results of its application are analyzed.*

Keywords: *distance learning; remote education; distance educational technologies; education system; information technology.*

INTRODUCTION

Distance learning is a way of receiving education at a distance, in which the educational process is carried out using modern information and telecommunication technologies. The problems associated with the use of information technologies in the educational process, including distance learning, are reflected in the works [1,2,3].

Recently, distance learning technologies in our republic have been intensively developed. The Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan has developed a special area, curricula and allocated funds for the development of distance education.

The education system in the Republic of Uzbekistan is aimed at providing free and open access to education for its citizens throughout their lives, based on their interests and abilities. The multi-stage system of education adopted by the state contributes to the solution of the problems of equality and continuity of education. The “Law on Education” of the Republic of Uzbekistan establishes the legal foundations of education and determines the obligation to “introduce progressive forms of education and new pedagogical technologies, technical and information teaching aids into the educational process.” This confirms the existence of potential opportunities for the development of distance learning in the country [4].

MAIN PART

In the modern world, distance learning is one of the fastest growing systems of higher education. Internet technologies and computer telecommunications are ways to ensure the transfer of knowledge and access to educational information.

In Uzbekistan, all areas, including the education system, are moving towards digitalization, and we will have to adapt to new realities. A student in the education system, with the help of digital technologies, i.e. remotely, it is necessary to be able to clearly formulate learning goals, specify the problem and focus on the main, significant details, creatively rethink the learning process and acquired knowledge.

Distance learning has both pros and cons. One of its main shortcomings, which must be paid attention to, is the lack of practical knowledge. Distance learning in specialties (directions) that require a large number of practical exercises is very difficult. Even the most modern technologies will not replace real practice. Another disadvantage is that such education is not suitable for the development of communication skills, this is due to the fact that in distance learning, the contact of students is minimal not only with the teacher, but also with one another. Therefore, this form of education is not capable of developing such a skill as teamwork.

In addition, distance learning requires a lot of motivation among students, it is necessary to maintain the desired pace in learning without outside help. Insufficient computer literacy is also a disadvantage in this type of education, which can become a serious problem in obtaining education remotely. Another disadvantage is the problem of user identification. When receiving education remotely, it is quite difficult to determine how much the student himself performed this or that

work. In addition, students are forced to come to the university for the final certification, since there is still no way to remotely conduct the exam.

But it is worth noting that distance education has a lot of advantages, the main of which is the availability of education for any person, regardless of their geographical location and at any time. Studying without interruption from the main activity is also one of the significant advantages of such training. Distance learning allows you to study several courses at the same time. When receiving education remotely, students do not face the problem of a lack of textbooks or any other materials, since educational materials can always be found on the net, which increases their availability and facilitates the learning process. There are benefits in distance learning not only for students, but also for teachers, as they can devote time to students even in another city.

Unfortunately, the speed of the Internet, computer and legal literacy, as well as the provision of the population with computers are still insufficient. The practice of online learning during the pandemic showed that students at home used phones (smartphones) more often than computers. Thereby, there is a big difference in opportunities among students: someone can fully use all the functionality of the electronic educational environment based on MOODLE or ZOOM, and someone can only be a listener. There are problems with the provision of computers and the speed of the Internet in the regions of the republic. This problem is especially relevant for regions where there are many hard-to-reach and remote settlements that do not have network communications.

To find out how distance learning is perceived, a survey was conducted between teachers and students.

The results of the survey showed that the answer to the question, “How do you see the effectiveness of distance learning in universities? The majority of teachers and students answered that they see distance learning as an auxiliary education, and not the main one, as 80% of the interviewed teachers and 60% of students think so.

To the question “Do you think distance learning will improve the quality of education?” the majority of surveyed teachers answered “No, it will only get worse” - 50% of the respondents, “Yes, subject to good methods” - 40% of the respondents, “No, nothing will change” - 10% of the respondents.

Most teachers do not consider distance learning to be a qualitative form, there are a number of reasons for this, for areas of training, the largest component of which is practice, distance learning remains much less effective in quality than full-time, distance learning is not suitable for areas of training, an essential aspect which is communication with people and teamwork. In addition, there is no guarantee that the work done by the student is done by him independently, since it is impossible to provide a sufficient level of control, the quality of the education received largely depends on the student himself.

When asked about the impact of distance learning on the quality of education among students, 20% of those surveyed from the full-time department evaluated negatively, 40% lean towards this assessment. This influence was called positive by 5% of students, another 10% tend to this point of view, but are not completely sure. Note that every fourth student surveyed could not answer this question.

CONCLUSION

From all of the above, we can conclude that there is an absolutely real prospect for the full-fledged universal development of distance learning, but we also need to understand that this is only one of the forms of education, which is currently developing both society and scientific and technological progress. Distance learning will gain popularity, primarily due to the convenience for working people, those who live in remote areas. Despite many organizational flaws in the distance learning format, students are more optimistic about the prospects for its further development than teachers.

The author proposed the following recommendations: training teachers for the development and use of distance learning resources in the educational process, to think over new methods of using distance learning forms together with traditional forms, which would include closer contacts between students and teachers.

Without a doubt, distance learning cannot become a full-fledged replacement for traditional learning. It is not able to create a student atmosphere and replace live communication with a teacher, but it can really become the most promising form of evening distance learning, for advanced training courses or retraining courses, for students with disabilities, etc.

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Rezyume: *Maqolada masofaviy ta'limning asosiy tushunchalari va xarakterli xususiyatlari ko'rib chiqiladi. Oliy ta'lim muassasalarida masofaviy ta'limning afzalliklari va kamchiliklari muhokama qilinadi, uni qo'llash natijalari tahlil qilinadi.*

Резюме: *В статье рассматриваются основные понятия и характерные особенности дистанционного обучения. Обсуждаются преимущества и недостатки дистанционного обучения в Вузах, анализируются результаты его применения.*

Kalit soʻzlar: *masofaviy ta'lim; masofaviy ta'lim texnologiyalari; ta'lim tizimi; axborot texnologiyalari.*

Ключевые слова: *дистанционное обучение; дистанционное образование; дистанционные образовательные технологии; система образования; информационные технологии.*

GAMES AS THE WAY OF TEACHING FOREIGN LANGUAGES

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Summary: *This article provides information about the most effective method of teaching foreign languages as a game. Game is a motivation tool which causes interest to the educational process. It is important pedagogical value which helps mastering knowledge very easier and faster and as it is pleasant process, it promotes to remember information for a long time. This article focuses on the role of game in teaching foreign languages and which games will be effective in EFL classes.*

Keywords: *game, method, teaching foreign languages, EFL classes, functions, tool.*

Introduction

Teaching foreign languages is not easy as it seems. If the lesson process doesn't interest to the student, it interferes in acquiring the language. In this way, most of teachers use game methods. This method has been used since time ago. Using games is an important tool that allows language teachers to add colors to their classrooms by providing challenge and entertainment. Using games in the process of language teaching-learning is not restricted for any language level; it helps all students to feel comfortable and more confident in acquiring a new language. The method is a great importance for a teacher for the purpose of evaluating the work and knowledge of their student. There are many functions of game. G.S.Vladimirova offers the following functions of the game.[1]

1. Scientific function
2. Educational function
3. Entertainment function
4. Communication function
5. Relaxation function
6. Psychological function
7. Developing function

All of the above functions of the game help not only in teaching a foreign language, but also develop the personal qualities of the student.

Now let's look through the role of game in teaching foreign languages deeply. Games play an impact role in EFL classes. There are many benefits to the learning process of the learners. It prevents lessons to be boring and ordinary. Thus it creates a positive and successful atmosphere in class. E.Gozcu and C.K.Caganaga on their scientific research they mentioned some point that should be considered by teachers.[2]

- „Games should have an aim. They are used to motivate students, not only for fun
- Games should focus on the use of language. By their means students have to learn, practice, or refresh language components
- The content should be appropriate. It should fit the curriculum, be correct from all points of view and not to promote wrong values (e.g. violence).
- Games should be technically easy to use in the classroom.
- Games should be in accordance with students' age and level of knowledge.
- Games should keep all of the students interested.
- It is advisable to use short games; otherwise students may lose their interest.”

First of all, the game should be connected to the course process. The teacher should be confident that he or she will be able to convey information to the students through this game. It should become a success key that will receive information for the student.

The role of the game as you see is especially incomparable in the organization of foreign languages.

In the development of children's writing, listening, reading and speaking skills, game plays a significant role. In addition, it influences to the group-working and individual skills of students too. There many types of games that can be used in EFL classes. But let's look through the most effectives among them.

“Word train”-The game involves increasing and improving the vocabulary of a younger student and consists in the fact that students need to make as many correct sentences in English as possible using new words or constructions. The words are written on cards in advance and distributed to children. Of these, they must correctly compose sentences.

Role play - You are talking to a foreign friend about the countries and cities in which you live. What would you ask and tell each other about?

“My region”-The class is divided into two groups. The task of each of them is to tell as much as possible about their region in English, using the studied lexical and grammatical material.

“Number games”- The essence of the game is as follows: the class is divided into two teams. A series of numbers is written on the board. The first student from each team is given a piece of chalk (marker). The teacher calls the number. The team whose participant found and crossed out this figure faster wins a point.

“Alphabet Race” -The essence of the game is that each student can name as many words as possible for a given letter of the alphabet. The task can be complicated: the words must belong to the same thematic group.

“Bingo”-This is a pair game. A field with many pictures is placed in front of the student. Composing a sentence with the pictured word, the student covers this picture with a chip. The goal is to fill in a horizontal or vertical row of pictures. Tasks are usually on a lexical or grammatical topic. The partner controls the game, and if he notices an error in the sentence, he does not let him put a chip.

“Sweet clean house”- Students are divided into groups of 3-4 people. Each of the players rolls a die and moves to the specified number of cells. There may be a picture and a word on the cell. The student must compose a sentence using a drawing and a word.

“Snowball”- Students come up with sentences on a specific topic, repeating the sentences that the previous students said [3]

Through these games, the effectiveness of the lesson would have increased even more. The main thing was that the topic would become easier to understand.

Conclusion:

Within this article we can conclude that learning languages through game is one effective and interesting method. It also provides in the development of skills and personal qualities. All in all, it is a successful key which leads to the learner's goals.

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Rezyume: *Ushbu maqolada chet tillarini o'yin sifatida o'rgatishning eng samarali usuli haqida ma'lumot berilgan. O'yin - bu o'quv jarayoniga qiziqish uyg'otadigan motivatsiya vositasi.*

Bu muhim pedagogik qadriyat bo'lib, bilimlarni juda oson va tezroq o'zlashtirishga yordam beradi va bu yoqimli jarayon bo'lgani uchun ma'lumotni uzoq vaqt eslab qolishga yordam beradi. Ushbu maqola xorijiy tillarni o'rgatishda o'yinning roli va EFL darslarida qaysi o'yinlar samarali bo'lishiga qaratilgan.

Резюме: *В данной статье представлена информация о самом эффективном методе обучения иностранным языкам в игровой форме. Игра является средством мотивации, которое вызывает интерес к образовательному процессу. Важна педагогическая ценность, которая помогает легче и быстрее усваивать знания, а так как это приятный процесс, способствует запоминанию информации на долгое время. В этой статье основное внимание уделяется роли игры в обучении иностранным языкам и тому, какие игры будут эффективны на занятиях по английскому языку.*

Kalit so'zlar: *o'yin, metod, chet tillarini o'rgatish, EFL darslari, funktsiyalar, vosita.*

Ключевые слова: *игра, метод, обучение иностранным языкам, занятия английскому языку, функции, инструмент.*

LITERARY FEATURES OF MAHMUD TOIR'S QUARTERS

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Summary: *This article analyzes the forms of quatrains in the lyrics of one of the modern poets, Mahmud Toir, and issues of tradition, experience, and renewal in them.*

Keywords: *four, literary form, poetics, tradition, experience, research, quatrains.*

Mahmud Toir, one of our poets who have been making a significant contribution to the development of modern Uzbek poetry, attracts our special attention with his creativity and great interest. In the poet's poetry, together with epics, poems, etc., poems in small lyrical forms also occupy a special place. Therefore, in this article, we will discuss one of the small lyrical forms widely used in the poet's work: quatrains and their characteristics. We want to think about the characteristics, traditions of classical poetics, and the issues of their development.

It can be seen that small forms of lyrics, especially quatrains, are widely used in the works of poet Mahmud Toir. If we describe the small-volume works of this lyric in terms of form in literary studies, we can see that the term "small lyrical forms" is being used by scientists [1. 2, 3.]. The term quatrain is defined as a separate genre in the "Dictionary of Literary Studies": Quatrain - 1) a poem consisting of four lines, a genre of ruboynavism in folk oral works and classical Eastern poetry. a form of poetry that is very common in modern Uzbek poetry as a continuation of his mother; a lyrical genre classified by form. In contrast to the classic lyrical genres of rubai and tuyuq, it is enough for the poem to be four lines to be included in the quatrain genre. "Doesn't do it" [4; 337].

Paying attention to the general aspects of short lyrical forms, Professor Qazoqboy Yuldoshev expresses the following thoughts: "Later, examples of four-, three-, two- and one-line short poems in our national poetry significantly increased. Since Uzbek short poetry appeared as the result of an attempt to get rid of formal boundaries and traditional patterns, it abandoned the strict student system such as hokku, tanka, quartet, rubai or syaoshi. In independence poetry, there are lines such as "Graves are barren - left from childbirth", "Pomegranates burst like pain" (Fakhriyor), "I lived without you because of you" (Ulugbek Hamdam), "A man is not a bedclothes, but a shirt", "I weave a poem like a spider", "From the threads of love" independent two-line poems (Fakhriyor) ("Go'rlar qisir – tug'ishdan qolgan", "Anorlar dard kabi yorilar" (Faxriyor), "Seni deya sensiz yashadim" (Ulug'bek Hamdam) singari bir misrali, "Erk choyshabmas, Ko'ylakdir", "She'r to'qiyman o'rgimchak kabi", "Muhabbatning tolalaridan") appeared. Different variations of triplets from the poetry of the country of East were born. B. Rozimhammad put the hokku in a different way, Rauf Parfi in a different way, and Farida Afroz, who composed a tasbih consisting of eleven, thirty-three and ninety-nine independent triplets, put them in a completely piecemeal way. will cry Azim Suyun's rhymes, consisting of five incomplete lines, attract the attention of readers as they can express great feelings and deep thoughts in a small poem" [5; 103-104]. In fact, this idea can be observed in the works of the poet Mahmud Toir. There are examples of fours in his poetry. For example:

Oftobning alami kuymagan jonda,

Bulbulning alami suymagan jonda.

Shabnamni sahroga sochmagin, Mahmud,

Iymon nima qilsin to'yumagan jonda.[6;288].

In this quatrain, it is explained in the antithesis method that a person has a wide heart, treats others well, works honestly, and also tries to be a believer for the sake of the world, because the poet expressed these thoughts not directly in the correct sense, but in a contrasting way with opposite words. That is, a person's resilience to problems and difficulties is expressed as "The sun is in a soul that does not burn", and a person's good relationship with those around him is expressed as "The nightingale's soul does not fade", that he does meritorious deeds, and that he cannot do meritorious deeds if he is not satisfied, is reflected through the metaphor of "unsatiated soul". Also, the poet mentions his name in the third stanza of the poem, "Don't scatter my dew on the desert", a lyrical hero who wants to have more hardworking people. He describes concepts and ideas such as the futility of what we say, the impossibility of supplying water to the vast desert, using the metaphor of a drop of wet water.

In this place, we can witness the preservation of the artistic traditions passed down from the classical Eastern poetry in the four poets. "...the use of the author's pseudonym at the end of lyric works is a stable tradition for classical poetic forms. Although some contemporary poets are inspired by the work of classical poets such as Makhtimquli, they do not use their pseudonyms at the end of their poems. Such a literary phenomenon is not visible in world literature. Therefore, at this point, at the end of the poem, it is permissible to admit that there is a case of using a nickname or one's own name in the above poem. the use of his own name and nickname in poems written in a finger weight not related to classical traditions can be found in the work of the national poet of Uzbekistan Mahmud Toir" [7].

Professor Bahadir Karim also expresses the following thoughts about the art of Mahmoud Toir's lyrics. "It is known that poets stamp their pseudonym-signature on the praise of classical oriental literature, especially the ghazal genre. Mahmud Toir, who grew up in this tradition, wrote his poems with the finger weight of modern poetry, in one of the lines of the last stanza "Mahmud is happy in your eyes, this is the day", "To Mahmud, you are a soul, you are a soul", "To you, my friend, a dildo like Mahmud" there", "Although you will not be far from envy, Mahmud, you will not be a light to any heart", "Hey, Mahmud, it seems that the grasses have a language", "For Mahmud, this earthy embrace is the Motherland", "This old he adds his name in the style of "Mahmud repeats the truth" ("Qoshingda Mahmudning xush dami bu kun", "Mahmudga siz jonsiz, jononsiz", "Sizga, ey do'st, Mahmud kabi dildosh bor", "Agarchi hasaddan yiroq bo'lmaysan, Mahmud, hech bir dilga chiroq bo'lmaysan", "Ayo, Mahmud, maysalarning tili borgan o'xshaydi", "Mahmudga shu tuproq quchog'i Vatan", "Shu ko'hna haqiqatni Mahmud takrorlar mudom") Unlike other poets of our time, this attitude is considered an important characteristic of Mahmud Toir's poems, a stylistic novelty that suits him." [8; 111-116].

In fact, as the scientists admit, we can witness that such a tradition in the classical literature system was developed in the direction of renewal as a result of artistic research in Mahmoud Toir's quartets. For example, in the third stanza of the quatrain analyzed above, it is quoted in the style of "Don't scatter my dew in the desert, Mahmud", and the lyrical hero directs his admonitions primarily to himself and brings out thoughts that are important for all humanity. At this point, he brings his name in the third line of the poem, breaking the classical tradition. In classical poetry, this program is often used at the beginning or end of the last stanza of the poem.

Below we observe another innovation in the poet quartet:

Shabnam sharobidan xushdarsan, Mahmud,

Oshiqsan, ko'kdagi qushdarsan, Mahmud

Bulbuldek bog'zingda qalqisa joning,

G'uncha ko'rolmagan tushdarsan, Mahmud.

In this quatrain, the poet makes extensive use of radif harmony and mentions his name at the end of the verses. As we all know, along with ensuring the rhythm and melodiousness of a certain similar poem, at the same time, it is of particular importance in expressing the essence of the poem in an emotionally impressive way. Therefore, the poet mentions the word "Mahmud" in his quatrain, which reflects the idea of the poem, attracts the readers' attention, and serves to fulfill the function of artistic tact. The fact that this method is the result of the poet's artistic research is clearly visible in the poetic verses.

Baxilning tosh yorar ko'zi bor, do'stim.

Tumorda Tangrining so'zi bor, do'stim.

Iymon-e'tiqodda sobitsan agar,

O'zingda Xudoning o'zi bor, do'stim.[9;290].

We can observe that the classical poetic traditions are widely developed in a new direction in this quartet of the poet. The enemy does not always say "let it be" to the person he is jealous of, on the contrary, he is jealous of his wealth and wealth. Our people consider the made amulet jewelry as sacred and explain the concept that the person who wears it cannot be seen through the metaphor of "the word of God". ideas about are artistically depicted. It is known that these ideas were widely praised in the works of our classic poets Khoja Ahmed Yassavi, Nasimi, Navoi, Makhtimquli. Therefore, there is no doubt that the content characteristic of classical literature has found its expression in Mahmud Toir's quatrains, which have been analyzed.

In Mahmud Toir's quatrains, the views and opinions of the poet are depicted in various poetic ways in a colorful way, and the poem attracts the reader's attention with its artistic and aesthetic effect.

In general, one of the small lyrical forms in the lyrics of Mahmud Toir, even though quatrains are compact in terms of volume, they contain deep meaning and content, as well as the continuation and development of classic classical traditions.

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Rezyume: Bu maqolada zamonaviy shoirlardan biri Mahmud Toir lirikasida to'rtlik shakllari va ularda an'ana va tajriba, yangilanish masalalari tahlil qilinadi.

Резюме: В данной статье анализируются формы четверостиший в лирике одного из современных поэтов Махмуда Тоира и вопросы традиции, опыта и обновления в них.

Kalit so'zlar: to'rtlik, badiiy shakl, poetika, an'ana, tajriba, izlanish.

Ключевые слова: благочестие, художественная форма, поэтика, традиция, опыт, исследование.

**GIVING NATURE TO THE LYRICAL INNER FEELING OF KARAKALPAK POETRY
(USING THE EXAMPLE OF POEMS BY M.ZHUMANAZAROV, B.SEYTAEV)**

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Summary: *The article deals with the preservation of the integrity of human psychology and its positive indicator at the intersection of the calories of the nation and the period increases the need for the functional task of fiction. Thus, the content of the lyrical hero is the subject itself and everything that went through it.*

Keywords: *Globalization, human psychology, lyrics, valuable feelings, karakalpak literary, criticism, nature.*

During the period of globalization, the exit from the borders of national culture and mass culture could not but affect the value features of national thinking and national psychology. The preservation of the integrity of human psychology and its positive indicator at the intersection of the calories of the nation and the period increases the need for the functional task of fiction. Especially importance is the aesthetic effectiveness of the lyrics when presenting the internal evenings of the lyrical hero to the pure consciousness of the reader. Current poetry is distinguished by a thematic expansion and deepening description of the domestic feelings of people of today. In recent years, the works of scientists noticed by scientific innovations began to appear in Karakalpak literature. On this I.Eshniyazova, Kh.Turdibaev, A.Dosimbetova, P.Dabilov, Kh.Mambetov, D.Tilewniyazova, M.Orazimbetova note the work of such scientists as. Literary critic, Kh. Turdibaev, "who penetrated the national poetry on the eve of independence, B.Seytaev, S.Ibragimov, O.Satbaev, B.Genjemuratov, M.Jumanazarova, P.Mirzabaeva, G.Dauletova, G.Nurlepsova and other talents made a certain contribution to the enrichment of our national poetry with colorful colors and artistic images.[1.171]

The lyrics give words and images to mute emotions gives them a separate life. Thus, the content of the lyrical hero is the subject itself and everything that went through it. When the poet picks up the pen, the idea that emerged in his home life becomes a poem on white paper. In fact, in modern Karakalpak poetry, among the most famous poets whose pencil is M. Zhumanazarova, B. Seitaeva. The possibility and beauty of Karakalpak literature gives impetus to the subtle style (technique) and the poet's opinion. His poetry serves to increase the interest of many literary scholars in lyrics. Many poetry collections of poets have long entered the hearts of clients. For example, the collection of poems by the poet B. Seitaev "Apple Flower" includes poems on various topics. The study of the poet's work not only meets the psychological needs of literary scholars, but also makes it possible to create new works and new methods. B. Seitaev was visited by thousands of poets.

The student B. Seitaev, reading poetry feels that the circle of life of the poet is so wide. «Sensiz yashay olmas ekanman» in his poem of the same name, the lyrical hero is filled as follows:

*Bir kulganing jonima zafq,
Aql-xuchim uzinga ogib,
Ot aylanib qozigin topib,
Sensiz yashay olmas ekanman [2.101-102].*

In the example given, the hero in love says that his lover beat his mind, and he cannot live without his beloved side. Lyrical heroic language adds value to the artistic word using the poem. One of the manifestations of the subject of the lyrics is a form proving the author's inner experiences, domestic feelings. The lyrical heroine was noted as a person reflecting evenings in

lyrical works, a "man" carrying valuable feelings and thoughts for society as a whole, in one of his works the scientist Izzat Sultan.

*Terib yurman suluv suz bulsa,
Qumsab diydorlashar gez bulsa,
Kimda suluv qora kuz bulsa,
Seni eslab jirlaydi ekanman.*

In the life of a lyrical hero, he thinks that he would like to talk to his lover from coral words, and when the time comes to meet, he manifests himself as a lover looking for prying eyes from meet, similar to his favorite eyes. In these lines we are talking about the feeling of cooling. So the lover can find his place and give him a poetic mood. The lyrical hero is excited, grieving, rejoicing, reassuring, all reflected in those lines. In the poet's poems, pure love is described from the inner evening of the lyrical hero. The lyric work of the poet's spirit, which is the fruit of a minute mood, disappears if the poet's spirit is not transferred to paper earlier, without being tied to a different mood. In poetry, many form poems that glorify love, devotion, honesty. In the works of the poet B. Seitayev, feelings of love sound high.

*Xosillar ichida xosilim,
Sen deb yonib utar oshiging,
Olma gullab turgan faslini,
Xech unuta olmas ekanman.*

The example describes the youth of a poet, a young hero filled with a sense of heart. The youth of human life looks like spring, in the poem the feeling of love is expressed in parallel with the spring season. Apple blossoming beans are the most beautiful place in life, reminiscent of a period of kitchens without joy. It is no coincidence that the poet brings this period to the lines of the song. The time during which he trusts unforgettable people remains vivid in a person's life. In the work, the feeling of love rises on the chest. Despite the fact that the words used in the lyrics are simple, the reader has mysterious feelings. The use of a word like coral testifies to the poet's achievement. When reading a poem by a lyric hero, in response to the concept of "Life," a description of the huge content is given. In the work, the feeling of love rises on the chest. Despite the fact that the words used in the lyrics are simple, the reader has mysterious feelings. The use of a word like coral testifies to the poet's achievement. When reading a poem by a lyric hero, in response to the concept of "Life," a description of the huge content is given. A German philosopher Hegel, discussing the features of a lyrical song in the work "Aesthetics" cites the following: Real lyrics, like any other real poetry should reflect the true content of the human heart but all this expresses lyrical content in the most elementary, most material situations, the intimate sense of the soul in the window should be visible and thoughtful. [4.304]

Today, the concept of a lyrical inner supper is characterized by a special mood in the form of subtle shortcomings of the human mood. We know that the term lyrical inner evening has been used in fiction since the 30s of the XX century. At first, this began to be applied in the sense of human feelings and houses. At home, the feelings of a person are very hidden, psychologist Z. Frade believes that emotions, internal evenings can leave the world without knowing and understanding the person himself. [5.254]

Our creative poets are explored in this matter based on their own experience. It is determined that the main thing in the creation of the song is feeling and internal lateness. Lyrical inner evening based on its nature, affects the content of songs, emotional colors. The lyrical inner evening image is accompanied by feeling. The song, like other genres of fiction, is not born in itself. For example, in the poem by M. Zhumanazarova on the topic "Yuqsan"

*Jonimning ichidasan,
Yonimning iuqsan,
Xar kun tushimdasan,*

Ungimda iuqsan,
Juda yaqshi kuraman,
Kura olmayman,
Jonimni beraman,
Bera olmayman,
Shunda xam izlayman,
Qalbimda iuqsan-o,
Bilmayman,
Nega iuqsan.[6.16-17]

of obesity in the opposite form. Using the example given by a lyrical hero in the nature of the inner supper and to the level of the image of parties. The hero's name cannot be found at. The place we are looking for encourages the student to search, drives him into the house. The reader feels that it is hard and difficult. Through the word "no" in the song, the philosophical concept serves to reveal the inner image of parties in the song. Any poem is written based on a lyrical evening. Therefore, each element in the song serves to reveal the evening. [7.12]

A distinctive feature of the lyric poem is the secret presentation of its content. You are very interested in knowing the mystery of human nature. Therefore, he writes poems about secret things. Words, metaphores expressing the hidden meaning of poetry are hidden behind stylistic figures. If the song is described in regular language, the song loses its sound. The poet's product is to inspire his songs with emotional colors that can use beautiful words and give lines of songs, as well as post content for this evening. The poet needs to find the right words to convey subjective parties, as well as work with the element that sets the form of the song. [7.13]

In conclusion, on the study of the nature of the lyrical inner supper, we tried to study the works of poets B. Seitayev and M. Zhumanazarova using the example of their creative process, a deeper study of the nature of the lyrical inner supper in science of karakalpak literary criticism and requiring scientists.

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Rezyume: Mazkur maqola inson psixologiyasining yaxlitligini saqlash va millat kaloriyasi va davr o'rtasidagi ijobiy ko'rsatkichiga bag'ishlangan bo'lib, badiiy adabiyotning funktsional vazifasiga bo'lgan ehtiyojni oshirmoqda. Shu tariqa, lirik qahramonni saqlash – ushbu buyumning o'zi va undan o'tgan barchasidir.

Резюме: Это статья посвящена сохранению целостности человеческой психологии и ее положительному показателю на пересечении калорий нации и периода увеличивает потребность в функциональной задаче художественной литературы. Таким образом, содержание лирического героя - это сам предмет и все, что через него проходило.

Kalit so'zlar: Jahonlashtirish, inson psixologiyasi, lirika, qadrli sezimlar, qoraqalpoq adabiy, tanqid, tabiat.

Ключевые слова: Глобализация, человеческая психология, лирика, ценные чувства, каракалпак литературный, критика, природа.

ISSUES OF DETERMINING THE LEGAL NATURE AND PLACE OF THE CORPORATE CONTRACT

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Summary: *This article covers the issues of corporate management, ensuring the organization of mutual relations between the participants of society, their rights, obligations, and the procedure for their implementation.*

Keywords: *corporate contract, corporate relationship, corporate management, shareholder, society participants*

INTRODUCTION.

The rights and obligations of a company participant or shareholder are determined both by legal documents and by separate clauses of the founding documents and relevant regulations. However, in addition to complying with the above provisions, corporate management must ensure the organization of mutual relations between the participants of society's activities, which can be done by concluding a corporate agreement aimed at determining their rights, obligations, the procedure for their implementation and their responsibility in this area.

Regulations on corporate contracts in foreign countries are strengthened at the legislative level. For example, the right to conclude a corporate contract is provided for in Article 7 of the Law of Ukraine "On Limited Liability and Additional Liability Companies". D. Juravlev, A. Korotyuk, K. Chijmar, analyzing the above-mentioned standard, distinguish the following features of the corporate contract: the corporate contract is free; it shall be made in writing; the date of conclusion and the term of validity should be indicated in the contract; the content of the corporate agreement may be confidential and disclosed unless otherwise specified by law or the agreement; the provisions of the contract have precedence over other contracts that conflict with the provisions of the corporate contract concluded by its party (a contract concluded by a party to a corporate contract in violation of such a corporate contract is void if the other party to the contract knew or should have known about such a violation) ; an irrevocable power of attorney can be issued in accordance with the rules of the corporate agreement; a corporate contract can be concluded only by company members (individuals and/or legal entities). [1, 27 p]

A.Svinsky believes that a corporate agreement can be concluded between the participants of the society and the creditors of the society. [2] In our opinion, this opinion is debatable. The content of the corporate agreement is a set of conditions under which it is concluded. At the same time, legal relations arise from the corporate contract, the content of which is recognized as the rights and obligations of the participants established in it. The terms of the corporate contract regulate the actions of the entities participating in it and find their legal expression through their rights and obligations.

One of the most controversial issues is the issue of determining whether a corporate agreement belongs to the civil-legal agreements. One of the aspects that should be paid attention to is that if this corporate contract is considered to have a civil-legal character, then it is necessary to determine the position of this contract in the system of civil-legal contracts. It is known that one of the main classifications of civil legal contracts is based on the principle of "dichotomy". Based on this, the three most important pairs of contracts are distinguished: one-sided and two-sided, paid and free, real and consensual. Before determining the position of one or another type of agreement in these listed pairs, it is necessary to distinguish the obligation arising from the contract. The implementation of this classification in relation to the corporate contract creates certain difficulties,

because the construction of the usual obligation is manifested in the section of mutual rights and obligations of the creditor and the debtor. In its "main" part, the corporate contract includes the obligation to jointly exercise corporate rights, so we can only talk about the general obligation of all participants, the fulfillment of which none of the participants has the right to demand against themselves personally. In addition, the corporate agreement is made to act as a "single agreement" of all parties, not to satisfy the personal needs of the participant through the actions of the partner. It will be necessary to solve this non-standard situation and find a place for the corporate contract among the civil-legal agreements.

Most scholars who consider a corporate contract to be a civil contract usually classify this contract as mutual (bilateral). In particular, V. V. Rublev [3, 45-55 p] and P. S. Nasten [4, 61-68 p]. Apparently, this conclusion is based on the majority of the participants of the corporate agreement. However, the decisive factor in this matter is not the number of participants, but the mutual obligations that arise on the basis of the contract. At the same time, the above scholars or other authors do not show what mutual rights and obligations arise for the parties to the corporate contract.

Another part of the representatives of the scientific community even believes that the corporate contract does not create a civil obligation due to the special scope of its activity - corporate relations. Corporate relations are an independent type of private law relations. [5, 526 p]. The relations arising from the corporate contract do not ensure the circulation of goods between the participants, therefore, there are opinions in the scientific literature that they should be considered as relative relations not related to obligations. [6, 4-10 p] It is also stated that a corporate contract creates a non-property obligation that arises as a result of concluding pre-contractual relations regulating agreements. [7]

Corporate contract as a civil contract, it is possible to clearly see the obligation created by this contract and, starting from this, to form a certain point of view regarding unilateral obligations and mutual agreements. In our view, a corporate agreement binds the parties to the exercise of corporate rights under pre-agreed conditions. It also provides for the condition of the turnover of shares (shares) under predetermined conditions. The latter obligation is based on the principles of reciprocity, as it provides for the alienation and acquisition of objects of civil rights. [8]

Determining the nature of the obligation to jointly exercise corporate rights is somewhat complicated. In this case, it is unlikely that there will be a double obligation, since the voice of one of the parties to the contract may not correspond to the voice of the other or others. In addition, the emergence of a unilateral obligation in a corporate contract is also controversial. Because each of the parties is obliged to vote in a certain way, but in this case it is necessary to identify the person who has the right to demand it. In other words, it is necessary to identify the "counterparty" who has the right to demand voting in a certain way, because the obligation binds certain persons and is therefore called relative. In the absence of a "counterparty", a corporate contract cannot be called a unilateral obligation or a bilateral obligation.

If we focus once again on the issue of joint implementation of corporate rights - the obligation created by the corporate contract - we will see that all attempts to find a mutually opposite party are unsuccessful. The fact is that none of the participants can demand the fulfillment of obligations to him personally from the other participant or from all the other participants, and this is very reasonable, because the parties are united for joint participation and it is not aimed to satisfy their personal interests at the expense of a specific person (debtor).

Therefore, in the first part, the corporate contract is considered to have the characteristic of a consolidated obligation. The fact that the corporate contract is not included in the scope of the contract that imposes unilateral or bilateral obligations does not mean that it is excluded from the list of civil legal agreements. This type of contract is also distinguished in civil law. Among them, the ordinary partnership agreement is especially well known.

It is also important to determine the place of the corporate contract in the system of contracts concluded for a fee or for free. In the scientific literature, the "reimbursement" of the contract is interpreted in different ways. This is "mutual property benefit" [9] and compensation that the parties want to receive by entering into contractual relations [10] and others. Article 355 of the Civil Code contains a definition of remuneration. In accordance with this article, an agreement in which the other party must pay a fee for an obligation performed by one party or make another counter payment is a contract concluded for a fee. On the other hand, an agreement that does not imply the obligation of one party to give something to the other party without receiving a fee or other counter-provision is considered a gratuitous contract. Therefore, the basis of the legal distinction between contracts concluded for a fee and for free is the existence or non-existence of countervailing security.

Civilians who believe that a corporate contract is "made for a fee" show that its parties rely on the profit received by the economic entity of which they are a party. In addition, the law establishes a presumption of compensation for all civil contracts. The first thesis is somewhat controversial. In order for the contract to be considered concluded for a fee, the counterparty must receive a counter-payment from the counterparty (directly or indirectly). It is possible that the consolidated activities of the participants of the company may benefit them through dividends or an increase in the value of the shares, but this is not considered a payment provided by the counterparty. In general, the concept of economic benefit should be distinguished from the concept of "structure for payment" in civil law.

According to H.R. Rahmankulov, "when each party presents property of equal value, payment acquires the color of equivalence. Equivalence of property relations requires them to be economically equal in value, in which case these relations are paid relations even in cases where equal value is determined according to the current prices. [11, 245 p]

According to I.B. Zakirov, "contracts concluded for consideration, one party receives payment in money or property in exchange for the transferred property, services rendered." [12, 601 p]

In our opinion, the conclusion of a certain type of agreement for a fee is primarily determined by the existence of conflicting rights and obligations of the parties to the contract. If the obligation is directed only to one party or the status of "partnership" has arisen due to the participation of many people in the contract, then the element of conclusion for a fee does not arise in such contracts. Therefore, in cases where there is a factor of "reciprocity" and in cases where "opposite presentation" is provided, it can be said that the contract was concluded for a fee. These aspects are not clearly visible in the corporate contract. As for the argument about the presumption of consideration, it is more reasonable, but it does not, however, affect our final conclusion that the contract is gratuitous. The fact is that each presumption, including the presumption mentioned in the third part of Article 355 of the Civil Code, means that the point of determination is established only after. The presumption is not axiomatic and can be overcome. The presumption of compensation within the meaning of the third part of Article 355 of the Civil Code is eliminated by the law or the content of the contract.

CONCLUSION

In conclusion, the essence of the corporate contract, as a general purpose, its remuneration is rejected. From the point of view of ensuring the circulation of shares, a corporate contract can be a contract concluded both for a fee and for free.

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Rezyume: Ushbu maqolada korporativ boshqaruv jamiyat faoliyati ishtirokchilarining o‘zaro munosabatlarini tashkil etishni ta’minlash, ularning huquqlari, majburiyatlari, ularni amalga oshirish tartibi masalalari yoritilgan.

Резюме: В данной статье освещены вопросы корпоративного управления, обеспечения организации взаимоотношений между участниками общества, их права, обязанности и порядок их реализации.

Kalit so‘zlar: korporativ shartnoma, korporativ munosabat, korporativ boshqaruv, aksiyador, jamiyat ishtirokchilari

Ключевые слова: корпоративный договор, корпоративные отношения, корпоративное управление, акционер, участники общества

**PROBLEMS OF TEACHING FOREIGN LANGUAGES IN KARAKALPAKSTAN
SCHOOLS**

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Summary: *This article deals with the period of independence, in accordance with the decision of state bodies throughout Uzbekistan, including Karakalpakstan, a phased introduction of a new system of teaching foreign languages was carried out. The author analyzes the situation with the shortage of personal in schools of Karakalpakstan, the formation of curricula and the compilation of educational and methodological literature.*

Keywords: *Foreign language, programme, formation, English, Russian, German.*

In the age of globalization, when geographical boundaries are erased, horizontal mutual ties are increasingly strengthened, cooperation between states, communities and ordinary people is developing, the world takes on the importance of the most important factor in progress. At the same time, progress is a joint activity, an opportunity to agree and come to a consensus and thus achieve mutual enrichment of cultures and prosperity. This can only be achieved by a person who has not only a high educational potential, but also has the skills of practical communication with representatives of other linguistic cultures. This is achieved directly through the system of education and teaching foreign languages in it.

During the period of independence, in accordance with the decision of state bodies throughout Uzbekistan, including Karakalpakstan, a phased introduction of a new system of teaching foreign languages was carried out. The main emphasis was placed on the in-depth and ubiquitous study of foreign languages, especially English. Today, English is widely spoken in the world, wider than French, German, Spanish, Russian and Arabs, used as a means of international conversation. In many states, it is used as a native, second and foreign language, for example, English has a special place in seventy-five countries of the world, in nineteen countries it is a state language. In most countries, it is taught at school as the main foreign language, displacing other foreign languages. From the first years of independence, teaching foreign languages has become an important task of the state policy of our country. The attention paid by the state to the upbringing of the younger generation led to the development of the education system as a whole. Both the content of education, its goals and social tasks, and its structure, levels, types, forms, methods, means, infrastructure have undergone targeted reform. Thus, in 1992, the first Law of the Republic of Uzbekistan "On Education" was adopted, then, in 1997, it was adopted in a new version of the "Law on Education," as well as the National Training Program. The purpose of these legislative acts were to reorganize the structure and content of training based on the prospects for the social and economic development of Uzbekistan and its constituent part of Karakalpakstan.

Researcher D.D. Buranova, noting the special status of the Russian language in Uzbek society, writes that "after gaining independence, the expansion of international relations both from government agencies and from various enterprises and interpersonal relations led to the fact that the need for specialists who speaks foreign languages steadily began to grow. Among the foreign languages that took place in Uzbekistan, two main areas are traditionally divided: a) learning Western languages; b) teaching Oriental languages. Among Western languages, English, German, Spanish, Italian, Bulgarian, Polish, Czech, French and other languages are studied. To help the education system, there are such language structures as language courses at embassies, a wide

network of informal language courses, and special training programs organized by embassies for training and internship in many pressing areas of the country's economy." [1.416-419]

In accordance with the Presidential Decree No. PP-1875 "On Measures to Further Improve the System of Learning Foreign Languages" of December 10, 2012, from the 2013/2014 academic year, a phased introduction of a new system of teaching foreign languages began throughout Uzbekistan, including Uzbekistan. According to the decree, the main emphasis was placed on in-depth and widespread study of the English language. [2. (5630)]

The adopted resolution was the next step to improve the education system and integrate Uzbek society into the world community. Today it is already clear that in the context of the transition to the information stage of the development of a society based on information technologies and knowledge, education becomes the most important resource of socio-economic and political development. The introduced new didactic-methodological concepts, educational and methodological kits and other teaching tools increase the level of learning, including foreign languages.

Thanks to this, to date, the range of methodological innovations has expanded significantly. In addition to the traditional ones, which mostly still prevail in general education institutions, new methods have appeared (communicative method, intensive training). The expansion of the horizons of communication relations allows today to deepen intercultural ties and determines new prospects for educational and methodological tools for teaching foreign languages in the entire structure of educational institutions of Karakalpakstan. In the context of the problem of learning Western European languages, such as English and German, it is especially important to formulate the purpose of learning. As you know, the starting point in determining the strategic goal of learning is the social order of society in relation to the younger generation.

As our study shows, foreign-language education for almost the entire twentieth century consisted in high-quality possession of the subject. Then there was a turn from grammar and translation methods to the problem of practical mastery of a foreign language. However, the very concept of "practical knowledge of a foreign language" was specified and specified depending on the level of development of the methodology and the related goals of teaching the subject:

- mastering speech within a certain framework;
- formation of skills and skills of understanding other people's thoughts and expressing their thoughts (orally and in writing);
- development of speech skills in all types of speech activity;
- teaching communication in a foreign language in the unity of all its functions: cognitive, regulatory, value-oriented, etiquette.

Such dynamics of the development of the interpretation of the purpose of teaching a foreign language reflects the essence of the development of the methodology as a science and related areas of scientific knowledge. There is no single point of view on the problem of goal-setting among Methodists. The famous linguist L.V. Shcherba believed that in order to build a methodology for teaching foreign languages, it is important to realize the practical tasks that life in the field of knowledge of these languages and different types of this knowledge can be set for us. In his opinion, these tasks include:

1. The ability to correctly read, if necessary, and understand using the dictionary the titles of books, addresses on envelopes, parcels, the text of invoices, etc. This is necessary for certain categories of library employees, for communication workers, transport, for qualified workers of different industries.

2. The ability to express your desire and ask the simplest questions (possibly with slight inaccuracies), understand the answers to such questions. Such a skill could be called the "tourist language" if its scope was not actually much wider. When traveling abroad, this skill should be

combined with the ability to read and navigate all inscriptions, as well as newspaper headlines if possible.

3. The ability to accurately understand any non-artistic text of any difficulty, leaving only unimportant words incomprehensible and only occasionally resorting to the help of a dictionary. This skill is necessary for scientists, engineers, students, all those who need to monitor foreign literature in one area or another.

4. The ability to maintain a conversation on any topic, while making small mistakes, however, speech is quite understandable both from the point of view of phonetics and from the point of view of vocabulary and grammar. This skill is necessary for people forced to have more or less responsible conversations with foreigners. This skill is enough only if these people are not obliged to speak publicly.

5. The ability to competently write scientific and technical articles, business papers and letters may be necessary for the previous category of people.

6. The ability to freely and subtly understand the most difficult texts, by the way, fiction, newspaper and all sorts of others. It is necessary for writers, critics, literary publicists, politicians and, above all, teachers of foreign languages and translators.

7. The ability to write responsible documents, literary articles, etc. well is necessary for diplomatic workers and speakers in the press.

8. The ability to speak freely and absolutely correctly, from the point of view of phonetics, is necessary for diplomatic workers and all speakers in public. [3.112]

True, over the past time, this classification has undergone some changes, but, nevertheless, indicates that knowledge of the language may be dependent on practical needs and requests for social development. A distinctive feature in the history of teaching foreign languages in the context of the independence of Uzbekistan was the change in the status of the Russian language as a foreign language. Scientific and methodological literature indicates that the teaching of Russian as a foreign language is different from the teaching of the Russian language as a non-native language. Teaching Russian as a non-native language usually means teaching the language in national schools, where the native languages of most of the population are other languages, but not Russian. Changes were also made to the program of teaching the Russian language in the context of the independent development of our country. This includes an in-depth study of phonetics, grammar, as well as the lexical composition of the language, but still theoretical study gives way to the development of practical skills. The main one is the functional principle of studying Russian as a foreign one. As practice shows, at present it is important to teach students not only to master the basics of the Russian language, but also to teach them to communicate in the language being studied, to show interest, both within the framework of their professional topics and in various everyday situations. Students must not only understand the language being studied, but also correctly build their message in response, which will respond to the culture of the interlocutor. Today, the following methods are often used in the process of teaching students the Russian language: discussion method (dialogue, conversation), design method, listening method, role-playing method.

By summarizing the methods of teaching the Russian language as a foreign language, we can characterize the most common of them grammar-translation, audio-linguistic, communicative, etc. The study of the peculiarities of teaching and assimilation of foreign languages made it possible to identify *lingua* - the didactic potential of corpus of texts, in particular student, and the prospect of its use in teaching Russian as a foreign language. Teaching Russian as a foreign language is different from teaching Russian as a non-native language. Teaching Russian as a non-native language usually means teaching the language in national schools, where the native languages of most of the population are other languages, but not Russian. The main one is the functional principle of studying Russian as a foreign one. Students should be taught not only to

master the basics of the Russian language, but also to teach them to communicate in the language studied with enthusiasm and interest, both within the framework of their professional topics and in various everyday situations. Students must not only understand the language being studied, but also correctly build their message in response, which will respond to the culture of the interlocutor.

During the teaching of a foreign language, individualization of the educational process must be carried out at all stages in the sense that its depth and forms must be adapted to the capabilities of each student. The desire to put into practice the principle of a differentiated approach to the personality of the student, the desire of teachers to go beyond the outdated education system led to the emergence of new methods of teaching the Russian language with unconventional content. Summarizing the theoretical material, I would like to note that foreign languages (including Russian) are important for modern people in Uzbekistan and Karakalpakstan. This thesis has several reasons for goal-setting. Firstly, our society is developing, increasingly opening up to the world and absorbing all the best in world modern civilization. This process is only possible with a structured goal designation. The purpose of communication is to establish contact, persuasion of the interlocutor, carried out in the form of a conversation or dialogue. That is why the most priority direction of submission of educational material is lexical, and only then - grammatical and phonetic. Undoubtedly, the basis of such an activity should be oral speech. It is observed from the very first minutes of the lesson. In my opinion, the study of grammatical rules, memorization of words is only a means of mastering oral speech, since it is the best way to assimilate and consolidate any material.

Secondly, it is important to use a foreign language in an environment where our native language is not spoken. This is facilitated by role-playing games used in the teaching process, which are an active method of learning practice. They help in overcoming language barriers, significantly increasing the volume of speech practice. In other words, this is learning in the process of discussion. Today, there are many different types and forms of role-playing games in foreign language classes as a foreign language.

Thirdly, the development of economic relations, accompanied by a struggle for sales markets and raw materials, changes in the geopolitical situation in Central Asia and in the world as a whole, required quite wide sections of society to speak in foreign languages. In this regard, the social order of society to the school in relation to teach foreign languages is changing. The existing teaching methods in the past did not meet these requirements. Pedagogical science was not prepared either. In this regard, new to the board in the method of teaching foreign languages began to first develop practices and some methodologists without sufficient scientific justification. This new method was called "natural." The essence of the natural method was to create the same conditions when teaching a foreign language and apply the same method as when a child naturally learns his native language.

Of this number of methods, the grammar-translation method prevails, where grammar, translation, does not teach a living language, only a form of attention, does not pay attention to the content. Lexical and translation method - analysis and translation. Memorize words and remember grammar. The direct method gives direct learning of the word, the concept without the help of the native language. Forms the skills of speaking, reading and understanding foreign words. This method is used to learn a foreign language as a means of communication. Among other methods, we can point to Harold Palmer's method, which is based on the perception, analysis and memorization of words and concepts. He at one time taught the Japanese, during which he began teaching the language with an oral lecture. During the lessons, Harold Palmer told and demanded to remember words, a gradual complication of tasks. This technique often used a simple conversation, question-answer. He successfully applied the dictionary and grammar of his native language. There is a Michael West method in which learning through reading. It also uses a dictionary and native language. The oral introduction of the new material is due to the fact that students must hear good pronunciation and have the right role model in front of them. There is the Berlitz method, which

included several stages, including explaining new vocabulary using clarity, talking to the teacher with the audience, describing paintings by students, reading a worked topic on a textbook and a final conversation. As we pointed out above, the most important in the process of learning foreign languages (in the conditions of Karakalpakstan, this is English) is the mastery of speech development by students. The gradual and systematic formation of speech skills and skills represents the first stage of learning foreign languages. It is achieved as a result of students performing oral and written tasks, tests. An important stage is to control the knowledge and skills of students. Typically, comprehensive schools use forms of control such as individual and frontal questioning, interviewing, testing, and test work in oral and written form. Also with the development of new information technology today, teachers of general education schools mention modern teaching methods, such as audio-linguistic, audio-visual and comparative methods. For all diversity, at the present stage, the methodology distinguishes four main aspects: the educational practical aspect; educational aspect; educational aspect; a developmental aspect. The educational practical aspect is based on the need to master the foreign language as a means of communication and students should be able to use it orally and in writing. We are talking about mastering four types of speech activity: receptive - listening and reading, productive - speaking and writing, as well as the three aspects of the language associated with them - vocabulary, phonetics, grammar. The educational aspect of learning involves the formation of spiritual and moral principles in each student. And the educational aspect includes the acquisition of knowledge about culture of the country of the language under study, including literature, music, architecture, painting, history, knowledge about the structure of the language, system, character, features, similarities and differences with the native, interference. The developing aspect provides awareness of the means of expressing thoughts, how people pronounce, what words are used to nominate subjects, comparison and comparison of the phenomena of native and foreign languages, development of the sense of language, language guess, memory in all its types, logic (analysis, synthesis, comparison, conclusion), development of sensory perception, motivational sphere, ability to communicate, character traits such as hard work, will, purposefulness, activity, ability to learn. The issue of training is of great importance for improving all these aspects. It is well known that in the early 1990s, interest in the Russian language somewhat faded, but, nevertheless, the training of personnel - teachers of the Russian language in national schools, continued. A huge contribution to this matter was made by the Faculty of Russian Philology of Karakalpak State University (KSU) named after Berdakh and the Faculty of Russian Language and Literature of the Nukus Pedagogical Institute (NGPI) named after Azhiniyaz. In the 1995/1996 academic year, the Faculty of Russian Philology of KSU named after Berdakh became part of the Faculty of Romano-Germanic Languages (RGF), and in 2005 was merged into the Faculty of Philology, which also included the faculties of English Philology, German Philology and Uzbek Philology. Since 2014, this faculty has been transformed by the Faculty of Foreign Languages. Today, the faculty includes 5 departments: English language and literature, German language and literature, Russian language and literature, theory and practice of translation and between the faculty department of foreign languages. The faculty employs over 90 professor-teachers, of which 1 professor, 16 candidates of sciences, 10 senior teachers and over 60 assistant teachers. Among them, we can single out well-known representatives of the faculty, such as K. Ismailov, A. Kurbanbaev, O. Ibragimov, L. Khvan, G. Yeshimbetova, K. Obbaev, H. Dautzhanov, D. Mamirbaeva, A. Tazhieva, J. Kurbanbaev, Y. Kurbanov, A. Zhumamurat.

Among them, we can single out well-known representatives of the faculty, such as K. Ismailov, A. Kurbanbaev, O. Ibragimov, L. Khvan, G. Yeshimbetova, K. Obbaev, H. Dautzhanov, D. Mamirbaeva, A. Tazhieva, J. Kurbanbaev, Y. Kurbanov, A. Zhumamuratov, D. Bermuratov, A. Mambetniyazov, who have extensive ties with scientists from Russia, England, USA, Germany, Austria, Bulgaria, China and Israel.

The faculty trains specialists in the field of undergraduate philology and language training (English), foreign language and literature, philology and language training (German), philology and language training (Russian), translation theory and practice and specialists in the field of master's studies linguistics (English) and linguistics (Russian). In the 2011-2012 academic year, a new specialty for the training of highly qualified translators was opened at the university, in 2014, based on the order of the ministry, a department of theory and practice of translation was organized. Since the 2012-2013 academic year, the faculty has been studying Korean as a second foreign language.

Nukus State Pedagogical Institute named after Azhiniyaz was again formed in 1990 and from this year the faculty of Russian language and literature continued its work. Since 2000, the faculty has continued its activities as the faculty of Russian-English philology, since 2004 as the faculty of foreign languages. Currently, 81 teachers work in the departments of Russian language and literature, English language and literature, foreign languages, of which 1 professor, 11 candidates of sciences and associate professor, 2 Ph.D. The faculty has 1,053 students. The faculty trains bachelors in the specialties "English language and literature," "Russian language and literature," "Russian language and literature (in foreign-language groups)." Also, from the 2018-2019 academic year, the magistracy began training personal in the specialty "Russian Language and Literature."

In general, the transition to new programs caused a lively discussion of the problems of content and methodology of school education both among scientists, methodologists, teachers, and among parents, the general public. As our study shows, there are various techniques that teachers use to teach foreign languages in national schools, for example, methods of teaching speech interaction. As the experience of the leading teachers of the republic shows, an important role in learning is played by the purpose of learning - this is what they strive for in the process of learning foreign languages, this is an ideally planned result.

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Rezyume: Ushbu maqolada mustaqillik davrida davlatimiz qaroriga muvofiq butun O'zbekistonda, jumladan Qoraqalpog'istonda ham chet tillarni o'qitishning yangi tizimini bosqichma-bosqich joriy etish haqida so'z etilgan. Muallif Qoraqalpog'iston maktablarida kadrlar yetishmasligi,o'quv dasturlarini shakllantirish va o'quv uslubiy adabiyotlarni jamlash bilan bog'liq vaziyatni tahlil qiladi.

Резюме: В данной статье рассматривается о периоде независимости, в соответствии с решением государственных на всей территории Узбекистана, в том числе и Каракалпакстана осуществлено поэтапное внедрение новой системы обучения иностранным языкам. Автор анализирует ситуацию с дефицитом кадров в школах Каракалпакстана, формирование учебных планов и составление учебно- методических литературы.

Kalit so'zlar: Chet tillar, programma, shakllanish, ingliz tili, rus tili, nemis tili.

Ключевые слова: Иностранные языки, программа, формирование, английский, русский, немецкий.

ON SOME ISSUES OF ASSESSING STUDENTS' COMMUNICATIVE SKILLS

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Summary: *The article presents the importance for an emphasis on assessing students' communicative skills. It is also devoted to the specifics of assessing students' acquisition of a foreign language, reviews recommendations which are given in the process of describing the methods of working on the language material.*

Keywords: *continuous assessment, language acquisition, knowledge assimilation, communicative skills.*

The issues of assessing students' learning of a foreign language have received significantly less coverage in the methodological literature in comparison with other problems.

Moreover, in a number of manuals this important problem, in fact, was not considered. Thus, in the methodological manuals of I. V. Rahmanova. I.D. Salistra has no special sections or paragraphs, devoted to the specifics of assessing students' acquisition of a foreign language: only some recommendations are given in the process of describing the methods of working on the language material. The main attention in these and other textbooks was paid to the control of knowledge and skills in dealing with language materials, which is also typical for the work of V.S. Tsetlin, the textbook of B.F. Kordorf. [4]. Thus, V.S. Tsetlin distinguishes three types of assessment: primary, subsequent and final, stating at the same time that these terms are all conventional and imperfect. The essence of the first test is to establish the quality of knowledge assimilation by lexis and grammar in an separated form, the second is to check the ability to use the studied language material, and, finally, the third is to check the development of skills to use foreign language means in oral and written speech without any special control assessment.

Thus, up to the mid-sixties the main object of checking the success of language acquisition was knowledge and ability to use language materials, and the criterion of acquisition was considered to be the correctness dealing with language units.

Increasing attention to practical knowledge of a foreign language by students in the last century made methodologists change the approach to the objects of assessment. The main objects of assessment of students' learning a foreign language are communicative skills. So, in the collective monograph "General methodology of teaching foreign languages in a secondary school" for the first time the main attention was paid to controlling communicative skills in speaking, reading and writing, taking into account the specifics of separate types of speech activity. [2]

It was shown for the first time that the main object of control was the implementation of the act of communication in oral or written form. Therefore the basic criteria - the correctness of the statement in oral and written form or receipt of information as a result of understanding of the spoken statement or reading the text. Correctness of the act of communication is considered as an additional criteria. This point of view was developed in subsequent works and became widely accepted in methodology.[1].

The essence of this approach to the objects and criteria of control is as follows:

1. The main object of assessing are the oral skills of students, and the reception of the language material is the object of current of the language material is the object of continuous assessment.
2. The basis of the assessment should be positive criteria for determining the skills in speaking (monologue and dialogic speech), for which we should refuse to consider oral speech as a sum of skills in using the language material.

3. When assessing students' learning of a foreign language we should focus not on absolute appropriateness, but on the relative correctness of speech and link the evaluation not with linguistic errors, but with the implementation of communicative act, the solution of communicative task.
4. The indicators satisfying the requirements for the statement of secondary school students are: a) the ability to adequately express their thoughts in a given speech situation, b) the relative correctness of the used speech patterns and their combinations.
5. When assessing receptive skills of listening and reading comprehension of foreign language speech attention should be paid to the depth of comprehension of the given material.
6. Assessing receptive speech skills allows quantitative measurement of their indicators. The propounding of communicative competence as the main practical goal of teaching a foreign language and the development of the Temporary State Educational Standard, which includes minimal requirements for students, aroused the need to identify different levels of communicative competence as objects of assessment.

Communicative skills are ideal objects of assessment. They are found in the specific speech activity of students - "the activity of communication", as M.L. Weisburd noted. However, so far there is no point in solving the problem of distinguishing material objects of assessment. I.L. Bim made a definite attempt in this direction. She managed to fix the speech actions which learners master at this or that level of communicative competence, and describe in sufficient detail of the progress in the formation of foreign language communicative skills.[3].

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Rezyume: *Maqolada talabalarning muloqot qobiliyatlarini baholashga e'tibor qaratish muhimligi muhokama qilinadi. Shuningdek, talabalarning chet tilini o'zlashtirishlarini baholashning o'ziga xos xususiyatlariga bag'ishlangan va til materiali bilan ishlash jarayonida berilgan tavsiyalar ko'rib chiqiladi.*

Резюме: *В статье рассматривается важность акцента на тестировании коммуникативных навыков учащихся. Также посвящена специфике оценивания усвоения студентами иностранного языка, рассмотрены рекомендации, которые даются в процессе работы с языковым материалом*

Kalit so'zlar: *joriy nazorat, horijiy tilni egallash, til biliml ko`nikmalarini assimilyatsiya qilish, kommunikativ qobiliyatlar.*

Ключевые слова: *Текущий контроль, овладение языковыми навыками, усвоение знаний, коммуникативные навыки.*

THE PRINCIPLE OF RENEWAL OF POETIC FORM

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Summary: *This article examines the principles of renewal in the works of new Uzbek literature, in particular, Kamil Khorazmi, Muqimi, Furqat, and Zavqilar. Updates in the poetic form of their works are revealed on the basis of analysis.*

Keywords: *poetics, form, aruz weight, finger weight, murabba, melody, tortkil, song, social spirit, folk melody*

It is known that the representatives of the new Uzbek literature, in particular, Komil Xorazmiy, Muqimiy, Furqat, Zavqiy, created mainly in the direction of poetry. The literary prose and dramaturgy genres that appeared in the later stages of the development of our literature are not found in the literature of the Enlightenment. Enlightenment poets mostly wrote works in sub-types of poetry. There are certain historical reasons for this phenomenon, of course. The most important of these reasons is that poetry has developed widely in our classical literature, and it was convenient for enlightened poets to continue existing traditions in the field of poetry. In addition, poetic works, especially ghazals, are quickly absorbed among the masses, and because the answer to the high literary taste of the people is now an literary form, enlightened poets turned to it more often. Therefore, enlightened poets wrote works in sub-types of poetry: ghazal, mukhammas, musaddas, murabba, masnavi, fard, partially tuyuq and rubai genres. If we do not take into account Komil Xorazimiy's prose translations, we can see that all great poets of the Enlightenment - Muqumiy, Furqat, Zavqiy, Avaz O'tar - created in these types of poetry. This, in turn, means that Enlightenment literature is limited to a certain extent in terms of genres. Along with the poetic types of the past poetry, the literature of the Enlightenment used its weight (aruz), rhyme, and literary imagery. It should be said that the use of a number of elements of the poetic form characteristic of the classical literature of the Enlightenment literature was, without a doubt, temporary, transitory, and at the same time an obligatory phenomenon. Because every form is always behind its content. It can be said that there is no time when the form is fully worthy of the content.

For example, although the traditional forms of classical literature (ghazal, masnavi, mukhammas, etc.) were used in the work of enlightened poets, these forms underwent a certain evolution and change in terms of content, and the form of classical poetic types was preserved. but the content has changed. So, enlightenment is not the same as the ghazal, mukhammas, etc. in classical literature, for example, the ghazal, mukhammas, etc. in the poetry of the 15th century, but a new type that has undergone a certain evolution. For example, let's take Muqimiy's works "Hajvi Xalifayi Mingtepa", Avaz O'tar's "Xalqim", "Sipohiyarga". All these works are written in ghazal form. But they cannot be compared to 15th century ghazals in terms of their ideological and literary characteristics. Although these ghazals are similar to the 15th century ghazals in terms of their form (stanzas, rhyme, rhythm), they are far away from them in terms of theme and ideological orientation, enriched with new content. This situation can also be seen in mukhammas. For example, Zavqiy's "Ajab ermas" and Muqimiy's "About Hapalak Village" can't be compared to the 15th century in their ideological and literary aspects. Such examples can be cited from all poetic types in the literature of enlightenment. In these examples, it is clearly seen that the poetic genres of the 15th century abandoned their dominant romantic-lyrical theme and traditional style in the work of enlightened poets and acquired a new content and a new spirit. In the narrow-intimate lyrics of the Enlightenment literature, this evolution, although not as clear and obvious as in satire or poems written on a social theme, is, in any case, a certain change in their ideological-literary features

happened. Because the new creative and aesthetic principles of Enlightenment literature, ideological foundations such as Enlightenment and patriotism determined the essence of lyrics and created new ideological and literary features in it. So, Enlightenment poets differ from classical literature in their attitude to traditional poetic forms. While the representatives of classical literature adopted the traditional poetic forms, preserving all their ideological and literary features, and mastered the content and form of the poetry of the 15th century, the poets of the Enlightenment approached the issue creatively, enriching them with new qualities, they moved the literary life one step forward, developed it. Undoubtedly, enlightened poets were inspired by the style of poets such as Makhmur, Gulkhani, Haziq, who were their immediate predecessors in this field, and continued it. Comedy, satire, and humor in the literature of the Enlightenment influenced the creative method defining the essence of the literature of the Enlightenment as the main and leading genre in the literature of this period. This enlightenment was the most important feature of satire and humor in literature. Another important feature of Enlightenment literature that distinguishes it from other periods of humor is that the humor of this period began to reflect life through the images of a person who is the main object of literature. Reflecting life in the activities of typical characters acting in typical conditions is one of the signs that literature has reached adulthood. For example, Hakimjon and Sultan Ali Xoja in Muqimiyy's satire "Tanobchilar", Hodikhoja in "Moskovchi boy ta'rifida", "Voqeai Viktor" and others are personified characters embodying the essence of a certain social phenomenon. A travelogue is also a new genre in enlightenment literature. In the history of literature, there have been no such works describing travel memories in poetic form. In general, travel and travel memories are often found in history. However, almost all of them are works of a memoir character and have different literary stylistic features. Muqimiy was the initiator of the creation of the travelogue genre in Enlightenment literature. Muqimiy described the impressions of his travels in different directions (Qoqon - Fergana, Qoqon - Shahimardan, Qoqon - Isfara) in his work entitled "Travel". Muqimiy's "Travel" was widespread and popular among the people at that time. This work still lives in the nation in various versions and is performed by art lovers. Muqimiyy's "Sayohatnama" published the views on time. It is known that the poet Zavqi also wrote a "Travel" in the spirit of Muqimiy's "Travel" while keeping its weight, rhyme, and clause system. There is information that the poet Tajalli, who accompanied Furqat during his trip to India and China in 1892, also wrote a "Travel" in response to Muqimiyy's "Travel". Tajalli's "Travel" has not reached us in its entirety, only some fragments of it have been preserved. There is information that Furqat also wrote "Travel". Thus, a certain genre was born and formed in the literature of the Enlightenment, which is characterized by the same spirit and common literary features written on the same topic - the genre of "Travel". Reminiscences of travel are a common theme in all of these works.

Another important new genre in Enlightenment literature is the letter genre. Writing letters in poetic form is also found in the past periods of our literary history. For example, Alisher Navoi's poetic letter "Hasbi Hol" sent to his friend Said Hasan Ardasher from Herat is an important example of this genre. But not many and valuable letters have been preserved from the past times, as in the case of enlightened poets. Enlightenment poets used to write poetic letters along with prose letters. Muqimiy's 10 poems ("Assalom", "Minnatdoeman", "Javobi ruq'ayi Nodim Namangoni", "Nuktadonlar assalom", "Salom, ey mehribonlar", "Salom, ey yoru oshnolar", "Bor erdi", "Payg'omi manzuma", "Ul husn sultoniga salom"), the poetic letter has reached us. Furqat's letters written during his life in Fergana and Tashkent, as well as his poetic letters from Turkey, India and China during his travels abroad, are known and famous. The important part of the matter is that these letters are not simple "congratulatory greetings", but literary works containing valuable lines about the poet's mood, feelings, and inner experiences. Thus, the letter genre emerged from the correspondence between Enlightenment poets. These poetic letters are an incomparable source for studying the life and work of Enlightenment poets, as well as for investigating the literary life of

that time. Uzbek poetry of the end of the 19th - beginning of the 20th century researches in the form of research are distinguished by their reformatory nature, as a result of which a new Uzbek poetry was created. "Researches in the chapter of form are visible first of all at the rhythmic-intonational level of the poem. It would be correct to say that these researches were carried out in the framework of Aruz. Here, I am referring to the widespread use of poetry measures and forms of poetry that are closest to the lively language and melodies of folk art. For example, Muqimi's lyrics. The melody of the murabbas, which has an important place in the poet's heritage, is very close to folk songs. Let's pay attention the murabba "Qildi shaydo ko'zlarim" ("Your eyes attractive me") that matches the tone of his folk songs.

Despite the fact that it is written in Aruz, it seems that the given murabba band is fully compatible with the 11-syllable 6 + 5 balanced finger measure. The same thing, I think, is the reason why the orderly repetition of long and short hijas in several places of the murabba goes unnoticed. In our opinion, the process of literal renewal of poetic forms in Uzbek literature began with the appearance of poems in the form of folk songs, in addition to changes in aruz and rhyme. The phenomenon that led to the appearance of poems in the form of folk songs, which are completely unique in terms of weight, rhyme and stanza structure, and which are sharply different from the form of poems with traditional aruz weight, is, of course, the content there was a renewal, a change in the function of literature, a weakening of the tension in the rules of classical poetics. Such poems were created by Hamza, Abdulla Avloniy, Cholpon; it was even arranged by Hamza in the form of several complexes.

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Rezyume: *Ushbu maqolada yangi o'zbek adabiyoti namoyondalari, xususan, Komil Xorazmiy, Muqimiy, Furqat, Zavqiylar ijodidagi yangilanish tamoyillari tadqiq qilingan. Ular ijodidagi poetik shakldagi yangilanishlar tahlillar asosida ochib berilgan.*

Резюме: *В данной статье рассматриваются принципы обновления в произведениях новой узбекской литературы, в частности Камиля Хоразми, Мукими, Фурката, Завкилара. На основе анализа выявляются обновления в поэтической форме их произведений.*

Kalit so'zlar: *poetika, shakl, aruz vazni, barmoq vazni, murabba, ohang, to'rtkil, qo'shiq, ijtimoiy ruh, xalqona ohang*

Ключевые слова: *поэтика, форма, вес аруз, вес пальцев, мурабба, мелодия, торткиль, песня, светский лад, народная мелодия*

THE PHRASEOLOGISMS UGUZ WITH NEGATIVE CHARACTERISTIC OF ITS TIME

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Summary: *In this article, the "Koshkupir Shah of the Khorezm Region" was founded. Types of phraseologisms with negative color were analyzed. Examples of this noisy oral speech are also given.*

Keywords: *dialect, uguz, phraseology, phraseologism, vocabulary, science, synonym*

Language is the main force for the development of society. Understanding a person's identity, his role in solving such high feelings as national pride, pride is a completely inappropriate. President of our country Sh.M. Mirziyoyev noted that "the Uzbek language, which is a bright and invaluable product of the centuries-old cultural, scientific, educational and artistic thinking of our people, intellectual potential, is one of the richest and most ancient languages in the world," and the Uzbek nation deserves not only to establish its position in society, but also the most developed people desire to take a place - that's all. Raising the status of the native language to the level of state policy served as the basis for the further growth of the spiritual and educational potential of our people. One of the important tasks facing science, in particular linguistics, is the preservation, scientific analysis and achievement of subsequent generations of Lisonian wealth in their native language, combining the centuries-old experience of each people. After Uzbekistan gained its national independence, the Uzbek language received the status of the State Language. After that, the need to study local dialects of the Uzbek language, especially in various areas, in a serious study of ethnographic vocabulary, intensified. On theoretical issues of Uzbek phraseology, first E.D. Polivanov, then Sh. Rakhmatulaev, Y.A. Pinkhasov, B. Yuldoshev, Abdimurod Mamatov, Abdugafur Mamatov, A. Isaev, A. Rafiev, M.S. Odykova, K. Kadayev, A. Khakimov, Sh. Usmanov, K. Bozorbayev, B. Zhuraev, Sh. Almamatova, M. Vafoeva, G. Adashulloeva and several other linguists have been published. Emotional expressiveness means feeling and attitude. Some words in Uzbek also reflect the attitude of the speaker, sometimes the attitude is not felt. In this sense, the words will be double:

1) emotionally expressive red-free words;

2) emotionally expressive colorful words. In fuzzy words, only the concept, meaning is expressed. The filter ratio is not felt. Such words are called colorless or neutral words. Colorful words also express the speaker's attitude. By the nature of the relationship, colorful words are double:

a) positive colorful words: Czech, Kamol.

b) negative colorful words: babar, Turk, aft. We know that methodical coloring in words reveals our opinion on how much we consider positive or negative meaning. Phraseology in local dialect has been used since ancient times, its composition is a durable and fundamentally sharp. Without excluding such a combination of words from the linguistic composition, the people reached a generation. Phraseological phrases reflect either positive or negative scores, expressive features, and the speaker's emotional relationship to something or subject, a person. Uguz, as in the literary language. Such expressive paint is mainly characteristic of the artistic and speech style, but due to the fact that it refers to the spoken style, we describe phrases with positive and negative color in the style of literature.

In particular, the phrase "**Go'zzi kambog'olni otizidin**" is used in a negative way and is used in relation to a person with a naked eye who is re-typing diamonds in this Shevin language. There are variants with a negative color: "**Go'zzi chonoqinnon chiqodi**", "**go'zzi po'stinni yirtiqidin**" is applied to a person who does not belong to anyone.

“**Qon yolog'on qonjiqdin**” is also used in a negative sense. We know that in the animal world, the word wing is used in a rough sense in relation to female animals. It is when the beast is fed meat that its oysters are stained in the blood of the meat. In Khorezm hair to beat.

“**Tars qurilg'on tondirdin**” means he disagreed. This phrase creates negative paint. An important side of this phrase is that it is applied both to people and to objects, and to people "standing" in an uncoordinated place.

“**Ita soyo barmidi(ita hayri deymidi)**” to a man who doesn't touch anyone.

“**O'yinnan ko'pirni teyi yoxshi**” by the word "daydi." (From this comic spoken word)

“**Siqib suvingni ichadi**” the word "puts to a harsh test" means "haunting." However, the use in the sense of torture does not provide for physical, but spiritual persecution. Mn: Until you read this mentor, the arc drinks water. (From this comic spoken word) the word "elephant" can be used in reference to a person who panics about what is not, and synonymous with the word "elephant from Pashsha" in Uzbek literary language. Sheva from oral speech)

“**Cholo eshitib, chotmoni yiqodi**” is used in relation to a person who panics about what is not, and may be synonymous with the phrase "Elephant from Pashsha" in Uzbek literary language. Sheva from oral speech). Also, "Keep the donkey's face derisidine" in some cases means that this phrase, in Uzbek literary language there are such synonyms as "Face tolerates," "Face tolerates." For example: If she herself were a girl, I would keep a donkey leather, then this did not affect (in Chokupir).

The phrase "**Eshaki tushoqino loyiq**" expresses worthy and worthy meanings. This verbal unity is tantamount to the phrase of Uzbek literary language "Uzukka laid her eye," but unlike each other, the version of this phrase in Uzbek literary language is used in a positive way, and the version of dialect in a negative sense: Everyone knows that the legal girl, Nargiz, Masur received. The moon itself deserves a vilo donkey. (in Chokpir) The phrase "**Pishik eti yegan**" characteristic of this miracle expresses vivid, satanic meanings. It is noteworthy that this phrase in Uzbek literary language, which may be synonymous with the phrase "Licked Elon," was used only in relation to the inhabitants of Khiva district and the city of Khorezm region. The phrase "Fiery Light" means stealth, a fearless botinmak, and its synonym in Uzbek literary language is "Disappointing".

Thus, the expressive - evaluative color of a phrase is not always related to its functional and methodological nature, but to a certain extent contributes to the methodological nature of the phrase. Functionally and methodically expanding words gives good results when all the above criteria are objectively taken into account.

Among the above criteria, the criteria of semanticity, assessment and effectiveness of the internal form of expression in determining the belonging of the expression to the usual style of speech plays a decisive role. This is especially noticeable in noise versions of words. After all, Uzbek dialects are local manifestations of Uzbek language, the study of which is of theoretical importance for science, has practical significance for the future teacher of language and literature.

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Rezyume: Bu maqolada o'g'uz lahjasining Xorazm viloyati Qo'shko'pir shevasi asos qilib olingan. Ushbu shevadagi frazeologizmlarning salbiy bo'yoqdorlikka ega turlari tahlil qilingan. Shuningdek shu sheva og'zaki nutqidan misollar keltirilgan.

Резюме: В этой статье рассматривается «Кошкупирский шах Хорезмской области», проанализированы типы фразеологизмов с отрицательным цветом. Приведены также примеры этой шумной устной речи.

Kalit so'zlar: sheva, o'g'uz, frazeologiya, frazeologizm, leksik, ilm, sinonim

Ключевые слова: фразеология, фразеологизм, лексика, наука, синоним

THE IMAGE OF HISTORICAL FIGURES IN UZBEK

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Summary: *The article deals with the works of literature play which is a special role in mastering knowledge about historical employees. Because literary works are a novel, passages, stories, drama, stories and poems that took place in the distant time, and the image of those who lived at that time comes to life and impresses. This article will discuss the presentation in Uzbek works of the image of historical figures.*

Keywords: *a novel, work, a story, a historical personality, literature, humanity, talent.*

Introduction

Novels such as “O‘tgan kunlar”, “Mehrobdan chayon”, “Navoiy”, “Yulduzli tunlar”, “Ulug‘bek xazinasi”, “Javzo” give a clearer idea of life of our ancestors than the works of any scientist, straw miner. Because these works vividly show a picture made with symbols characteristic of time and space, as well as muscles.

Research methodology and empirical analysis

Sakkoki is one of the largest figures in Uzbek classical literature before Navoi, his work made a significant contribution to the development of Uzbek classical literature. Based on this, we think that he was carefully studied and creatively fed from the rich folk art, as well as the works of his predecessors. Sakkoki was also the ancestor, a talented lyric poet who carefully studied the works of Uzbek and Persian poets. They used creativity. Indeed, observing the poet's work, we see that he carefully studied the sources of Uzbek and Persian languages and used them in his works. A particularly great influence on Sakkoki's work was folk oral creativity. Sakkoki's poem contains images of historical figures, interpreted in connection with religious concepts, which served as the basis for the artistic contemplation of his gazelles, as well as the attractiveness of his language. Studying poetic gazelles, Iso alayhissalom, Xizr, Farhod, Sulaymon, Layli, Majnun and many other similar historical figures, pointing to the legend and information about literary heroes, outstanding qualities and qualities inherent in the character of the lyrical hero We see the image. One of the images of historical figures interpreted in our classical poetry in connection with religious concepts is the image of Iso alayhissalom. It is known that Jesus, like all prophets, was born not from his parents, but from Tanho's mother, that is, from Bibi Mariam, about which Alisher Navoi writes: “Muqarrardurkim,, Iso (a.s.) has no father. Mariam Jabroil (a.s.) was pregnant, and at this time Baytulmukaddasdin came out and lost weight. People, having learned about this case saw him and began to say loud words. I will finish above. Iso (a.s.) gave no answers. After that, the country became cloudy and could not say a word. Upon learning of Mariam, Habib Najjorkim, disgrace, Jesus (a.s.) went to Damascus. Iso (a.s.) was paid until the age of thirteen. And then the miracle of Jesus (a.s.) became a cubic threshold.[1.29]. In this regard, the question arises of which literary laws did the artistic symbol of Jesus Christ find its ideological and artistic reflection in the poetry of the East? Yet it is no coincidence that the artistic image of Iso Alaihissalom has taken a strong place in our classical poetry, his feelings such as the resurrection of death, the civility of language and spirit, the symbol of freedom of sin, causing business creators to turn to themselves and over and over again. The theme of Islam and the Quran created in Uzbek literature a distant essence of the treatise of the image of historical figures. In Islamic literature, the image of historical figures is described on the basis of criteria such as eloquence, beliefs, good deeds, human responsibility to the Creator. Therefore, the literature of Turkic people in the regions of a single Islamic culture played an important role and influenced literature. In the 1920s, the outstanding Uzbek artist Aburauf Fitrat made great achievements in the development of the genre of historical drama. During these years,

his dramas "Temur sag'anasi", "Abulfayzxon", "Arslon", "Shaytonning tangriga isyoni" were printed. It is important for us that the hero of the drama Temur Sagana appeals to the spirit of Sahibkiran seeks him comforting. Thanks to the image of the great man who left a deep mark on the history of mankind, the concern of the spirit of Amir Temur about the part of the Turkic people who in those years were blessed by his future was expressed. Thus, Vitrat's drama "Temur Sagana" allowed through the image of Sahibkiran to overcome the urgent problems of our time, to present the future of the Motherland and the people. In the work of the major Uzbek writer Oybek, the image of Amir Temur occupies a special place [8.102]. In some places of the novel "Navoi," Adib gives subtle hints of the greatness and glory of Temur Saltanat. And at the scene of the novel, he cannot hide his passion for Amir Temur. Moreover, when the captured Mumin Mirzoni came to Muzaffar Mirzo, this attitude was expressed in the dialogue between them:

- There was another way, said Muzaffar Mirzo, one of the kinds with which he joked, if you hung your sword around your neck and came to me yourself, he said: "You would be gracious to me. A.Oripov, M.Jalil, B.Ahmedov, O.Bo'riev, Muhammad Ali, To'ra Mirzo, Ye.Berizikov, O.Yoqubov poets such as the poet created works reflecting the life of Sahibkiran, his impeccable struggle in the way of building a powerful state. Even though these works are on a diverse artistic level, but they complement those gaps that have been "white" in our literature for years, they teach the younger generation to appreciate the Motherland, to love and to be proud of their people. One of these works is the novel-chronicle of the historian B. Akhmedov "Amir Temur." From the point of view of its genre affiliation, the work is especially distinguished by historical sources, a wealth of information, simplicity and nationality of the language, a deep combination of artistic analysis with scientific analysis. Each event described in the work is based on a specific historical source. The author did not aim to create an artistic character, highlighting one of the directions from the life and activities of Temur, he decided to conduct such large-scale artistic research, covering his entire life and activity. Due to the fact that Boribay Akhmedov's novel "Amir Temur" is a work of art that embodies life reality, a promising period was added to Uzbek theme. The novel is valuable in that Amir Temur artistically reflects the years of turbulent life, socio-political events that took place in Turonsamin. At the same time, this work is one of the steps in the history of Uzbek reinforced concrete. Summing up, Boribay Akhmedov's novel "Amir Temur" is a phrase in which the Uzbek temurnoma describes a kind of independent period of perspective in reflecting the centuries-old life and activities of Amir Temur. The novel by Adiba Risolat Khaidarova "Javzo" also reflects the idea of the life of Temurists and Shaibonians, while the rulers are mudarists, traders, strongmen, peasant sheikhs, as well as families, women's dreams of that time "plays an important role in acquiring the concept [4.30]

In his work, he skillfully covered not only historical things, but also the lifestyle of women of that time, thoughts about family, evolution in the world of psyche, dreams. The novel "Javzo," in particular, the period after Hussein Baika, allows readers to imagine and feel their knowledge of historical figures, such as his children Muzaffar Mirzo, Badiuzzamon Mirzo, Hadichabeg, Shaibonihan, as well as the complexity of the environment in which women of that time lived. We are talking about the education of our society, this is what we are talking about, because our knowledge is the direct influence of our literature on the concepts of society and on the process of registration. It follows from this that the knowledge of society members about their history, "the idea of their historical adventures, the concept of history" is formed and developed not on the basis of scientific research, but on the basis of works of literature, such as a novel, in part, a story. Risolat Khaidarova's novel "Javzo" is the most striking representation of the historical figures of Shaibonihan and Khadichabegim. " Hussain Boiboniyhan, Muzaffar Mirzo and Khadichabegim in this novel correspond differently to historical reality. The authenticity of the work begins with how, after the death of King Hussein Baikaro, his children Badiuzzamon Mirzo and Muzaffar Mirzolar left their citizenship and fled, and Shaibonihan approaches the hands of the conquest of Hirota and

describes a prosperous situation with the population. "Shahi Bashirkat (Bashkir Shahi - Shahi ruling on a partner basis. After the death of Hussein Boyi, Badiuzzamon Mirzo was to take the throne. Nevertheless, Muzaffar Mirzoni, like Beidiuzzamon, would have to go to the throne. Thus, the brothers were called Bashkir princes), one of whom fled to Kandahor, the other to Astrobad, in the city of reign". In the novel "Javzo" Adiba Risolat Khaidarova managed to confidently describe the lifestyle, dreams, spiritual world of her women in Temurian times. In the work, Karakuzbegem's beloved life partner Muzaffar Mirzo emphasizes that galayons in the dark do not give him peace, cannot believe in this reality, and gam in the dark, depicting anxiety, gives impetus to the life of the hero of the work. If Shaibonihon defeats Hirota, he will reflect on what will happen next, and in his language he is concerned that he is approaching him. Then he said:... "Sultan Hussein Boycarogina could come to Shaibonihon! It's not like the father of one of the shahes."

Also, this period corresponds to the words described by the mother of Karakuzbegim, without looking at the life path of palace women and their fate. That is: "Women prone to fame will always have short. One of the historical figures illuminates the image of Hadichabegem with excellent skill. When creating this image, Adiba tries to reveal, relying on historical reality. Sultan Hussein, as the beloved wife of International Hadichabegim, is also close to historical reality. In the work, Karakuzbegim's mother Hussein proves our opinion on the language of his beloved sister Boycott. "... chewing gum of a woman without guardianship. Because Hedichabegim Sultan Husayndek.... " Among the palace women, there was high happiness in getting into sight and becoming his favorite. Such happiness and luck were entrusted to my Hadichabeg. In any period, a woman's happiness is that she has a favorite side, a bachelor, and feels like someone needs it.

CONCLUSION AND DISCUSSION

As the Spanish philosopher José Ortega y Gasset stated: "The history of any art is a series of attempts to express one side of the human heart. The same distinguishes it from other arts. These attempts form such a curved line that art, like the light axis of the kamalaka, strives for its goal. This moment on the horizon of suicide indicates the direction, essence and meaning of any art". In reality, the creator, transferring his bonds to his word in the heart, skillfully illuminates dreams, aspirations, noble goals of man in his heart without any time or space. According to literary scholar Bahodir Karim, "In our opinion, an order on the perfect interpretation of a work of art takes place; it always contains controversial points, open fields." [2, 14]. Therefore, a work that can serve as the basis for themes is included in the palace of mature works. This indicates that the writer owns his talent, talent and the art of the word.

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Rezyume: Tarixiy xodisalar haqidagi bilimni o'zlashtirishda adabiyot asarlari alohida rol o'ynaydi. Chunki adabiyot asarlari – roman, qissa, hikoya, drama, doston va she'rlarda olis zamonlarda bo'lib o'tgan voqealar, u paytlarda yashagan kishilar qiyofasi jonli va ta'sirchan gavdalaniriladi. Ushbu maqolada o'zbek asarlarida tarixiy shaxslar obrazining namoyon bo'lishi muhokama etiladi.

Резюме: На этом статье рассматриваются произведения литературы которые играют особую роль в овладении знаниями об исторических сотрудниках. Потому что литературные произведения - это роман, отрывки, рассказы, драма, рассказы и стихи, происходившие в далёкое время, и образ тех, кто жил в то время, оживает и впечатляет. В этой статье будет обсуждаться презентация в узбекских работах образа исторических деятелей.

Kalit so'zlar: roman, asar, doston, hikoya, tarixiy shaxs, adabiyot, insoniylik, ijod.

Ключевые слова: роман, произведение, рассказ, историческая личность, литература, человечество, талант.

COMMON SUBJECTS IN THE CREATION OF ABDULLA ORIPOV AND IBRAYIM YUSUPOV

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Summary: *This article examines the issue of literary influence in Uzbek and Karakalpak works. Common images are analyzed on the example of the works of Abdulla Oripov and Ibrayim Yusupov. National and universal ideas were revealed through the works of the great representatives of the two nations.*

Keywords. *Poetics, creativity, influence, national, universal, world, A. Oripov, I. Yusupov, image, subject, idea, form.*

In the field of world literature, extensive research has been carried out on the works, contributions to national and world literature, literary heritage, ideas of universal importance, and creative laboratory of extraordinary great leaders of a particular nation. In particular, it is urgent to conduct a comprehensive study of the poetic thinking process of artists, poets, writers who are recognized as a phenomenon in Uzbek literature, whose works reflect the identity of the nation, and whose literary-ethical, moral and creative concepts changed the essence of the literature of the next period is one of the issues.

Turkic peoples, including Uzbek and Karakalpak literature, occupy a special place in the world literature. This literature, like the history of the entire nation, is distinguished by its richness and antiquity. The past of the Turks, the way they traveled as a people and a state, the sometimes calm and sometimes conflicting situations in the way of life and thinking, certainly found their expression in the examples of literature. Thus, motifs such as images formed as symbols of the people, lines consisting of emotional experiences, the desire for freedom and perfection, striving for truth and truth, calling for the salvation of humanity became the main characters of national literature. In addition, as a result of enjoying the experiences of world literature, the use of new types and genres in Uzbek literature created a basis for changes in the nature of the creator and work.

A comparative study of the essence of the lyrics of Abdulla Oripov and Ibrayim Yusupov, which embodies the personality and talent, and determining their literary heritage is one of the urgent issues of today's literary studies. One of the important tasks of comparative literary studies is to research the common themes reflected in the works of Abdulla Oripov and Ibrayim Yusupov, the images and genres used by the poets, and the innovations they brought to literature. However, the lyrics of two great poets are an extremely wide source of literary vision of the nation, society's history, aesthetic ideal.

Ibrayim Yusupov's work is a bright page in the history of Karakalpak literature of the second half of the 20th century and the beginning of the 21st century. As a child, he got to know examples of Karakalpak folklore, representatives of Eastern literature and our classical literature, and during his student years, he got to know the masterpieces of Russian and world literature, diligently studied the secrets of art in their works. The poet, since the publication of his first work "My Country" poem, until today "Lyrics of Happiness", "Kunchikar Passenger", "Thoughts", "Yetti Navo", "Field Dreams", "The heart drinks water from the heart", "To'maris", "Ilhom", "The world full of worries", "Salty winds", "The wide world in the heart", "Don't break your expectations...", "Every He published poetry collections such as "who has his own time". In the collections published in different years, the poet's "Comrade teacher", "Where the acacia blooms", "The luck of the actress", "Carpet woman", "The tale of the old fountain", "Field dreams", "To'maris", "Nightingale" Nest", "Angel Moon", "The Wrath of Poseidon", "Soil of the Motherland" and other epics (poems) were

published. Ibrayim Yusupov wrote a number of meaningful articles on literary analysis, controversial problems of poetry, literary translation, and made a great contribution to the science of contemporary Karakalpak literary studies. His "Discussion on Lyric", "Poetry of Karakalpak after the war", "People's Poet Abboz Dobilov", "Orfey of the Field", "Karakalpakistan - the second poetic homeland of Mahtumquli", "Mahtumquli and Karakalpak literature", "Mahtumquli's works in translation" Articles such as "about misunderstandings" are among them.

The theme of eternal friendship with poet Uzbek literature forms the brightest pages in the work of Ibrayim Yusupov. As a creator, translator, press officer, and public figure, he made friends with major representatives of Uzbek literature and culture, took part in creative dialogues, and traveled together. His creative relations with artists such as Gafur Gulam, Oybek, Zulfiya, Kamil Yashin, Hamid Gulam, Azod Sharafiddinov, Erkin Vahidov, Abdulla Oripov, Omon Matjon were always enriched with new content and exemplary events. When I read his poems, we witness his poems written in harmony with Uzbek literature. In particular, we read such lines in the poem "This World":

Bu dunyo besh kunlik, yolgʻonchi demak,
Avvalgilar aytgan soʻzinda bordir.
"Oshiqadi bizdan qolgan" demak,
Bevafolik kulgan yuzinda bordir.
Mol-mulk deb odamzod bir-birin qirgan,
Shayton gʻulgʻulasi haq yoʻldan urgan.
Bul yerda yoziq yoʻq dunyoda turgan,
Har balo odamning oʻzinda bordir.
Bu dunyo yolgʻonchi emas chininda,
"Nafsingni tiy", deya aytgan burunda.
Bir hovuch tuproqqa toʻlgan soʻnginda,
Ochkoʻzlik odamning koʻzinda bordir.

A person comes into the world and does not realize that most of his life has passed by busying himself with things like accumulating wealth, raising children, building a house. In fact, the main reason why we came to this world is to pray to Allah Ta'alo. The fate of the rest of the issues will continue to be current as it was written in the past. Some people are eager to build a house. The transience and infidelity of this worldly person are often written in the poems of Abdulla Oripov, a bright representative of Uzbek literature.

Bir kimsa umrining soʻngiga qadar,
Yigʻdi mol-u dunyo, yigʻdi siym-u zar.
Uni qiziqdirdi na doʻstning holi,
Va na qoʻshnisining oʻksik ahvoli.
Endi na siym-u zar qutqara olur,
Na billur, na gavhar qutqara olur.
Rozi yo norizo - farqi yoʻq mutloq,
Bunday choq chorasiz hatto doʻst-oʻrtoq.
Beshafqat ajalga berar ekan tan,
U dedi: «Shu ekan, dunyo shu ekan».

A man built a house in Medina. When he finished building the house, Abu Huraira passed by his house. A man of color stood in front of the door of his house and said, "O Abu Huraira, what should I write on the door of my house?" he asked. Abu Huraira, may God bless him and grant him peace, said to him: "Be strong, it will break anyway." Have a baby, you'll get divorced one day anyway. They said, "Write down the wealth of the world, and it will still be left to the heirs." It is not difficult to understand exactly this meaning in the poems of two artists.

In world literature, there are scientific-theoretical issues about the literary-aesthetic thinking and creative concept of the creator. One of them is the reaction to the phenomenon of renewal of poetic content and thinking, which ensures the originality of a certain artist. The concept of poetic thinking is first found in Aristotle's views. New visions of this concept were revealed in modern science in the researches of Heidegger, French philosopher and literary critic Jacques Derrida. The poetic closeness in the works of Abdulla Oripov and Ibrayim Yusupov is directly related to the closeness in the period and social environment in which they lived and worked. "Abdulla Oripov in the poem "Chupon" can evoke the mood typical of the epic "Alpomish" in the wide fields, the sound of the flute and the song of the flock. The Uzbek land and the Uzbek nation are depicted on a large scale in this small work. Let the grass you love turn yellow, let the spring you drink dry - he only writes that he will find true inspiration and be filled with joy in the bosom of his motherland. In the poem "People" he shows a bright example of the Uzbek spirit, generosity, generosity and youth. One of the unwritten golden rules of Uzbekism is to consider a guest as a special god. In the poem, in the behavior of the guest and host characters, showing compliments to Adam, regardless of who he is, is interpreted as a tradition specific to our nation. The finale of the poem is very beautiful. The poet glorifies hospitality without any taste and restrictions. Let's pay attention to the poem "Tugishganlik" by I.Yusupov, who created in folk spirit in harmony with A. Oripov:

Tarixlarga guvohli so'z,
Har bir dardga davoli so'z,
Muqaddas so'z, duoli so'z:
Tug'ishganlik, tug'ishganlik.
Or-nomus, vijdoni sherik,
Moli bilan joni sherik,
Tomirdagi qoni sherik,
Qon-qardosh so'z tug'ishganlik.

Friendship and kinship ties between people acquire a special tone in each of the artist's poems. In particular, we read the following lines in the poem "One person is one person":

Qanday yaxshi, birodar,
Odamzodning yuragi –
Bir odamni bir odam
Jondek yaxshi ko'radi.
Bir odamni bir odam,
Sevib qolar tanishsa.
Bir odamni bir odam,
Sog'inar ayro tushsa.

No matter what topic Ibrayim Yusupov tackles, he finds new, unspoken aspects of it, uses images that no one has used yet to express his thoughts. In this way, he created attractive works that are not repeated by others.

In conclusion, the commonality in the work of two great representatives of the Uzbek and Karakalpak peoples is reflected not only in the themes, but also in the content and images.

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Rezyume: Ushbu maqolada o'zbek va qaraqolpoq ijodidagi adabiy ta'sir masalasi o'rganilgan. Abdulla Oripov va Ibrayim Yusupov ijodi misolida mushtarak obrazlar tahlil qilingan. Ikki xalqning zabardast vakili ijodi orqali milliy va umuminsoniy g'oyalar ochib berilgan.

Резюме: В данной статье рассматривается проблема литературного влияния в узбекских и каракалпакских произведениях. Анализируются общие образы на примере произведений Абдуллы Орипова и Ибраима Юсупова. Национальные и общечеловеческие идеи раскрывались в произведениях великих представителей двух народов.

Kalit so'zlar: Poetika, ijod, ta'sir, milliy, umuminsoniy, dunyo, A.Oripov, I.Yusupov, obraz, mavzu, g'oya, shakl.

Ключевые слова: Поэтика, творчество, влияние, национальное, универсальное, мировое, А. Орипов, И. Юсупов, образ, предмет, идея, форма.

TRADITIONAL AND NEW IMAGES IN UZBEK AND KARAKALPAK POETRY

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Summary. *Traditional and new images in Uzbek and Karakalpak poetry are comparatively studied in this article. The images in the work of U. Hamdam, B. Genjemuratov, J. Izbaskanov were analyzed from the perspective of tradition and innovation.*

Keywords. *poetics, Uzbek, Karakalpak, tradition, novelty, image, theme, idea, form, effect.*

Style, form, content, idea, and plot play an important role in the literary development of each genre. In this sense, imagery is one of the important factors in the transformation of experience into poetic integrity in poetry. When talking about a poetic image, one or another type of literary form, genre-compositional integrity is also understood. The various meanings of the word play the main role in the emergence of reality. Imagery is the soul of the work, its soul. It is natural that the meaning of the poet is expressed even in a simple two-line poem. For example, figurativeness also requires the depth of the creative imagination and originality. It gives him a spirit. It provides a perfect representation of the universe and man. So, the most primary function of imagery is to effectively convey the idea and content of the poem. Now, the science and technology revolution, the extreme expansion of the boundaries of civilization, led to a radical change in the laws of poetics. Even the representatives of modern poetry, without moving away from the ancient traditions, began to express the mood, goals and aspirations of the people of the new era in an literary form. True history was restored as a result of creative research conducted in this regard. A modern expression of national identity has appeared. A great epic scale was infused into the word. Reactions were made to sudden changes in people's mood. Therefore, our poetry, which has undergone poetic renewal in a short period of time, fully proves that it is always in search. In fact, "Where a man ends, a poet begins," - writes the Spanish philosopher Ortega-i-Gasset[1,366].

In the science of literary studies, three features that constitute the vital foundations of poetry are listed. These are: 1. Content. 2. Image. 3. Character.

"These concepts are so integrally and closely connected with each other that touching one of them is equivalent to touching the second, and touching the second is touching the third[2,366]. By the way, the lyrical content opens a wide way for the character to be expressed in bright colors, just as it is reflected in the image. In this sense, reflecting the world through the personality of the poet is considered appropriate if it is approached based on character traits. After all, the poet gives a new meaning to the word: imagery emerges from the sum of experience, imagination, thinking, and emotions. And this is the fruit of a momentary moment born from the awakening of imaginations and fantasies that shine in the personality of the poet.

Emotion may not play a primary role in poems created on the basis of new formal and stylistic research, but the general temperature of the poem is clearly felt in the thought, what content the poet gave to that thought. Thought is the main means of expression for new poetry. The noise of society is alien to the artist who is in the torment of loneliness and separation. He cannot react to the events around him because of his inner suffering. As a result, the human personality becomes a whole essence. He revolves around the views that are most important to him. The density of reality, emotion, and experience moves somewhat freely in new poetry. The poet's thought-provoking expressions play a greater role than warm, playful verses. Magnificence, overflowing with excitement and pleasure are not among the main factors for modern poetry. If he ensures the originality of the idea, he is considered to have fully achieved his goal:

sensizlikka ko'nikdim
biroq
har baxtli kunimda sening yoding bor[3,172]
(Meaning:
I got used to being without you
However
I remember you every happy day).

In this duality of U.Hamdani, the feeling of consent in the heart of the unrequited lover served to ensure poetic integrity. In this, the image of the river is expressed in a very beautiful and concise way. In other words, he has not reached the peak, and in order to feel the great happiness behind getting used to "youlessness", it is permissible to listen to the poet's opinion. After all, indifference does not present defeat to the poet, but success. It is true that the poet feels happy behind this victory. His confession that "you have a mind" and his inability to reach his goal never lead him to unnecessary troubles. Again, he felt very relieved, and in his mind, I am convinced that my failure to reach your goal led me to happiness. In this case, the poetic image is the beloved. If the meeting of two souls in the memories is the content, the passionate warmth of love is aimed at uniting the souls. When memory is awake, a person breathes life, because a person is alive with beautiful memories.

In the work of J.Izbaskanov, the honored poet of the Karakalpak people, we can see the form of imagery proportional to the above content:

Ishqing sening qanchalar go'zal!
Go'zallikdan shodalanaman men,
Hech so'nmagin kuzgi quyoshim!?[4,63]
(Meaning:
Your love is so beautiful!
I rejoice in beauty,
May my autumn sun never fade!?)

It seems that in this poem the poet expresses his happy life in beautiful allusions. Feeling the beauty of love, feeling the joy of living in it, shows the great literary thinking of the poet. In both examples, the epic poetic content is embodied. He is taught to live with pleasure from every moment of life, not to give long definitions and descriptions. A smart reader also makes a habit of enjoying its warmth.

In J.Izbaskanov's work, you can find many traditional hokku in Japanese poetry. In it, the poet comes into conflict with his ideals, ideas, and sufferings. As a result, the poet's poetic image appears convincingly, impressively, meaningfully.

"An image in a work of art is not just a character or a metaphor; in fact, it has a wide range of action. A literary image is a vision, concept, hypothesis that can be seen, felt, understood; a sum of things, events, scenery, people, words, expressions, etc., that re-express life in a literary way. It embodies many concepts, such as the author's literary ideal and attitude towards it, the reflection of real existence, the inner world of a person"[4,194].

It is no secret that epicness is deepening in the images created by B.Genjemurad. The poet himself may not know about it, but it is difficult to infuse great life content into each poem. But B.Genjemurad manages to do it:

"Yo, tavba!
Pushkinning qanotida parvoz etganlar

Pushkinning parvozin o'rgatar emish..."[6,35]

(Meaning:

"Oh, repentance!

Those who flew on Pushkin's wing

Pushkin's flight instructor...")

The status of a teacher is appreciated by the peoples of the East, but also in other countries. It doesn't matter what nationality or people he belongs to. In this sense, the grassy lines of the Russian poet Pushkin did not remain without influence on the creativity of the Turkic peoples. He charmed A.Oripov, I.Yusupov, Oybek, Shuhrat and many other poets, and this process continues. There are artists who are fascinated by Pushkin's creative flight, inspired by him, and learn from him, who always bow before Pushkin's personality and image. So, the poet first of all trained himself to reach this height. He constantly researched himself and, if necessary, kept his talent like the apple of his eye. It cannot be denied. B.Genjemurad was able to absorb the burden, content, and idea of a great epic work or essay in this short line. The density of metaphors used in it opened a wide way for the creator to express his idea in a very beautiful way.

The deepening of the elements of image and literary image in poetry dates back to the beginning of the 20th century, that is, to the time when the First World War took place. In it, the mood of the crowd striving to save their lives in the hustle and bustle of social life was expressed in this form in bright colors. This feature can also be seen in Cholpon's lyrics. So, it turns out that imagery is the most important, the only method that neither time nor years can affect. The most common images in B. Genjemurad's work are:

Island, desert, desert, saxophone, river, mountain, bush, reed, torgai, shamshir, field, dutor. In these images, the inner experiences of the poet come to the surface with the help of metaphors, which it is not difficult to feel in the heart and imagine in front of your eyes during the reading process. Since modernism is a direction that connects visual art with the art of words, the poet thickens the colors as in the painting:

Cho'llarga qarayman... Karvon ko'rinmas,

Tog'larga qarayman... Qo'rg'on ko'rinmas,

Yolg'iz darveshdirman – armonlarim es,

Etik bilan suv kechdim – oyog'imda muz.[6,65]

The image of the desert occupies the main place in the poet's experience. That is, the fact that he lived and created in the lower Amudarya delta allows the artist to express this mood in his own way. The tragedy of the island is a tragedy for humanity not only in the 20th century, but also today. In the world community, the depletion of the Aral Sea hinders the conduct of scientific research. As the poet develops this tragedy in the style of "I look at the deserts - no caravan is visible", he is tormented by the question of what is the real factor of the destruction that shook the entire humanity. "The caravan is invisible" is also a compound that carries a symbolic meaning. Loneliness tormented the poet so much that as a result he got ice on his feet. In this place, the method of antithesis is effectively used.

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Rezyume: Ushbu maqolada o'zbek va qoraqalpoq she'riyatidagi an'anaviy va yangi obrazlar qiyosan tadqiq qilingan. U.Hamdam, B.Genjemuratov, J.Izbaskanov ijodidagi obrazlar an'ana va yangilik nuqtayi nazaridan tahlil qilingan.

Резюме: В статье сравнительно исследуются традиционные и новые образы в узбекской и каракалпакской поэзии. Образы в творчестве У. Хамдама, Б. Генджемуратова, Ж. Избасканова проанализированы с позиций традиционности и новизны.

Kalit so'zlar: Poetika, o'zbek, qoraqalpoq, an'ana, yangilik, obraz, mavzu, g'o'ya, shakl, ta'sir.

Ключевые слова: поэтика, узбекский, каракалпакский, традиция, новизна, образ, тема, идея, форма, эффект.

УДК 347.4

RIGHTS AND OBLIGATIONS OF THE PARTIES ARISING FROM CONTRACTUAL RELATIONS FOR THE PROVISION OF MEDICAL SERVICES

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Summary: *This article analyzes the specifics of the relationship arising from the contractual relationship between a doctor and a patient in the provision of medical services, the rights and obligations of the parties.*

Keywords: *Patient and doctor, rights and obligations, provision of services, medical services.*

As a civil law contract for the provision of medical services, it is the basis for the emergence of the rights and obligations of a doctor and a patient. Such an agreement has a validity period, defines the rights and obligations of the parties, as a civil agreement is based on private autonomy, is a form of mediation of relations between a doctor and a patient, makes the contractual civil liability of a doctor (medical institution). This explains the need to introduce normative regulation of this type of contract in the legislation.

The relationship between the doctor and the patient in this case is of a civil law nature. Therefore, disputes related to the execution of an agreement on medical services are resolved in civil proceedings. The patient and the doctor conclude an agreement, which is the basis for the emergence of an obligation. Between them there are purely civil relations. This agreement must be fiduciary in nature. This is reflected in the choice of doctor. The performance of an operation or medical manipulation by another specialist without the consent of the patient - a party to the contract, is considered a violation of the terms of the latter. This may relate to the status of a family doctor as a representative of his patient with a medical institution to carry out the necessary medical manipulations.

All contracts for the provision of medical services are characterized by a model content.

However, the parties, along with the typical ones, can agree on special conditions. Medical institutions (associations) develop the content of standard contracts. But this does not exclude the possibility of agreeing on other conditions (for example, living conditions, the term for the provision of services, etc.).

Another problem that characterizes the realities of the provision of medical services in Uzbekistan is the lack of clarity in establishing the rights and obligations of participants in these legal relations. The legislation defines a general list of rights and obligations of the parties to such obligations. The doctor, in particular, has an obligation to properly provide services. That is, he must act in such a way as not to harm, first of all, the health of the patient, based on the well-known Hippocratic oath. However, this is only a general declaration.

These facts gave impetus to the idea, which is expressed in the literature by some authors, about the possibility of applying the Law of the Republic of Uzbekistan "On Protection of Consumer Rights"[1] to these relations. The unacceptability of this position is due to the fact that the subject of the application of the Law of the Republic of Uzbekistan "On Protection of Consumer Rights" are relations arising from the acquisition, order, use of goods (works, services) for their own domestic needs. Relationships that arise in the provision of medical services require special, special separate regulation.

In the legal literature at different times, different opinions were expressed on the definition of the content of the contract for the provision of medical services. For example, by virtue of an

obligation that has arisen, a medical institution is obliged, using the data of medical science, medical equipment, the experience and knowledge of medical personnel, to establish the correct diagnosis and ensure proper treatment of the patient. In turn, the patient is obliged to comply with all the instructions of the medical institution[2].

According to Yu.D. Sergeev, the medical institution is obliged, using the data of medical science and practice, appropriate medical equipment, special knowledge and experience of medical workers, to take the necessary actions to examine the patient, establish the correct diagnosis and conduct appropriate treatment. At the same time, this medical institution (doctor) has the right to require the patient to comply with all appointments, prescriptions and recommendations [3].

According to M.M. Mallein, the content of this obligation is formed, on the one hand, by the obligation of the medical institution to provide the patient with qualified medical care, choosing appropriate methods for this, maintaining medical secrecy, acquiring, in cases established by law, the right to demand payment for medical services and, accordingly, on the other hand, the obligation of the patient to comply with the instructions of the medical institution, pay for medical care and the right to demand information about the diagnosis, the method of treatment, its possible consequences[4].

In Uzbekistan and other countries of the world, the problem of ensuring the rights of patients has been solved for decades. Lawyers, physicians and human rights organizations in many countries of the world have repeatedly joined their efforts to develop effective mechanisms for the observance of human rights in the field of medical care.

In Amsterdam, in March 1994, A Declaration on the Promotion of Patients' Rights in Europe was adopted [5]. After that, relevant legislation was adopted in many European countries. According to this Declaration, the "European principles of the rights of the patient. General structure", defining the general conditions of international health organizations for European member countries, which must be observed in the field of protecting the rights of the patient. Later, other pan-European regulatory documents were adopted that define the rights of the patient: Convention on Human Rights and Biomedicine (1996); Memorandum "on the rights of a citizen and a patient to participate in the decision-making process on issues of medical care" (1999) [6].

Finland was the first country to adopt a separate patient rights law. This law was adopted in 1992 after 20 years of lengthy discussions in Parliament. Most jurists still criticize this law, considering it too "administrative", as it contains strict imperative directives for medical institutions. At the same time, the law has not established standards for the rights and quality of medical services that a patient receives. However, it stipulates that every institution that works in the field of health care for the population of Finland must have an ombudsman. According to the latest statistics, there are currently about 2,000 patient ombudsmen in Finland.

Laws on patients' rights have also been adopted in other countries: the Netherlands (1995), Israel (1996), Lithuania (1996), Iceland (1997), Denmark (1998), Norway (2000) and others.

The content of any contract, as an act of will of the parties, is a set of certain conditions that are determined at the discretion of the parties and agree to them or that are mandatory in accordance with acts of civil law. In the doctrine of civil law, three groups of contract terms are distinguished: essential, ordinary and accidental.

According to Part 1 of Art. 364 of the Civil Code of the Republic of Uzbekistan, the essential terms of the contract are the terms on the subject of the contract, the conditions that are defined by law as essential or necessary for contracts of this type, as well as all those conditions regarding which, at the request of at least one of the parties, an agreement must be reached. The essential terms of the contract for the provision of medical services include:

1. The Subject of the Agreement.

The subject of the contract is the provision of medical services. It should be emphasized that the subject in the contract will not be a service, in the sense of a certain benefit for the recipient or its final result, but the process of providing the service (the actions of the contractor).

It is interesting to note that at one time, individual scientists recognized the subject as the only valid, "in the full sense" essential condition, a necessary part of the contract [7].

In the legal literature, it is noted that in contracts for the provision of services for a fee, a certain beneficial effect from the implementation of actions or activities by the performer, that is, a service, is considered as a subject. Taking into account the characteristic features of the service and, in particular, the high degree of its uncertainty, the variability of quality [8], the inability to guarantee the occurrence of a specific expected result, we can conclude that the service itself is not the subject of this contract. This is consistent with the requirements for the object of legal relations. It is well known that the object of civil legal relations should always be specific, and not abstract, desirable and indefinite. With this in mind, as a condition on the subject of the contract for the provision of paid medical services, actions to provide a medical service or services should be considered.

When determining the conditions on the subject of the contract for the provision of medical services for compensation, the parties may directly provide for a specific method of diagnosis or treatment, that is, determine the method for carrying out the actions of the service provider. If the parties have not given this condition a significant value, the determination of the method of carrying out certain medical actions should be at the sole discretion of the particular service provider (for example, the attending physician), who, when choosing a specific method, should proceed from the interests of the patient and be based on modern achievements of medical science. At the same time, it should be noted that no method of treatment can be recognized in advance as one hundred percent successful, because each of them is associated only with a certain higher or lower degree of probability of a successful result for the patient; each method of treatment contains a certain degree of risk, the possibility of an adverse outcome for the patient [9].

Contract price.

The price of a medical service, as a rule, is set by the service provider unilaterally, based on its nature, volume and taking into account market prices for similar services. An individual may agree with the price set by a specific subject of the provision of medical services and, accordingly, make an expression of will to conclude an agreement or apply to another.

Taking into account the principle of freedom of contract, a person may agree to the price set by the service provider and conclude a contract, or vice versa, refuse to conclude it. In practice, it often happens that after agreeing on all the essential conditions, including the price and the provision of a medical service in full in accordance with the needs of the patient, the latter refuses to pay the agreed payment for the service.

The price of the contract can be determined by the parties by drawing up, for example, an approximate "estimate" for medical actions. In this case, if during the fulfillment of the obligation an objective need arises to perform additional medical actions, the service provider is obliged to notify the service recipient in a timely manner. The latter, if he does not agree to exceed the "estimate", has the right to withdraw from the contract by paying the service provider the price for the medical services already provided.

In the event of a significant increase after the conclusion of the contract for the provision of medical services of medicines, as well as the cost of medical services, the service provider has the right to demand an increase in the "estimate". If the service recipient refuses to increase the "estimate", the lender has the right to demand termination of the contract.

The rights and obligations of the doctor and the patient in private relationships are interrelated. In addition to legal relations, moral and ethical relations develop between them, which are not covered by the contract or the provisions of the law. These include trust, adherence to

doctor's recommendations, and the like. These issues have a certain impact on the legal relationship between the doctor and the patient. After all, failure to comply with the doctor's prescriptions in most cases deprives the patient of referring to improper treatment.

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Rezyume: *Ushbu maqolada tibbiy xizmatlar ko'rsatishda shifokor va bemor o'rtasidagi shartnomaviy munosabatlar natijasida yuzaga keladigan munosabatlarning o'ziga xos xususiyatlari, tomonlarning huquq va majburiyatlari tahlil qilinadi.*

Резюме: *В данной статье анализируется специфика взаимоотношений, возникающих в результате договорных отношений между врачом и пациентом при оказании медицинских услуг, права и обязанности сторон.*

Kalit so'zlar: *Bemor va shifokor, huquq va majburiyatlar, xizmatlar ko'rsatish, tibbiy xizmatlar.*

Ключевые слова: *Пациент и врач, права и обязанности, предоставление услуг, медицинские услуги.*

PROCEDURAL FEATURES OF PRELIMINARY JUDICIAL MEETINGS

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Summary: *The article is devoted to the study of different points of view of scientists on the preparation of the case among other stages of the economic process. The author reveals some features of the preparation of the case as an independent stage of the economic process. Proper preparation of economic affairs contributes to the implementation of the principles of the economic process.*

Key words: *economic legal proceedings, the right to judicial protection, preparation of economic cases, stage of the economic process, preparation features.*

The introduction of the institute of preliminary court session is one of the sub-institutions of modern economic procedural law. The preliminary court session is a procedural intersectoral institution, which is one of the most interesting and new results of the latest codification of economic procedural legislation.

In our opinion, the question of the nature of the preliminary court session is of great theoretical importance. The Economic Procedural Code of the Republic of Uzbekistan, scientific articles and comments do not give a specific definition of the concept of "preliminary court session". It is important to note that Art. 1631 of the Economic Procedural Code of the Republic of Uzbekistan, which reveals a preliminary hearing, is new to the legislation [1]. It should also be noted that, in fact, this procedure has been established for a long time and, in fact, took place as part of an interview (which took place at a reception with a judge) [2, 10].

The problem of the concept of "preliminary court session" has not only theoretical, but also practical significance. It should be emphasized that the preliminary court session as "the final stage of preparing a case for trial and as a special procedure for resolving the most important, from the point of view of the parties, issues of the process, which makes it possible to ensure an appropriate level of procedural guarantees for the exercise of their rights, the fulfillment of the tasks of preparing a case for trial and economy of means of justice".

Meanwhile, some elements of the trial, which penetrated the stage of preparation of the case and found their implementation in the preliminary court session, allow us to most fully consider the issue of securing the administrative rights of the parties, taking into account the opinions of all persons participating in the case, to verify the legality of the will of the parties.

Since the beginning of the XXI century. the significance of the de la preparation stage became clear to the participants in the process. At the present stage, a preliminary court session has become the norm of the economic process, since it would be practically impossible to increase the role of the stage of preparing a case for trial without a procedurally fixed action in the form of preparing a case.

The preparatory stage of the process is obligatory, but its necessity does not imply the inevitability of a preliminary court session as a procedural form, which is inherent in the second stage of the process. In judicial practice, in some cases, a preliminary court session is like a rehearsal for a future trial. As part of the preliminary court hearing, issues that are directly provided for by law, as well as issues related to the case, such as the price of the claim, the amount of compensation for moral damage claimed by the plaintiff, the emergence of disputed legal relations, etc., are discussed.

When considering economic cases, the preliminary court session performs different functions. In one case, it helps to improve the quality of preparing a case for trial, and in another it can serve as a means of saving legal proceedings.

At the stage of preparing the case for trial, holding a preliminary court hearing contributes to the efficiency of the entire economic process in the further resolution of the case, as well as guarantees of legality in the exercise of procedural rights by the parties. It is also important to take into account the fact that the objectives of the preliminary court hearing, set out in Part 1 of Art. 1631 of the Economic Procedure Code of the Republic of Uzbekistan, express the functional purpose of the stage of preparing the case for trial.

The preliminary meeting is held in order to:

a) the implementation of preparatory actions (determining the circumstances that are important for the correct consideration and resolution of the case; determining the sufficiency of evidence);

b) the implementation of actions that are not related to the preparation of the case for trial: procedural consolidation of administrative actions of the parties aimed at ending the case; study of the circumstances that are important for the further development of the case (determination of the facts of missing the limitation period and the deadlines for applying to the court, the reasons for missing such deadlines).

The preliminary court session serves as a certain stage of the second stage of the economic process and, according to its purpose, sums up the stage of preparation of the case, which is the basis for considering the case ready for trial.

Let us assume that this action is not mandatory for the implementation of the tasks of preparing the case for trial, but is a mandatory procedural action if the parties have stated the grounds that prevent the consideration of the case on the merits (there are grounds for leaving the application without consideration), or an omission is declared the limitation period, or the period of contestation, and there are also grounds for fixing the administrative actions of the parties, which serve as the basis for terminating or suspending proceedings [3., 48].

We consider it unnecessary to hold a mandatory preliminary hearing for each case in the economic process. In simple cases with a minimal evidence base, the obligatory holding of a preliminary hearing would complicate the process and lead to an unreasonable waste of time in considering and resolving the case. Such cases include: divorce, recovery of alimony, recovery of wages, recovery of debts for housing and communal services, etc.

It is advisable to appoint a preliminary hearing in more complex cases that require a large amount of procedural material, which the parties must be familiar with when their presence is required to determine the disputed facts to resolve issues of presenting and demanding evidence. Based on this, we can conclude that a preliminary hearing should be held when it is needed.

The development of a preliminary court session in the future may be one of the ways to improve and speed up the economic process and one of the forms of a simplified type of legal proceedings. The preliminary court session can be considered not only as a stage of preparatory actions, but also as a form of summary proceedings, which will thereby further enhance the role of this institution.

In order to improve Art. 1631 of the Economic Procedure Code of the Republic of Uzbekistan, we consider it possible to add some changes, namely, to summon not only the parties, but all participants in the process (and third parties and their representatives, state bodies, the prosecutor, witnesses, specialists and experts) to the preliminary hearing, so the same as provided for by the Economic Procedure Code of the Republic of Uzbekistan - notification and summoning of the parties and other interested parties.

Namely, to completely limit the plaintiff's right to change the claim by changing the grounds or the subject of the increase in claims, after a preliminary meeting, in which the plaintiff agreed to hold a meeting on the merits. Because of this, limit the defendant's right to file a counterclaim if he was at the preliminary hearing. All of the above actions are possible only at the stage of preparing the case and during the preliminary court hearing.

It is necessary to consider the possibility of presenting new evidence to the court in the case, if they were not presented at the preliminary hearing, only if the participant learned about them after the end of the preliminary hearing at which he was present.

In this case, at such a preliminary meeting, when the parties express their positions on the case, present to the court all the necessary evidence, and the court examines the case materials together with the participants in the process and resolves all issues on the evidence, both the persons participating in the case and the court itself. In the period from the preliminary court session to the resolution of the dispute, the parties, after evaluating all the evidence in the case, may conclude an amicable agreement or withdraw from the claim.

Based on the foregoing, it can be concluded that the institution of a preliminary court session needs to be improved. The legislator can include our proposals for improving the institution of a preliminary court session in regulatory legal acts, which further emphasizes the complexity of the mechanism of a preliminary court session, which is one of the ways to optimize and speed up legal proceedings. The above problematic issues and proposals for improving the law are related to the preparation of the case for the trial.

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Rezyume: *Maqola iqtisodiy jarayonning boshqa bosqichlari qatorida ishni tayyorlash bo'yicha olimlarning turli nuqtai nazarlarini o'rganishga bag'ishlangan. Muallif iqtisodiy ish jarayonining mustaqil bosqichi sifatida ishni tayyorlashning ayrim xususiyatlarini ochib beradi. Iqtisodiy ishlarini to'g'ri tayyorlash iqtisodiy jarayon tamoyillarini amalga oshirishga yordam beradi.*

Резюме: *Статья посвящена исследованию различных точек зрения ученых по подготовке дела среди иных стадий экономического процесса. Автор раскрывает некоторые особенности подготовки дела в качестве самостоятельной стадии экономического процесса. Надлежащее проведение подготовки экономического дела способствует реализации принципов экономического процесса.*

Kalit so'zlar: *iqtisodiy sud jarayoni, sud himoyasi huquqi, iqtisodiy ishlarni tayyorlash, iqtisodiy jarayonning bosqichi, tayyorlash xususiyatlari.*

Ключевые слова: *экономическое судопроизводство, право на судебную защиту, подготовка экономических дел, стадия экономического процесса, особенности подготовки.*

**PROSPECTS FOR THE FURTHER DEVELOPMENT OF THE ACTIVITIES OF
DOMESTIC INVESTORS AND FOREIGN INVESTORS IN THE COUNTRY**

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Summary: *This article provides information on the economic content and essence of investment activities, its sustainable economic rise, measures aimed at further development of the activities of foreign investors in our country, as well as investment processes in the economy of Uzbekistan.*

Keywords: *investment, investment activity, investment process, Investment Policy, Public Investment Program.*

In the context of the modernization of the economy, investment activities are important. The level of development of each country, that is, the development and economic growth of the economy, largely depends on the investment processes in the country. It is impossible to imagine the stable economic civilization of any society without investments. This is especially evident today, when the rise of any country after this depends on the state of investment attraction.

The term "investment" comes from the Latin word "invest", which means "to put", "mobilize funds", "capital put". In a broad sense, investment means the mobilization of capital in order to increase and withdraw funds. In most cases, the concept of "investment" is defined in the way of material and intangible benefits and rights to them, which are included in economic and other objects of activity. Investment refers to all types of national and intellectual assets, which are aimed at the objects of entrepreneurial activity, which are necessary to generate income or achieve a positive effect. The main goal of investing is to generate income and achieve a positive social effect. As we know, economic growth cannot be without investment resources, these resources are, in their essence, funds aimed at the development of production. Investments in the form of funds are nominal investments. These investments become materialized and practically become real investments after being involved in production, ensuring economic growth.

In the law of the Republic of Uzbekistan "on the mountain of investment activities", investments are differentiated according to the designated object. In accordance with this, investments are divided into the following types.

Types of investment:

capital investments

innovative investments

social investment

Currently, changes and structural reforms are being carried out in all areas of the economy of Uzbekistan. The conduct of such reforms directly depends on the investment process in the country, the investment policy of the state, its priorities and the investment activity of enterprises in the country. Increasing investment activity, strengthening it in a short period of our independence a number of practical measures have been taken, a number of laws and under-laws regulating investment activities have been issued and are being implemented into life.

The importance of investment policies on this path is enormous. Because investments promote structural changes in the economy, technical and technological updates, the implementation of overhaul of enterprises, make it possible to increase the export and import potential of the country. In this respect, the state of Uzbekistan is pursuing its own investment policy.

Investment policy is a mechanism, a set of methods aimed at developing priority sectors of the economy, withdrawing support, moving from a centralized investment process to a decentralized investment process, supporting priority investment projects. Greater priority in the implementation of state investment policy is aimed at creating small business entities, enterprises

with foreign investment and creating a favorable economic, investment environment for eliminating existing shortcomings, solving problems quickly and, as such, for investment participants to be able to move freely. State investment policy is the mutual tolerance of regions, industries and enterprises, finding their content in investment policy. The investment policy of the regions is a set of measures that allow the investment to be carried out in an area that allows it to be used effectively, taking into account the population, territory and investor manfa'ts. And the industry investment policy is to support the development of the economy of this country through investment in sectors, escorting industrial products, establishing the production of import substitutes, scientific and technological progress.

The need to carry out investment projects in the priority sectors of the Republic's economy arises from the following: the physical and moral obsolescence of production capacities, the fact that they have become subject to restoration or technical reequipment or renewal in general; the extremely low base of material technology in the industrial sector and the presence of many unprofitable enterprises; the ratio between savings and consumption in the national income of the Republic is being spent in large numbers on the consumer side and the decrease in savings as an investment source, the richness of Uzbekistan in natural resources and the availability of the opportunity to build many processing enterprises here; the growing population (labor resources) and the need to establish small modern compact enterprises, bring them closer to the village, which is a source of labor resources; the need to reduce the amount of raw materials in the export of the Republic and be able.

In conclusion, we can say that by implementing investment projects, it makes it possible to make fundamental changes in the economy, and this serves as a guarantee of the organization and development of new jobs in the economy. Modernizing the economy, bringing modern technologies to our country in conditions, updating industrial production and conducting modernization processes can not be achieved without investment activities. Attracting investment projects will not only raise the state economy, but also have a great effect on improving the level of population. That is, a large department of household necessities is satisfied, production expands, new labor forces are formed, from the old and hard labor derivatives are transferred to new, light and effective labor activities.

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Rezyume: *Ushbu maqolada investitsiya faoliyatining iqtisodiy mazmun va mohiyati, uning barqaror iqtisodiy yuksalishi, mamlakatimizda chet-el investorlari faoliyatini yanada rivojlantirishga qaratilgan chora-tadbirlar, shuningdek O'zbekiston iqtisodiyotida investitsion jarayonlar to'g'risida malumotlar keltirilgan.*

Резюме: *В данной статье представлена информация об экономическом содержании и характере инвестиционной деятельности, ее устойчивом экономическом подъеме, мерах, направленных на дальнейшее развитие деятельности иностранных инвесторов в нашей стране, а также об инвестиционных процессах в экономике Узбекистана.*

Kalit so'zlar: *Investitsiya, investitsion faoliyat, investitsiya jarayoni, investitsion siyosat, davlat investitsiya dasturi.*

Ключевые слова: *Инвестиции, инвестиционная деятельность, инвестиционный процесс, инвестиционная политика, государственная инвестиционная программа.*

SIGNIFICANCE AND OBLIGATIONS OF LEGAL RESPONSIBILITY FOR VIOLATION OF THE REQUIREMENTS OF THE ENVIRONMENTAL LAW

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Summary: *Evidence of the need to improve the legal norms related to the topic of the article, a comprehensive study of the issues of improving legal liability for violation of environmental legislation, and conducting research, combining theoretical knowledge and practical skills.*

Keywords: *Ecological law, national environmental crimes, legal liability, violation, legal norms, responsibility.*

Environmental crimes, committed in the modern era of rapidly developing globalization, are negative acts, causing the most severe consequences in the system of environmental crimes, causing serious damage to nature and society, have a high social risk. Environmental crimes represent a complex set of crimes on non-compliance with the requirements of environmental legislation, i.e. represent a set of illegal and socially dangerous acts, causing harm to the natural environment and human health, use, including environmental safety, damage to social relations to ensure sustainable development of an individual, society, nation and state. It is advisable to determine the place of legal responsibility for violation of environmental law in the system of law on the basis of the opinions of scientists and scientific literature. In the legal literature there are a number of definitions of the concept of responsibility for violation of legal requirements and its place in the system of law. In particular, it is defined as "liability for violation of the requirements of law is the infliction of material and moral damage to the interests of society, the state and citizens (persons) as a result of non-compliance with the rules of law or dangerous actions and inactions". Liability for violation of the requirements of the law is a socially dangerous act committed by a legally capable subject, which contradicts the requirements of legal norms and causes harm to individuals, property, the state and society as a whole [1,348].

As for liability for violation of the requirements of environmental law, the scientists who conducted studies on this subject expressed a number of opinions.

In particular, according to M. I. Mamaraimov, responsibility for violation of environmental law requirements, i.e. manifested in causing damage to natural objects, economy, people, causing nuisance and negative situations, environmental protection requirements and their rational use, established by competent state bodies, is a public action (action or inaction), violating norms of environmental law, violating rights of citizens to well-being of natural environment and right of the state to possess natural sources [2,10]. According to the analysis of the literature, the main functions of legal responsibility for violation of the requirements of environmental legislation can be divided into the following three groups:

1) stimulating function of environmental legal responsibility - ensures strict compliance with the requirements and norms of environmental legislation by users of natural resources and citizens.

Disincentive function means absence of responsibility measures, which will entail any negative consequences for citizens, who do not violate norms of environmental legislation.

2) compensatory function of environmental legal responsibility - this function means necessity of compensation for damage, caused to natural environment, any natural object or resource as a result of application of measure of responsibility.

3) preventive function of environmental-legal responsibility is a preventive function, preventing other citizens from committing environmental offences or crimes under threat of punishment.

For example: Violation of legal norms related to the protection of atmospheric air and its use, entails liability for violation of legal requirements related to the protection of atmospheric air. Therefore, the necessary components of responsibility for violation of legal requirements in the field of protection of atmospheric air are the guilty behavior or inaction of the guilty person and the presence in this guilty act or inaction of the degree of danger to atmospheric air. Only in committing such cases, bringing to responsibility for violation of legislative requirements in the field of atmospheric air protection can be considered that norms of environmental law regulating legal relations in this sphere have been violated.

Mallaev N.R. in his opinion, «otherwise we cannot qualify him as guilty of violating the requirements of the legislation in the field of protection of atmospheric air and its use».

Legal responsibility for violation of requirements of environmental legislation is a guilty, unlawful action or inaction, which violates legislation on nature protection and causes or creates a threat of causing harm to the natural environment, human health. Liability for violation of requirements of environmental law means unlawful public act (action or inaction), affecting rational use and protection of natural resources, as well as the right of population to favorable environmental conditions. The subject of responsibility for violation of environmental legislation is an enterprise, institution, organization, official and citizens who have violated the procedure established by law.

From the objective point of view, responsibility for violation of environmental law is conditioned by wrongfulness of behavior, causing or threatening to cause environmental damage, violation of rights and legally protected interests of other subjects of environmental relations. The responsibility for violation of environmental law is conditioned by the unlawfulness of the conduct causing or threatening to cause harm to the environment, violation of the rights and legally protected interests of other subjects of environmental relations [3,203].

Sh. H. Fayziev also includes in the composition of the objective side of responsibility for violation of the requirements of the legislation the place, time, method, conditions and methods of bringing to responsibility for violation of the requirements of environmental law [4,163].

The subjective side of responsibility for violation of the requirements of environmental law is guilt in the form of intent or negligence. Guilt is an expression of mental attitude of the offender to his actions and their consequences. Liability for violation of the requirements of the law shall be deemed to be committed intentionally, if the person who committed it was aware of the nature of violation of the law, foresaw its harmful consequences and wished them to come or knowingly allowed these consequences. Liability for breach of the requirements of the law shall be deemed to have been committed through negligence if the person who committed it foresaw the possibility of harmful consequences resulting from his action or omission, but expected to prevent them, or could have foreseen such consequences or could not have foreseen the possibility of such consequences in cases where it was necessary.

According to V. Tokarenko, legal responsibility is one of the important guarantees of human and civil rights and freedoms, the interests of society and the rule of law. And the state is an indispensable symbol of freedom. Freedom and state are interrelated. Freedom has no meaning without responsibility of each member of society towards society. The need for the formation of a democratic state governed by the rule of law is reflected in the relevance of studying the problems of legal responsibility. Legal liability is expressed as a legal form of state coercion and legal responsibility: substantive and procedural rules. Drawing attention to the problems of legal responsibility, considering legal responsibility as a type of social responsibility and material law as an institution; separation of legal responsibility from other state coercion (coercive measures and measures to protect violated subjective rights); allows to prove that the implementation of legal responsibility takes place within the relevant procedural form [5, 23].

In accordance with Article 47 of the Law of the Republic of Uzbekistan "On Nature Protection", responsibility for violation of the requirements of this Law, including for violation of

standards, norms, rules and other regulatory and technical requirements in the field of nature protection, including for planning and construction of enterprises, structures, vehicles and other objects during reconstruction, their use or termination of their operation in violation of the established ecological capacity of the area, environmental norms, rules, when exporting and importing environmentally hazardous products abroad; unauthorized use of natural resources, non-compliance with the requirements of the state environmental expertise; for refusing to pay a fixed fee for the use of natural resources, as well as compensation payments for environmental pollution and other types of harmful effects on it; in case of non-fulfillment of plans for the construction of environmental protection facilities, other activities related to nature protection; failure to take measures to restore the natural environment, elimination of the consequences of harmful effects on it, reproduction of natural resources; non-compliance with the instructions of the bodies exercising state control in the field of nature protection; in violation of the legal regime of specially protected territories and objects; in violation of the rules for accounting for harmful effects on the environment; in violation of the requirements of nature protection during storage, transportation, use, neutralization and disposal of waste, chemicals, as well as radioactive and harmful chemicals; that officials exercising state control in the field of environmental protection are not allowed to visit objects, and individuals and public environmental organizations are not allowed to exercise their rights and obligations; persons guilty of refusing to provide timely and reliable information about the state of the natural environment and the use of its resources are subject to disciplinary, administrative, criminal and other liability in accordance with the legislation of the Republic of Uzbekistan.

Summing up, we can say that the role of legal liability for violation of environmental law requirements in the legal system is of particular importance, it serves to improve environmental safety, environmental culture of people and prevent violations of environmental law requirements in the whole world.

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Rezyume: *Mavzuga oid qonunchilik normalarini takomillashtirish zarurati, ekologik qonun talablarini buzganlik uchun yuridik javobgarlikni takomillashtirish masalalarini kompleks o'rganish, nazariy bilim va amaliy kunikmalarni birlashtirib tadqiq qilish zarurati mavjudligidan dalolat beradi.*

Резюме: *Доказательство наличия необходимости усовершенствования норм законодательства, относящихся к теме диссертации, комплексного изучения вопросов усовершенствования юридической ответственности за нарушение экологического законодательства, и проведения исследований, объединив теоретические знания и практические навыки.*

Kalit so'zlar: *Ekologik huquq, milliy ekologik jinoyatlar, yuridik javobgarlik, huquqbuzarlik, huquq normalari, javobgarlik.*

Ключевые слова: *Экологическое право, национальные экологические преступления, юридическая ответственность, правонарушение, правовые нормы, ответственность.*

DEVELOPING SPEAKING AND LISTENING ABILITIES IN MIXED-LEVEL GROUPS

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Summary : *The purpose of this article is to discuss the methods and results of developing listening and speaking skills for students of all ages*

Keywords: *listening, speaking, skills, foreign, different, phrases, communication, objective, curriculum, questionnaire, pronunciation*

Abstract. The purpose of our study is to investigate works of scholars about the problems of listening and speaking in learning foreign languages. We try to analyze the difficulties in doing listening and speaking exercises in mixed level groups focusing on “New English File” (Intermediate) textbook. “New English File” presents different kinds of listening and speaking tasks in order to improve all four skills (listening, reading, speaking and writing). Problems in listening and speaking in mixed level groups were taken from the results of questionnaire. Students’ questionnaire determined the effective ways of using role plays and various activities in practice. The result of our study showed that the textbook was worse using in mixed level groups. Different creative activities in English classes motivate students to learn foreign languages, and improve knowledge.

1. Introduction. All of our students have different language proficiency levels, because most of them are trained under the weak influence of English grammar at secondary schools. Some students cannot learn English individually, and others just are in the habit of doing textbook exercises and read given materials. Ultimately, in higher schools, they have difficulties in speaking and listening. They have difficulties in pronouncing words, understanding the meaning of the words, phrases, using the linking words, grammatical structure, expressing their ideas, thoughts, sharing their opinions in English, and analyzing the problems. In fact, speaking and listening are closely integrated skills in learning any foreign languages. According to the requirements of our life, English listening and speaking have important utility values in all spheres. Speaking and listening tend to be more important in human communication and daily life. As a fact, any language develops from listening and speaking.

The aim of our study is to improve English listening and speaking skills of students in mixed level groups. In order to reach this aim, we put several objectives:

1. To conduct listening and speaking questionnaire (LSQ) about students’ attitude toward speaking and listening skills;
2. To identify learning efficient activities in developing listening and speaking skills on “New English File” edition;
3. To find solutions to reduce difficulties and improve listening and speaking skills of students in mixed level groups.

2. Literature review. Different scholars have different concepts of listening and speaking but they all agree with one very important feature of listening and speaking, that is a two way process between the speaker and listener.

Listening plays an important role in second language instruction for several reasons (Rost, 1994). If you cannot hear it well, you will find it hard to communicate or perhaps you cannot do listening task for instance. In fact, students often take the wrong way when listening and this leads them to the poor result. It should be noted that the learner’s perception of their listening problem and strategies can affect their comprehension both positively and negatively (Wenden, 1986). Thus, in order to help students get improved with their listening skill, it is needed finding out their listening problems which cause difficulties to them. We strongly agree with this statement that to improve listening skills it is important to find out the listening problems regardless of the level of students English knowledge. Each student has his/her own problems and the task of the teacher is to help him/her cope with these problems.

3. Methods. In order to achieve our aim to improve listening and speaking skills in mixed level groups, our study was based on the collection and search of the theoretical and practical materials.

Theoretical materials include literature sources and review. Practical materials involve: to conduct a questionnaire (LSQ) about students' attitude toward speaking and listening skills in mixed level groups; to identify learning efficient activities in developing listening and speaking skills; and to find solutions improving listening and speaking skills of students in mixed level groups.

The subjects of the study are 20 first-year students from different groups, they were randomly chosen. They range from 16-18 years of age. Of the 20 students, 8 students finished schools in villages. The duration of English classes at school was different. Some have learnt English for 4 years; some of them have learnt English for 3 years. The reason of choosing the first-year students for our study is our academic curriculum, and a textbook "New English File". This book fully provides with listening and speaking activities. Curriculum on "New English File" is the same for all groups. We made some changes in curriculum for our research, and try to adapt listening and speaking materials to mixed level groups.

4. Discussion. As for mixed level group students, role plays help students cope with real life situations, commonly used expressions, forcing them to think "on their feet". Furthermore, role-plays help students work together as a team or a group, and communicate in order to understand each other. Role play can improve students speaking skills in any situation, and helps to interact. As for the mixed level group students, role play activities help to overcome difficulties in speaking. In addition, it is most students think that enjoyment leads to better learning.

Students with low English proficiency in mixed level groups push teachers to determine the useful and fruitful activities in improving listening and speaking skills. The first-year students study English on "New English File" textbook. During our experiment in mixed level groups, we used relevant role-play activities for our students, as Beautiful Mind, Bingo, Fishbowl, Interview, Leader of the XXIst century, Mind Mapping, Star Wars, Who Wins a Million? etc.

As it was mentioned before, students in mixed level groups have difficulties in speed of delivery during listening and speaking, face problems with misunderstanding of new words and phrases, have problems in pronunciation of English words, and have difficulties in composing sentences using correct grammatical structure. In order to find solutions to reduce these difficulties, we start to listen to short dialogues from "New English File" textbook. There are a lot of dialogues in "New English File" for doing listening tasks. Having in mind the difficulties of our students in listening, we start to listen to these dialogues by making pauses. After listening to short dialogues, students do exercises for comprehension. These exercises include: to find the main heroes; to copy out numbers or figures; to highlight proper names; to mark signal words of grammar (usually, always, sometimes, every day). The content of the listened part of the dialogue students tell his/her partner.

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Rezyume: *Ushbu maqolaning maqsadi barcha yoshdagi talabalar uchun tinglash va nutq qobiliyatlarini rivojlantirish usullari va natijalarini muhokama qilishdir.*

Резюме: *Целью данной статьи является обсуждение методов и результатов развития навыков аудирования и говорения у учащихся всех возрастов.*

Kalit so'zlar: *tinglash, gapirish, ko'nikmalar, chet el, turli, iboralar, muloqot, maqsad, o'quv dasturi, so'rovnom, talaffuz*

Ключевые слова: *аудирование, говорение, навыки, иностранные, разные, фразы, общение, цель, учебная программа, анкета, произношение.*

INTRODUCTION TO VIDEO-BASED LANGUAGE LEARNING: ADVANTAGES AND PROMINENCE

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Summary: *This article delves into the realm of video-based language learning, a prominent and effective approach in language education. Leveraging visual and auditory stimuli, this method enhances language acquisition by engaging learners in an immersive and interactive experience. The article introduces video-based language learning, emphasizing its advantages and significance in the field of language education. By providing a comprehensive overview of this approach, the article aims to shed light on its growing prominence as an innovative and engaging tool for language learners.*

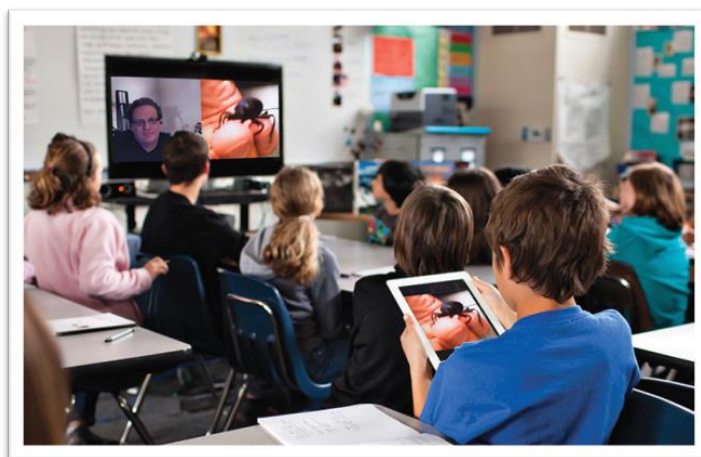
Keywords: *video-based language learning, advantages.*

Video-based language learning has emerged as a prominent and effective approach in language education, leveraging the power of visual and auditory stimuli to enhance language acquisition. In this article, we will introduce video-based language learning, exploring its advantages and discussing its prominence in the field of language education.

What is Video-Based Language Learning?

Video-based language learning refers to the utilization of video content as a key tool in language acquisition. It involves incorporating instructional videos, authentic materials, and multimedia resources into language learning curricula. Videos provide learners with visual context, real-life language use, and engaging content to support the development of listening comprehension, vocabulary acquisition, and overall language proficiency.

As Smith, J., & Johnson, R. (2020) mentioned: “Video-Based Language Learning: Enhancing Language Acquisition through Visual and Auditory Stimuli. International Journal of Language Education, Video-Based Language Learning refers to the use of video materials and resources as a primary tool for language acquisition and instruction. It involves incorporating videos, such as authentic video clips, movies, documentaries, and online video content, into language learning activities and lessons. Video-based language learning allows learners to engage with visual and auditory stimuli, observe authentic language use, cultural practices, and social interactions, and develop various language skills in an immersive and dynamic learning environment.”



(Image from <https://news.easyshiksha.com/wp-content/uploads/2018/07/classroom.jpeg>)

Description: The image depicts a classroom setting with a diverse group of students engaged in video-based language learning. The students are shown watching videos on screens, and actively participating in interactive exercises. The teacher is seen facilitating the learning process, providing guidance, and encouraging discussion among the students. The image showcases the advantages of video-based language learning, such as visual engagement, interactive learning, and the use of multimedia resources to enhance language acquisition. It also conveys the prominence of video-based learning in modern language education.

Advantages of Video-Based Language Learning:

Video-based language learning offers several advantages that contribute to its prominence in language education:

1. **Visual Context and Authenticity:** Videos provide visual context that enhances comprehension and reinforces language usage in authentic contexts. Learners can observe body language, facial expressions, and cultural nuances, allowing for a more comprehensive understanding of the language.

2. **Audio-Visual Stimulation:** Videos engage learners through auditory and visual stimuli, making the learning experience more engaging and memorable. The combination of visual images, spoken language, and contextual cues improves retention and helps learners develop a more natural sense of pronunciation and intonation.

3. **Multimodal Learning:** Video-based learning engages multiple senses, promoting multimodal learning. Learners can simultaneously listen to spoken language, observe visuals, read subtitles or transcripts, and interact with on-screen prompts. This multisensory approach caters to different learning styles and enhances comprehension and retention.

4. **Authentic Language Use:** Video content exposes learners to authentic language use in real-life situations. Learners can observe how native speakers communicate, including their expressions, idiomatic phrases, and cultural references. This exposure fosters a deeper understanding of the language and promotes more natural language production.

5. **Content Variety and Cultural Awareness:** Videos offer a wide range of content, including movies, documentaries, interviews, news clips, and educational materials. This variety exposes learners to different topics, genres, and cultural perspectives, broadening their language skills and cultural awareness.

Prominence of Video-Based Language Learning:

Video-based language learning has gained prominence in language education for several reasons:

1. **Accessibility:** With the advent of online platforms, video content has become easily accessible to learners worldwide. Learners can access a vast array of videos at their convenience, enabling self-paced learning and personalized language practice.

2. **Technological Advancements:** The availability of multimedia technology has made it easier to create and share video content. Learners can access high-quality videos, interactive exercises, and online platforms that support video-based language learning.

3. **Engagement and Motivation:** Videos are inherently engaging and captivating, capturing learners' attention and motivating them to actively participate in the learning process. This heightened engagement leads to increased motivation and better language learning outcomes.

4. **Integration with Online Platforms:** Video-based language learning seamlessly integrates with online platforms and learning management systems, offering interactive exercises, quizzes, and discussion forums. Learners can engage in collaborative learning, receive feedback, and track their progress.

In conclusion, video-based language learning has emerged as a prominent approach in language education due to its advantages in providing visual context, audio-visual stimulation, authentic language use, and cultural awareness. The accessibility of video content, technological

advancements, and its ability to engage and motivate learners have contributed to its growing prominence. Incorporating video-based learning into language curricula can enhance language acquisition and create a dynamic and engaging learning environment.

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Rezyume: Ushbu maqola videoga asoslangan til o'rganish sohasini o'rganadi, til ta'limida muhim va samarali yondashuv. Vizual va eshitish stimullaridan foydalangan holda, bu usul o'quvchilarni immersiv va interaktiv tajribaga jalb qilish orqali tilni o'zlashtirishni yaxshilaydi. Maqolada til ta'limi sohasidagi afzalliklari va ahamiyatini ta'kidlab, videoga asoslangan til o'rganish bilan tanishtiriladi. Maqola ushbu yondashuvni har tomonlama ko'rib chiqish orqali uning til o'rganuvchilar uchun innovatsion va qiziqarli vosita sifatida tobora ortib borayotgan nufuzini yoritishga qaratilgan.

Резюме: Эта статья посвящена изучению языка с помощью видео, известному и эффективному подходу в языковом образовании. Используя визуальные и слуховые стимулы, этот метод улучшает овладение языком, вовлекая учащихся в захватывающий и интерактивный опыт. В статье представлено обучение языку с помощью видео, подчеркнуто его преимущества и значение в сфере языкового образования. Предоставляя всесторонний обзор этого подхода, статья призвана пролить свет на его растущую известность как инновационного и привлекательного инструмента для изучающих язык.

Kalit so'zlar: videoga asoslangan til o'rganish, afzalliklari.

Ключевые слова: видеообучение языку, преимущества.

**CONCEPT OF LEGAL RELATIONSHIP OF HUSBAND AND WIFE IN CITIZENSHIP
AND FAMILY LAW AND ITS SPECIFIC CHARACTERISTICS**

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Summary: *In this article, the legal essence, legal foundations and specific features of the regulation of legal relations between husband and wife in the field of civil and family law are researched in a broad context. The article also analyzes the signs of legal relations between husband and wife and their legal description.*

Key words: *civil law, family law, husband and wife, legal relationship, subject, object, content of legal relationship.*

The legal relationship of a spouse is a social relationship regulated by the norms of family law arising from marriage. Like any legal relationship, the legal relationship between husband and wife consists of certain elements: subjects, object, content.

Subjects can be not only citizens of the Republic of Uzbekistan, but also foreign citizens, as well as stateless persons. In such marriage relations, foreign citizens and stateless persons enjoy equal rights and obligations with citizens of the Republic of Uzbekistan. After all, in accordance with the second part of Article 76 of Chapter 14 (Family, Children and Youth) of the Constitution of the Republic of Uzbekistan, marriage is based on the traditional family values of the people of Uzbekistan, voluntary consent and equal rights of the spouses [1].

It is worth noting that in accordance with the family legislation of the Republic of Uzbekistan, foreign citizens and stateless persons permanently residing in the Republic of Uzbekistan enjoy equal rights and have equal obligations with citizens of the Republic of Uzbekistan in family relations in its territory.

Marriages concluded outside the territory of the Republic of Uzbekistan between citizens of the Republic of Uzbekistan and between citizens of the Republic of Uzbekistan and foreign citizens or stateless persons on the territory of another state in accordance with the legislation of that state are recognized as valid in the Republic of Uzbekistan if there are no circumstances preventing the conclusion of a marriage [2].

The presence of a foreign element in family legal relations involves solving the issue of which country's law applies to specific legal relations and which court has jurisdiction over disputes arising from these legal relations. It provides for the possibility of applying foreign law to such relations based on the citizenship of the participant of family legal relations or his place of residence.

Thus, the conditions for concluding a marriage in the territory of the Republic of Uzbekistan are determined by the legislation of the state of which the person is a citizen at the time of marriage. However, when regulating a number of relations between husbands and wives, priority is given to the application of the applicable national sphere to relations in the territory of the Republic of Uzbekistan. In particular, these include norms such as the forms and procedure of marriage, the procedure and grounds for annulment of marriage.

It is also worth noting that, in accordance with international private legal norms and norms, private law may also give the parties the opportunity to choose the law of their country in regulating relations between spouses. However, in most cases, this rule can be applied not to marriage relations, but in many cases to the conclusion of a relevant marriage contract, to the conclusion of an agreement on the payment of alimony.

Another sign of the legal relationship of husbands and wives is its object, that is, at the same time, special attention is paid to this issue in the legal literature related to family law. In particular,

according to F. M. Otao'jaev, "The basis of civil-legal relations is property relations, while the basis of family-legal relations is, on the contrary, non-property non-property personal relations." Accordingly, all norms and institutions of civil law aim to regulate property relations, while family law primarily aims to regulate personal relations [3., 20].

This opinion is also supported by M.T. Oridoroga, who emphasizes the opinion that "marital relations are among legal relations that do not have a material object" [4., 44]. At the same time, there are other views about the object of marital relations. In particular, it is noted that the objects of property legal relations are material goods - the property and means of material support that a husband (wife) must provide to his wife (husband), and the objects of personal non-property legal relations are intangible goods such as the choice of a name, residence and place of residence.

In particular, scientists such as N.A. Barinova, S.A. Muratova, N.Yu. . They say that in this regard, the object known as "actions" means the objects related to the spouse's right to choose their surname, profession, place of residence and place of residence, and the provision of funds for the maintenance of the spouse (ex-spouse). Actions can be the object of both personal and property legal relations. In this case, the property (things) achieved through actions is the object of property legal relations [5., 23].

It should be noted that in the current family legislation, the concept of common property of the spouses and personal property of the spouses is distinguished by content. In particular, according to the first part of Article 23 of the Family Code of the Republic of Uzbekistan, in order for the husband and wife to be the joint property, the spouses shall transfer this property:

- acquired during marriage;
- before the marriage is registered, it should be taken at the expense of the future spouse's common funds;
- it is required that the law or marriage contract does not state otherwise regarding this property.

The third sign of legal relations between spouses is the content of these legal relations. When it comes to the rights and obligations of husbands and wives, their extent is determined by the rules of family law that regulate certain relationships. For example:

- procedure and conditions of marriage;
- grounds for annulment of marriage;
- personal and property rights and obligations of spouses;
- maintenance obligations of husband and wife [6., 6].

All the rights and obligations of the family are carried out within the framework of relative legal relations, in which the appropriate use of rights between husband and wife as authorized persons and the fulfillment of obligations ensure the clear manifestation of the signs characteristic of family legal relations.

Collecting the specified points, it is possible to come to the conclusion that as participants of family relations, husband and wife are bound to each other by a relative legal bond. This is considered to be a characteristic of marital relations, and in some cases, the right of one of the husband and wife may conflict with the obligation of the other husband and wife. For example, family relations are characterized by signs of absolute legal relations, which are also expressed in the fulfillment and implementation of the rights and obligations of husband and wife in relation to other third parties in ensuring the family rights of all third parties. For example, the obligation to raise children and financially support them, the right to receive alimony and other material support from children in the future, etc.

Based on the above, the scope of family-legal relations between husband and wife can be divided into the following four groups:

- 1) relations arising in connection with marriage, annulment of marriage and invalidity;

2) personal non-property and property relations between family members, i.e. husband and wife, parents and children (adoptees and adoptees);;

3) personal non-property and property relations between other relatives and other persons in the cases stipulated by the family legislation;

4) relations arising in connection with determining the forms and procedure of placement of children deprived of parental care in the family.

In this regard, as S.A. Muratova correctly stated, "the range of rights and obligations of the spouses also includes the personal and property rights and obligations of the spouses" [7., 23].

It is also worth noting that family legal relations related to the legal status of husbands and wives are divided into the following types, which are directly involved in communication with other subjects and also in terms of the composition of these subjects:

- legal relations of husband and wife;
- legal relations of ex-husband and wife;
- legal relations between parents and children;
- legal relations of other family members;
- legal relations, one of whose subjects is a child deprived of parental care.

In this regard, family legal relations, where the scope of the legal status of husband and wife is defined, can be compared with civil-legal relations in connection with their respective features.

In particular, according to some legal scholars, family relations have specific characteristics compared to civil relations, which include:

- separate subjective structure of legal relations;
- permanent and personal privacy feature;
- the emergence of legal relations in a unique way based on relevant legal facts [8., 31].

Other authors believe that the specific characteristics of family legal relations should be provided only in family legislation [9., 41]. In particular, Article 5 of the Family Code of the Republic of Uzbekistan provides for relations regulated by the family legislation, according to which the family legislation determines the conditions and procedure for entering into a marriage, ending (ending) a marriage and declaring it invalid, family members: husband- regulates personal non-property and property relations between spouses, parents and children (adoptees and adoptees), in the cases and within the framework stipulated by the family legislation, and between relatives and other persons, as well as forms and forms of adoption of children deprived of parental care defines the rules, the procedure for recording civil status documents [10].

Family legal relations are also closely related to the relations between different areas of law in terms of content, that is, family law belongs to the group of regulatory areas by granting permission, for example, civil law [11., 27].

On this basis, it is worth noting that family relations related to the legal status of husband and wife are closely related to civil-legal relations. In particular, according to Article 6 of the Family Code of the Republic of Uzbekistan, civil law applies to property and personal non-property relations between family members, which are not regulated by the family law, only if they do not contradict the essence of family relations.

At the same time, it is assumed that the norms of civil law can be applied to family legal relations. In particular, according to Article 2 of the Civil Code of the Republic of Uzbekistan, personal non-property relations and personal relations not related to property relations are regulated by civil legislation, unless otherwise provided for in the laws or if there is no exception to the essence of these relations [12].

Therefore, civil law regulates other property and related personal non-property relations based on the equality, independence of will and property independence of their participants. Family relationships do not always meet these criteria. In particular, with regard to the legal relations of

spouses, they are not always legally equal, and therefore the connection of family legal relations with civil legal relations is of great importance.

According to its legal nature, family relations regulated by family law between husband and wife are divided into personal and property relations. These include personal relationships that arise during marriage and annulment, when a couple enters into and annuls a marriage, chooses a surname, makes a decision about the place of residence, motherhood and paternity, as well as other issues of family life.

It is also worth noting that property relations in the family related to the legal status of husband and wife are classified according to two bases:

1. Depending on the regulatory object;
 - 1) relations arising from property;
 - 2) relations arising from the maintenance of other family members by some family members;
2. Depending on the subject content of the participants in property relations:
 - 1) property relations between spouses;
 - 2) property relations with third parties in which the spouse acts as a single person (responsibility for joint obligations);
 - 3) property relations between parents and children;
 - 4) property relations between other family members.

In the theory of family law, personal relations regarding the legal status of husband and wife have priority, because property relations are always related to them and arise from them. After all, among family relationships, the relationship between spouses has an important place, because marriage is the foundation of the family. Therefore, the specific characteristics of the relationship between husband and wife should be taken into account.

According to the current family law, husband and wife must have legal capacity and legal capacity in family legal relations. However, in accordance with these legal sentences, the lack of a normative description in the family legislation of the Republic of Uzbekistan today leads to the incorrect application of the relevant norms related to the application of this right and legal capacity in defining the scope of the norms of sectoral legislation related to the legal status of husband and wife in family law and there are cases of misunderstanding.

Taking these circumstances into account, the current Family Code of the Republic of Uzbekistan, it is appropriate to directly express the rights and legal capacity of the husband and wife in this family-legal relationship with the term "family legal capacity" and give a corresponding normative-legal description. In this regard, legal scholar N.M. Saveleva believes that this right and capacity to deal "consists of the ability to draw up family legal documents and the ability to implement family legal transactions" [13., 9].

In our opinion, it is appropriate to give family legal capacity as a subject of family law not only to husband and wife, but also to other subjects who have lived as subjects of this relationship and may participate in family legal relations. On this basis and on the basis of the above, the legal relations of spouses are classified on the following basis:

- 1) by subjects: legal relations of husband and wife;
- 2) according to their legal nature: property and personal relations;
- 3) according to the method of satisfying the interests of the authorized person: property (in relation to the property of husbands and wives); obligations (in connection with the provision of some by others, fulfillment of obligations to third parties);
- 4) according to the nature of relations between authorized and obligated persons: absolute - property relations of husband and wife in relation to third parties; kinship of husband and wife - legal relations.

Not all legal relationships between husband and wife are governed by family law. For example, relations related to inheritance of property, use of residential buildings are regulated by civil and housing legislation.

The practical importance of this classification of legal relations between husband and wife is important in correctly understanding the rights and obligations of husband and wife and ex-husband and wife, in determining the scope of legal norms that should be applied in the process of their creation, implementation and termination.

If we pay attention to the statistical information on divorce cases heard by civil courts in the first instance in the Republic of Uzbekistan, we can see that their number has increased from 53,660 in 2021 to 62,331 in 2022. Of these 62,331 cases that were completed in 2022, 33,420 divorce claims were upheld, 21,324 cases were rejected, and 5,021 cases were left pending. Therefore, it can be seen from these statistical data that the duration of the legal status of husbands and wives in family legal relations is terminated by divorce, only between the relevant parties this relationship can continue again in alimony and other similar cases [14].

It should be noted that it is also of practical importance to determine the specific characteristics of the legal relationship between husband and wife. In this regard, it is necessary to pay special attention to such a feature as the duration of these relations.

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Rezyume: *Ushbu maqolada fuqarolik va oila huquqi fanida er va xotin o'rtasidagi huquqiy munosabatlarni tartibga solishning yuridik mohiyati, huquqiy asoslari va o'ziga xos xususiyatlari keng mazmunda tadqiq qilinadi. Maqolada shuningdek er va xotin o'rtasidagi huquqiy muosabatlarning belgilari hamda ularning huquqiy tavsifi atroflicha tahlil qilinadi.*

Резюме: *В данной статье в широком контексте исследуются правовая сущность, правовые основы и особенности регулирования правоотношений между мужем и женой в*

сфере гражданского и семейного права. Также в статье анализируются признаки правоотношений между мужем и женой и их юридическая характеристика.

Kalit so'zlar: fuqarolik huquqi, oila huquqi, er va xotin, huquqiy munosabat, sub'ekt, ob'ekt, huquqiy munosabat mazmuni.

Ключевые слова: гражданское право, семейное право, муж и жена, правоотношение, субъект, объект, содержание правоотношения.

**FOREIGN EXPERIENCE OF ATTRACTING CITIZENS TO PUBLIC ASSISTANCE IN
THE FIGHT AGAINST CRIME**

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Summary: *The article analyzes the experience of the police of foreign countries in attracting citizens to publicly assist in the fight against crime.*

Keywords: *crime fighting, public assistance of citizens, foreign countries, operational-search activity, an employee of a body carrying out operational-search activities, an operative.*

The high crime rate in our country is one of the main factors hindering the implementation of positive socio-economic reforms. Therefore, in modern conditions, one of the fundamental national tasks requiring the adoption of a set of urgent measures is the fight against crime.

An important role among the most effective means of combating crime is played by operational investigative activities. At the same time, the use of its specific forces, means and methods is one of the important, integral components of the successful work of the operational units of the internal affairs bodies to solve the tasks of detecting, preventing, suppressing and solving crimes.

However, as the analysis of departmental regulations and the activities of operational units of the internal affairs bodies shows, operational investigative activities are carried out mainly behind the scenes, while significant assistance to these units in the fight against crime is provided by persons assisting on a confidential basis. In turn, the public assistance of citizens to the operational units of the internal affairs bodies is not given due attention, although this category of persons often carries out no less difficult work. Persons who openly assist the operational units of the internal affairs bodies often solve similar tasks, and they are also exposed to danger from criminals.

This situation is partly explained by the presence of many unresolved problems concerning legal regulation, organization and tactics of public assistance of citizens to operational units. It can be stated that at present, many operational officers of the internal affairs bodies, due to their short experience and, accordingly, insufficient work experience, involve citizens in the prevention and detection of crimes causes certain difficulties.

The problem is further compounded by the fact that in the science of operational investigative activities, an integral concept of the organization and tactics of public assistance of citizens to operational units has not been developed, and the available "Currently, the issues of motivating citizens to provide public assistance to operational units of internal affairs bodies remain insufficiently developed, which play an important role, since the duration and effectiveness of public assistance directly depend on the motivation of a person to provide it.

In addition, the current operational-search legislation, although it takes into account the possibility of citizens providing assistance to bodies carrying out operational-search activities on a public basis, however, does not fully meet the modern needs of the practice of combating crime, which negatively affects the involvement of persons to assist law enforcement agencies in solving the tasks of operational-search activities.

Thus, the need for further development of the institution of public assistance to citizens is dictated by the objectives of the theory of operational investigative activities and is conditioned by the needs of practice to obtain scientifically sound recommendations for providing public assistance to citizens to operational units of internal affairs bodies.

In the process of searching for optimal ways of possible changes and development of Russian legislation regulating the public assistance of citizens to operational units of internal affairs bodies, in our opinion, it is necessary to refer to the experience of the police of foreign countries in attracting citizens to fight crime. In many foreign countries, for example in the USA, Japan, China, Germany, there have been their own organizational forms of interaction between the police and the population for a long time. There are special structural units in the police, whose main function is to work among the population. Interaction between the police and the population is also carried out in widespread advisory councils consisting of representatives of trade unions, religious, house and other public organizations [1].

For example, in Japan, where there is a lower crime rate compared to other developed foreign countries, one of the reasons for success in this area, experts call the broad cooperation of the population with the police. Crime Prevention Associations have been established at the level of police stations and prefectures, whose functions include reporting crimes to the police, as well as patrolling the streets in the evening and at night as part of the so-called "vigilance detachments" [2].

In the USA, in Washington State, on the initiative of local residents, an organization called "Population - against Criminals" was created, characterized in that all its members had their own cars equipped with portable radio transmitters, which reported everything suspicious. There are similar formations in England and Canada [3].

In a number of regions of Germany, there is a "Voluntary Friends" program to assist police in arrests. In each police unit, a public visitor from the master is elected, 1842 who has the opportunity to come to the station without warning to check the conditions of detention of the arrested, their moral and physical condition [4].

In the UK, in the Northumbria area, the police work is assisted by the Northumbria Coalition against Crime, which is an unpaid reserve force used in an emergency situation. They are led by the police with the support of entrepreneurs, industrialists and representatives of local communities [4].

In China, the connection of law enforcement agencies with the population is considered one of the fundamental principles of its activities. Street and village committees are being set up to assist law enforcement agencies in combating crime. In each parish, so-called information points have been established on the streets of cities, which receive messages about illegal actions that are being prepared or have occurred, suspicious persons, etc. [5].

In our opinion, it is possible to turn to the experience of foreign countries on the problem of protecting persons who provide or wish to assist justice authorities in combating crime, since this problem has long acquired particular relevance. This has led to the improvement of legislation in some foreign countries, especially in terms of State protection of persons assisting law enforcement agencies in detecting, preventing and investigating crimes.

The protection of persons assisting in the prevention, detection and investigation of crimes is regulated in foreign countries not only by international legal acts, but also by the provisions of the Criminal Code, the CPC, as well as general laws on combating crime or special laws.

Currently, there is a tendency abroad to adopt special regulations regulating the protection of witnesses. In the USA and some other countries, protection programs are adopted, which are formalized in the form of laws and may be called program laws.

These laws-programs disclose the objectives of the program, determine the activities to be carried out, establish a list of bodies responsible for the implementation of the program, resolve issues of giving performers the necessary powers and coordinating the activities of various institutions, indicate sources of funding, and assign responsibilities for monitoring such activities.

In general, it should be noted that the legislation and judicial practice of foreign countries, unlike Russia, have long been on the path of improving the institution of public assistance of citizens to justice authorities in the fight against crime. The sincere interest of the population of foreign countries in the eradication of crime causes legitimate attempts to organize the protection of their lives and property on their own.

Thus, in conclusion, it can be concluded that the analysis of foreign experience in involving citizens in the fight against crime has shown that providing assistance 1843citizens who are not secret police officers in some countries is a tradition, in others it is a mutually beneficial interest, but in general such assistance is one of the factors of a successful fight against crime.

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Rezyume: *Maqolada xorijiy davlatlar politsiyasining jinoyatchilikka qarshi kurashda fuqarolarni jamoatchilik yordamiga jalb etish tajribasi tahlil qilingan.*

Резюме: *В статье анализируется опыт полиции зарубежных стран по привлечению граждан к публичному содействию в борьбе с преступностью.*

Kalit so'zlar: *jinoyatchilikka qarshi kurash, fuqarolarning, xorijiy davlatlarning jamoat yordami, tezkor-qidiruv faoliyati, tezkor-qidiruv faoliyatini amalga oshiruvchi organ xodimi, tezkor xodim.*

Ключевые слова: *борьба с преступностью, общественное содействие граждан, иностранные государства, оперативно-розыскная деятельность, сотрудник органа, осуществляющего оперативно-розыскную деятельность, оперативник.*

TESTING ENGLISH GRAMMAR SKILLS

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Summary: *The control of knowledge, skills and abilities of students is an integral part of the teacher's pedagogical work, an important factor in improving the quality of education. The control of knowledge assimilation makes it possible to plan the teacher's activities, differentiate testing, exercise systematic control, and combine control over the assimilation of knowledge of weak performers with the elimination of gaps in their knowledge. It must be carried out in accordance with the methodological requirements. So, we have considered the objects of control and possible forms of test tasks to test the formation of grammatical skills, which can be used both for current and for midterm and final control.*

Keywords: *control of knowledge, grammatical skills, test tasks.*

The objects of control in grammar are knowledge of a grammatical phenomenon (grammatical rules), the process of mastering methods of action with grammatical material, or the result of this process - a grammatical skill. Knowledge of grammatical material (knowledge of the rules) serves as an indicative basis for actions with grammatical material. Grammar knowledge is one of the first possible objects of control, within which smaller objects can be distinguished: knowledge of the meaning of grammatical material, its form and use. These components can be tested either in isolation or in combination with each other. Grammar knowledge is checked during the current control.

Consider examples of test tasks to test knowledge of the meanings of a grammatical phenomenon.

Task 1. Choose the grammatical form that you would use when translating the underlined verb in the Russian sentence.

Я пойду в театр, если ты меня пригласишь.

- 1) am going to 2) will go 3) go 4) went

Task 2. Choose the grammatical form that you would use when translating the underlined verb in an English sentence.

He has just removed from one city to another.

- 1) переехала
2) переезжает
3) переедет
4) только что переехала

These tasks are related to tasks with a choice of answers. A similar matching task could be as follows:

Task 3. Choose the grammatical form that you would use when translating the underlined verb into the Russian sentence. One grammatical form is superfluous.

1) The architect <u>will present</u> his project soon.	a) will be presented
2) The project <u>was presented</u> last week.	b) will presented
3) The draft <u>will be presented</u> in two days.	c) had been presented
4) Yesterday the architect <u>presented</u> his project.	d) presented

The following tasks are aimed at testing knowledge of the form of a grammatical phenomenon.

Task 4. A noun that forms the plural differently than others is ...

- 1) mice
- 2) city
- 3) umbrella
- 4) animal

The tasks also check knowledge of not only the form of the verb, but also its meaning. Since the forms of all verbs have similar endings, choosing the correct answer depends on knowing the grammatical meaning of each of the verbs in the sentences given.

The following tasks are aimed at testing the knowledge of the use of such grammatical phenomena as articles, personal pronouns-additions, temporary forms of verbs in the conditional and subjunctive moods. - Choose the correct answer.

Task 5. I am ____ teacher !

- 1) a
- 2) an
- 3) the
- 4)-

Task 6. Have you seen ____ picture which I like?

- 1) the
- 2) an
- 3) a
- 4)-

Checking the knowledge of a grammatical phenomenon (its form, meaning and use) should be combined with the control of the ability to perform actions with it . Thus, the next object of control will be a grammatical skill, which consists of a system of actions with grammatical material, formed sequentially. In a grammatical skill, it is possible to single out its constituent actions: recognition and understanding of grammatical information (morphological forms and syntactic constructions) in a written and oral text; the choice of structure and its design when compiling one's own statements in oral and written form. These actions will be the objects of control during the formation of a grammatical skill at a certain point in the educational process (current control).

Accordingly, certain test tasks can be offered to these objects of control. To check the actions for recognizing and understanding grammatical information, you can use, for example, test tasks for supplementing sentences.

In the task, the sentence structure (syntactic construction) is already set. The subject must put the verb in the desired grammatical form in accordance with the given syntactic construction.

The next task is aimed at testing the ability to compose a sentence from given words, i.e., reconstruct the syntactic structure of a sentence based on understanding the grammatical meanings and forms of individual words and phrases. In form, this can be a task to establish the correct sequence, in which the numbers of correct answers can be marked with numbers to the left of words and phrases.

To test the actions of choosing the syntactic structure of the statement and the grammatical design of this structure in accordance with the situation of communication, you can use, for example, test tasks in which the subject is asked to formulate a question or answer to a question according to the logic of the situation, using the necessary syntactic structures. In form, these can be tasks with a choice of answers.

Tasks check the formation of individual actions that make up the grammatical skill, i.e., they control the process of skill formation during the current control. However, when checking the formation of grammatical skills at the level of a single phrase, it is impossible to control the functioning of this skill in speech. In order to make sure the stability of the formed skill, students should be offered tasks in which they would have to use a controlled grammatical phenomenon in combination with previously learned ones. These can be open-ended tasks with a short answer.

Students are invited to fill in the gaps in a coherent communicative text by inserting the correct grammatical form in accordance with the content of the text. In this case, students independently enter the answer in the answer sheet.

The performance of such tasks requires students to analyze the grammatical structure of each sentence in the text.

The objects of control in tasks based on a communicative-oriented text can also be integrative lexical and grammatical skills. In a coherent text, grammatical skills are checked on the basis of the studied vocabulary, and lexical skills are checked on the practiced grammar. Such tasks can also be used for final control.

Thus, in the modern world, testing is already a part of life, a given that needs to be mastered and accepted. Despite all the problems associated with this method, it is the test tasks that hold the dominant position in situations where it is necessary to reveal the maximum level of opportunities with a minimum expenditure of time.

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Rezyume: *O'quvchilarning bilim, ko'nikma va malakalarini nazorat qilish o'qituvchi pedagogik faoliyatining tarkibiy qismi, ta'lim sifatini oshirishning muhim omili hisoblanadi. Bilimlarni o'zlashtirishni nazorat qilish o'qituvchining faoliyatini rejalashtirish, testlarni farqlash, tizimli nazoratni amalga oshirish va zaif ijrochilarning bilimlarini o'zlashtirish nazoratini ularning bilimidagi bo'shliqlarni bartaraf etish bilan birlashtirish imkonini beradi. U uslubiy talablarga muvofiq amalga oshirilishi kerak. Shunday qilib, biz joriy va oraliq va yakuniy nazorat uchun qo'llanilishi mumkin bo'lgan grammatik ko'nikmalarni shakllantirishni tekshirish uchun nazorat ob'ektlari va test topshiriqlarining mumkin bo'lgan shakllarini ko'rib chiqdik.*

Резюме: *Контроль знаний, умений и навыков учащихся является неотъемлемой частью педагогической работы учителя, важным фактором повышения качества образования. Контроль усвоения знаний дает возможность планировать деятельность учителя, дифференцировать тестирование, осуществлять систематический контроль, сочетать контроль за усвоением знаний слабыми исполнителями с устранением пробелов в их знаниях. Оно должно проводиться в соответствии с методическими требованиями. Итак, мы рассмотрели объекты контроля и возможные формы тестовых заданий для проверки сформированности грамматических навыков, которые можно использовать как для текущего, так и для промежуточного и итогового контроля.*

Kalit so'zlar: *bilimlarni nazorat qilish, grammatik ko'nikmalar, test topshiriqlari.*

Ключевые слова: *контроль знаний, грамматические навыки, тестовые задания.*

CONCEPT AND CHARACTERISTICS OF PRIVATE ENTERPRISE

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Summary: *In this article, you can familiarize yourself with the information about the concept and signs of a private enterprise and their specific aspects, as well as the regulatory legal documents adopted by our country in this regard.*

Key words: *Private enterprise, legal entity, joint-stock company, commercial organization, non-commercial organization, family business.*

Introduction. A number of economic and legal reforms have been carried out in our country to carry out business activities, and sufficient conditions have been created for entities carrying out these activities. In the process of globalization, new reforms were carried out in accordance with the daily growing demands of the population, on the basis of which a number of laws were adopted and changes and additions were made to the existing ones. All this is recognized as a continuation of the gradual reforms aimed at raising the standard of living of the population by creating wide opportunities for the development of the economy based on market relations, various forms of property, and entrepreneurship. Further liberalization of the economy, increasing the freedom and economic independence of economic entities, forming a wide-ranging market infrastructure, sharply reducing the control and management authority of the state, limiting its interference in the economic activities of enterprises, and eliminating obstacles to the development of entrepreneurship. - all this is a decisive direction of deepening reforms. The legal basis of private enterprises is the Civil Code of the Republic of Uzbekistan, the laws "On private enterprise", "On guarantees of freedom of business activity", "On the protection of private property and guarantees of the rights of owners", "On state control of the activities of economic entities" and other normative legal documents.

Discussion. Private enterprises are formed in order to engage in business activities and earn income on this basis. According to the new version of the Law "On Guarantees of Freedom of Entrepreneurial Activity" adopted on May 2, 2012, entrepreneurial activity is entrepreneurial activity carried out by subjects of entrepreneurial activity in accordance with legal documents, aimed at obtaining income at their own risk and under their own property responsibility.[1, 201]

Private enterprises are a type of legal entities. According to Article 39 of the Civil Code of the Republic of Uzbekistan, a legal entity is an organization that has separate property in its ownership, management or operational management, and is responsible for its obligations with this property, can acquire and exercise property or personal property rights on its own behalf, can fulfill obligations, be a plaintiff and be liable in court. Legal entities can be of two types. One is an organization that makes profit as the main goal of its activity (commercial organization), and the other is an organization that does not make profit as such (non-commercial organization). The Code specifies commercial organizations as full company, limited partnership, limited liability company, additional liability company, open and closed shareholders' company, branch company, dependent company, production cooperatives, unitary enterprise based on the right to conduct business, state unitary enterprise based on the right of operational management, and their legal status is defined. Legal scholar D. Karakhodjaeva writes the following about types of legal entities: "legal entities can be divided into the following types: joint-stock company; economic communities (limited and additional responsibility); companies (full and limited) and unitary enterprises. This list of organizational and legal forms can be considered complete." [2. 22]

However, the existence of a rule in the code that a legal entity that is a commercial organization can be formed as a business company and society, a production cooperative, a unitary

enterprise, and other forms provided for by law does not negate new organizational and legal forms that are created on the basis of laws. Private enterprises are also a type of legal entities created on the basis of law. In our opinion, it would be appropriate if other organizational and legal forms provided for by laws were included in the Civil Code.

Pursuant to Article 3 of the Law "On Private Enterprise" adopted on December 11, 2003, a commercial organization created and managed by a single individual owner is recognized as a private enterprise. A private enterprise is an organizational and legal form of business entities. A private enterprise is liable for its obligations with all its assets. In case the property of the private enterprise is insufficient, the owner of the private enterprise shall be subsidiarily liable for the obligations of the private enterprise with his own property in accordance with the legal documents. [3. 8]

It is clear from this definition that a private enterprise is established by a single individual and on the basis of his property. Neither legal entities nor natural persons with several owners can directly participate in its creation as founders, as well as other organizational and legal forms of business entities. This is one of the unique aspects of its legal status. Because joint-stock companies, limited liability and additional liability companies, as well as joint-stock farms and family enterprises, which are considered as subjects of entrepreneurial activity, can be established by individuals with one or more participants and by a legal entity, depending on the relevant legal documents.

In the new version of the Law "On the protection of joint-stock companies and shareholders' rights" adopted on May 6, 2014. [4. 210] as a joint-stock company, it is stated that the chartered fund is a commercial organization divided into a certain number of shares confirming the rights of shareholders in relation to the joint-stock company. Unlike private enterprises, its shareholders are not responsible for the obligations of a joint-stock company and pay damages related to its activity within the value of their shares. Shareholders who have not paid all the share price shall be jointly liable for the obligations of the company within the unpaid part of the value of the shares belonging to them.

Also, a private enterprise has a unique legal status from limited liability and additional liability companies. According to the Law "On Limited Liability and Additional Liability Companies" adopted on December 6, 2001, an economic company founded by one or more persons, whose charter fund is divided into shares in the amounts determined by the founding documents, is considered a limited liability or additional liability company. [5. 10]

It stipulates that the participants of the limited liability company are not liable for its obligations, and the participants of the additional liability company are jointly and severally liable for the company's obligations with their property, which is the same for everyone and in relation to the value of their contributions, in a multiple amount determined in the founding documents of the company. A limited liability company formed by one person is similar to a private enterprise, but the participant in the company may or may not manage it.

A private enterprise is organized on the basis of the property of a single owner, and this owner directs its activities as a sole manager. It is assumed that the responsibility of a private enterprise arising from an obligation does not occur without the actions of the head of the enterprise who has assumed this obligation or participated in its origin with orders and in other ways (drafting contracts, issuing power of attorney, etc.). This creates a sense of responsibility from the head of the enterprise.

Based on the Law "On Family Entrepreneurship" adopted in 2012, a new organizational and legal form of business activity was defined as the establishment of family enterprises. Although a family enterprise is somewhat close to a private enterprise in terms of its structural form, responsibility issues, and scope of activity, its founders are family members, the organization of participants consists of at least two people, its activity is based on the personal labor of its

participants, it is formed only within the framework of a small business entity, and the priority authority of the general meeting in management shows its unique qualities as an independent organizational and legal form. The founding document of a family enterprise is a founding agreement signed by all participants of this enterprise. In the case of a private enterprise, the founding document is its charter. [6. 188]

Pursuant to Part 3 of Article 12 of the Law "On Private Enterprise", if the owner gives property to the enterprise at the expense of the joint property of his family members during the formation of the charter fund of a private enterprise, it is determined that notarized consent is required from all owners of this property. A family enterprise is a small business entity established by its participants on a voluntary basis for the production and sale of goods, on the basis of shared or joint property of family enterprise participants. It depends on which organizational and legal form the family members who are property owners choose. Based on their family's capabilities, they either transfer their shares to a family member who is considered the owner of a private enterprise and do not participate in its management and operation, or if not, they participate in its activities based on the formation of the chartered fund of the family enterprise with their share.

Sole entrepreneurship is the implementation of business activities by an individual (individual entrepreneur) without establishing a legal entity. [7. 175]

According to our legislation, sole proprietorship is carried out independently by an individual entrepreneur without the right to hire employees, on the basis of the property he owns on the basis of property rights, as well as on the basis of the property he owns due to the property ownership and (or) the right to use it. In cases where one of the spouses uses the joint property of the spouses for the implementation of an individual business, the consent of the husband (wife) is required, unless otherwise provided by laws, a marriage contract or a separate agreement between the spouses.

A private enterprise is an organizational and legal form that largely retains the positive features of sole proprietorship and is free from its limitations. [8. 9]

In fact, agreeing with this point of view, a sole proprietorship is not a commercial organization created and managed by a single natural person, but an individual, because he cannot hire employees. A private enterprise is an organization that can hire as many employees as it wants.

The activity of enterprises of this type has now taken a leading position in the economy of developed countries. In Germany, sole proprietorships account for 45 percent of all limited liability companies and, together with de facto sole proprietorships and "family companies," more than 80 percent of all such companies. The activity of private enterprises occupies the main share in the US economy. [9. 48]

Most of the property owners in our country are conducting their business activities in the form of private enterprises. They have been playing an important role in the development of the country's economy, employment and social protection. However, it should be noted that the term "private enterprise" is used as a synonym in various legal documents.

We can observe that in the normative legal documents of the President of the Republic of Uzbekistan and the Cabinet of Ministers, the phrase "private enterprise" covers all organizational and legal forms. The word "private" is a word that represents the form of ownership of legal entities, and the word "enterprise" can represent all organizational and legal forms in a general sense. [10. 410]

That's why there are some terminological confusions in legal documents. However, our laws should be correctly and clearly understood by our people.

During the research, it became clear that in the legislation of some foreign countries, business entities close to private enterprises are expressed differently. For example, "individual private enterprise" in China, "individual enterprise" in Lithuania, "private enterprise" in Ukraine, etc.

Conclusion. Based on the above and based on legal technical requirements, it would be appropriate if the term "private enterprise" used in the Law "On Private Enterprise" is replaced by one of the words "single enterprise", "individual enterprise", "private firm" or "private firm".

In short, private enterprises are characterized by their own characteristics. First, the privileges and guarantees provided by our state to private enterprises on the basis of legislation are in accordance with the principle of social justice; secondly, the fact that its organization and composition are somewhat compact and simple; thirdly, the fact that the legal regime of the private enterprise reflected in the legal documents has favorable opportunities compared to the legal regime of other business entities; fourthly, being organized on the basis of sole proprietorship and being managed on the basis of his direct participation ensures that the activities of the private enterprise are properly managed with thoughtfulness and deep observation.

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Rezyume: Ushbu maqolada siz xususiy korxona tushunchasi va belgilariga oid ma'lumotlarini va ularning uziga xos jihatlari va bu buyicha davlatimiz tomonidan qabul qilingan normativ-huquqiy hujjatlar bilan tanishib chiqishingiz mumkin.

Резюме: В данной статье вы можете ознакомиться с информацией о понятии и признаках частного предпринимательства и их конкретных аспектах, а также с нормативными правовыми документами, принятыми в нашей стране в этой связи.

Kalit so'zlar: Xususiy korxona, yuridik shaxs, aksiyadorlik jamiyati, tijoratchi tashkilot, tijoratchi bo'lmagan tashkilot, oilaviy tadbirkorlik.

Ключевые слова: частное предприятие, юридическое лицо, акционерное общество, коммерческая организация, некоммерческая организация, семейный бизнес.

USING INVERSION IN ALDOUS HUXLEY'S "CHROME YELLOW"

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Summary: *This paper highlights the deliberate and calculated use of inversion in Aldous Huxley's "Chrome Yellow" and its impact on the novel's narrative. The study identifies the prevalent cases of inversion, such as those involving the "there is/are" construction, inversions after direct speech, and interrogative sentences. The author's purposeful incorporation of inversion enhances the depth and variety of the storytelling, imparting a distinct literary flair to the work. Consequently, this stylistic element captivates readers and contributes significantly to the overall richness of the novel's style.*

Keywords: *Inversion, Aldous Huxley, Chrome Yellow, Interrogative sentences, Stylistic richness*

The exploration of word order and inversion in literature offers a fascinating lens through which to analyze the syntactic expression and stylistic dimensions of a literary work. In this subtopic, we focus specifically on Aldous Huxley's "Chrome Yellow" and examine the presence and significance of inversion within the text. As a renowned novelist and essayist, Huxley's works are known for their rich linguistic elements and intricate narrative structures. By delving into "Chrome Yellow," we aim to uncover the unique employment of inversion and its role in enhancing the literary experience. Through a detailed analysis of the novel's inverted sentences, we can gain deeper insights into Huxley's stylistic choices, the thematic nuances they convey, and their impact on the overall reading experience. This investigation contributes to the broader understanding of word order and inversion in English literature and provides valuable insights into Huxley's artistic craftsmanship and narrative techniques.

So, in this research work we will consider various options for using inversion in the work of Aldous Huxley *Chrome Yellow* and analyze them.

Example 1

Consider the proposal:

What right had he to sit in the sunshine, to occupy corner seats in third - class carriages, to be alive ? - What right did he have to bask in the sun, take seats in third-class carriages, continue to live?

We have an interrogative sentence. As we know, in English sentences of this type use reverse word order, or grammatical inversion. Smirnitsky calls this type of inversion partial. This type is used to express a question. As we can see, when translating into Russian, the inversion is not preserved.

Example 2

was the word to describe the curves of those little valleys? - И каким словом можно описать изгибы тех неглубоких канавок?

As in example 1, we are dealing with an example of grammatical inversion, which is an essential feature of English interrogative sentences. When translated, the structure and type of the sentence completely changed.

We see similar cases of using inversion in the following examples:

Example 3. *I tell you how I won four hundred on the Grand National this year?*

Я тебе не рассказывал, как я выиграл четыре сотни на скачках Grand National в этом году?

Example 4

are thousand-pound fur coats, what are quarter-million incomes? -

Что за меховые шубы за тысячу фунтов, что за доходы в четверть миллиона?

Example 5

Had Priscilla no sense of proportion? - Знакомо ли было Присцилле чувство меры?

Example 6

Why was he born with a different face? - Почему он родился с другим обликом?

Example 7

they suffer you to go on writing villanelles, my good Denis? - Они разрешат тебе и дальше писать вилланели, мой дорогой Дэнис?

Example 8.

“Do you propose,” Ann asked, “that the custom should be revived at Buckingham Palace?” - «То есть ты предлагаешь возродить традицию в Букингемском дворце?» - спросила Энн.

Example 9.

“Shall we be allowed to read it now it’s finished?” Denis asked. - «Можно нам прочесть книгу, если она закончена?» - спросил Дэнис.

Example 10.

had he been such a fool as to suggest that carrying stunt? - Как он мог быть таким дураком и не воспользоваться таким удобным случаем?

Example 11.

“Couldn’t you give the animals a little holiday from producing children?” asked Ann. - «Неужели вы не можете устроить животным выходной, чтобы они смогли отдохнуть от воспроизводства себе подобных?» - спросила Энн.

In this example, we will consider two cases of using inversion. In both cases, grammatical inversion is used: inverted word order in direct speech in an interrogative sentence, as well as inversion in the words of the author.

Example 12.

Here was Camlet at last. - Вот наконец и Камлот.

Analyzing this example, we can say that the construction here was is close in meaning to the there construct was. According to Smirnitsky, constructions such as there is \ was, there are \ were difficult enough to parse. On the one hand, there, as well as here in such sentences, goes back to its full meaning (there - there, here - here), however, in such constructions, where the predicate always precedes the subject, these adverbs are particles. However, in this case we are dealing with grammatical inversion.

Example 13

Here am I at Crome. - Вот я и в Кроме.

Construction here am I is close in meaning to the constructions there is / are , so we have an example of grammatical inversion.

Example 14

Consider a sentence with direct speech:

“All in good time, sir,” said the guard soothingly. - «Всему своё время, сэр,» - мягко сказал проводник.

As we can see, in this sentence, direct speech precedes the words of the author. Smirnitsky argues that such sentences are similar in structure to sentences where common adverbial expressions are in the first place. Inversion in such cases serves to express the lexical subject and lexical predicate, but is complete. IN Russian offer inversion is preserved.

Example 15

There was the morning-room, with its pale lemon walls, its painted Venetian chairs and rococo tables.

Вот столовая в бледно-жёлтых тонах, где стояли расписные венецианские стулья и столы в стиле рококо.

As already mentioned in example 2, for sentences with the there construct is / are is characterized by grammatical inversion, which does not carry any semantic load.

In addition, this type of inversion occurs repeatedly in the text, in such examples as:

Example 16

There was something rather pleasing about the notion of black patent leather. - Было нечто притягательное в лакированной коже.

Example 17.

There was no sign of any of the other guests. - Никого из остальных гостей больше не было.

Example 18.

There had never been a flimsier pretext. - Никогда ещё не было столь необоснованных отговорок.

Example 19.

After the social revolution there will be no reservations.-После общественной революции больше никто не будет молчать.

Example 20.

There was a breaking of glass, a stamping of feet, with an outburst of shouts and laughter. - Были слышны звуки бьющегося стекла, топот ног, крики и взрывы хохота.

In our analysis of Aldous Huxley's novel "Chrome Yellow," we closely examined 20 examples of inversion and provided detailed explanations for each case. Throughout the study, we identified and analyzed all clear examples of inversion in the text. It is worth noting that the most frequently employed cases of inversion in the novel were found in sentences containing the constructions "there is/are" (or "here is/are"). Additionally, the author utilized inversion after direct speech, as well as in interrogative sentences. However, conditional constructions such as "may it be..." and similar forms were relatively infrequent.

The use of inversion in the novel "Chrome Yellow" serves various purposes, including stylistic variation, emphasis, and creating a distinctive narrative voice. By employing inversion, Huxley adds a unique and engaging quality to the prose, capturing the attention of readers and enhancing the overall aesthetic experience of the work.

Inversion is particularly prevalent in sentences with the "there is/are" construction. This inversion technique, where the subject follows the verb, creates a sense of anticipation and draws attention to the existence or presence of something. For example, in the sentence "There stood the old oak tree, its branches reaching towards the sky," the inversion of "there stood" emphasizes the visual image of the tree and adds a poetic flair to the description.

The author also employs inversion after direct speech, allowing the characters' words to stand out and command attention. By inverting the word order, Huxley adds a touch of drama and significance to the characters' dialogues. For instance, in the passage "'Wonderful!' exclaimed Priscilla, her eyes sparkling with excitement," the inversion of "exclaimed Priscilla" accentuates her enthusiasm and highlights the emotional intensity of the moment.

Interrogative sentences in the novel often feature inversion, adding a distinct flavor to the characters' questioning or expressing a sense of surprise or disbelief. Inversions in interrogative

sentences can create a sense of rhetorical effect or introduce a dramatic pause. For example, "Could it be true?" or "Was she really going to leave?" showcase the use of inversion to heighten the impact of the questions posed.

However, it is worth noting that conditional constructions using inversion, such as "may it be..." or similar forms, are less frequent in "Chrome Yellow." These constructions are used sparingly, perhaps to maintain the overall flow and readability of the text without overwhelming the reader with excessive inversion.

In conclusion, the analysis of inversion in Aldous Huxley's "Chrome Yellow" reveals its purposeful and strategic use throughout the novel. The most common cases of inversion include sentences with the "there is/are" construction, inversions after direct speech, and interrogative sentences. By utilizing inversion, Huxley adds depth, variety, and a touch of literary flair to the narrative, engaging readers and contributing to the overall stylistic richness of the work.

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Rezyume: Ushbu maqolada Aldous Huxleyning "Xrom sariq" asarida inversiyaning ataylab va hisoblangan ishlatilishi va uning roman hikoyasiga ta'siri yoritilgan. Tadqiqot inversiyaning keng tarqalgan holatlarini aniqlaydi, masalan, "there is/are" konstruksiyasi, to'g'ridan-to'g'ri nutqdan keyingi inversiyalar va so'roq gaplar. Muallifning inversiyani maqsadli tarzda kiritishi hikoyaning chuqurligi va rang-barangligini oshiradi, asarga o'ziga xos adabiy tuyg'u bag'ishlaydi. Binobarin, bu stilistik element o'quvchilarni o'ziga jalb qiladi va roman uslubining umumiy boyligiga katta hissa qo'shadi.

Резюме: В этой статье освещается преднамеренное и расчетливое использование инверсии в «Желтом хrome» Олдоса Хаксли и ее влияние на повествование романа. В ходе исследования выявлены распространенные случаи инверсий, в том числе конструкции «есть/есть», инверсии после прямой речи и вопросительные предложения. Целенаправленное использование автором инверсии увеличивает глубину и разнообразие повествования, придавая произведению отчетливый литературный колорит. Следовательно, этот стилистический элемент захватывает читателей и вносит существенный вклад в общее богатство стиля романа.

Kalit so'zlar: Inversiya, Aldous Huxley, Chrome Yellow, So'roq gaplar, Stilistik boylik

Ключевые слова: инверсия, Олдос Хаксли, желтый хром, вопросительные предложения, стилистическое богатство.

LINGUISTIC DIFFERENCES OF INFORMATION TECHNOLOGY TERMS IN ENGLISH AND KARAKALPAK LANGUAGES

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Summary: *This article aims to study the terminological system of information technologies in English and Karakalpak languages as a linguistic phenomenon, mainly focusing on the in-depth study of synonyms and doublet terms in the researched terminological system.*

Key words: *information-technology, lexical units, synonymy, doublet, terms*

Since the lexical units in the language are specific signs of a large system, they are connected to each other based on a certain relationship. Therefore, describing them, revealing their communication differences is one of the important issues. Linguists use several methods in describing language units.

One method of learning language units is related to learning the terminological system. That is, the representation of several meanings of one word in the language (polysemy), the expression of two or more words with the same meaning (synonym), the expression of words with the same form and different meanings (homonym), the occurrence of two words with opposite meanings (antonyms) is a common situation in language knowledge, and it is also a common phenomenon in the field of terminology.

In this article, we aimed to study the terminological system of information technology in English and Karakalpak languages as a linguistic phenomenon, focusing mainly on the in-depth study of synonyms and doublet terms in the researched terminological system.

S.V. Grinev-Grinevich developed a complex of the study of synonyms based on universal features in the classification of synonyms [1:105] (in the terminology of S.V. Grinev-Grinevich - "equivalent terms", i.e. "used to name a certain phenomenon, they are the same or must have a similar meaning"). The second is divided into absolute or conditional synonyms. Absolute synonyms are studied as synonyms with only one meaning, conditional synonyms - "Synonyms with a similar meaning, used as absolute synonyms under certain conditions" and divided into conditional synonyms.

A. A. Reformatsky comments on the synonymous meanings in the mentioned methods of expression: "in addition to absolute synonyms in terminology, words can be used in different forms, i.e. doublets arising from the same base" [2: 54]. So, the scientist thinks that doublets are formed morphologically using various affixes and prefixes: phonetically (paynet-paynet); orthographic method (display-display), elliptical method, abbreviations (internet-net), lexical method (mouse-mouse), syntax is divided into doublets (display of the desk - desktop display). Based on this information, we can say that synonyms are words with the same meaning and different forms, so doublets are different forms of the same word. That is why we must distinguish between synonyms and doublets when organizing terminology.

Lexical units in the English language have a different meaning in everyday use and a different meaning in the researched information-technological field: *bus* - *bus*.

bus *bas* noun [countable] **1** a large road vehicle with a lot of seats that you pay to travel on, especially one that takes you fairly short distances and stops frequently: by bus; Take/catch a bus; miss the bus.

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This word is a commonly used lexical item, used in the sense of passenger transport. However, this word is used in the field of information technology in the following meanings:

1. *tire*. A physical device that transmits data from one part of a computer to another; 2. *line*. High-speed communication lines. 3. *channel*. (information transmission) signal or data transmission device [IEDCT, 2010].

Another word that is widely used in information technologies is the term *key*:

key ki: noun [countable] **1** a small piece of metal used for opening or locking a door or a container, or for starting the engine of a vehicle: **key to**. **2** usually singular the thing that will do most to help you to achieve something; **3** one of the parts that you press on a keyboard to make it produce letters, numbers etc.; **3a** one of the parts that you press on a musical instrument to make it produce sounds; **4 MUSIC** a set of musical notes that are based on one particular note; **5** a list of signs and their meanings, for example a list of the signs that are used on a map, drawing etc.; **5a** a list of answers to the questions in a test or in a book.

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Meaning in the field of information technology: 1. *Complex of symbols. It is used to hide objects by separating them from a set of similar objects*. 2. *one or more characters or a text field used to identify data*. 3. *Conversion of the original text into ciphertext and the opposite operation (bit sequence)* [IEDCT, 2010]. Apart from this, *key* is used as the key component in the phrase in lexical unit: *key frame* - *key frame* (the video frame given when the size of all video messages is reduced); *quadrature phase-shift keying (QPSK)* - *quadrature-phase manipulation* (a type of modulation using two phase shifts (0 and 1800) shifted by 900 to each other); *parental key* - *restriction (parental restriction button: it is possible to restrict the functions of channels and programs based on a password)*; *chroma-key* - "*Chroma-key*" (change one video view to another, a new view by clicking on a specific color section); *fixed key* - *specified key* (Tandberg Television company created symbols such as conditional keying symbols, which control symbols were developed to make the RAS system easier to use and fixed).

The term *display* is also actively used as the main component of a number of terminological combinations: *reversible display* - *reversible display* (reversible screen that can restore white symbols on a black background or, conversely, at the operator's command); *display primaries (receiver primaries)* - *primary colors of the recovery device* (perceived continuous chroma and variation control, their use in combination with other colors in an appropriate amount of interference situations); *graphic display* - *a graphic display* (a display that provides a matrix of dots on the screen and a display that illuminates the texts); *display-controller* - *display-controller* (hardware and software block that converts computer data into a continuous analog massive called "video signal"); *frame display frequency (vertical)* - *(frame (vertical) rate* (the amount of frames updated in one second); *monitor (display)* - *monitor (display)* (a device for visual movement of message text, tables, photos, charts and others); *color display* - *color display* (a device that displays information visually); *symbolic display* - *a symbolic display* (display, used for working with texts and drawings, showing a set of letters, numbers and symbols on the screen).

Synonymous relations in the terminology of information technology in English and Uzbek are synonymous terms that represent different aspects of the same concept and subject; the content is the same and the form is different, one is a word of this special language, and the other is a doublet term borrowed from another language. These words consist of term variants that differ only in the plan of expression and have the same plan of content.

It is observed that the semantic structure of the terms of information technology encounters a synonymous phenomenon.

In the course of the research, it was found that the phenomenon of synonymy is more characteristic of the terminology of the English language information technology field. The use of English terms showed the following differences. It was found that 384 terms of the information technology field have synonyms, 8.43% of the total number form a synonymous line. In total, 85

synonymous combinations were identified, and this situation confirms that synonymy is widespread in the terminology of the field of information technology.

The synonyms of information technologies terminology were analyzed as follows: 1) synonyms between fields or within fields; 2) terms in a synonymous line; 3) structure of terms in synonymous line; 4) reasons for the appearance of synonymous lines; 5) complete synonyms or comparative synonyms (doublets).

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Rezyume: *Ushbu maqolada ingliz va qoraqalpoq tillari axborot texnologiyalarining terminologiya tizimini til hodisasi sifatida o'rganish vazifasi qo'yilgan bo'lib, asosan o'rganilayotgan terminologiya tizimidagi sinonimlar va dublet atamalarni chuqur o'rganishga e'tibor qaratiladi.*

Резюме: *В данной статье ставится задача изучения терминосистемы информационных технологий английского и каракалпакского языка как лингвистического феномена, в основном акцентируя внимание на углубленном изучении синонимов и терминов-дуплетов в исследуемой терминосистеме.*

Tayanch so'zlar: *axborot texnologiyalari, leksik birliklar, sinonimiya, dublet, atamalar.*

Ключевые слова: *информационные технологии, лексические единицы, синонимия, дублет, термины.*