

**ҚОРАҚАЛПОҒИСТОНДА
ФАН ВА ТАЪЛИМ**

**ҚАРАҚАЛПАҚСТАНДА
ИЛИМ ҲӘМ ТӘЛИМ**

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В КАРАКАЛПАКСТАНЕ**

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AVERAGING METHOD FOR THE QUASI-LINEAR COUPLED VAN DER POL-DUFFING EQUATION

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Summary: *Differential equations, averaging method, quasilinear equations, generating system, approximate solutions in analytical form.*

Key words: *The problem of using the averaging method to study quasilinear second-order equations is considered. Using the averaging method in the Van der Pol sense, an approximate solution of the quasilinear coupled Van der Pol-Duffing equation is constructed in analytical form.*

Let us consider an oscillatory system described by a weakly nonlinear second-order differential equation [1,2]

$$\frac{d^2x}{dt^2} + \omega^2 x = \varepsilon f\left(x, \frac{dx}{dt}\right) \quad (1)$$

When the generating equation corresponding to equation (1) has a two-parameter family of periodic solutions of the form

$$x(t) = a \cos \psi, \quad (2)$$

where $\psi = \omega t + \varphi$, $\frac{d\psi}{dt} = \omega$, $\frac{da}{dt} = 0$. From (2) it follows that

$$\frac{dx}{dt} = -a\omega \sin \psi \quad (3)$$

When the $\varepsilon \neq 0$ parameters begin to change over time t , that is a and φ , they become functions of the form $a = a(t)$, $\varphi = \varphi(t)$. Then, taking into account (2) and (3), the solution to equation (1) can be represented in the form

$$x(t) = a(t) \cos \psi(t), \quad (4)$$

$$\frac{dx(t)}{dt} = -a(t) \omega \sin \psi(t)$$

From representation (4) it follows that

$$\frac{dx(t)}{dt} = \frac{da(t)}{dt} \cos \psi(t) - a(t) \omega \sin \psi(t) - a(t) \sin \psi(t) \frac{d\varphi}{dt} \quad (5)$$

$$\frac{d^2x(t)}{dt^2} = -\frac{da(t)}{dt} \omega \sin \psi(t) - a(t) \omega^2 \cos \psi(t) - a(t) \omega \cos \psi(t) \frac{d\varphi}{dt} \quad (6)$$

Taking into account the second equality in (4) and from (5), we have

$$\frac{da(t)}{dt} \cos \psi(t) - a(t) \sin \psi(t) \frac{d\varphi(t)}{dt} = 0 \quad (7)$$

Next, taking into account equality (6) and (4) from equation (1), we obtain

$$\frac{da(t)}{dt} \sin \psi(t) + a(t) \cos \psi(t) \frac{d\varphi(t)}{dt} = -\frac{\varepsilon}{\omega} f(a(t) \cos \psi(t), -a(t) \omega \sin \psi(t)) \quad (8)$$

Now from (7) and (8) we find

$$\begin{cases} \frac{da(t)}{dt} = -\frac{\varepsilon}{\omega} f(a(t)\cos\psi(t), -a(t)\omega\sin\psi(t))\sin\psi(t) \\ \frac{d\varphi(t)}{dt} = -\frac{\varepsilon}{\omega a(t)} f(a(t)\cos\psi(t), -a(t)\omega\sin\psi(t))\cos\psi(t) \end{cases} \quad (9)$$

System (8) is called the standard form of quasilinear equation (1). From (8) it is clear that the new variables $a = a(t), \varphi = \varphi(t)$ are slowly changing functions, since the right-hand sides of system (8) are proportional to the small parameter ε .

Averaging the right side of system (8) over ψ , we obtain the averaged system

$$\frac{da(t)}{dt} = \varepsilon A(a); \quad \frac{d\varphi(t)}{dt} = \varepsilon B(a),$$

where

$$\begin{aligned} A(a) &= \frac{1}{2\pi\omega} \int_0^{2\pi} f(a(t)\cos\psi(t), -a(t)\omega\sin\psi(t))\sin\psi(t) d\psi \\ B(a) &= \frac{1}{2\pi a\omega} \int_0^{2\pi} f(a(t)\cos\psi(t), -a(t)\omega\sin\psi(t))\cos\psi(t) d\psi \end{aligned} \quad (10)$$

It is obvious that it is much easier to study system (10) than the original equation (1).

Let us illustrate the presented methodology using the example of the quasilinear coupled van der Pol - Duffing equation:

$$\frac{d^2x}{dt^2} + \omega^2 x = \varepsilon(1 - x^2)\frac{dx}{dt} + \varepsilon x^3 \quad (11)$$

where $\varepsilon > 0$ is a small parameter.

Equation (1) is called the quasilinear coupled van der Pol-Duffing equation [3].

Let us consider the problem of constructing an approximate solution of equation (1) using the averaging method in the sense of Van der Pol [1].

When the $\varepsilon = 0$ generating equation corresponding to equation (11) has the form:

$$\frac{d^2x}{dt^2} + \omega^2 x = 0 \quad (12)$$

and has a two-parameter family of periodic solutions $x(t) = a \cos\psi$, where $\psi = \omega t + \varphi$ a and φ , are parameters. From here

$$\frac{dx}{dt} = -a\omega \sin\psi, \quad \frac{d\psi}{dt} = \omega \quad (13)$$

When $\varepsilon \neq 0$, a and φ begins to change depending on t , that is, they become functions of the form $a = a(t)$, $\psi = \psi(t) = \omega t + \varphi(t)$. According to (4), in this case the solution to equation (11) is represented as

$$x(t) = a(t)\cos\psi(t), \quad (14)$$

and equality (13) takes the form

$$\frac{dx(t)}{dt} = -a(t)\omega \sin\psi(t), \quad \frac{d\psi}{dt} = \omega + \frac{d\varphi(t)}{dt} \quad (15)$$

From (14) it follows that

$$\frac{dx(t)}{dt} = \frac{da(t)}{dt} \cos\psi(t) - a(t)\sin\psi(t) \frac{d\psi(t)}{dt} = 0 \quad (16)$$

Further, from equality (15) it follows

$$\frac{d^2 x(t)}{dt} = -\frac{da(t)}{dt} \omega \sin \psi(t) - a(t) \omega \cos \psi(t) \quad (17)$$

Substituting (14), (15) and (17) into equation (11) taking into account the second equality in (15), we obtain

$$\begin{aligned} & -\frac{da(t)}{dt} \omega \sin \psi(t) - a(t) \omega \cos \psi(t) \frac{d\varphi(t)}{dt} = \\ & = \varepsilon (1 - a^2(t) \cos^2 \psi(t)) (-a(t) \sin \psi(t)) + \varepsilon a^3 \cos^3 \psi(t) \end{aligned} \quad (18)$$

To determine $\frac{da(t)}{dt}$ and $\frac{d\varphi(t)}{dt}$ we will compose a system from (16) and (18)

$$\begin{cases} \frac{da(t)}{dt} \cos \psi(t) - a(t) \sin \psi(t) \frac{d\varphi(t)}{dt} = 0 \\ \frac{da(t)}{dt} \sin \psi(t) + a(t) \cos \psi(t) \frac{d\varphi(t)}{dt} = \frac{\varepsilon}{\omega} (1 - a^2(t) \cos^2 \psi(t)) a(t) \sin \psi(t) - \frac{\varepsilon}{\omega} a^3(t) \cos^3 \psi(t) \end{cases} \quad (19)$$

From system (19), it follows that the standard form of writing equation (11) has the form:

$$\begin{cases} \frac{da(t)}{dt} = \frac{\varepsilon}{\omega} (1 - a^2(t) \cos^2 \psi(t)) a(t) \sin^2 \psi(t) - \frac{\varepsilon}{\omega} a^3(t) \cos^3 \psi(t) \sin \psi(t) \\ \frac{d\varphi(t)}{dt} = \frac{\varepsilon}{\omega} (1 - a^2(t) \cos^2 \psi(t)) \sin \psi(t) \cos \psi(t) - \frac{\varepsilon}{\omega} a^2(t) \cos^4 \psi(t) \end{cases} \quad (20)$$

Averaging the right-hand side of (20) over the variable $\psi(t)$, we obtain an averaged system in the form

$$\begin{cases} \frac{da(t)}{dt} = \frac{\varepsilon a(t)}{2\omega} \left[1 - \frac{a^2(t)}{4} \right] \\ \frac{d\varphi(t)}{dt} = -\frac{3\varepsilon}{8\omega} a^2(t) \end{cases} \quad (21)$$

Solving system (21) under initial conditions $a(0) = a_0$, $\varphi(0) = \varphi_0$ we have

$$a(t) = \frac{a_0 e^{\frac{\varepsilon}{2\omega} t}}{\sqrt{1 + \frac{a_0^2}{4} \left(e^{\frac{\varepsilon}{\omega} t} - 1 \right)}} \quad (22)$$

$$\varphi(t) = \varphi_0 + \frac{3}{2} \ln \left| 1 + \frac{a_0^2}{4} \left(e^{\frac{\varepsilon}{\omega} t} - 1 \right) \right|$$

Substituting (22) into (14), we obtain a solution to equation (11) in the form

$$x(t) = \frac{a_0 e^{\frac{\varepsilon}{2\omega} t}}{\sqrt{1 + \frac{a_0^2}{4} \left(e^{\frac{\varepsilon}{\omega} t} - 1 \right)}} \cos \left(\omega t + \varphi_0 + \frac{3}{2} \ln \left| 1 + \frac{a_0}{4} \left(e^{\frac{\varepsilon}{\omega} t} - 1 \right) \right| \right)$$

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Rezyume: Kvazichiziqli ikkinchi tartibli tenglamalarni o'rganish uchun o'rtacha hisoblash usulidan foydalanish masalasi ko'rib chiqiladi. Van der Pol ma'nosida o'rtacha hisoblash usulidan foydalanib, analitik shaklda kvazichiziqli bog'langan Van der Pol-Duffing tenglamasining taxminiy yechimi tuziladi.

Резюме: Рассмотрена задача о применении метода усреднения для исследования квазилинейных уравнений второго порядка. С помощью метода усреднения в смысле Ван-дер Поля построена в аналитической форме приближенное решение квазилинейного связанного уравнения Ван-дер Поля-Дюффинга.

Kalit so'zlar: Differensial tenglamalar, o'rtacha hisoblash usuli, kvazichiziqli tenglamalar, hosil qiluvchi tizim, analitik shakldagi taqribiy yechimlar.

Ключевые слова: Дифференциальные уравнения, метод усреднения, квазилинейные уравнения, порождающая система, приближенные решения в аналитической форме.

**STUDY OF ANTHRACHINONE CONTAINED IN THE ROOT EXTRACT OF
"Rubia tinctorum L"**

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Summary: This article presents the results of research on the composition of the root extract of the plant "Rubia tinctorum L". "Rubia tinctorum L" plant extract consists of a complex of extractive substances containing about 8% anthracene derivatives. The extract is a colored powder with a sour taste and hygroscopic appearance. During the study, anthraquinone and anthraquinone derivatives were isolated from the extract. The composition of the solution sample was studied using the HPLCh (High performance liquid chromatography) method. The physico-chemical properties of the isolated substance were determined and its structure was studied using IR spectroscopy.

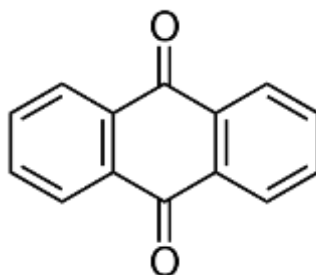
Key words: anthraquinone, extract, chromatography, condensed ring, biologically active substance, IR-spectroscopy.

Our country is rich in flora, and biologically active substances extracted from them are widely used in folk medicine, food industry, pharmaceuticals and various sectors of the economy. It is known that the chemical industry is a "catalyst" of modern industry, chemical processes are the basis of any production, without this industry there will be no progress in the economy. Identification of plant substances containing anthracene and its products, creation of effective methods for their isolation is of great importance in pharmaceuticals and folk medicine. One such plant is the perennial Rubia tinctorum L.

Taking this into account, in this research work aimed at studying the chemical composition of plant substances and researching their properties, based on the study of the chemical composition of the root extract of the plant "Rubia tinctorum L", the extraction of anthraquinone from its composition, the physico-chemical properties of the extracted substance detection, chromatographic and IR-spectroscopic analysis were aimed.

Dry extract of "Rubia tinctorum L" plant consists of extractive substances. It contains about 8% of anthracene products, and the extract is a sour-tasting, hygroscopic and colored powder [1-3]. It is reported in the literature that the root contains 5-6% oxymethylantraquinones and their products [1-3]. In addition, the root contains citric, malic and tartaric acids, sugar, oxyl, pectin and phenolic substances. The dark extract prepared from the underground parts of the plant has the properties of gout, against the accumulation of salts in the kidneys, and of disintegrating stones consisting of phosphate and oxalate salts. Plants containing anthracene products have been used for a long time in the treatment of acne and skin diseases, as well as as antibiotics, biostimulants, and nephrolytic drugs were obtained from them [1-3].

Anthraquinone (9,10-anthracenedione) belongs to the class of quinones. Practically insoluble in water, soluble in organic solvents [4].



Anthraquinone

Anthroquinone was first synthesized by the French chemist O. Laurent (1835 y) as a result of oxidation of anthracene with nitric acid [4].

PART OF EXPERIMENTS

Research object and chemical reagents: The following substances and their solutions, distilled water (bidistillate), organic solvents (isopropyl alcohol, hexane, ethyl alcohol) purified by a new driving method were used for the research work.

For samples analysis, solutions of anthraquinone standard solution with different concentrations: 0.05mg/ml, 0.125mg/ml and 0.25mg/ml were prepared and calibrated.

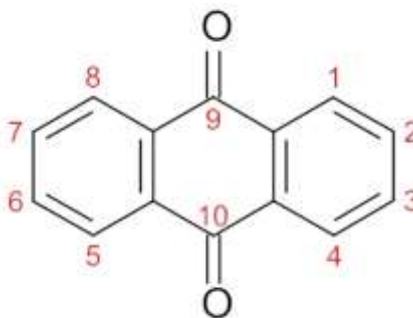
Used methods and devices: VLR-200 analytical balance, MM-5 TU 25-11834-80 magnetic stirrer, centrifuge, notch filters of different sizes, PTP TU 25-11-1144 for measuring the liquidus temperature of substances device, IR-1M2 rotor evaporator, Chromatograph: Prominence-i LC-2030C 3D Plus (Shimadzu) and analytical column (250 mm x 4.6 mm, 5 μ m Brownlee™ HPLC column, (Perkin Elmer) were used. 20 μ l of the sample solution was added to the column in a gradient flow of 1.0 ml/min of a mixture of mobile phase - isopropyl alcohol and water (80:20). The temperature in the column was adjusted to 400°C, and the optimal temperature was set. A total time interval of 30 min was performed for each sample extract from the mobile phase with multi-step gradient conditions.

The extract from the underground part of the plant "Rubia tictorium L" was used for the experiment. After extraction, it was sent to a rectification column using vacuum and rectification was carried out in alcohol. The waste left in the column is removed to the residue.

The mass of alcohol extract was left in a crystallizer at a temperature of 50°C for 24 hours, after 24 hours it was filtered on a nut filter, and then washed with ethanol, and a chromatogram was obtained by the HPLCh method.

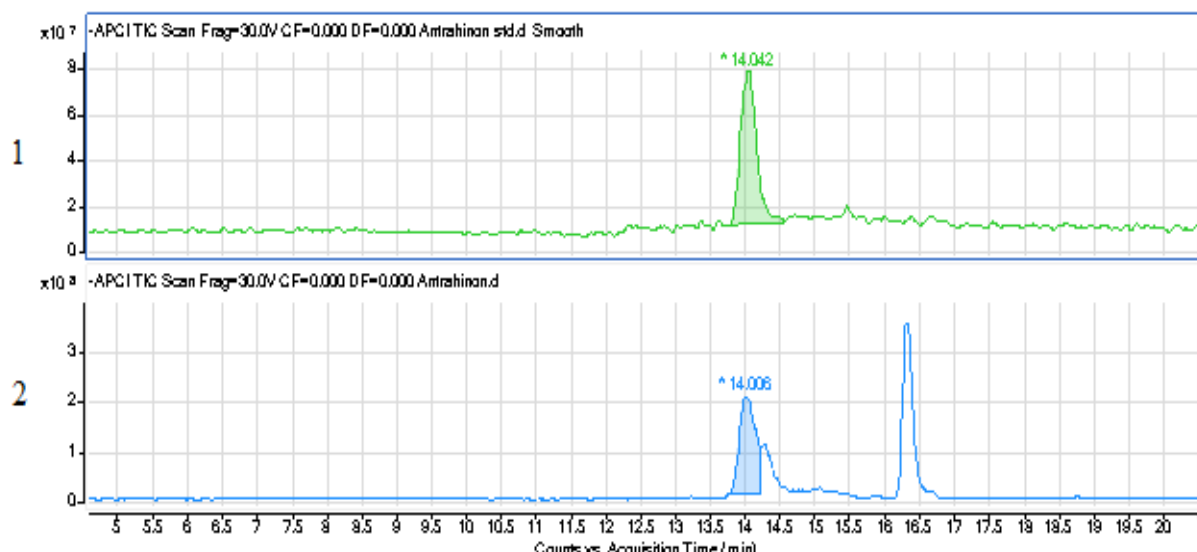
The obtained results and their analysis

Anthraquinone is a yellow crystalline substance that liquefies at 286°C and boils at 379,8°C. Insoluble in water, soluble in nitrobenzene and aniline. Its molecular mass is 208 g/mol [5-8]. Anthraquinone is an oxidized form of anthracene, so it is included in anthracene products [8-9]. Anthracene chemical structure consists of three mutually condensed benzene rings, in which 1,4,5,8 - states α - state, 2, 3, 6, 7 - states β - state and 9, 10 - states γ - state or meso is called a condition.



Initially, optimal conditions were selected for the chromatographic determination of anthraquinone in the extract. For this, the optimal sensitivity of the PDA diode-matrix absorption detector was determined. In order to have the maximum selectivity, the optimal range of the wavelength was chosen, and this value is 254 nm. As a second detector, RF-20A XS monochromator fluorescence detector was used, which allows to achieve the best sensitivity with the help of program matching the excitation and emission wavelength. As a result, all PAHs and their derivatives, including anthraquinone, can be detected. In order to analyze the samples, standard anthraquinone (anthraquinone-100mg, >96% HPLC, Sigma Aldrich) solutions with different concentrations: 0.05mg/ml, 0.125mg/ml and 0.25mg/ml were prepared and calibrated.

A chromatogram of a standard solution of anthraquinone was obtained to compare the analyzed results.



Fi

gure 1. Chromatographic spectrum of pure anthraquinone standard solution (1) and anthraquinone experimentally isolated from plant root extract (2).

It can be seen that the chromatogram of the isolated substance exhibits some magnitudes characteristic of the spectra of anthraquinone. For example, the exposure time of the anthraquinone standard of 14,042 shows a single peak as anthraquinone in the experiment.

Table 1 Physico-chemical constants of anthraquinone obtained as a result of the experiment.

Substance name	Chemical formula	Molecular mass g/mol	T _{liquid} , °C	T _{boiling} , °C	R _f	Solubility
Anthraquinone in literature	C ₁₄ H ₈ O ₂	208	286	379,8	0.19	nitrobenzene and aniline
Anthraquinone experienced			284-285	380	0,19	

First, its liquefaction temperature was studied, then the influence of solvents and thin-layer chromatography and IR-spectroscopy methods.

It was observed that some physico-chemical properties of anthraquinone obtained as a result of the experiment corresponded to the properties in the literature. The structure of the obtained substance was studied by IR spectroscopy. We can observe that the IR-spectra of the isolated substance showed some values characteristic of the IR-spectra of anthraquinone. For example, like anthraquinone at 707.88 cm⁻¹, it shows one peak, i.e., the rings of the anthracene nucleus are identical, in the IR spectra of anthraquinone, the peaks in the 3500-3000 cm⁻¹ range are characteristic of deformation vibrations of C=O bonds. Intense signals in the range of 1600-1000 cm⁻¹ are characteristic of the valence vibration of C-H bonds in the aromatic ring, deformation vibrations characteristic of C=C double bonds in the aromatic ring can be observed in the range of 1000-500 cm⁻¹. Valence fluctuations of C-C bonds were observed in the 500-400 cm⁻¹ range.

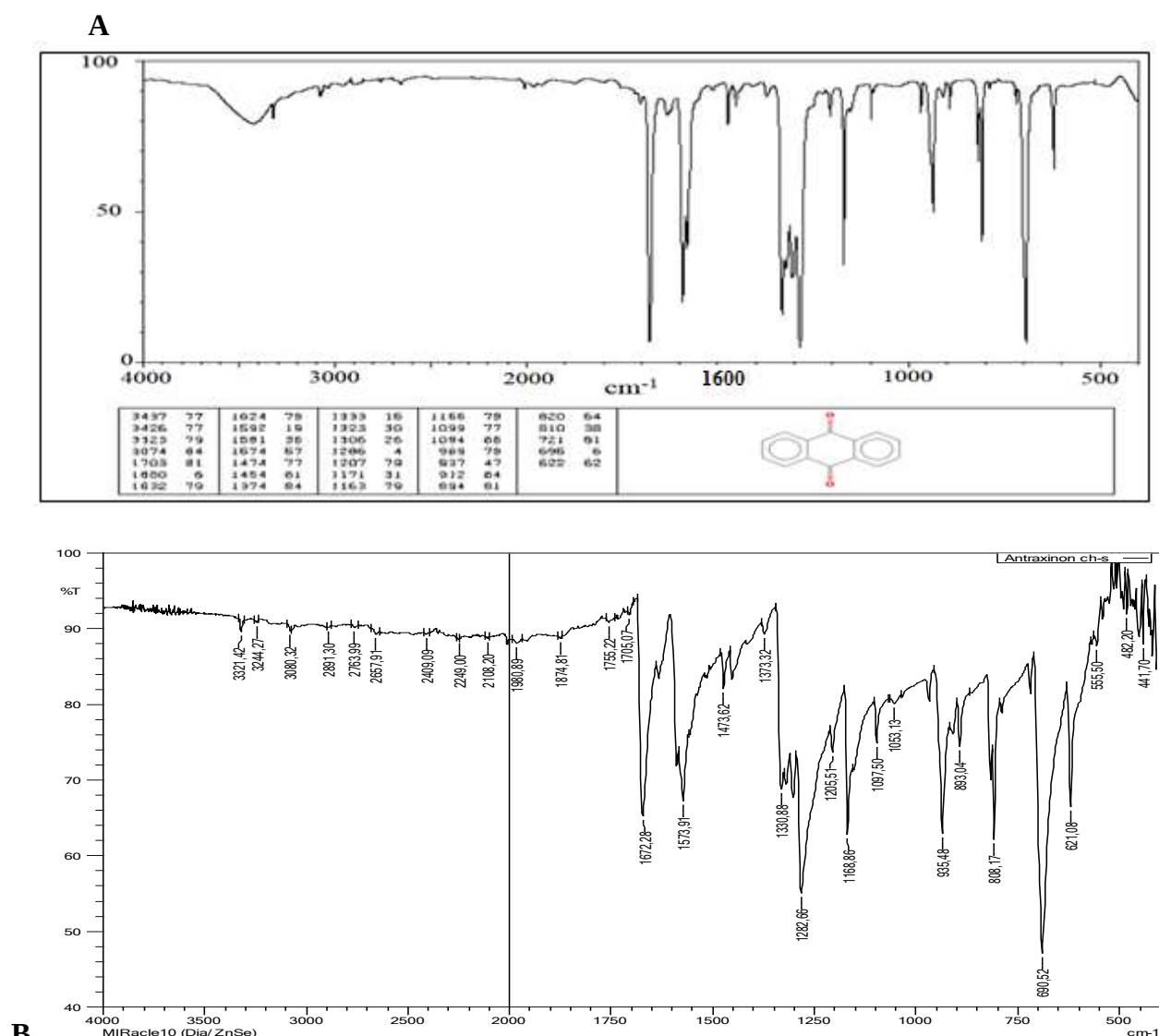


Figure 2. IR-spectroscopy of pure anthraquinone (A) and experimentally obtained anthraquinone

CONCLUSION

Anthraquinone products were extracted from the extract of the root of *Rubia tinctorum* L plant, the optimal conditions for the determination of anthraquinone by the HPLCh method were determined and analyzed by comparison with the standard solution. The physico-chemical constants of the extracted substance were determined, and its structure was studied by the IR spectroscopy method.

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Rezyume: *Ushbu maqolada "Rubia tinctorum L" o'simligining ildiz ekstrakti tarkibini o'rganish bo'yicha tadqiqot natijalari keltirilgan. "Rubia tinctorum L" o'simlik ekstrakti taxminan 8% antratsen hosilalarini o'z ichiga olgan ekstraktiv moddalar majmuasidan iborat. Ekstrakt nordon ta'mga va gigroskopik ko'rinishga ega bo'lgan rangli kukundir. Tadqiqot davomida ekstraktdan antraxinon va antraxinon hosilalari ajratib olindi. Eritma namunasining tarkibi YSSX usuli yordamida o'rganildi. Ajratib olingan moddaning fizik-kimyoviy xossalari aniqlandi va uning tuzilishi IQ spektroskopiya yordamida o'rganildi.*

Резюме: *В данной статье представлены результаты исследований экстракта корня растения «Rubia tinctorum L». Экстракт растения «Rubia tinctorum L» состоит из комплекса экстрактивных веществ, содержащих около 8% производных антрацена. Экстракт представляет собой окрашенный порошок с кисловатым вкусом и гигроскопичным внешним видом. В ходе исследования из экстракта были выделены антрахинон и производные антрахинона. Состав образца раствора изучали методом ВЖХ. Определены физико-химические свойства выделенного вещества и изучена его структура методом ИК-спектроскопии.*

Kalit so'zlar: *antraxinon, ekstrakt, xromatografiya, kondensirlangan halqa, biologik faol modda, IQ-spektroskopiya.*

Ключевые слова: *антрахинон, экстракт, хроматография, ИК-спектроскопия, конденсированное кольцо, биологически активное вещество.*

**THE ROLE OF USING PROBLEMATIC EXPERIMENTS IN TEACHING
CHEMISTRY**

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Summary: *In this article, approaches to the formation of students' experiential skills in chemistry classes using problem-based teaching are revealed. A step-by-step guide on how to approach the process and elements of problem-based learning in chemistry classes.*

Key words: *problem teaching, activation of the educational process, activation of educational activities, mental operations, active thinking.*

The purpose of chemistry, which is taught as a subject of general secondary education in our republic, based on the national personnel training program and the law in the field of education, is to provide fundamental knowledge of chemistry on the basis of general secondary education. Consists of In addition, by explaining the physico-chemical properties and the chemical landscape of the world on a scientific basis, it helps to develop students' scientific outlook and the ability to observe philosophically, to reveal the dialectical relationship between theory and practice. It is to increase the capacity to perceive physical processes in nature and technology, to prepare the acquired knowledge for social life and activities in the national economy, and to create a foundation for continuing education.

Today, the organization and management of educational processes in accordance with the requirements of the time for the preparation of a mature specialist who meets the requirements of the time is an urgent issue in education. In chemistry education of higher educational institutions, in addition to introducing students to the laws, theories, concepts and terms related to the basics of academic science, as well as ensuring the competence of the future mature specialist, the educational process A lot of scientific research is being done to improve its effectiveness. Because there are still shortcomings in the issue of putting the acquired knowledge into practice.

Most of the modern publications on the theory of education are related to the activation of the learning process and the educational activities of students. The purpose of activation through problem learning is not to train individual thought operations, but to train a system of mental actions to solve stereotypical problems. This activity is the student's own search for clarifying, analyzing, comparing, synthesizing, summarizing real material, in order to obtain new information from it, in other words, it is the expansion of knowledge through the application of previously learned knowledge or previous knowledge and deepening It is impossible to achieve high results without the active learning of the students themselves, without paying attention to the studied topic, without the desire to know something unknown. Thinking begins with a question that requires a solution. Therefore, in order for the student to start thinking actively, it is necessary to put a knowledge task in front of him. And it must be understood that the process of finding new things must be of personal interest to him, which requires explanations. Problem-based learning involves not only students' consistent and goal-directed learning tasks, which allows them to actively acquire new knowledge under the guidance of the teacher. [1].

Problematic situations allow students to focus on the object of learning gradually, arbitrarily, and strive to master the subject despite the existing difficulties.

Methods. Problem-based learning is not only for students, but all learning materials are learned by solving problems independently and discovering new concepts. There are teacher explanations, student reproductive activities, task assignments, and student exercises. At the same time, the organization of the educational process is based on the principle of the problem, and

systematic solving of educational problems is a characteristic of this type of education. At the same time, since the whole system of methods is aimed at the comprehensive development of the student, the development of his knowledge needs, the formation of an intellectually active person, problem-based education is a real developmental education. [2,3].

T.V.Kudryavtsev sees the essence of problem-based education as follows: problem-based education is the first and general interaction of schoolchildren with the teacher during the joint activity of schoolchildren in creating problem situations in front of students, understanding, accepting and solving these situations. in acceptable independence of management. However, this definition does not reflect the entire scope of the problem-based learning concept [4].

The most complete definition of the concept of "problem-based education", in my opinion, M.I.Mahmutov, problem-based education is a type of education that combines students' mastery of ready-made conclusions of science with regular independent research, and the system of methods is targeted and built with the problematic principle in mind; the process of mutual cooperation between teaching and learning is aimed at the formation of students' freedom of knowledge, stable reasons for teaching and intellectual ability, including creative abilities in mastering scientific concepts and methods of activity, and the formation of a deterministic system of problem situations [5].

The following three methods of problem-based learning are the most effective:

- problem-based explanation is a method of organizing problem-based learning, it is most suitable when students encounter a certain phenomenon for the first time and do not have enough knowledge to establish the necessary associations;

- search conversation is a conversation in which students rely on already known materials, find the answer to a problematic question under the guidance of the teacher and find it independently;

- independent search and research activity of students is the highest form of independent activity, which can only be done when they have sufficient knowledge necessary to create scientific assumptions, as well as the ability to put forward a hypothesis [6].

Implementation of problem-based learning is carried out as follows:

- existence of a problematic situation;

- the student's willingness to find a solution;

- the possibility of an ambiguous solution.

At the same time, the following methods of problem-based education are distinguished:

- methods of creating problem situations-problematic issues, tasks-experiments;

- methods of forming learning hypotheses for solving problem situations;

- assumptions about the causes of events, concepts, relationships between values;

- comparison, logical thinking, methods of proving educational hypotheses based on the results of educational and research experiments;

- methods of forming new learning outcomes and generalizations [7].

Problem-based learning is for everyone, not just good students. The problem-based approach allows all schoolchildren to be involved in the upcoming problem, to control the thoughts of students, to get quick information from students and to respond quickly. Weaker students need a special approach. When setting problematic tasks, it is necessary to create an incentive for them to answer easier questions, encourage their answers, and thus participate in thinking about more complex issues. [8].

The most effective use of problem-based teaching methods is possible in cases where the content of the educational material is aimed at forming concepts, laws and theories in the relevant field of science; if the content of educational materials is not radically new, but logically continues from previously learned, students can take independent steps in the search for knowledge; when content is available for readers to search independently [9].

Problem situations can be created and solved in a variety of ways, from teaching demonstrations and technical tools to chemical experiments. For example, during demonstration or laboratory work, students encounter situations that are unknown to them and require new knowledge. Such experiences are used to enrich previous topics before moving on to a new topic. At first, students only observe the process, and then, when the problem arises, they study its meaning in depth and comprehensively. Demonstration and laboratory experiments can be used to pose and solve problems [10].

Any experiments are not conducted to create a problematic situation. The teacher should take into account the following requirements for conducting a problem experiment [9]:

1) the content of the experiments should obey the processes and laws known to the students and pose a problem for them;

2) It is necessary to compare several experiments to solve the problem based on the known knowledge;

3) the experiments in which the problem is posed should be interesting and create interest in solving the problem.

The second requirement is to make sure that the experiment being conducted is problematic.

In order to create a problem situation, the teacher should carefully read the material, analyze the content and structure of the topic, how the students perceive it, and know how to conduct experiments to set and solve the problem. Therefore, in the thematic planning of the educational material, it is necessary to look at a specific topic that can be problematically transitioned and the related experience, the time of using the issues.

Students should learn by solving problems. For this, the teacher must first set the problems and show how to solve them, and then the problem situations are analyzed under the guidance of the teacher. Once students have acquired sufficient knowledge and experience using problem-based problems, they are challenged to set and solve independent problems.

The most important distinguishing feature of all pedagogical technologies is their child-centeredness or ability to work with children.

In conclusion, in the opinion of teachers, researchers, and practitioners who are studying the issues and problems of pedagogical technologies, pedagogical technology is related only to information technology, as well as computers, distance learning, which must be used in the teaching process. or defined as the use of different techniques. In our opinion, the most basic principle of pedagogical technology depends on the technology chosen by the teacher and the student to achieve a guaranteed result from the set goal. That is, every educational technology used in the teaching process to achieve a guaranteed result according to the goal can organize cooperative activities between the teacher and the student, if both can achieve a positive result, in the educational process. If teachers and students can think independently, work creatively, search, analyze, draw their own conclusions, and create opportunities for such activities.

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11. Academic Research in Educational Sciences VOLUME 2 Scientific Journal Impact Factor (SJIF) 2021: 5.723 Directory Indexing of International Research Journals-CiteFactor 2020-21: 0.89 Muammoli ta'lim usullaridan foydalangan holda kimyo darslarida ko'nikmalarni shakllantirish. A. N. Buzrukxo'jayev K. U.Komilov.

Rezyume: Ushbu maqolada kimyo fanini muammoli o'qitishning metodlari va uslublari haqida tushunchalar hamda ushbu metodning samaradorligi haqida so'z yuritiladi.

Резюме: В данной статье рассматриваются концепции и методы проблемного обучения химии, а также эффективность этого метода.

Kalit so'zlar: muammoli o'qitish, o'quv jarayonini faollashtirish, o'quv faoliyatini faollashtirish, fikriy operatsiyalar, faol fikrlash

Ключевые слова: проблемное обучение, активизация учебного процесса, активизация учебной деятельности, мыслительные операции, активное мышление.

CLUSTERING PROBLEM. DEVELOPMENT OF K-MEANS ALGORITHM IN R LANGUAGE

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Summary: *R, one of the most widely used languages for data analysis and statistical computing, has been achieving great results in compilation technology in recent years. R is a programming environment that mainly involves statistical computing and graphics.*

In this article, we will consider the development of the k-means algorithm in R using the R compiler.

Keywords: *k-means algorithm, cluster, cluster analysis, centroid, R language*

Enter.

In the modern world, data analysis occupies an influential place in many fields. Everything both in business and science, data analysis allows you to obtain valuable information and draw informed conclusions. Cluster analysis is one of the methods of data analysis that allows you to divide objects into classes based on their similarity. Each cluster is a set of data points that are close to each other in the character range.

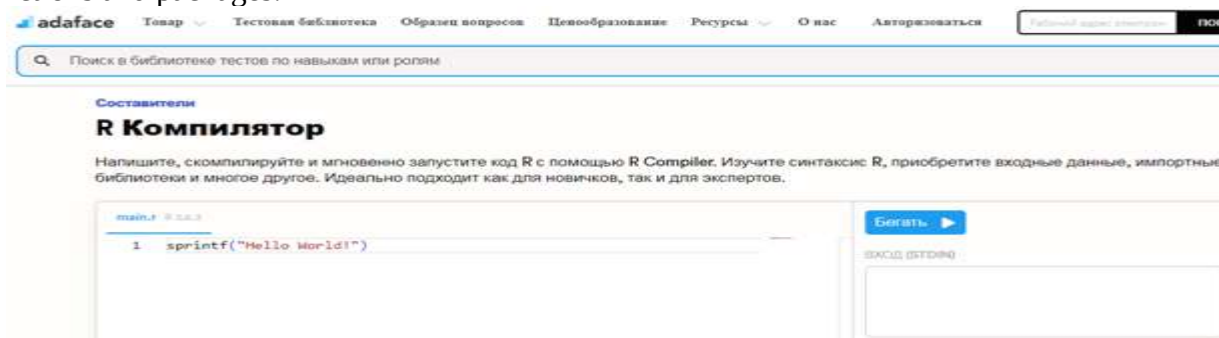
One of the most widely used methods of cluster analysis is the k-means algorithm, which is a simple and effective way to classify objects into clusters. The algorithm is simple, and its steps can be as follows.

Steps of K-means algorithm

- 1) Centroids initialization: initial Centroids are selected for each Cluster. It can be random data points from the set or it can also be selected by another method.
- 2) Cluster assignment: each data point is assigned to the nearest centroid due to clustering.
- 3) Recalculation of centroids: the centroids of each cluster are recalculated as the average value of the data points in that cluster.
- 4) Repeat steps 2-3: cluster assignment and centroid recalculation steps are performed iteratively until the centroids are stable.

Implementation of the algorithm in the R environment

Development of the k-means algorithm in the R environment can be done using built-in functions and packages.



First we need to import the data that is used for clustering. For example, let's take the "iris" dataset, which contains information about different types of irises.


```
1 # Maǵlıwmatlardı júklew (mısalı iris )
2 data(iris)
3 # Klasterdiń sanın tańlaw (berilgen mısál ushın, 3)
4 k <- 3
5 # Centroidlardı iniciyalizaciyalaw
6 initial_centroids <- iris[sample(1:nrow(iris), k), 1:4]
7 # k-ortasha algoritminiń tiykarǵı cikli
8 for (i in 1:100)
9 {
10     # Klasterlerdi tayarlaw
11     clusters <- kmeans(iris[, 1:4], centers = initial_centroids)
12     # Centroidlardı qayta esaplaw
13     new_centroids <- aggregate(iris[, 1:4], by = list(clusters),
14     # Centroidlardıń turaqlılıǵın tekseriw
15     if (identical(initial_centroids, new_centroids)) break
16     # Centroidlardı jańalaw
17     initial_centroids <- new_centroids
18 }
19 # Nátiyje - klaster toplamı
20 print(clusters)
```

In this example, a k-means algorithm was developed and implemented in R to cluster the "iris" data set into two variables - width and length of iris petals. The number of clusters is 3, the initial centroids (centers) of the clusters are randomly selected. The algorithm iteratively recalculated the cluster centers and attached each object to the nearest cluster until convergence. This example shows the basic steps of the k-means algorithm in R using the built-in Kmeans function.

Note: Before running the data, analysis and visualization are suggested to select an acceptable number of clusters.

Summary

An implementation of the K-means algorithm in R can be very useful for analyzing clustered data. When using this method, it is important to observe the correct selection of the number of clusters and analyze the stability of the results. Development of the k-means algorithm in R allows efficient cluster analysis. And the extensive library of functions and packages of the R environment offers a wide range of possibilities for working with and analyzing data. Implementing the k-means algorithm in cluster analysis using the R language is one of the simplest and most convenient methods.

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Rezyume: Ma'lumotlarni tahlil qilish va statistik hisoblash uchun eng keng tarqalgan tillardan biri bo'lgan R so'nggi yillarda kompilyatsiya texnologiyasida katta natijalarga erishmoqda. R-bu asosan statistik hisoblash va grafiklarni o'z ichiga olgan dasturlash muhiti.

Ushbu maqolada biz R kompilyatoridan foydalangan holda R tilida k o'rtacha algoritmini ishlab chiqishni ko'rib chiqamiz.

Резюме: R, один из наиболее широко используемых языков для анализа данных и статистических вычислений и добился больших успехов и отличных результатов в технологии компиляции. R — это среда программирования, которая включает статистические вычисления и графику.

В этой статье мы рассмотрим разработку алгоритма k-средних в R с использованием компилятора R.

Kalit so'zlar: k-means algoritmi, klaster, klaster tahlili, centroid, R tili

Ключевые слова: алгоритм k-средних, кластер, кластерный анализ, центроид, язык R.

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HELMINTHS OF THE *MUS MUSCULUS* CESTODA CLASS OF HOUSE MICE IN KARAKALPAKSTAN

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Summary: *The article examined 15 out of 45 copies house mice, 33.3% are infected with helminths belonging to the class of cestodes, and it is noted that these are 5 species of helminths belonging to type 1, class 1, order 1, 3 suborders, 3 families, 4 genera.*

Key words: *parasite, epidemiological, epizootological, helminth, degree of invasion, ecological, biological, faunistic, cyclic, zoonanthroponosis.*

Introduction. In recent years, the influence of anthropogenic factors on natural processes has increased significantly; the influence of these factors leads to significant changes in the biological diversity and ecological state of parasitic worms. In such changing conditions, the epidemiological and epizootological aspects of some helminth species are increasing. This, in turn, determines that monitoring the biological diversity and ecology of helminths in certain regions is one of the urgent tasks [1.3.5].

Animals with the largest populations play a key role in the formation of the helminth fauna complex under certain environmental conditions. Currently, the population of rodents among mammals in the conditions of Karakalpakstan is large in scale and occupies a special place in nature and in practical significance. In total, the fauna of Karakalpakstan includes 27 species of rodents. Rodents combine the functions of primary and secondary consumers as links in food chains and are an important link in the transmission of invasive elements to other animals. As a result of such actions of rodents, the activity of the development cycle of parasitic helminths is observed and excellent conditions are created for the development of helminthic diseases [1.3.5].

Therefore, the study of the biological diversity and ecology of helminths of rodents, especially house mice, is of great importance and is relevant.

Materials and methods. During 2023-2024 research work was carried out in different seasons of the year in rural and urban conditions of the Republic of Karakalpakstan. Using the method of complete and incomplete helminthological examination of Academician K. I. Scryabin, 45 specimens of domestic mice were examined [2.3.4].

Cestode and nematode helminths identified during the study were recorded in 70% and 96% alcohol and labeled.

Identification of helminths was carried out in the laboratory of experimental biological research of Nukus State Pedagogical Institute named after Ajiniyaz. To study helminths, a mixture of lactic acid and glycerol was used in a 1:1 ratio. The measurement of helminths was carried out using an ocular ruler divided into levels [2,3,4].

Results and discussion. Based on the research results, a route helminthological survey was carried out in rural and urban conditions of the Republic of Karakalpakstan, during which 15 out of 45 house mice were examined and 33.3% were infected with helminths belonging to the class of cestodes. It was also noted that 5 species of helminths belonging to the class of cestodes belong to 1 type, 1 class, 1 order, 3 suborders, 3 families and 4 genera (Table 1). It has been established that the identified types of helminths parasitize the small intestine, stomach and liver [2.3.4].

Table 1

**Helminths of house mice in Karakalpakstan.
taxonomic structure**

Type	Class	Order	Family	Genera	Species
Plathelminthes	Cestoda	Cyclophyllida	Catenotaeniidae	<i>Catenotaenia</i>	<i>Catenotaenia pusilla</i>
			Taeniidae	<i>Taenia</i>	<i>Taenia hydatigena</i>
					<i>Taenia pisiformis</i>
				<i>Hydatigera</i>	<i>Hydatigera taeniaeformis</i>
			Mesocestoididae	<i>Mesocestoides</i>	<i>Mesocestoides lineatus</i>
1	1	1	3	4	5

Almost all species of house mouse helminths interact ecologically with representatives of all classes of vertebrates as intermediate or reservoir hosts. The relationships of rodent helminths with other vertebrates are of great veterinary and medical importance [1.3.5].

The maximum infection with helminths detected in mice according to the degree of invasion corresponded to the cestode *Taenia pisiformis* 60.0%, the minimum - to the cestode *Catenotaenia pusilla* 13.3%, and infection with other cestodes - from 26.6% to 46.6% 1-Fig.

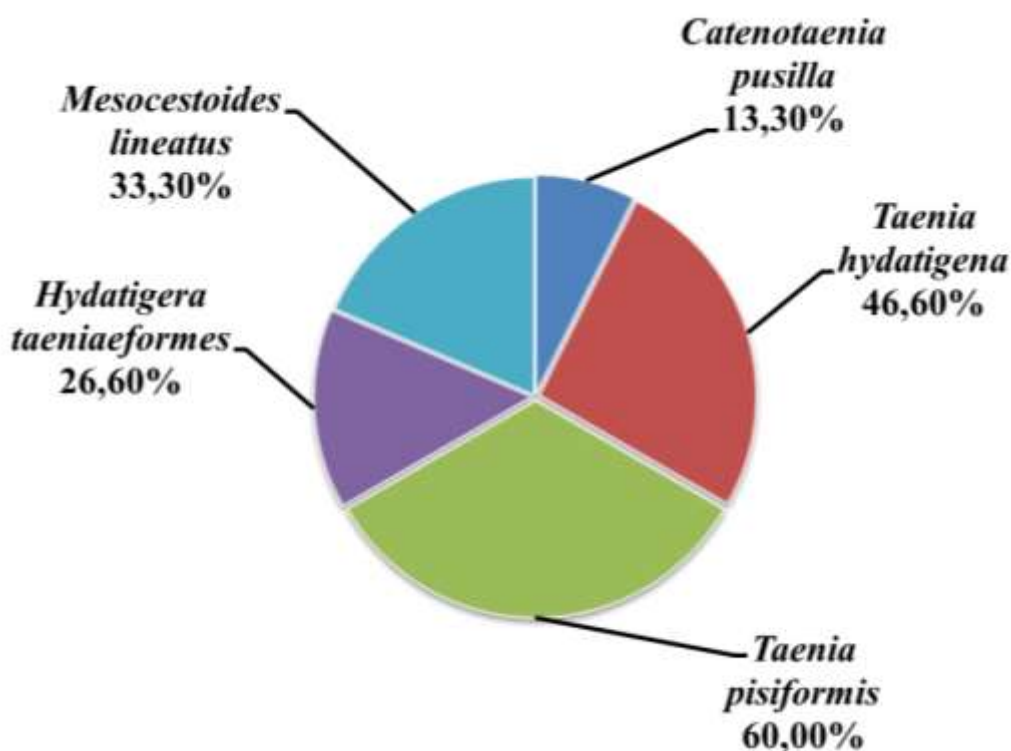


Figure 1. Index of helminth infestation detected in mice

Many animal species are involved in the circulation of helminths recorded in domestic mice in Karakalpakstan; they act as intermediate, reservoir and primary hosts and can cause various helminthic diseases in their host. A brief analysis of the localization of helminths found in mice and the role of animals in the development cycle is presented in Table. 2 [1.3.5].

Table 2

Participation of certain groups of animals in the circulation of mouse helminths

Species	Localization	Hosts		
		Main	Intermediate	Reservoir

<i>Catenotaenia pusilla</i>	small intestine	Rodents	Oribatid mites	-
<i>Taenia hydatigena</i>	in a stomach	Carnivorous mammals	Rodents	-
<i>Taenia pisiformis</i>	stomach	Carnivorous mammals	Rodents	-
<i>Hydatigera taeniaeformes</i>	liver	Carnivorous mammals	Rodents	-
<i>Mesocestoides lineatus</i>	stomach, liver	Carnivorous mammals	Oribatid mites	Rodents

Conclusion. Rodent populations, including house mice, have lived in close contact with humans and farm animals for many years and have also been observed to be the cause of many helminthic diseases. Rodents act as intermediate or reservoir hosts for many helminths and are causative agents of zoonanthroponotic diseases in domestic animals and humans. The most favorable conditions for the development of helminths are always observed when helminthic diseases spread in the lives of animals and people. This, in turn, can cause great economic damage to nature and society. Considering the infection of mice with zoonanthroponotic helminthiasis, disconnecting the populations of house mice from farm animals and humans allows, to a certain extent, to prevent infection with helminthiasis [1.3.5.6].

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Rezyume: Maqolada tekshirilgan 45 nusxa uy sichqonlarining 15 tasi 33,3% tsestoda sinfiga mansub gel'mintlar bilan zararlangani keltirilgan hamda ular 1 tip, 1 sinf, 1 turkum, 3 kenja turkum, 3 oila, 4 avlodga tegishli 5 turdagi gel'mintlar ekanligi qayd etilgan.

Kalit so'zlar: parazit, epidemiologik, epizootologik, gel'mint, invaziya ekstensivlik, ekologik, biologik, fauna, tsikli, zooantroponoz.

Резюме: Из 45 исследованных домовых мышей 15 экземпляров это составляет 33,3% были заражены гельминтами, принадлежащими к классу цестод, при этом отмечено, что эти 5 видов гельминтов, относятся к 1 типу, 1 классу, 1 отряду, 3 подотрядам, 3 семействам и 4 роду.

Ключевые слова: паразит, эпидемиологический, эпизоотологический, гельминт, степень инвазии, экологический, биологический, фаунистический, циклический, зооантропоноз.

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IMPORTANT ELEMENTS OF VEGETABLE (SWEET) CORN GROWING TECHNOLOGY (IN THE CONDITIONS OF KARAKALPAKSTAN)

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Summary: The article provides information on the elements of the technology of growing vegetable (sweet) corn varieties and hybrids in the conditions of Karakalpakstan, the germination and development of crop organs, the growth, development and productivity of plants.

Key words: horticulture, main term, varieties and hybrids, Eureka, Zamin, SPV 1022, Can. Pedro 2 Inta, Berys, Leonard's Early, Osnova 209, clx3349ys clause, Honey Bontam F₁, Sweet star F₁, Spirit F₁, Megaton F₁, Sentinel F₁, Baron F₁, Soyan F₁, Hybrid F₁, soil, plant, productivity.

A number of scientific research works are being carried out in the world to expand the geographical distribution of plants that are eaten by humans and to create a healthy diet by increasing the type of food crops due to the acclimatization of new species and varieties. In particular, the scientific research carried out in order to ensure the uniform growth of food crops in all regions of our republic, the selection of varieties and hybrids suitable for growing sweet corn as a vegetable crop, suitable planting periods, biological and morphological characteristics, cultivation technologies in the soil and climate conditions of Karakalpakstan has not yet been scientifically substantiated (8, 9, 12, 13, 14, 17). Under these conditions, growing vegetable (sweet) corn in large areas, growing a high-quality crop and providing the population with a valuable product is one of the urgent issues of today.

The cobs of vegetable (sweet) corn are harvested in the milk-wax ripening phase, and the harvested cobs are boiled and consumed as food and raw materials for the canning industry (1, 2, 3, 4, 7, 10, 11, 16).

As a result of our research, varieties and hybrids of vegetable (sweet) corn suitable for the soil and climate conditions of the Republic of Karakalpakstan were selected, some elements of the technology of cultivation as a fair crop were developed and recommendations were made for production (5,6,15).

As an object of research such varieties and hybrids as Eureka(testing), Zamin, SPV 1022, Can. Pedro 2 Inta, Berys, Leonard's Early, Osnova 209, clx3349ys clause, Honey Bontam F₁(testing), Sweet star F₁, Spirit F₁, Megaton F₁, Sentinel F₁, Baron F₁, Soyan F₁, Hybrid F₁ were selected and alluvial-meadow soils of the Republic of Karakalpakstan were chosen.

The subject of the study is the growth, development, leaves, stems and stalks of vegetable (sweet) corn varieties and hybrids.

Researches were carried out based on the methods of the manuals "Methodological recommendations for conducting field experiments with corn" (Dnepropetrovsk, 1980), "Methodology for state variety nutrition of agricultural crops" (1989).

Research results. In 2017-2019, 8 promising varieties and 8 hybrids of vegetable (sweet) corn were included in the State Register and planted in order to study their compatibility with climatic conditions. Early germination of seeds in Zamin, Can. Pedro 2 Inta, Berys varieties, Sweet Star F₁, Sentinel F₁ hybrids and relatively late germination in SPV 1022, Leonard's Early, Honey Bontam F₁, Spirit F₁, Megaton F₁, Baron F₁, Soyan F₁, Hybrid F₁ was noted.

In varieties and hybrids, the growth period from germination to milk-wax ripening was 75-85 days, and the fastest harvest was 73-77 days in Baron F₁, Sweet Star F₁, Spirit F₁, Soyan F₁

hybrids, relatively earlier harvest was 79-81 days in Zamin, Sentinel F₁, SPV 1022, Osnova 209, Hybrid F₁, Can. Also, such result was recorded in varieties and hybrids such as Pedro 2 Inta, Clx3349ys clause. The rest of the varieties and hybrids were harvested in 83-85 days.

In the experiment, plants ranged in height from 124.8 cm to 217.5 cm. The tallest plants are Can. Pedro 2 Inta, Leonard's Early, Hybrid F₁ hybrids were recorded and were 183.5-217.5 cm.

In the experiment, the highest mass of the root system per plant was recorded in Can. Pedro 2 Inta, Leonard's Early, Hybrid F₁ varieties and hybrids and was 415.8-285.0 g. Compared to other varieties and hybrids, formation of heavy and voluminous root system was observed in Clx3349ys clause, SPV 1022, Zamin varieties and consisted of 186.8-220.8 g.

The number of leaves in plants that produced many leaves at the expense of the side stems formed in one bush was 22.6-29.7 pieces. Spirit F₁, Soyan F₁, Honey Bontam F₁ hybrids and Osnova 209 varieties had the least number of leaves and consisted of 9.1-9.6 pieces. Compared to them, producing a lot of leaves was recorded in Baron F₁, Can. Pedro 2 Inta, Eureka, Sweet star F₁, Megaton F₁ varieties and hybrids.

When comparing the height of the first cob formed on the main stem of vegetable (sweet) corn, it was 30.3 cm in the Eureka(testing) variety, 35.4-41.7 cm in the Berys, SPV 1022 and Clx3349ys clause varieties, 21.3-23 in the Zamin and Osnova 209 varieties. It was 6 cm. The highest location of the initial cob on the main stem of 55.0-60.0 cm was observed in Can. Pedro 2 Inta and Leonard's Early varieties.

In hybrids, these indicators were 32.2-41.1 cm in Sentinel F₁, Hybrid F₁ and Sweet Star F₁ hybrids, 25.0-28.9 cm in Soyan F₁, Megaton F₁, Honey Bontam F₁, BaronF₁, and the lowest one of 16.4 cm. was recorded in Spirit F₁.

A characteristic feature of the subspecies of vegetable (sweet) corn is the formation of lateral stalks. In the experiment, accumulation from 1.1 to 2.8 was observed in the studied varieties and hybrids. Among the varieties, produced the most lateral stems were the SPV 1022, Leonard's Early, Zamin, Berys and the average number was 2.6-2.8. The lowest density in the conditions of the Republic of Karakalpakstan Can. Pedro 2 Inta - 1.1 units and plants that did not bloom at all were observed in Osnova 209 variety. Under these conditions, an average accumulation of up to 1.4 units was recorded in the Eureka(testing) variety.

Honey Bontam F₁ and Spirit F₁ hybrids did not produce side stems. The most lateral stems were formed in Sentinel F₁ and Hybrid F₁ hybrids with an average of 2.7-2.8 pieces.

Varieties and hybrids differed sharply in terms of cob formation, and on average, 1.7 to 3.2 cobs were formed per bush. An increase in the number of cobs in a plant makes it possible to increase productivity. Among studied varieties and hybrids, Leonard's Early produced 3.1 seeds per bush, Zamin - 3.2 seeds, and Megaton F₁ hybrid - 2.9 seeds.

In the analysis and study of the productivity indicators of varieties and hybrids, its yield, the average weight of one cob, the number of grain rows in a cob, the number of grains in one row of a cob, the length of the first and second cobs formed on the main stem, and the diameter of cobs, etc. were taken into account. The above-mentioned indicators differed from each other when the varieties and hybrids were compared.

In vegetable (sweet) corn varieties and hybrids, the yield of marketable cobs was from 1.2 to 2.3 units per bush. The highest number of commercial seeds was recorded in Zamin, Leonard's Early varieties and Sentinel F₁ and Megaton F₁ hybrids, making 2.1-2.3 pieces. Varieties and hybrids with the lowest yield were Osnova 209 (1.3 units), Spirit F₁ (1.2 units), SoyanF₁ hybrid (1.5 units). SPV 1022, Clx3349ys clause, Can. Pedro 2 Inta, Zamin varieties prevailed. In the studied hybrids, the formation of high cob weight (220.8-240.2 g) was noted in Sweet Star F₁, Honey Bontam F₁, Hybrid F₁ and Sentinel F₁ hybrids. In other hybrids studied in the experiment, the cob weight was 154.9-178.6 g.

Leonard's Early, Can. Pedro 2 Inta, Clx3349ys clause, Zamin, and Eureka(testing) varieties were dominant in terms of the number of grain rows (16.6-16.9 rows) in each cob were observed during the experiment. Among hybrids, this indicator (15.8-16.9 units) corresponded to Hybrid F₁, Megaton F₁ and Sentinel F₁ hybrids. A high indicator of the number of grains in one row of the cob was observed in Can. Pedro 2 Inta, SPV 1022, Zamin, Berys, Leonard's Early varieties and hybrids Hybrid F₁, Baron F₁, Honey Bontam F₁, Sentinel F₁, Megaton F₁, with an average of 36.5-42,4 grains.

Currently, most enterprises processing vegetable (sweet) corn cobs require that cobs be no less than 20-22 cm long and no shorter than 4-4.5 cm in diameter. Because this indicator determines the marketability of the milk-ripened cobs, and their price drops sharply (up to 5 times) if they do not meet these requirements.

The formation of the first pod in the range of 22.2-25.5 cm in length was recorded in most varieties of the experiment. Only in the variety Osnova 209, the initial stem of 19.8 cm was formed. The longest first cob formation of 24.4-24.9 cm was recorded in Zamin and Clx3349ys clause varieties. Among the studied hybrids, the longest first cob formation of 24.2-25.5 cm was observed in Hybrid F₁, Sentinel F₁ and Megaton F₁ hybrids. In the production and food processing industry, like the first cob of vegetable (sweet) corn, the second cob are required to be the same in length and diameter, and the length of it should not be less than 20-22 cm.

The length of the second cob was 20.4-23.4 cm in the following varieties and hybrids of vegetable corn studied in the experiment: SPV 1022, Zamin, Clx3349ys clause, Hybrid F₁, Sentinel F₁, Megaton F₁. In vegetable corn varieties and hybrids, the diameter of the first and second cobs also changed in accordance with the length. The diameter of the first cob was 3.9 cm to 5.2 cm, and the diameter of the second cob was 3.6 cm to 4.5 cm.

Cob productivity varied from 4.1 t to 10.6 t per hectare. In the years of experiment, the lowest yield among varieties was Osnova 209 - 4.1 t, among hybrids - 5.5 t in Soyan F₁ hybrid. A high result in terms of seed productivity indicators is SPV 1022, Can. Pedro 2 Inta, Zamin varieties consisted of 9.5-10 t. Among the studied hybrids, the Honey Bontam F₁(testing), Sentinel F₁, Megaton F₁ had a high yield of 9.4 to 10.7 t.

Conclusion

The results of the research of vegetable (sweet) corn varieties and hybrids in the conditions of Karakalpakstan showed that Can. Pedro 2 Inta (9.7 t), SPV 1022 (9.5 t), Zamin (10.0 t) varieties and as high-yielding varieties that adapt to these natural conditions and grow easily hybrids are Honey Bontam F₁ (9.4 t), Sentinel F₁ (10.3 t), Megaton F₁ (10.6 t) with high results in terms of these indicators and they provide a yield of 9.4-10.7 t per hectare.

In general, varieties and hybrids of vegetable (sweet) corn were tested for the conditions of Karakalpakstan, and the creation of agrotechnology for high-yielding varieties and hybrids as a result of this research is considered the direction of future scientific research.

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Rezyume: *Maqolada Qoraqalpog'iston sharoitida sabzavot (shirin) makkajo'xorining nav va duragaylarini yetishtirish texnologiyasi elementlari, o'simliklarning unib chiqish va hosil organlari rivojlanishi, o'simliklarning o'sishi, rivojlanishi va hosildorligi haqida ma'lumotlar keltirilgan.*

Резюме: *В статье приведены сведения об элементах технологии выращивания овощных (сладких) сортов и гибридов кукурузы в условиях Каракалпакстана, всхожести и развитии органов урожая, росте, развитии и продуктивности растений.*

Kalit so'zlar: *sabzavotchilik, asosiy muddat, nav va duragaylar, Evrika, Zamin, SPV 1022, Can. Pedro 2 Inta, Berys, Leonard's Early, Osnova 209, clx3349ys clause, Xoney Bontam F₁, Svit star F₁, Spirit F₁, Megaton F₁, Sentinel F₁, Baron F₁, Soyan F₁, Hybrid F₁, tuproq, o'simlik, hosildorlik.*

Ключевые слова: *овощеводство, сорт и гибриды, Эврика, Замин, SPV 1022, Can. Pedro 2 Inta, Berys, Leonard's Early, Основа 209, clx3349ys clause, Хоней Бонтам F₁(стандарт), Свит стар F₁, Спирит F₁, Мегатон F₁, Sentinel F₁, Baron F₁, Soyan F₁, Hybrid F₁, почва, растения, урожайность.*

UDC 502.74:591.5:599

**ON THE ISSUE OF ASSESSING THE SEASONAL AND LONG-TERM DYNAMICS
OF RODENTS IN THE CONDITIONS OF THE SOUTH ARAL REGION**

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Summary: *The article deals with the assessment of seasonal and long-term dynamics of rodents in the conditions of the Southern Aral Sea region. It is shown that the presence of several asymptotically stable attractors identified in the dynamics of the studied population of *Rhombomys opimus* in the autumn period indicates that it has the properties of multi-regime.*

Key words: *Aral Sea region, seasonal abundance, dynamics, rodents, external conditions, habitat.*

Introduction.

In the process of evolution, historically complex relationships between animals and their environment have developed, which ultimately reflect the ways of optimal use of the entire complex of external conditions with the same full realization of the capabilities of the population itself. Intrapopulation processes, on the one hand, are closely related to environmental conditions (climate, soil, vegetation, predators, state of the food supply, etc.), and on the other hand, they are determined by the biological characteristics of the population itself (sex and age composition, reproduction intensity, population dynamics, etc.) [3, 12].

Endo- and exogenous factors influencing the population of various animal species are a consequence of changes in both the phase portrait of the population's behavior and the intensity of intrapopulation processes occurring in it. According to experts, the interaction of external and internal factors influencing the population introduces an element of randomness and can cause complex behavior that determines the type of seasonal and long-term dynamics of the population, and the presence of self-organization processes allows us to consider it as a complex no equilibrium system [6,7, 5].

One of the main reasons for the lack of a scientific theory of population regulation is, first of all, the small number of long-term stationary observations of different animal species. In addition, there are not enough studies conducted in different landscape-geographical zones, when not only the size and demographic structure of the population, but also external factors were recorded [1, 2, 3, 11, 13, 15].

An analysis of the causes of the dynamics of the demographic and spatial structure of the population of small mammals can only be carried out using the theory of complex systems, which is capable of identifying general patterns of phenomena and processes in complex non-equilibrium population systems, taking into account their inherent principles of self-organization.

Material and methods.

The study is based on the results of a long-term study of rodent population dynamics collected by employees of the Karakalpak Research Institute of Natural Sciences. The material was collected using the standard catch/line method [4].

Table 1.

Characteristics of the material used

Stationary scientific stations	Period research	Catching effort, catch/night.	Caught animals

Northern part of the Ustyurt plateau	2017-2023	1220	56
Southern part of the Ustyurt plateau	2018-2023	1328	63

These stationary research stations are located on the territory of the gypsum desert of the Ustyurt plateau (northern and southern parts). To assess the reliability of the differences (similarities) of long-term seasonal population dynamics, we used the methods of mathematical and statistical analysis STATISTIC.V. 7.0.

Results and its discussion

Seasonal and long-term dynamics of the population of the great gerbil (*Rhombomys opimus*) represent a sequence of events from the state of the population in the spring (abundance and age-sex structure) to the generation of seasonal reproductive cycles, accompanied by the formation of a new spatial and demographic organization at each time stage of development [2, 11, 14]. In addition, rodents are in a natural environment, the state of which, under some conditions, can promote population growth, and under others, inhibit it mainly due to changes in the reproductive potential of individual individuals and an increase in the mortality of young animals. In response to changes in intrapopulation and external factors, the population forms a new spatial and demographic structure, allowing it to flexibly respond to these changes [2, 3].

As experts note, the mechanism for restructuring the spatial-demographic structure of rodent populations is the regulatory density-dependent relationships between animals, bringing the population size and structure into line with the current conditions [1, 2, 3, 10].

The presence of several asymptotically stable attractors in September and October, identified in the dynamics of the studied population of the great gerbil (*Rhombomys opimus*), indicates that it has multi-regime properties, since the complex-changing influence of exogenous factors can be considered, in particular, as a modification of the given initial conditions [9].

In the Aral Sea region, the population of *Rhombomys opimus* usually settles in large colonies, sometimes occupying up to 2 hectares. The most extensive colonies are the result of the digging activity of many generations over many years. The reproductive processes and survival of the great gerbil depend on environmental conditions.

As shown in the literature, population density, as well as the size and structure of social groups of *Rhombomys opimus*, change annually, depending on changing conditions, in particular, such as precipitation and temperature. Years with relatively high amounts of winter and spring precipitation are characterized by good development of vegetation and an abundant food supply, which stimulates spring reproduction and the formation of large family groups of the great gerbil. On the contrary, the authors showed that a two-year drought causes poor development of spring vegetation, and a lack of food leads to a decrease in the number and population density of *Rhombomys opimus* colonies, due to increased mortality of animals, especially young animals. The availability of succulents is also a factor in the survival of rodents during hot summers [16, 17].

The analysis of the dynamics of the seasonal population size of *Rhombomys opimus* showed that in months such as March-April and September-October, the population size gradually increases and is determined mainly by the reproductive activity of animals. The probability of the occurrence of a particular population size in each specific year during these months is described by a single-peak asymmetric lognormal distribution, shifted towards low population values (Fig. 1, 2).

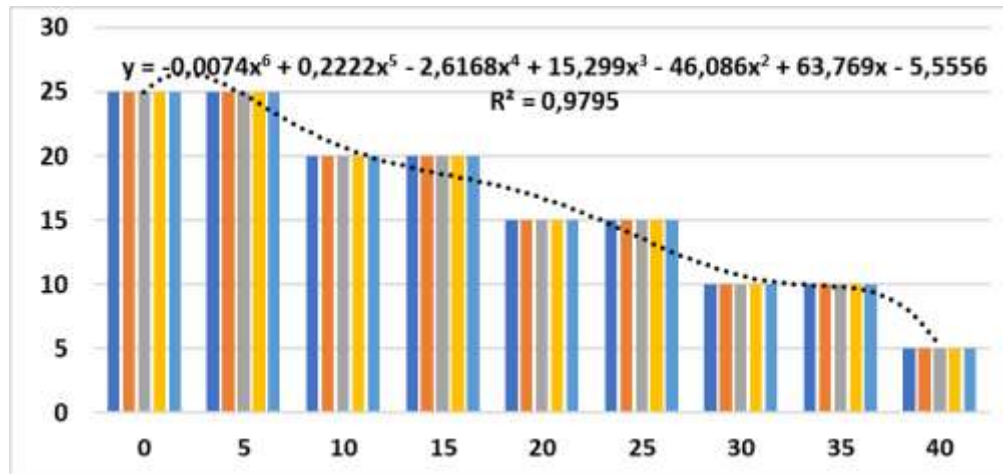
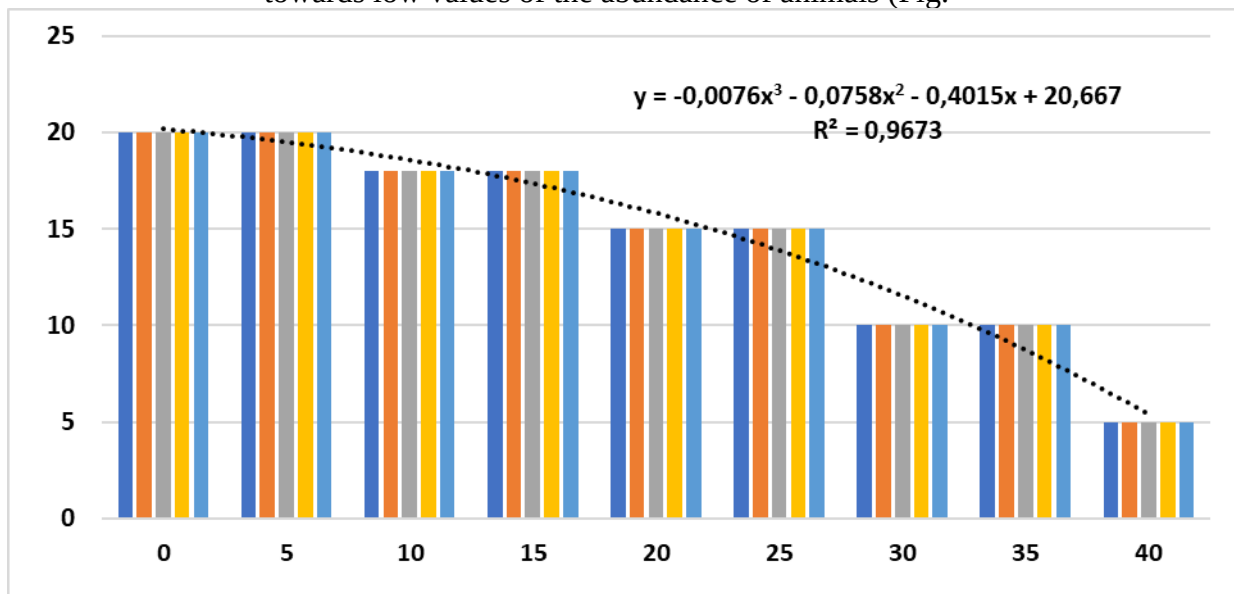


Fig.1. Probability distribution of numbers in total for two stationary scientific stations in a long-term series of observations (for the month of March-April)

Newly arrived animals die mainly in the fall; high mortality of individuals in transitional (spring and autumn) periods is associated with seasonal changes in physiology (primarily thermoregulation) [8]. Reducing the intensity of the low-temperature period reduces the energy expenditure of animals [15], while the possibility of searching for food resources increases, due to which higher animal activity is maintained, their survival rate increases, and the demographic structure of the population changes [13].

The long-term set of probabilities of the appearance of a particular abundance in the autumn period is also statistically reliably described by an asymmetric lognormal distribution, shifted towards low values of the abundance of animals (Fig.



2).

Fig.2. Probability distribution of numbers in total for two stationary scientific stations in a long-term series of observations (for September-October months)

For this type of distribution, the state of the population is determined mainly by the spatial and demographic structure of the population in April. This population process is also a continuous-time Markov branching process. The current abundance at the stage of seasonal growth shapes the population dynamics in subsequent months.

In the autumn period (September-October months), the total population size naturally decreases (Fig. 2), which is associated with the almost complete stop of puberty of the newly arrived animals and the significant death of breeding gerbils. According to the analysis, if in June

the share of breeding females was 42.2%, in August - 13.7%, then in October only a few pregnant females were encountered (their share did not exceed 2.8%). The numbers at all stationary scientific stations change synchronously; Spearman's rank correlation coefficients for different pairs of stationary research stations range from 0.56 to 0.78.

Long-term changes in abundance at the three stationary scientific stations are not statistically different ($\chi^2 = 0.68$, $p = 0.9$), therefore, the probability distribution of abundance by year is also constructed for the general sample, which includes the stationary research stations under consideration.

Conclusion

Under the influence of stable or temporary action of various external disturbances, detailed equilibrium does not exist in a nonequilibrium state. As a result, small deviations from a balanced state are not necessarily disrupted by the constantly emerging adaptive mechanisms of the population itself - they can be self-regulating. This feature underlies the ability of nonequilibrium population systems to carry out bifurcation transits to established states, ensuring population stability [6, 7].

The main property of such systems is manifested in the ability to transition to an ordered state through fluctuations. Such a unique feature is common for a population when exposed to exogenous factors, which creates certain difficulties in predicting the behavior of the system itself. Moreover, we note that the size and demographic structure of the population under consideration are unpredictable, since they are characterized by the main property of chaotic dynamics - significant attachment to the initial conditions.

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Rezyume: Maqola Janubiy Orol dengizi mintaqasi sharoitida kemiruvchilar sonining mavsumiy va uzoq muddatli dinamikasini baholashga bag'ishlangan. Ko'rsatilganki, *Rhombomys opimus*ning kuz davrida o'rganilgan populyatsiyasi dinamikasida aniqlangan bir nechta asimptotik barqaror attraktorlarning mavjudligi uning multi rejimli xususiyatga ega ekanligini ko'rsatadi.

Резюме: Статья посвящена оценке сезонной и многолетней динамики численности грызунов в условиях Южного Приаралья. Показано, что наличие нескольких асимптотически устойчивых аттракторов, выявленных в динамике изучаемой популяции *Rhombomys opimus* в осенний период, свидетельствует о том, что она обладает свойствами мульти режимности.

Kalit so'zlar: Orolbo'yi, mavsumiy ko'pligi, dinamikasi, kemiruvchilar, tashqi sharoit, yashash muhiti.

Ключевые слова: Приаралье, сезонная численность, динамика, грызуны, внешние условия, среда обитания.

UDC 581

**ECOLOGICAL GROUPS OF PLANTS IN RELATION TO MOISTURE IN THE
EASTERN CHINK OF KARAKALPAK USTYUR**

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Summary: *The article discusses the features of ecological groups of plants in relation to the use of ground moisture in the conditions of the Eastern Chink of Karakalpak Ustyurt. The establishment of plant species on the Eastern Chink that are associated with one or another type of water supply makes it possible to understand the relationship between vegetation and the nature of moisture. There is a special classification of ecological groups of plants in relation to their use of ground moisture: ombrophytes, trichohydrophytes, phreatophytes and hygrophytes.*

Key words: *phreatophyte, ombrophyte, trichohydrophyte, hygrophytes, Eastern Chink, Ustyurt, hydroindicators, classification, method.*

Introduction. One of the necessary conditions for the growth and development of plants is water. Its content in plant cells is 50-80%. During the evaporation process, water is consumed in large quantities. Water enters plants mainly from the soil through the root system. All biochemical processes occur with the participation of water, and the synthesis of organic substances occurs. Nutrients enter plants from the soil only dissolved in water. With the help of water, the continuity of their movement in plants is ensured.

Vegetation is very closely related in its distribution over the earth's surface to the distribution of moisture. The source of moisture in the soil for plant roots is precipitation penetrating the soil and groundwater. Depending on the length of the root system, the plant can draw moisture from one depth or another, either from the soil or directly from groundwater.

There is a special classification of ecological groups of plants in relation to their use of ground moisture, i.e., according to the sources of moisture absorption from the substrate. I.N. Beidman (1974) divided plants according to their use of moisture into four groups: ombrophytes, trichohydrophytes, phreatophytes and hygrophytes.

It distinguishes ombrophytes (from the Greek ombros - rain) - plants that feed on the moisture of precipitation, trichohydrophytes (from the Greek trix - hair) - plants associated with the capillary border of groundwater, which are in a state of constant mobility, phreatophytes (from the Greek phrear (phreatos - well) - plants whose root system is constantly connected to the aquifers of the soil and parent soil-forming rocks and hygrophytes (from the Greek hygros - wet) plants that can grow with excessive soil moisture.

Materials and methods. The object of our research was the flora of the Eastern Chink of the Karakalpak part of Ustyurt. Field studies to study the ecological groups of plants in relation to the use of ground moisture were carried out in 2020 - 2023. mainly by the route method and the classification of I.N. Beidman. During the field research, methods of field geobotanical and floristic research were also used.

Research results. In the territory of the Eastern Chink of the Karakalpak part of Ustyurt, in comparison with the southern part of this territory, the floristic composition is quite rich. During expeditions organized during 2020-2023. We identified 196 plant species related to various life

forms of plants and determined ecological groups of plants in relation to the use of ground moisture in the conditions of the eastern cliff of the Karakalpak Ustyurt.

On the territory of the Eastern Chink, 118 plant species belonging to the group of ombrophytes, 60 species of trichohydrophytes, 12 species of phreatophytes, and 6 species of hygrophytes were identified (Table 1).

Table 1

Ecological groups of plants in relation to the use of ground moisture in the conditions of the eastern cliff of the Karakalpak Ustyurt

	Ecological groups of plants in relation to the use of ground moisture	Trees	Shrubs	Shrubs	Subshrubs <i>Suffrutex</i>	Subshrubs <i>Suffruticulus</i>	perennials	Biennials	Annuals	Quantity plants	%
	Ombrophytes	-	-	-	3	3	60	5	47	118	60,2
	Trichohydrophytes	-	9	3	3	7	26	-	12	60	30,6
	Freatophytes	3	5	-	2	2	-	-	-	12	6,1
	Hygrophytes	-	-	-	-	-	6	-	-	6	3,1
	Total:	3	14	3	8	12	92	5	59	196	100

The table shows the main quantitative and percentage ratios of plant life forms related to various ecological groups in relation to the use of ground moisture in the conditions of the Eastern Chink. Among the life forms of plants, herbaceous perennials predominate (60.2%), which belong to the group of ombrophytes; the lowest occurrence is observed in subshrubs and subshrubs, which belong to the group of phreatophytes.

On the Eastern Chink, the most common plant species that use moisture are ombrophytes. Ombrophytes have a root system that spreads in the surface horizons of soils by deep groundwater, and absorb gravitational and capillary-suspended water, which seeps from the surface into the depths of the soil during periods of rain.

An example of ombrophytes are perennial and biennial herbs, ephemerals and ephemeroids (annuals), which bloom in a lush carpet in the spring, when the soil contains a supply of moisture, and quickly disappear as dryness increases. Subshrubs (*Artemisia terrae-albae*) and Wormwood (*Artemisia turanica*), also the subshrub (*Convolvulus fruticosus*) are ombrophytes. These plants also use moisture from atmospheric precipitation for their livelihoods. They exist due to easily accessible gravitational and capillary-suspended water.

Phreatophyte plants are also found on the Eastern Chink. Their characteristic feature is a powerfully developed root system, which sometimes measures tens of meters and, as a rule, is several times larger than the size of the above-ground organs.

Phreatophytes (from the Greek words "phrear" - well, pool and "phyton" - plant) have a constant connection with groundwater through a highly developed root system. For example, the root system of camel thorn (Alchagi) can penetrate the soil to a depth of 15-20 m, and the above-ground part rises above the soil surface by only 0.5 m.

Another plant from the same legume family, licorice (licorice), has roots 20-25 m long, similar to ropes. Meanwhile, the height of the above-ground part of this plant is 1.0-1.5 m. The powerful roots of Tamarix reach a depth of 30 m. Black saxaul (*Haloxylon ammodendron*), a woody plant from the goosefoot family, has a very deep root system. A case is described when living roots of black saxaul were present in a core extracted from a borehole from a depth of 37 m. In alfalfa (*Medicago sativa*), the length of the root system reaches up to 15 m. Phreatophytes also include the burial ground, or common harmala (*Peganum harmala*).

The phreatophytes of the Eastern Chink are quite diverse in appearance. Some of them are similar to ordinary mesophytes. Other phreatophytes have a xeromorphic appearance, for example, saxaul, tamarix.

Among phreatophytes, there are also succulent forms that accumulate water in the above-ground parts of their body - leaves, stems, which is why they look juicy and fleshy. These include, for example, sarsazan. Phreatophytes of this type grow in areas where water is highly mineralized.

A characteristic feature of phreatophytes is its highly intense transpiration throughout the growing season. They evaporate moisture 3 to 5 times more than species that are not connected to groundwater by their root systems. Therefore, in the conditions of the Eastern Chink, plants that quickly consume water can be used as groundwater indicators.

In a typical phreatophyte, slow transpiration indicates unfavorable water supply conditions for it, while intensive transpiration indicates favorable conditions. In addition to the intensity of transpiration, the color of phreatophytes also indicates the depth of groundwater. Having constant access to water, phreatophytes remain active throughout the growing season and retain a rich, bright green color even during severe droughts. If water supply conditions deteriorate, phreatophytes change their color to pale green, yellow or brown. Phreatophytes are clearly visible from a distance, so they are of greatest importance in aerial landscape hydroindication studies.

Plants of the Eastern Chink, related to the use of moisture in the group of trichohydrophytes, have a root system that goes deeper into the soil than that of plants of the previous group of ombrophytes and uses capillary-rising soil moisture from relatively shallow groundwater. There are 9 species of shrubs, and 3 species of shrubs growing on the Eastern Chink are trichohydrophytes.

Among the shrubs, it is important to note white saxaul, which is not an indicator of groundwater. It grows in many places: in clayey and sandy deserts, sometimes right on loose dunes. All shrubs found on the Eastern Chinka belong to trichohydrophytes (*Ephedra* two-spikelet *Kuzmicheva* grass, *Ephedra* false two-spikelet, *Boyalish*).

Trichohydrophytes are characterized by root systems of a universal type, combining the features of phreatophytes and ombrophytes. This includes most perennial grasses, for example, feather grass, fescue, etc.

Hygrophytes are plants that live in places with high air and soil humidity. The category of hygrophytes is distinguished based on the characteristics of the physiology and morphology of plants; The most characteristic feature of hygrophytes is the absence of devices that limit the consumption of moisture.

Hygrophite plants on the Eastern Chinka include 6 species of perennial grasses. Among these plants, it is important to note *Zannichellia major*, *Phragmites australis*, *Schoenoplectus hippolyti*, *Bolboschoenus affinis* (*Bolboschoenus popovii*), *Juncus gerardii*, *Juncus soranthus*.

Hygrophytes love a moist environment and easily take root in wetlands. But it is much more important that such plants are able to pump and evaporate water. The liquid is absorbed by the plant through the root system. The volume and speed of this process can amount to very impressive figures: tens and even hundreds of liters per day.

Common moisture-loving plants, such as reeds, are also important in indicating the locations of groundwater, especially those close to the surface. Even in deserts it is confined to shallow groundwater. If their level begins to decrease, reed growth is inhibited and fruiting is weakened.

Thus, the establishment of plant species on the Eastern Chink that are associated with one or another type of water supply makes it possible to understand the relationship between vegetation and the nature of moisture. The close connection of plants with groundwater allows us to approach the understanding of the regime of these waters through plants, which to a certain extent are hydroindicators.

Conclusions:

1. On the territory of the Eastern Chink, 118 species of plants belonging to the group of ombrophytes, 60 species of trichohydrophytes, 12 species of phreatophytes, 6 species of hygrophytes were established

2. In the conditions of the Eastern Chink, among the life forms of plants, herbaceous perennials (60.2%) predominate, which belong to the group of ombrophytes; the lowest occurrence is observed in subshrubs and subshrubs, which belong to the group of phreatophytes.

3. On the Eastern Chink, examples of ombrophytes include perennial and biennial grasses, ephemerals and ephemeroids (annuals), subshrubs *Artemisia terrae-albae* and *Artemisia turanica*, and also subshrubs *Convolvulus fruticosus*.

4. Phreatophyte plants are also found on the Eastern Chink. Their characteristic feature is a powerfully developed root system, which sometimes measures tens of meters and, as a rule, is several times larger than the size of the above-ground organs.

5. The phreatophytes of the Eastern Chink are quite diverse in appearance. Some of them are similar to ordinary mesophytes. Other phreatophytes have a xeromorphic appearance, and there are also succulent forms among phreatophytes.

6. In the Eastern Chink, phreatophyte plants can be used as groundwater indicators.

7. Plants of the Eastern Chink, related to the use of moisture in the group of trichohydrophytes, have a root system that goes deeper into the soil and uses capillary-rising soil moisture from relatively shallow groundwater.

8. Hygrophite plants on the Eastern Chinka include 6 species of perennial grasses. Among these plants, it is important to note *Zannichellia major*, *Phragmites australis*, *Schoenoplectus hippolyti*, *Bolboschoenus affinis* (*Bolboschoenus popovii*), *Juncus gerardii*, *Juncus soranthus*.

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Summary: Maqolada Qoraqalpoq Ustyurtning Sharqiy Chinki sharoitida er namligidan foydalanish bilan bog'liq holda o'simliklarning ekologik guruhlari xususiyatlari ko'rib chiqiladi. Sharqiy Chinkda u yoki bu turdagi suv ta'minoti bilan bog'liq bo'lgan o'simlik turlarining paydo bo'lishi o'simliklar va namlik tabiati o'rtasidagi munosabatni tushunish imkonini beradi. O'simliklarning ekologik guruhlarini tuproq namligidan foydalanish bo'yicha maxsus tasnifi mavjud: ombrofitlar, trixohidrofitlar, freatofitlar va gigrofitlar.

Резюме: В статье рассматриваются особенности экологических групп растений по отношению использования грунтовой влаги в условиях Восточного Чинка Каракалпакского Устюрта. Установление на Восточном Чинке видов растений, приуроченных к тому или иному типу водного питания, даёт возможность разобраться в связи растительности характером увлажнённости. Существует особая классификация экологических групп растений в отношении использования ими грунтовой влаги: омброфиты, трихогидрофиты, фреатофиты и гигрофиты.

Ключевые слова: фреатофит, омброфит, трихогидрофит, гигрофиты, Восточный Чинк, Устюрт, гидроиндикаторы, классификация, метод.

Kalit so'zlar: freatofit, ombrofit, trixohidrofit, gigrofitlar, Sharqiy Chink, Ustyurt, gidroindikatorlar, tasnifi, usuli.

UDK 91 (575.1)

**ASSESSMENT OF SOIL SALINIZATION PROCESSES IN IRRIGATED LAND OF
SYRDARYA PROVINCE USING GEO-INFORMATION SYSTEMS AND EMPIRICAL
METHODS**

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Summary: *The purpose of this article is to evaluate and map soil salinization processes in irrigated agrolandscapes in Syrdarya region using geoinformation systems. The results were one of the improved methods for district wide application of the IDW interpolation method as a GIS-based approach to soil salinity mapping.*

Key words: *IDW, geoinformation systems, soil salinity, empirical analysis, Syrdarya province.*

Groundwater, soil and surface water are components of a chain in the accumulation and movement of salts in the soil. That is why it is necessary to consider them together when solving reclamation issues. The role of seepage waters in the process of soil formation is particularly large, they have a comprehensive effect on the regime and formation of saline soils, serves as a means of collecting and moving to other lands with its own flow, redistribution [1, 2].

The salinity regime of the irrigated soils of the region is determined by the regimes of seepage waters in most cases. The closer the groundwater level is to the surface and the higher their level of mineralization, the faster and more intense the processes of salt accumulation and secondary salinization occur in the soil [3, 4, 14]. So, there is a control point (line) of groundwater, from which its decrease does not affect soil formation, including soil salinity, or this effect is almost zero, and this point is it is called "critical depth" of water. This term was originally coined by Bushuev, later accepted as a scientific term in the literature.

The rate of salt accumulation and secondary salinization processes in the soil depends not only on the depth of groundwater, but also on the level of their mineralization. As a result of research in this regard, they put forward the concept of "critical mineralization" of seepage waters. This concept is also in "ameliorative soil science", took a strong place and was widely used in project documents [5, 6, 12].

In the conditions of naturally and artificially weakly drained Syrdarya, irrigation at high standards for many years, a large amount of filtered irrigation water and underground seepage water are combined and combined, as a result, seepage water enters the ground. allowing it to rise sharply to the surface. This process leads to the rapid accumulation of salt in the irrigated soils, which in turn leads to a general unfavorable amelioration situation [7, 8, 13]. Currently, the groundwater level in the main areas of the newly irrigated zone and in the weakly drained part of the old irrigated zone has a stable seasonal character, and after the end of the growing season, the depth typical for these areas is 2.5-3, It decreases to 2 m, increases to 0.5-2.0 m during the growing season, the amplitude of seasonal fluctuations is 1.0-1.5 m throughout the year. The studied areas are located at different depths in the seasons of 2000 and 2001, in turn, showed that it actively participates in the processes of soil formation and soil salinization [9, 10, 11].

The purpose of this study is to evaluate and map soil salinization processes in irrigated agrolandscapes in Syrdarya region using geoinformation systems.

1. The Subject of the Agreement.

The Syrdarya region was established on February 16, 1963, and is located in the middle of the Syrdarya basin in the central part of the Republic of Uzbekistan. It borders the Republic of Kazakhstan to the north and the Tashkent region to the northeast, the Republic of Tajikistan to the south, and Jizzakh region to the west (Figure 1).



Figure 1. Study area

The area is 4.28 thousand km², the population is 900 thousand people, including 467.4 thousand people of working age. There are currently 8 districts and 5 cities in Syrdarya region. Districts of Boyovut, Gulistan, Mirzaabad, Aqoltin, Saykhunabad, Syrdarya, Khavos and Sardoba. The total irrigated area of Syrdarya region is about 287 thousand ha. Despite the small territory of the province, it belongs to 2 natural geographical districts. That is, the fact that Mirzachol covers a certain part of the natural geographical districts, as well as its location between the desert and the mountains, determines its unique characteristics. Syrdarya region is divided into two distinct parts. The central part of the region consists of lowlands, and in the southern part there are mountain ranges of Turkestan from east to west and to the northwest. These parts also differ in geological structure and topography, climatic conditions and soil-vegetation. The relief is mostly undulating and decreases from northwest to south. The main part of the Mirzachol steppe is part of the region. The height is 230 m in the central districts, 400-450 m in the south, 600-650 m in the northern and northeastern parts.

Contract price.

During the formation of salt compounds of ions and their movement, first of all, poorly soluble salts SiO₂, CaMg(CO₃)₂, CaCO₃, CaSO₄, Na₂SO₄ accumulate in the solid phase of soil horizons. Other salts with a high degree of solubility, which accumulate in this phase, have a pronounced seasonal character. It is reflected only in the upper layers of the soil, mainly in the soil solution (Na, MgCl₂, CaCl₂, NaCl, MgSO₄, Na₂SO₄). The lower the solubility of salts, the earlier they reach the saturation point of the solutions circulating in the ground and soil, and the geographical area of accumulation of these salts is wider.

Based on the field experiments conducted in Gulistan district, a total of 1,700 soil samples were taken from 0-10, 10-20, 20-40, 40-60, 60-100 cm soil layers during October. Each soil sample was taken from areas near district irrigation systems. In this study, various classified soil salinity widely distributed in Gulistan district during 2020-2023 are described in the illustrated results based on geoinformation systems (GIS) maps.

The water-salt regime of soils depends on many factors - the level of seepage waters, their mineralization, the degree of salinity of soil solutions, the regime of irrigation, the quality of saline washing and irrigation water, the properties of the soil, the lithological-geomorphological and climatic conditions of the area. All factors that determine the salt regime are closely related, and a change in one of them will lead to a sudden change in the others at the same time. The concentration of salts in the soil solution periodically approaching the level of toxicity without destroying agricultural crops is called the "critical salt regime" of the soil. Due to the regular movement of salts with water, it directly depends on the soil moisture (water) regime, including the intensity of their ascent through capillaries.

The analysis of long-term seasonal field-observation and laboratory-analytical data, the processes of salt accumulation and secondary salinization in the soils of the Syrdarya region, their direction and geographic distribution patterns, lithological-geomorphological, hydrogeological, soil conditions of the region. It was determined that it is compatible with climate and irrigation-economic conditions. In particular, it depends on the level of natural and artificial drainage of the territory's lands, the technical condition and efficiency of the collector-water supply networks, the level of location and mineralization of underground water, and the quality of irrigation water. Quantitative indicators of salts, including total and harmful reserves, showed that they are different in different geomorphological regions and different parts of the region. The soils of all studied farms are of varying degrees of salinity, and within them, different options can be distinguished according to salinity levels and types, as well as the location of salt horizons in the soil profile (Table 1).

Table 1. Amount of readily soluble salts, gypsum, carbonates and salinity in soils of irrigated agrolandscapes of Syrdarya region

Soil layer, soil type, farm	Layer depth, cm	Dissolved solids, %	Cl, %	SO ₄ , %	Salinity type	CaSO ₄ x 2H ₂ O	CO ₂
Soil layer 12, Meadow soil, «Guliston» farm.	0-30	0,550	0,014	0,313	C	2,58	6,28
	30-50	0,750	0,017	0,426	C	3,74	6,87
	50-100	1,120	0,052	0,570	C	1,30	5,92
	100-150	1,230	0,024	0,666	C	2,56	7,13
	150-200	0,600	0,014	0,321	C	2,31	5,92
Soil layer 48, Grass-meadow soil, «Yangi hayot» farm.	0-30	1,160	0,014	0,668	C	3,42	5,57
	30-50	0,870	0,014	0,475	C	2,26	6,28
	50-100	0,700	0,010	0,422	C	3,08	6,45
	100-150	0,760	0,017	0,454	C	1,35	5,93
	150-200	0,650	0,017	0,397	C	2,31	6,00
Soil layer 2, Meadow soil, «Ulug‘bek» farm.	0-30	0,590	0,021	0,311	C	2,98	6,31
	30-50	0,310	0,017	0,160	C	3,64	6,58
	50-100	0,230	0,014	0,101	C	2,54	5,56
	100-150	1,110	0,028	0,664	C	2,56	5,86
	150-200	1,810	0,024	0,740	C	2,85	6,01
Soil layer 17, Grass-meadow soil, «Paxtakor» farm.	0-30	0,250	0,017	0,123	C	1,12	6,50
	30-50	0,520	0,021	0,253	C	1,74	6,84
	50-100	0,730	0,021	0,350	C	2,01	6,74
	100-150	0,660	0,017	0,383	C	2,22	5,90
	150-200	1,150	0,017	0,730	C	2,31	5,65

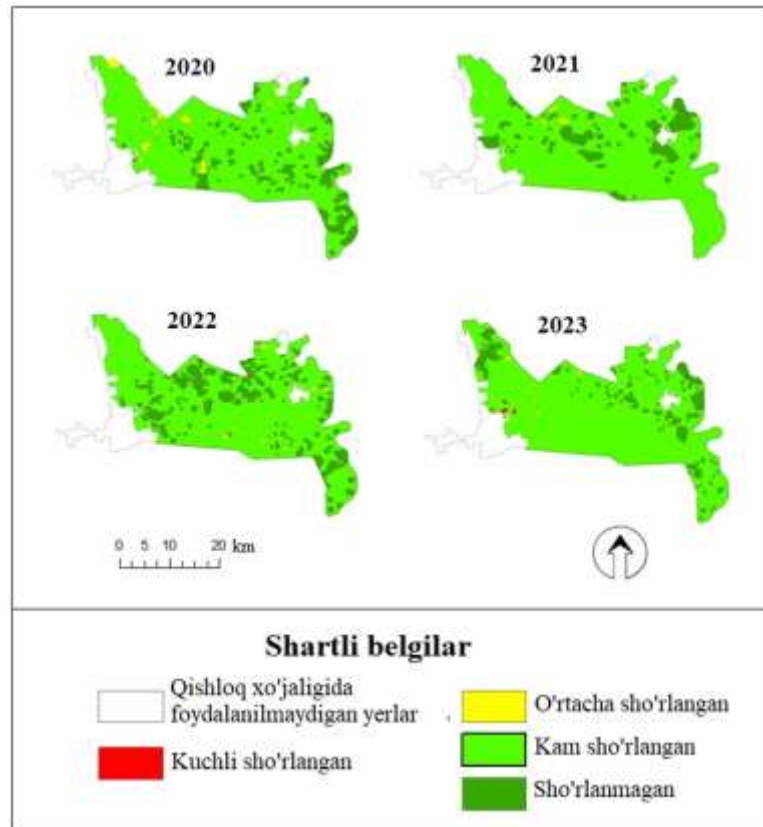


Figure 2. Soil salinity distribution maps of irrigated areas of Gulistan district in 2020-2023

In newly and old irrigated gray-meadow and meadow soils, studied according to the degree of salinity, from non-saline (salt-washed) fractions (salt content less than 0.3%) to saline (salt content differences of more than 3.0%) were observed. Saline horizons became saline (the maximum amount of salts is located in the 0-30 cm layer) according to the depth, layer thickness and salinity of the soil profile. High saline (at 30-50 cm), saline (at 50-100 cm), deep saline (at 100-150 cm) and deep saline (at 150-200 cm) groups are found (Table 1).

The agro-landscapes in the saline regions are mainly strongly and very strongly saline, and the largest amount of salts is accumulated in the upper arable layers of the soil. Their total amount is 1.160-3.915%, of which the amount of chlorine ions is 0.035-0.681%, and sulfates are 0.668-1.899%. The maximum amount of salts in highly saline groups of soils is 1.440-2.070, chlorine ions - 0.049-0.392, sulfates - 0.810-1.458%, proportionally 1.410-2.140, 0.017-0.031 and 0.829-1.315% in deep saline groups. 1.230-2.030, 0.024-0.066 and 0.666-1.225%, and lastly in deep saline soil groups - 1.150-1.810, 0.017-0.28, 0.730-0.870%. IDW maps were quantified for each soil salinity class and plotted per hectare (Figures 2-3).

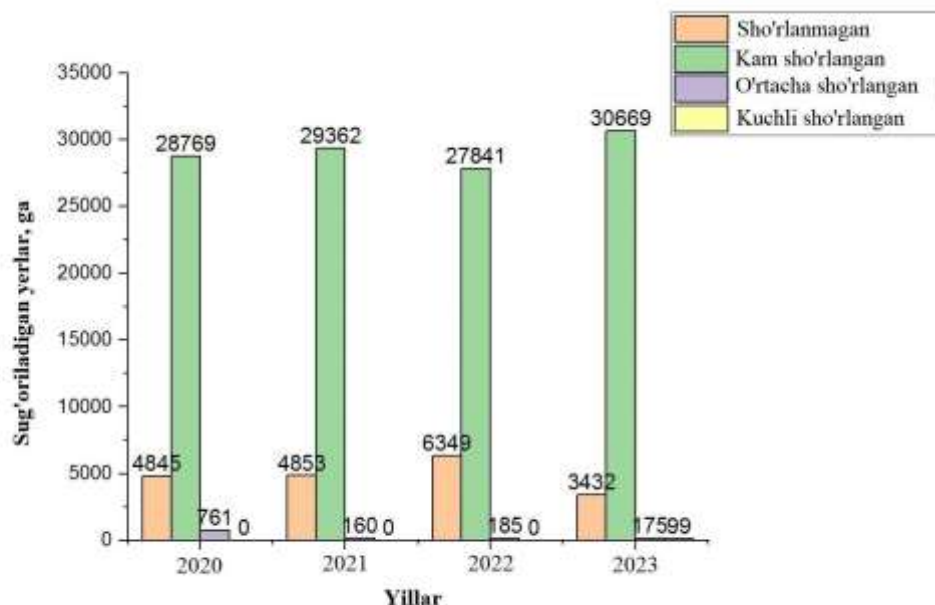


Figure 3. Growth/decrease trends for irrigated areas of Gulistan district with different soil salinities based on GIS for 2020-2023

These hectares were compared with official field experiments from the above-mentioned responsible organizations and table data based on our own experiments. As a result, IDW-based Soil Salinity Maps showed an accuracy of 85.2% ($p < 0.01$). The root mean square error (RMSE) of IDW maps generated with level 2 was 0.03 for soil salinity. These results were one of the improved methods for the district-wide application of the IDW interpolation method as a GAT-based approach to soil salinity mapping.

This study explored mapping techniques based on collected field data to provide areas of potential hazard and susceptibility to high soil salinity. The integration of geo-information technologies has made it possible to create an accurate map of these three variables and to make the results based on geo-information systems practical and scientific. Encapsulation of the mapping results of the IDW maps created for soil salinity, taking into account the existing errors in the formation of measures, was carried out. A practical and validated IDW interpolation method is strongly recommended for practical use in this province or such semi-arid region.

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Rezyume: Ushbu maqolaning maqsadi geoaxborot tizimlaridan foydalangan holda Sirdaryo viloyatidagi sug'oriladigan agrolandshaftlarda tuproqning sho'rlanish jarayonlarini baholash va xaritalashdan iborat. Natijalar tuproq sho'rliгini xaritalashda GISga asoslangan yondashuv sifatida IDW interpolatsiya usulini tuman miqyosida qo'llashning takomillashtirilgan usullaridan biri bo'ldi.

Резюме: Целью данной статьи является оценка и картирование процессов засоления почв орошаемых агrolандшафтов Сырдарьинской области с использованием геоинформационных систем. Результатом стал один из усовершенствованных методов районного применения метода интерполяции.

Kalit so'zlar: IDW, geoaxborot tizimlari, tuproq sho'rlanishi, empirik tahlil, Sirdaryo viloyati.

Ключевые слова: IDW, геоинформационные системы, засоление почв, эмпирический анализ, Сырдарьинская область.

УДК:556.004.

ASSESSMENT OF HYDROECOLOGICAL STATE OF WATER RESOURCES IN BUKHARA REGION

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Summary: *The article examines the hydroecological state of water resources in the Bukhara region. The degree of pollution of surface waters in the Zarafshan river basin, the hydrological and hydrochemical state of collector-drainage waters and underground groundwater.*

Keywords. *Hydrological regime, hydrochemical regime, irrigation water, collector-drainage water, groundwater.*

The republic is implementing a number of measures aimed at the efficient use and protection of water resources, especially in the context of global climate change and the observed shortage of fresh river water in many regions of the country. However, both surface and groundwater in some areas where industry and irrigated agriculture are developed are satisfactory, so the identification of such areas is relevant and of great practical importance. In the republic, an acute shortage of quality water is felt by all irrigated areas, especially those located in the delta part of river basins, this fully applies to the Bukhara oasis, one of the oldest and largest agricultural regions in Uzbekistan, the total area of the oasis is 28,702 km².

The area of the Bukhara region is 40,220 thousand km². It is located in the southwest of Uzbekistan, bordering Turkmenistan, Khorezm, Novoi and Kashkadarya regions, as well as the Autonomous Republic of Karakalpakstan. The Bukhara oasis is located in the western part of the lower reaches of the Zeravshan River, this river is of great importance for the oasis and it was thanks to it that the oasis arose. Water resources in the oasis are limited. River water comes from Zeravshan and Amu Darya, from which the Amu-Bukhara (ABK) and Amu-Karakul machine canals, built in the 1960s, are connected to the irrigated areas.

The issues of studying the hydroecological state of water resources that are under the increased influence of anthropogenic factors, a comprehensive assessment of river (irrigation), collector-drainage, groundwater, underground and drinking water in various regions of the republic are of particular and important importance; in this article, this problem is considered using the example of Bukhara region.

Hydrological and hydrochemical state of the Zarafshan River and irrigation waters.

In recent years, the shortage of brackish and fresh water has become a global problem and, in connection with this, more and more attention is being paid to the issues of effective and rational use of surface water resources of river basins. In many countries of the world, research work aimed at studying the quality of river waters, including the amount of mineralization, the content of major ions and the degree of their pollution, is of particular importance. A description of the current pollution of the Zeravshan River is given in the article by S.R. Shodiev, E.I. Chembarisov and M.B. Zhumayaya (2022). Based on their article, the current water quality of the Zeravshan River can be characterized as follows.

Dynamics of water mineralization along the length of the river. Chemical composition of river water Zeravshan on the territory of Uzbekistan is formed under the influence of pollution entering the river with wastewater from enterprises in Samarkand, Navoi and Bukhara regions, as well as with collector and drainage waters of irrigated areas. The mineralization of water downstream of the Zeravshan River increases from 0.29-0.30 g/l to 1.28-1.50 g/l, with maximum values even exceeding these values. The value of water mineralization in the lower reaches of the

river varies within a year from 0.98 to 1.62 g/l, which is due to the increased content of magnesium, sodium and sulfate ions. This fact is reflected in the irrigation quality of river water. In table 1. Long-term average values of mineralization and content of major ions for 2016-2020 were carried out.

The degree of pollution of surface waters in the Zarafshan river basin. For the Zarafshan river basin, this issue was also considered according to Uzhydromet data for 2020. According to the “State Water Cadastre”, In the Zeravshan river near the city of Samarkand (downstream of the Taligulyan collector), an excess of elements other than nitrate nitrogen is also observed. In the Zeravshan River near the city of Kattakurgan, the number of chemical elements exceeding the MPC is reduced to three: copper exceeds the MPC by 2.4 times, sulfates by 1.5 times, and petroleum products by 2.2 times. Near the village of Khatyrchi, in the river water there is an excess of copper by 2.8 times, phenols by 1.6 times, sulfates by 1.7 times and petroleum products by 1.2 times. In the Zeravshan river above and below the city of Navoi, the river contains the following elements exceeding the maximum permissible concentration: nitrite nitrogen (2.3-2.4 times), phenols - 5.3-7.6 times, sulfates - 7, 1-7.3 times, copper - 1.9-2.2 times; mineralization is 1.4 times, and the content of petroleum products (above the city) is 1.2 times.

In the r. Amankutansai near Amankutai village only three elements exceed the MPC value: copper - 2.4 times, phenols - 3.0 times and petroleum products - 1.8 times.

In the Kattakurgan reservoir and in the Inlet and Outlet canals, an excess of the maximum permissible concentration of four elements is observed: copper - 1.0 - 3.2 times, oil products - 1.8-4.0 times, sulfates - 1.3-2.1 times, phenols - 1.0-1.8 times.

In the lower reaches of the river above and below the city of Bukhara, the largest number of chemical elements exceeding the maximum permissible concentration is observed: magnesium by 4.5-4.6 times, mineralization by 2.4-2.5 times, sulfates by 10.9-11, 3 times, phenols - 3.7-3.9 times, zinc - 1.4-1.5 times, copper - 1.7-2.0 times, sometimes a slight excess of calcium is observed. Also, a significant excess of chemical elements is observed in the South Bukhara Canal (above and below the city of Bukhara): sulfates by 3.3-16.3 times, copper by 1.8-1.9 times, magnesium by 1.0- 5.5 times, zinc - 1.3 times, nitrite nitrogen - 2.0 times.

Hydrological and hydrochemical state of collector-drainage waters

Currently, on the irrigated lands of the Bukhara region, drainage has been built on an area of 225 thousand hectares. The collector and drainage network of the region is represented by open main, inter-farm collectors and on-farm collector and drainage networks of open and closed type, as well as vertical drainage wells. The total length of the main and inter-farm network is 2690 km, the on-farm network is 4692 km. For 1956–1986 the total length of the collector-drainage network increased from 1368 km to 5833 km, mainly due to the construction of the West Romitan, North Bukhara, Dengizkul, Parallel, Central Bukhara, and Main Karakul collectors. The main part of the drainage flow is diverted to natural depressions and depressions located outside the irrigated zone.

Existing collectors and large drainage tracts are combined into separate reclamation systems. The Parallel-Dengizkul collector system covers the territories of Alat, Karakul, Dzhandar, Bukhara and Kagan districts with a total area of 66.7 thousand hectares. The discharge of drainage and waste water (d-w-w) was previously carried out into the drainless depression of Dengizkul until it was filled, but at present, the water enters the Main Water-Discharge Tract (MWDT) and is then discharged along the Parsankul discharge into the river. Amu Darya.

The Central Bukhara and Western Romitansky collector system drains wastewater into the lake. Solenoe with its subsequent transportation along the Parsankulsky fault to the river. Amu Darya. The main Karakul collector, which previously drained wastewater into the lake. Solenoye, currently switched to the MWDT system - Parsankulsky discharge - Amu Darya. The drainage area of these systems covers the lands of the Alat, Karakul, Bukhara and Vabkent regions on an area of 71.0 thousand hectares. The Agitminsky discharge system, the water intake of which is the Ayak-

Agitminsky depression, drains the territory of the Gijduvan and Shafirkansky districts on an area of 16.2 thousand hectares.

The Northern collector system discharges wastewater into the lake. Kara-Kyr from the territory of Romitansky, Peshkunsky, Shafirkansky, Gijduvansky districts on an area of 16.3 thousand hectares. From the irrigated lands of the Karaulbazar massif with an area of 16.7 thousand hectares, drainage flow is diverted by the Main Drain (MD) collector to the Khodicha depression.

The total water intake for irrigation in recent years varies from 4.41 to 4.77 km³, together with irrigation water, 3.44–5.31 million tons of salts are supplied to irrigated lands, the collector flow varies between 2.23–2.61 km³, along with it 7.61–9.15 million tons of salts are removed from the irrigated area, i.e. In this irrigation area, desalinization of irrigated soils and soils is generally observed. The largest volumes of collector flow are observed in the Bukhara, Vabken, Dzhandar, Karakul, Peshkun and Gijduvan regions (243.86–330.45 million m³), and the smallest in the Kagan, Alat and Karaul-Bazar regions (52.36–182.33 million m³).

According to the analysis of the collected hydrochemical data, the chemical composition of the collector-drainage waters of this irrigation area with a mineralization of 1.70–1.97 g/l is hydrocarbonate-chloride-sulfate-magnesium-sodium-calcium (HCS-MNC), and with increased mineralization values (6.04–8.16 g/l) – chloride-sulfate-magnesium-sodium (CS-MN). In the Bukhara region there are 18 main collectors: Paralel-Dengizkul, Dengizkul into the lake, Zhanubiy, Bosh Karakul, Markaziy Bukhoro, Garbiy Romitan, Shimoliy, Shimoliy-9 branch, Halach, Temir yul, Karaun, Ogirma, Mavliyon, Parsankul, Main discharge, Zamon bobo, Toshkuduk (see 1 table). The lowest water flow rates are observed in the Temir yul collector – 0.45–1.08 m³/s; per year, 14.04–34.21 million m³ flows through the collector; the average annual value of mineralization varies from 3.29 to 3.77 g/l. In total, up to 2328 million m³ flows from the irrigated zone of the region through the collectors listed above. In this area, it is preferable to use water from the Markaziy Bukhoro, Shimoliy, Ogirma, and Mavliyon collectors for irrigation of agricultural crops. The water from other collectors must be diluted.

Hydrological and hydrochemical state of underground groundwater

Groundwater in the Bukhara region is confined to loamy-sandy loam and gravel-pebble deposits of Quaternary age. In the upper part of the deposit, the groundwater level is located in pebbles and partly overlying loams; in the central aquifer it is confined to gravel with sand and loam. The depth of the groundwater level is currently 1.5–3 m. Groundwater is formed due to filtration losses of surface waters of the Zarafshan river, canals and infiltration from irrigated fields. Mineralization along the main canals in the main territory is 1–3 g/l, in the lower parts 3–5 g/l. On the periphery of the boundaries – 5–10 g/l. The Karakul oasis is formed in the sands of upper and middle Quaternary aquifers with a thickness of 2 to 20 m. The groundwater level is located at a depth of 1–3 m. The dense remainder of groundwater varies from 2.0–3 to 20 g/l or more. The deposit is characterized by an increase in groundwater mineralization with depth. Irrigation and drainage are the main artificial factors that shape the regime and balance of groundwater in the oases of the Bukhara region.

The groundwater of the Kokchinsky deposit covers the ancient delta of the Zarafshan River within the Kokchinsky newly irrigated massif, its border to the south is the Dzhilvan Canal. On irrigated lands there is a constant rise in the groundwater level, caused by the development of newly irrigated lands – from 3–5 to 7.5 m.

The mineralization of groundwater varies from 5 to 20 g/l. A brief analysis of the state of groundwater in the Bukhara region allows us to draw the following conclusions. Over the past 30 years, as a result of intensive irrigation, the dismantling of the surface runoff of the Zarafshan River and the deterioration of its quality, there has been an increase in the mineralization of groundwater to 2–3 g/l and higher, and hardness to 15–20 mEq/l. Due to the deterioration of the quality of groundwater in the upper aquifers, an observation network is being developed. The monitoring

system is gradually introducing automatic devices (Divers) to monitor the condition of groundwater.

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Rezyume: Ushbu maqolada Buxoro viloyati suv resurslarining gidroekologik holati kўrib chiqilgan. Zarafshon daryosi havzasi yer usti, kollektor-drenaj va yer osti suvlarining gidrologik va gidrokimyoviy holati va ifloslanish darajalari tahlil qilingan.

Резюме: В статье рассмотрены гидроэкологическое состояние водных ресурсов Бухарской области. Степень загрязненности поверхностных вод бассейна р.Зарафшан, гидрологическое и гидрохимическое состояние коллектор-дренажных вод и подземных грунтовых вод.

Kalit so'zlar: gidrologik rejim, gidrokimyoviy rejim, sug'orish suvi, kollektor-drenaj suvlari, yer osti suvlari.

Ключевые слова. Гидрологический режим, гидрохимический режим, оросительная вода, коллекторно-дренажные воды, подземные воды.

**RECREATIONAL AND TOURISM OPPORTUNITIES OF PROTECTED NATURAL
AREAS OF BUKHARA REGION**

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Summary: *The study of the recreational and tourism potential of various regions occupies an important place in economic and geographical studies. This article describes the types of recreational resources. The article describes the types of protected natural areas in the Bukhara region. Are also studied the recreational and tourism opportunities of protected natural areas of the Bukhara region.*

Keywords: *protected natural areas, recreation, tourism, recreational resources, recreational opportunities, nature reserves, sanctuaries, natural monuments, nurseries, infrastructure.*

Introduction. The regular increase in the population of the globe (according to the UN, the planet's population is increasing by 80-85 million people per year), the rapid development of production (industry, agriculture, transport) industries in countries and regions is human and leads to an improvement in relations with nature. Being a part of nature, a person always lives on the basis of nature, uses its resources for his needs, enjoys relaxation, restores health, etc. Indeed, natural resources are the most important in human life. Recreational resources also occupy a special place among natural resources.

Study area. Recreational resources include natural and man-made objects that have unique historical or cultural value, aesthetic pleasure, medicinal and medicinal value, used in organizing various forms of recreational activities. The study of regional recreational opportunities is considered one of the important areas of modern geographical research.

The Bukhara region is located in the south-west of Uzbekistan, geographically in the south of the Kyzylkum desert, in the lower reaches of the Zarafshan River. Although the province develops in a desert area, various types of recreational resources can be seen here. Most scientists divide recreational resources into 2 groups [4]:

- Natural recreational resources
- Cultural and historical recreational resources

Natural recreational resources include natural conditions and their individual elements (relief, geological structure, climate, surface and underground waters, soils, flora) used in recreation and tourism in the regions. In the development of tourism in a certain territory, the main place is occupied by the potential of the historical and cultural resources of this place. Cultural and historical resources can be used for many purposes in tourism services. The attractiveness of cultural complexes depends on easily use of their historical and visual assessment.

Cultural and historical resources, a complex of various material and cultural monuments are objects of tourist's interest in the region.

Materials and methods. The richness of architectural monuments in the regions is the reason for the development of tourism. The preservation of cultural and historical resources for tourism purposes is proposed to be carried out as follows:

- restoration of existing historical sites, buildings and monuments as objects of tourist's interest;
- intensifying the protection of cultural and historical resources;
- increase the responsibility of management organizations for preserving and improving the environment in order to meet tourism needs.

Cultural and historical recreational resources may include cultural objects, architectural monuments, archaeological sites, religious sites, shrines, historically and ethnographically unique places that serve the spiritual and cultural development of people.

It is no secret that the Bukhara region is one of the regions that rich in cultural and historical recreational resources. More than 800 historical monuments, archaeological sites and sacred shrines in the region are the basis for the development of historical, religious and pilgrimage tourism.

Although the Bukhara region has great opportunities for the development of tourism, historical (monument viewing) and pilgrimage tourism is mainly developed. However, the region has ample opportunities for the implementation of such types of tourism as ecotourism (geotourism), rural tourism, ethnographic, sports, gastronomic, recreational (therapeutic and health-improving). In particular, there are great prospects in the development of tourism through the use of the natural conditions of the region for recreational purposes.

As a rule, natural recreational resources of the region are seasonal. In particular, in the spring (especially in April-May) and partly in the autumn seasons, you can go to the desert to relax, improve your health, and enjoy the beauty of the desert nature and unique flora. These types of recreational activities have been developing relatively quickly in recent years.

There is a great opportunity to use the natural conditions and resources of the Bukhara region for tourism and recreational purposes. According to the information, the categories¹ of protected natural areas in our country are divided. Protected natural areas, depending on their purpose and regime, are divided into the following categories:

- ✓ state reserves;
- ✓ state order reserves;
- ✓ natural parks;
- ✓ state natural monuments;
- ✓ territories intended for the conservation, reproduction and restoration of individual natural objects and complexes;
- ✓ protected landscapes;
- ✓ areas set aside for the management of certain natural resources.

According to information, today in our country there are 7 state reserves (their total area is 186,335 hectares), 1 complex (landscape) reserve (area 628,300 hectares), 2 biosphere reserves (total area 111,670 hectares), 4 national natural parks (total area 555154,5 hectares), there is a national park "Durman" (32.4 hectares), 11 natural monuments (total area 3803.1 hectares). There are 12 state reserves (total area 572,404 hectares), 1 Bukhara specialized nursery "Jeyran" (total area 16,522 hectares), forestry enterprises and forest hunting farms (total area 11.5 million hectares). The total area of protected natural areas (PAs) that ensure sustainable conservation of biodiversity (except for category VI) is 13.5 million hectares. The area of territories, including biosphere reserves and protected natural areas of category IV, is 2,074 million square meters hectares or 4.6% of the total area of the republic. At the same time, the total area of state reserves and natural parks is 741,489.5 hectares, or 1.65% of the territory of the republic.²

By Decree of the President of the Republic of Uzbekistan dated February 16, 2022 "On measures for organizing natural areas protected in the system of the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan" No. PP-131³, the following were created as a state environmental institution:

♣ National Natural Park "Central Kyzylkum" with a total area of 1,200,000 hectares in the Uchkuduk region;

¹ Law of the Republic of Uzbekistan "On Protected Natural Areas". dated March 12, 2004 No. 710-II.

² <http://uza.uz/oz/society/tabiiy-ududlarni-mu-ofaza-ilish-y-lida-anday-ishlar-amalga-o-09-10-2020>

³ https://www.norma.uz/oz/qonunchilikda_yangi/muhofaza_qilinadigan_tabiiy_hududlar_tashkil_etildi

♣ Aktau-Tamdi State Nature Reserve with a total area of 40,000 hectares in the Tamdinsky district.

Activities related to the majority of protected natural areas have been launched in the Bukhara region. In the far west of the region, on the border with the Khorezm region, in areas adjacent to the Amu Darya, the Kyzylkum Nature Reserve was created. The reserve was created in 1971 and consists of tugai and desert areas. Almost half (1883 hectares) of the reserve with a total area of 3985 hectares is covered with forest [3].

There are 4 state reserves in the Bukhara region. This:

1. Dengizkul;
2. Khadicha;
3. Karakir;
4. Kumsultan

The Dengizkul nature reserve was created in 1973, and is now included in the Ramsar list⁴. This is one of the 4 Ramsar protected areas in our country.⁵ Due to the remoteness of the Dengizkul, Karakir and Khadicha reserves from the regional center, the inconvenience of the roads and infrastructure leading to them, the flow of tourists to them is slow.

The proximity of the Kumsultan reserve to the city of Bukhara may become the basis for the formation of ecotourism and recreation facilities around it in the future.

In Bukhara there are state natural monuments Vardonze, Varakhsha and Paykent [5]. Domestic tourism is developing on the basis of these facilities. Tourism to these sites of local importance is seasonal (mainly in the spring).

In addition, the Bukhara specialized nursery “Jeyran” operates in the region. Among the protected natural areas, the Jeyran nursery is an institution with the greatest tourism and recreational potential. This was influenced by the following positive factors:

- Located in a convenient geographical location - along the international highway A - 380 (Guzar - Bukhara - Nukus – Beineu);
- Has a tourist infrastructure. On the territory of the nursery there is a modern hotel with 30 beds;
- Located on the territory directly adjacent to the Bukhara oasis.

Results and discussion. Thanks to the above opportunities, the tourist flow in the Jayron nursery is relatively large. If existing opportunities are effectively used, a further increase in the flow of tourists can be achieved and generated additional income. In particular, the nursery has great recreational opportunities. For example, on the territory of the nursery there are opportunities for walking, observing rare animals, lying on the sand, and relaxing in nature.

Conclusions. In general, the protected natural areas of the Bukhara region have great recreational and tourism potential. However, due to the lack of transport and road infrastructure and tourism infrastructure, the tourist flow in them has practically not formed. In the near future, it will be possible to use the recreational and tourism opportunities of protected natural areas by improving the condition of roads and transport infrastructure.

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⁴ The Convention on Wetlands was signed by 18 countries at Ramsar, Iran, on February 2, 1971, and is currently acceded to by more than 170 countries around the world. Our country joined this convention in 2001.

⁵ For information, in Uzbekistan there are 4 regions - Dengizkul in 2001 and the Aydar-Arnasoy lake system in 2008, Tudakul-Kuyimazar - in 2020, Sudoche - in 2023, included in the list of Ramsar wetlands database international importance.

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Rezyume. Turli hududlarning rekreatsion va turistik imkoniyatlarini o'rganish iqtisodiy geografik tadqiqotlarda muhim o'rin tutadi. Mazkur maqolada rekreasion resurslarning turlari haqida fikr bayon etilgan. Maqolada Buxoro viloyatidagi muhofaza etiladigan tabiiy hududlarning turlari yoritib berilgan. Shuningdek, Buxoro viloyatidagi muhofaza etiladigan tabiiy hududlarning rekreatsion va turistik imkoniyatlari o'rganilgan.

Резюме. Изучение рекреационного и туристического потенциала различных регионов занимает важное место в экономико-географических исследованиях. В данной статье описаны виды рекреационных ресурсов. В статье описаны типы охраняемых природных территорий Бухарской области. Также были изучены рекреационные и туристические возможности охраняемых природных территорий Бухарской области.

Kalit so'zlar: muhofaza etiladigan tabiiy hududlar, rekreatsiya, turizm, rekreatsion resurslar, rekreatsion imkoniyat, qo'riqxonalar, buyurtma qo'riqxonalari, tabiat yodgorliklari, pitomnik, infratuzilma.

Ключевые слова: охраняемые природные территории, рекреация, туризм, рекреационные ресурсы, рекреационные возможности, заповедники, заказники, памятники природы, питомники, инфраструктура.

PECULARITIES OF FORMATION OF OHMIC CONTACTS TO DOPED Si LAYERS

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Summary: Various regimes of formation and temperature dependence of contact resistivity $\rho_c(T)$ of ohmic contacts on the basis of Au-Ti, Au-Ti-Pd and Au-Pt-Ti-Pd to doped layers of Si have been studied. It has been revealed that in Au-Ti-Pd₂Si- n^+ - n -Si contact structures with a pre-doping step obtained by diffusion doping or ion implantation, ρ_c in the entire investigated temperature range grows according to a trend close to a quadratic one. The measured experimental dependences of $\rho_c(T)$ are described theoretically on assumption that there is a thin high-resistance Si layer between the massively doped n^+ layer and the substrate.

Key words: silicon, ohmic contact, palladium silicide, contact resistance.

Introduction.

The mechanisms of how to design and engineer non-rectifying contacts to silicon semiconductor devices is currently known and sufficiently studied by many scientists [1–3]. Depending on the doping level of the near-contact layers, current transport phenomena in such contact structures is well explained by classical theories and models [1]. Meanwhile, how and when the specific contact resistance $\rho_c(T)$ of ohmic contacts to silicon devices does change as a function of temperature, has not been sufficiently studied, neither thoroughly analyzed. The observed anomalous dependences $\rho_c(T)$ (such as, the increase in ρ_c as temperature increases) are not well explained by generally accepted models [4]. Ascending dependence curves of $\rho_c(T)$ were also observed during experiments by Goldberg, Posse, Tsarenkov and others, in which the objects of study were ohmic contacts to Ga phosphide and nitride. Since silicon still remains the basic material used in the technology of manufacture of high-frequency pulsed millimeter-wave diodes, so the information on the $\rho_c(T)$ dependence will be of great scientific and technical interest to scientists and engineers involved in the development of such devices. Therefore, the study of the mechanism of formation of contact resistance and $\rho_c(T)$ dependences of ohmic contacts to heavily doped silicon layers, which are analogues of high-frequency pulsed silicon avalanche diodes, must be of utmost interest.

Samples and measurement techniques.

Contacts of Au-Ti, Au-Ti-Pd and Au-Pt-Ti-Pd to $p^+(n^+)$ silicon layers and n^{++} - n^+ -Si structure formed by the diffusion of boron and phosphorus to dopant concentrations up to $\sim 10^{20} \text{ cm}^{-3}$, were studied, the detailed description of which are presented in [5, 6]. Also, the specific contact resistance of ohmic contacts Au (150 nm)–Ti (60 nm)–Pd (20 nm)– n^+ - n -Si in vertical geometry was also studied on test trial structures in the temperature range of 120–380 K. The doping step was created by diffusion or implantation phosphorus to a depth down to ~ 0.06 – $0.07 \text{ } \mu\text{m}$ with a surface concentration of $\sim 10^{20} \text{ cm}^{-3}$. The process of diffusion was carried out at $T=900^\circ\text{C}$ for 6 minutes. The process of implantation was carried out on the “Vesuvius-5” implantation unit (dose $10^3 \text{ } \mu\text{K/cm}^2$) energy 60 keV, with post-implantation annealing at $T = 850^\circ\text{C}$ for 30 minutes. Wafers of single-crystal dislocation-free silicon type the *phosphorus-doped silicon* (100) with $\rho \sim 7.5 \text{ } \Omega \cdot \text{cm}$ and a thickness of $\sim 400 \text{ } \mu\text{m}$ were used as the starting material. Contact metallization was created by vacuum deposition of metals in a single technological cycle onto a substrate heated to 350°C . An ohmic contact based on Pd₂Si was formed directly during the deposition process, without additional annealing [5]. Experimental data on measurements of ρ_c regarding the contact structures under study and technological modes of formation of ohmic contacts to $p^+(n^+)$ Si layers are presented in Table 1.

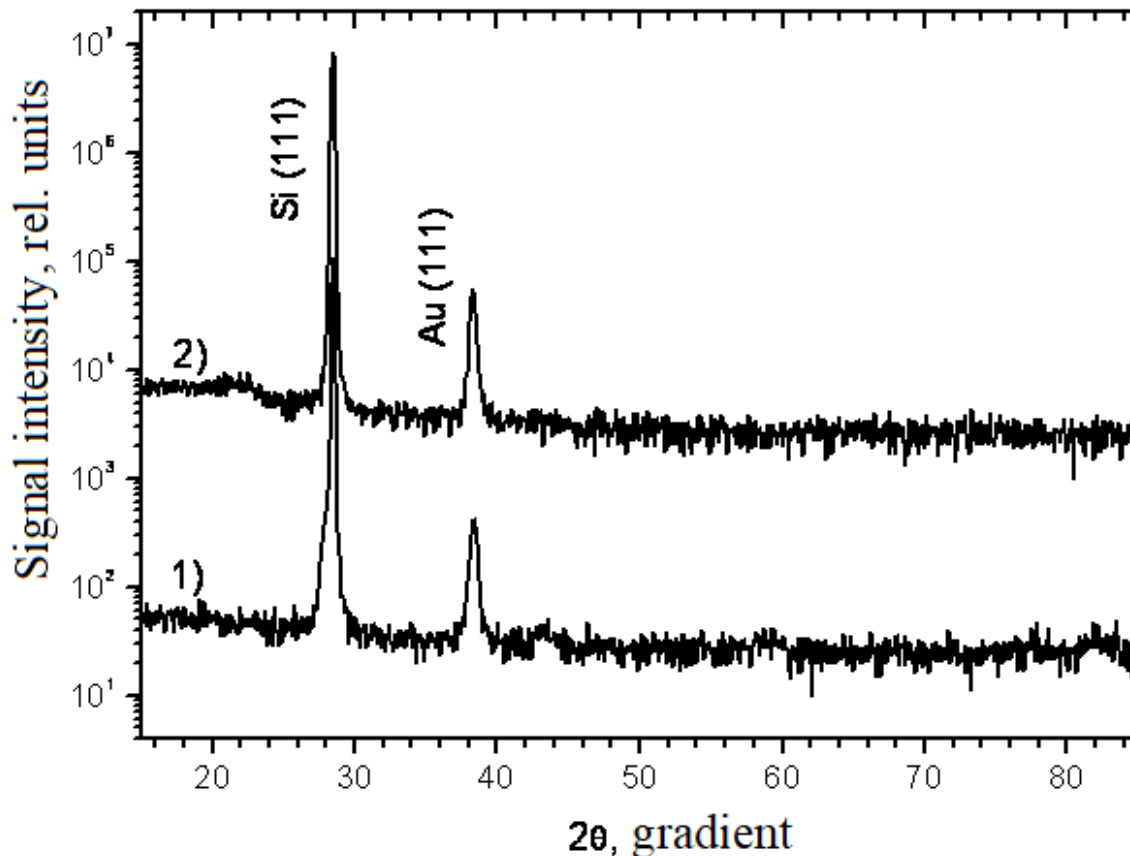
Type of contact structures, modes of contact formation and the value of ρ_c

Table 1

Contact structures	Concentration of dopant in n(p) layers, cm ⁻³	Temperature of deposition, °C	Starting ρ_c Ω·cm ²	Annealing mode T, °C, t, min	ρ_c Post-annealing Ω·cm ²
Au-Ti-n ⁺ -Si	As n ⁺ ~2·10 ¹⁹	400	Barrier-type contact	500°C, 1 min	~5·10 ⁻⁵ -10 ⁻⁴
Au-Ti-Pd ₂ Si-p ⁺ -Si	B p ⁺ ~10 ²⁰	330	~1,3·10 ⁻⁴	450°C, 10 min	~1,3·10 ⁻⁵
Au-Ti-Pd ₂ Si-n ⁺ -Si	P n ⁺⁺ ~10 ²⁰	330	~3·10 ⁻⁵	450°C, 10 min	~3·10 ⁻⁶
Au-Ti-Pd ₂ Si-n ⁺ Si (arsenic-doped silicon, ρ=0,002)	As n ⁺ ~2·10 ¹⁹	330	~1,2÷2,3·10 ⁻⁴	450°C, 10 min	10 ⁻⁵ ÷10 ⁻⁶
Au-Ti-Pd ₂ Si- n ⁺⁺ -n ⁺ Si	P n ⁺⁺ ~2,5·10 ²⁰ As n ⁺ ~3·10 ¹⁹	330	~10 ⁻⁵		
Au-Ti-Pd ₂ Si- p ⁺ -n-n ⁺ Si	B p ⁺ ~ 5·10 ¹⁹ ÷ 2,5·10 ²⁰	330	~10 ⁻⁵ (metal shunts)		

The experimental and discussion.

Au-Ti-n⁺Si. In Au-Ti-n⁺Si contact structure, despite the pre-heating of the substrate during deposition, the titanium silicide phase is not observed and the current-voltage characteristic of the initial contact is of a barrier nature. Rapid thermal annealing (RTA) at T=500°C for 60 seconds leads to forming of an ohmic contact with a specific contact resistance $\rho_c \approx 5 \cdot 10^{-5} \div 10^{-4} \Omega \cdot \text{cm}^2$, possibly associated with the formation of titanium silicide TiSi in accordance with [7]. In the area of the Ti-n⁺Si interface, due to mutual mass transfer, a transition layer is formed, the structure of which, judging by XRDy phase analysis, is likely amorphous, since the X-ray diffraction pattern of the original sample and the one that underwent thermal annealing at T = 500°C for 60 sec contains only reflections of Au and Si (Fig. 1, curves 1 and 2). Since the analyzed Au and Ti layers were each 50 nm thick, the selected RTA mode was sufficient for the formation of a titanium silicide phase throughout the entire volume.

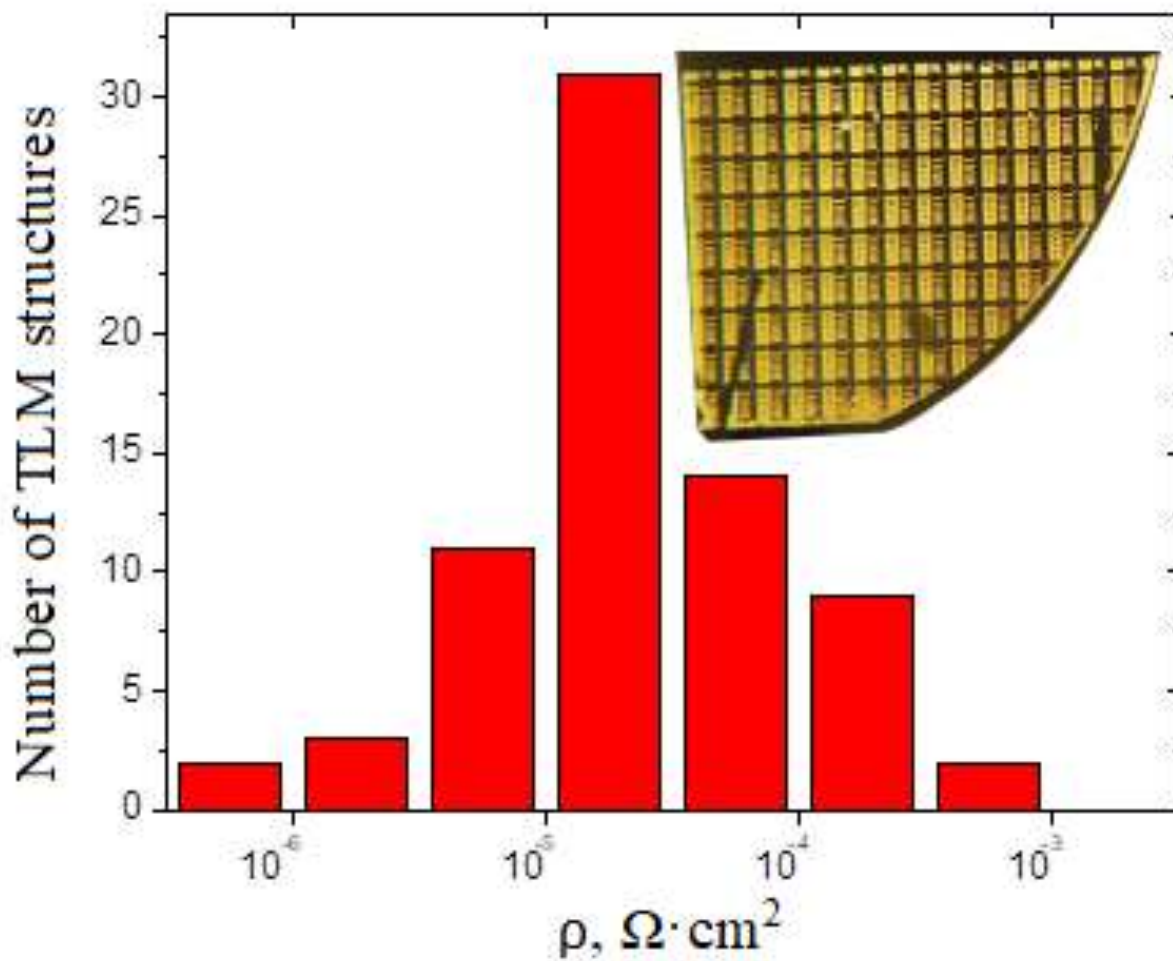


1-before and 2-after RTA at $T=500^{\circ}\text{C}$ for 60 seconds.
Fig. 1. XRD-analysis diffraction pattern of Au-Ti- n^+ Si contact metallization

Au-Ti-Pd₂Si- p^+ -Si and Au-Ti-Pd₂Si- n^+ -Si. The use of palladium as a contact-forming layer makes it possible to obtain initial values of specific contact resistance of $\sim 1,3 \cdot 10^{-4} \Omega \cdot \text{cm}^2$ and $\sim 3 \cdot 10^{-5} \Omega \cdot \text{cm}^2$ in Au-Ti-Pd₂Si- p^+ -Si and Au-Ti-Pd₂Si- n^+ -Si contact structures, respectively, i.e. ohmic Au-Ti-Pd contacts with thicknesses (1200Å)-(500Å)-(300Å) created by sputtering on p^+ and n^+ type silicon substrates heated to 330°C , which turn out to be formed already in the process of thermal deposition of components. Annealing of contact structures at $T=450^{\circ}\text{C}$ for 10 minutes leads to a decrease in ρ_c by approximately an order of magnitude (Table 1).

Au-Ti-Pd₂Si- n^+ Si (arsenic-doped silicon with $\rho=0,002$). The Au-Ti-Pd₂Si ohmic contacts with thicknesses Au (200 nm)-Ti (100 nm)-Pd (100 nm) deposited in the above manner on n^+ Si when using a silicon substrate of the arsenic-doped silicon type with $\rho=0.002 \Omega \cdot \text{cm}$ also had a low-resistive contact resistance $\rho_c \sim 1,2 \div 2,3 \cdot 10^{-4} \Omega \cdot \text{cm}^2$. The concentration of the dopant impurity (arsenic) in the n^+ layer was $\approx 2 \cdot 10^{19} \text{cm}^{-3}$. Annealing at $T = 450^{\circ}\text{C}$ for 10 min due to the fulfilment of Pd₂Si formation reaction in the entire volume of the contact-forming layer and its enrichment with silicon, leads with increasing annealing temperature, to a decrease in ρ_c down to $10^{-5} \div 10^{-6} \Omega \cdot \text{cm}^2$.

Au-Ti-Pd₂Si- n^{++} - n^+ -Si. Low-resistive contact resistance ρ_c without additional heat treatment can be obtained by producing contact metallization of Au-Ti-Pd on a substrate with an n^{++} - n^+ structure heated to 330°C , obtained by diffusion of phosphorus to a doping level of $2,5 \cdot 10^{20} \text{cm}^{-3}$ onto n^+ -Si substrate with a doping level of $\sim 3 \cdot 10^{19} \text{cm}^{-3}$ [5]. The obtained values of the specific contact resistance of these contacts are presented on the histogram of the distribution of ρ_c on the plate with test TLM structures (Fig. 2).

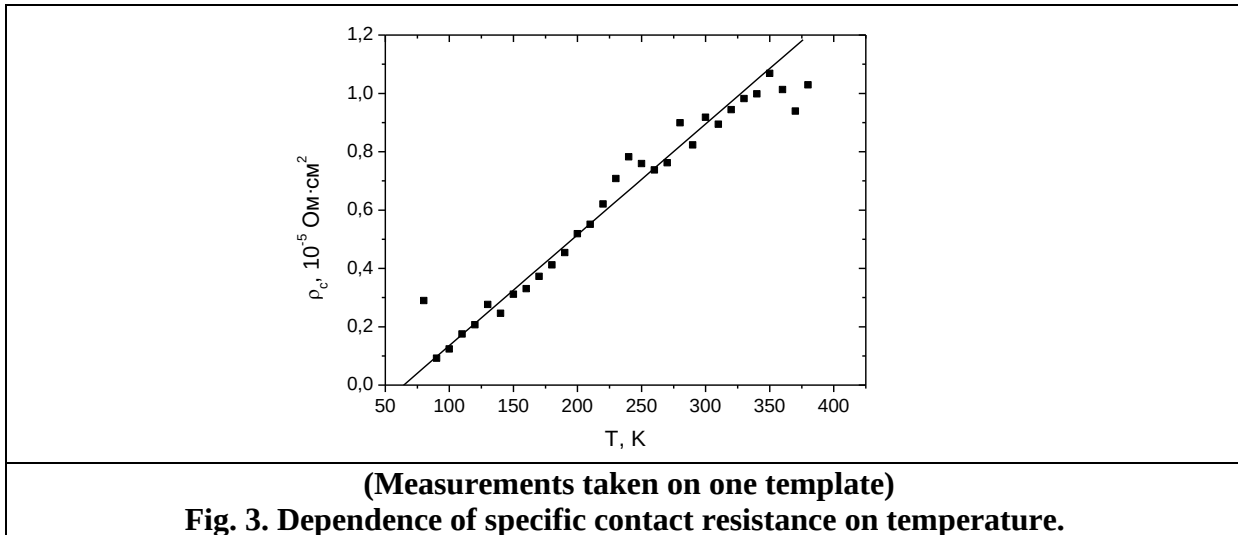


The fragment of a test structure with ohmic contacts (b)

Fig.2. Histogram of ρ_c distribution on a plate with TLM contacts
Au-Ti-Pd₂Si-n⁺⁺-n⁺-Si, sputtered onto a substrate heated to 330°C (a).

Au-Ti-Pd₂Si-p⁺-n-n⁺ Si. The ohmic contacts based on palladium disilicide to p⁺-Si were created by sputtering Pd(50nm)–Ti(50nm)–Au(120nm) films onto a Si substrate heated to 330°C, with deposition times Pd(15s)–Ti(45s)–Au (30s). Heavily doped layers of p⁺ - silicon were formed by diffusion of boron up to concentrations of $5 \cdot 10^{19} \div 2,5 \cdot 10^{20} \text{ cm}^{-3}$ into the n-n⁺ epitaxial structure of Si. The depth of the p-n junction was $\sim (3 \div 9,8) \cdot 10^{-5} \text{ cm}$. Measurements of the temperature dependence of the specific contact resistance in [8] showed that:

- the dependence of the measured resistance of Au-Ti-Pd₂Si-p⁺Si structure on distance between the contacts, is linear;
- in the temperature range of 77-400 K, the measured resistance increased with increasing temperature;
- specific contact resistance in the temperature range of 77-400K increased with increasing temperature (Fig. 3).



The above temperature dependence of ρ_c , presented by us in [8], is explained by the assumption that the flow of current passes through metal shunts. These metal shunts are formed by the deposition of Pd atoms on dislocations during the deposition process, causing an increase in ρ_c with temperature. From those temperature dependences of ρ_c shown in Fig. 4 and measured on samples with diffusion and implantation doping steps, show that for both samples the value of ρ_c increases with increasing measurement temperature.

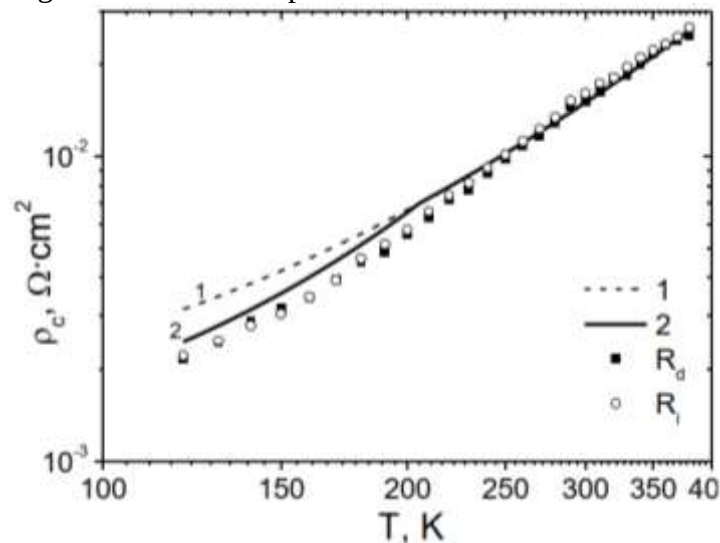


Fig. 4. Experimental (points) and calculated (curves) dependences of the specific contact resistance of Au-Ti-Pd₂Si-n⁺-n-Si ohmic contacts with a doping step obtained by diffusion (R_d) or ion doping (R_i).

To explain such dependence of $\rho_c(T)$, we carried out an analytical calculation of the dependence of the specific contact resistance $\rho_c(T)$ for ohmic contacts with a doping step based on Si for the limit case when in a narrow near-contact layer the semiconductor is strongly degenerate, and there is also a pronounced non-monotonicity dependence of the electrochemical potential $\phi(x)$ on the coordinate x directed deep into the semiconductor. In this case, the specific contact resistance ρ_c can be represented by the following sum:

$$\rho_c = \rho_{c1} + \rho_{c2} \quad (1)$$

where ρ_{c1} is the specific contact resistance associated with the passage of electrons through the barrier at the interface of a heavily doped semiconductor and metal, and

$$\rho_{c2} = \frac{kN_c}{qA^*Tn_2} \left(1 + \frac{L_D A^* T}{k\mu_n N_c} \right) \quad (2)$$

is the effective specific contact resistance of the lightly doped region. Here q is the electron charge, k is the Boltzmann constant, A^* is the effective Richardson constant, μ_n is the mobility of electrons in the lightly doped region, N_c is the density of states in the conduction band, T is temperature,

$$L_D = (\epsilon_0 \epsilon_s kT / 2q^2 n_2)^{0.5}$$

is Debye screening length for a lightly doped region, n_2 is the electron concentration in a lightly doped region, ϵ_0 and ϵ_s are dielectric constants in vacuum and semiconductor, respectively. Expression (2) was obtained taking into account the results of [9], i.e. it takes into account the diffusion and emission components in the current flowing through the lightly doped Si region. If the inequality $\rho_{c2} > \rho_{c1}$ is satisfied, the contact will be purely ohmic, and the dependence of the specific contact resistance on temperature will be of increasing nature. In this case, in a lightly doped region, the bending of the bands is not depleting, but enriching, and therefore all the voltage applied to the contact will fall on the neutral volume, which will ensure the contact will be ohmic. In the temperature dependence of resistance ρ_{c2} the value of specific contact resistance depends on temperature in a power-law manner, i.e., $\rho_{c2}(T) \sim T^n$. Depending on the value of the electron concentration in the lightly doped region, the value of n varies in the wide ranges (from 2 at $n_2 \sim 10^{13} \text{ cm}^{-3}$ to 0.5 at $n_2 \geq 10^{17} \text{ cm}^{-3}$). As can be seen from the figure, the experimental dependences of $\rho_c(T)$ for both cases almost coincide. Theoretical curve 1 was obtained using formula (2) at $n_2 = 2.1 \cdot 10^{13} \text{ cm}^{-3}$. It's worth noting that the concordance between theory and experiment is quite well. It can be further improved if we take into account that at low temperatures better concordance between theory and experiment is observed if we set the value of n_2 equal to $2.6 \cdot 10^{13} \text{ cm}^{-3}$. Combining the above n_2 values, we can obtain the theoretical curve 2. Why the sharp decrease in the electron concentration (by almost two orders of magnitude compared to the electron concentration in the substrate) occurs, must be explained as a key aspect of the research. One most probable explanation is related to taking into account the fact that, due to the relaxation of mechanical stresses, the kind of extended defects with sufficiently high concentrations of deep levels of an acceptor nature appear at the interface of heavily doped layers and the substrate. For this reason, a thin, highly compensated layer with a concentration of approximately 10^{13} cm^{-3} appears between the heavily doped layers and the substrate. This explanation does not contradict the data presented in monograph [10].

Conclusion.

Summarizing the above results, one can outline:

- for the manufacture of contact systems based on titanium metallization with a specific contact resistance of $10^{-5} \Omega \cdot \text{cm}^2$, it is necessary to provide conditions for the formation of titanium silicide;
- the formation of a silicide layer enriched with silicon is necessary for the formation of a low-resistance contact to heavily doped Si layers; a reduction in ρ_c to the required value is achieved by implementing subsequent thermal annealing;
- it is shown that in ohmic contacts with the doping step $n^+ - n\text{-Si}$, obtained by diffusion or implantation of phosphorus into $n\text{-Si}$ with $\rho \sim 7.5 \Omega \cdot \text{cm}$, the value of ρ_c increases with increasing measurement temperature. This is due to the implementation of enrichment bending of bands in a lightly doped region at the interface between the n^+ layer and the $n\text{-Si}$ substrate, as well as

presuming that a thin high-resistivity Si layer must high likely be present in the near-contact n-region.

Meanwhile, the further study of the influence of long-term thermal annealing modes (simulating the limit operating modes of devices) on the value of ρ_c and dependence of $\rho_c(T)$, as well as the role of diffusion barriers in metallization contacts in these processes is highly desirable.

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Rezyume: Legirlangan Si qatlamlariga olingan Au-Ti, Au-Ti-Pd va Au-Pt-Ti-Pd asosidagi omik kontaktlarning solishtirma kontakt qarshiligining haroratga bog'likligi $\rho_c(T)$ va shakllanish rejimlari o'rganildi. Aniqlanishicha, Au-Ti-Pd₂Si-n⁺-n-Si kontaktli strukturalarda diffuziya yoki ionli implantatsiyasi natijasida hosil bo'lgan legirlash bosqichida ρ_c butun o'lchangan harorat oralig'ida kvadratikga yaqin qonun bo'yicha ortadi. Tajribaviy va nazariy jihatdan $\rho_c(T)$ bog'liqliklarida kuchli legirlangan n⁺-qatlam va taglik o'rtasida yupqa yuqori qarshilikli Si qatlami mavjudligi hisobga olingan.

Резюме: Исследованы режимы формирования и температурные зависимости удельного контактного сопротивления $\rho_c(T)$ омических контактов на основе Au-Ti, Au-Ti-Pd и Au-Pt-Ti-Pd к легированным слоям Si. Установлено, что в контактных структурах Au-Ti-Pd₂Si-n⁺-n-Si со ступенькой легирования, изготовленной диффузией или ионным легированием ρ_c во всем измеренном интервале температур растет по закону, близкому к квадратичному. Экспериментальные зависимости $\rho_c(T)$ описаны теоретически в предположении, что между сильнолегированным n⁺-слоем и подложкой существует тонкий высокоомный слой Si.

Kalit so'zlar: kremniy, ohmik kontakt, palladiy silisidi, kontakt qarshiligi.

Ключевые слова: кремний, омический контакт, силицид палладия, контактное сопротивление.

**AUTOMATIC REGULATION OF REACTIVE POWER IN SYSTEM
WITH RENEWABLE ENERGY SOURCES.**

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Summary: *This article provides information about reactive power compensation using contactless devices in single-phase electrical networks and for electricity consumers powered only by renewable energy sources. In addition, schemes for compensation of reactive power in each phase in three-phase systems with single-phase electricity consumers are presented.*

Key words: *autonomous systems, renewable energy sources, photovoltaic station, reactive power compensation, automatic control, microcontroller, contactless device.*

Today, much attention is paid to the production of electricity from renewable energy sources [1-2]. To achieve the development indicators of renewable energy in 2020-2030, it is planned to build 3 GW of wind and 5 GW of solar power plants. Target parameters for the annual capacity of renewable energy sources have been established [3-5]. In order to develop electricity production in our country from renewable energy sources, our government has made a number of positive decisions in this area. In particular, Presidential Decree No. 57 of February 16, 2023 on measures to accelerate the implementation of renewable energy sources and energy-saving technologies in 2023 was announced. In total, 400 MW of solar panels were installed and put into operation in the republic, of which two solar power plants of 200 MW each were put into operation, these are 100 MW stations commissioned by the Madras company in the Nurata district of Navoi region and 100 MW stations commissioned by Total Eren in the Kattakorgan district of the Samarkand region, the remaining 200 MW will come from solar panels installed in the buildings of physical and legal organizations and government enterprises and institutions on the basis of Presidential Decree No. 57 of February 16, 2023 [6].

Consumers consuming reactive power with $\cos\varphi = 1$ in currently installed photovoltaic power plants consume this power from the local network. Stand-alone photovoltaic power plants require additional reactive power generation. In existing renewable energy systems, $\cos\varphi$ can be set as a controllable parameter, thereby increasing the reliability of the existing renewable energy network. Figure 2 shows a diagram of automatic power factor maintenance, in other words, reactive power compensation, using a non-contact device in an autonomous single-phase system. Single-phase consumers require the installation of separate compensating devices for each phase to compensate for reactive power. When implementing reactive power compensation, the currents in the phases are balanced and power losses are reduced. For this purpose, a contactless device circuit was developed that implements reactive power compensation. This scheme is set separately for each phase, which leads to the formation of overall symmetry [7-8].

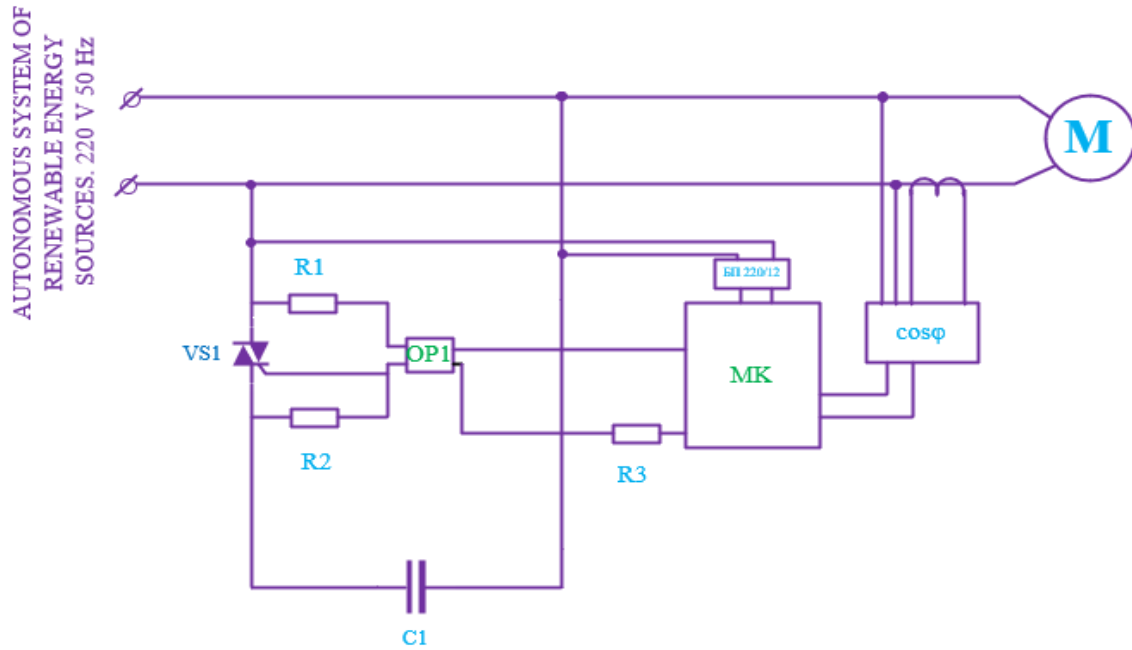


Fig. 1. Scheme of single-phase contactless reactive power compensation in an autonomous system

In scheme, the motor is presented as an autonomous consumer of renewable energy sources. The motor consumes both active and reactive power. Typically this value is in the range from 0.8 to 0.9, depending on the $\cos \varphi$ value of the motor.

The Arduino UNO microcontroller was used (Fig. 2) for this starting device, its technical parameters are listed below.



Fig. 2. Microcontroller Arduino UNO.

In the diagram, the control element is the Arduino UNO platform, assembled on the basis of the ATmega 328 microcontroller. The technical characteristics of the Arduino UNO platform are as follows.

- ❖ Operating voltage 5 V.
- ❖ Input voltage 7-12 V.
- ❖ The maximum input voltage is 6-20 V.
- ❖ Digital input, output 14, analogue 6
- ❖ Constant current at input-output 40 mA.
- ❖ Flash memory 32 KB
- ❖ Fast memory 2 KB
- ❖ Output signal frequency 16 MHz.
- ❖ Its dimensions are 6.9 cm in height and 5.3 cm in width.

In addition to Arduino UNO, many other types of microcontrollers can be used. They differ from each other mainly in the number of connection points for digital and analogue inputs and outputs.

Writing a program into the memory of these microcontrollers and its software is also very simple. The dimensions are very compact and the connection points do not cause inconvenience when assembling the circuit.



Fig. 3. Review of Arduino microcontrollers.

a) Arduino NANO; b) Arduino Leonardo; c) Arduino MEGA;

The program is written for the Arduino UNO microcontroller based on the C++ programming language. To write a program for the microcontroller, the Arduino IDE program and compiler are used, running on Windows, Mac OS and Linux operating systems. This program is completely free to use. Completed programs are loaded into the microcontroller via the USB port.

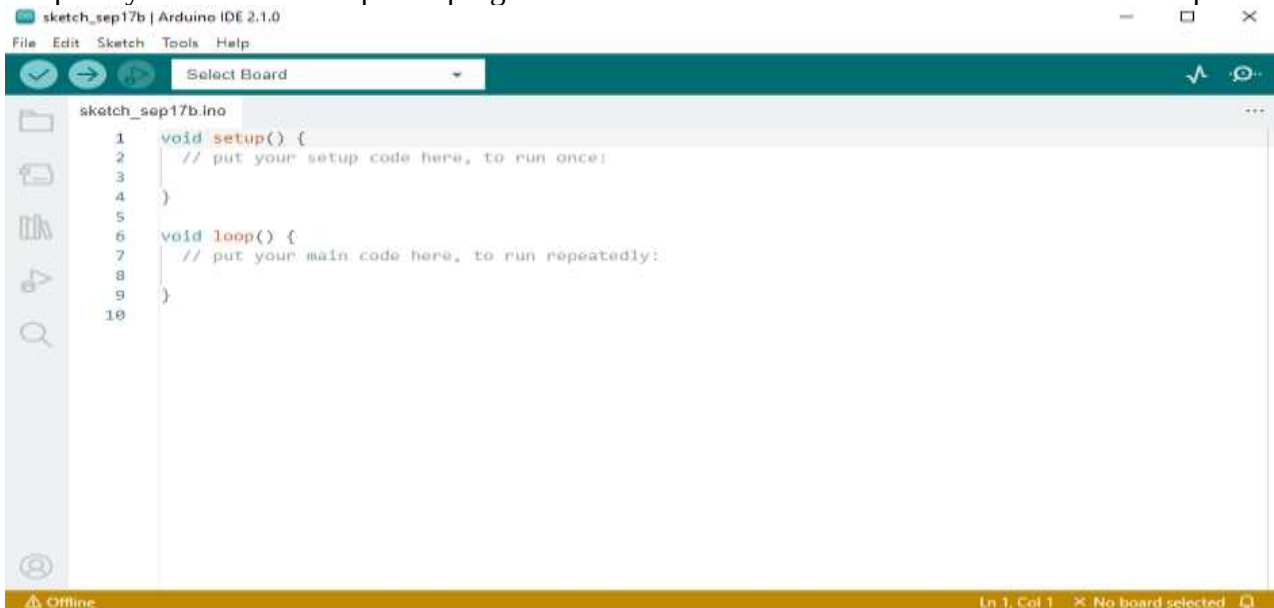


Fig. 4. Arduino IDE main window.

Single-phase consumers connected to a three-phase network consume different amounts of active and reactive power from the network. Consequently, the $\cos\phi$ value in each phase of a three-phase network is different. To symmetrize this value, a separate reactive power compensation circuit is required for each phase. In general, the structure of the reactive power compensation network with single-phase consumers is shown in Fig. 5. In this case, photovoltaic power plant which is connected to the local network, supplies consumers with electricity. The rest of the active energy of the Photovoltaic plant is consumed from the local network. Reactive power is provided by a compensating device based on non-contact devices installed separately for each phase.

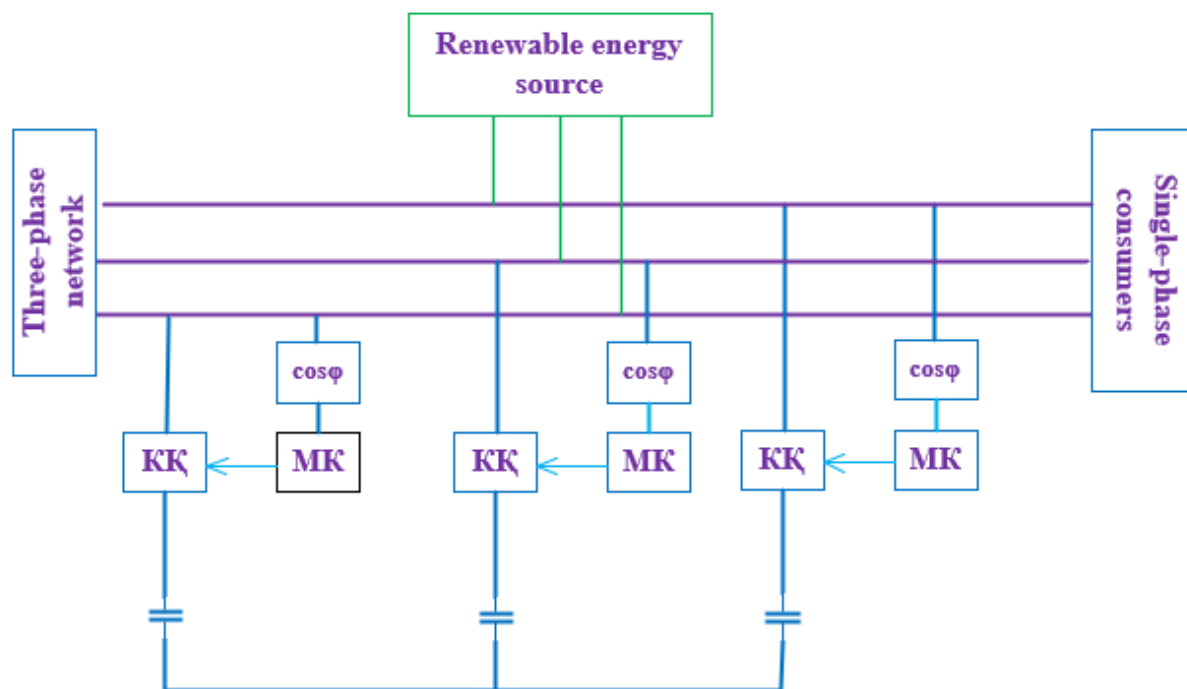


Fig. 5. Structure of a circuit compensating the reactive power of a network connected to single-phase consumers

With this scheme, the required value of $\cos\phi$ on each phase can be adjusted by reactive power compensation. In this case, the value of $\cos\phi$ is constantly monitored by using the PFR-12 measuring device, and the value change signal is transmitted to the microcontroller. The microcontroller connects capacitor banks in parallel to the network until the required $\cos\phi$ value is formed, with increasing $\cos\phi$ value in the network it reduces the number and power of capacitor banks.

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Rezyume: Ushbu maqolada bir fazali elektr tarmoqlarida hamda faqat qayta tiklanuvchi energiya manbalari orqali ta'minlanuvchi elektr iste'molchilarini reaktiv quvvatini kontaktsiz qurilmalar yordamida kompensatsiyalash haqida ma'lumotlar keltirilgan. Bundan tashqari bir fazali elektr iste'molchilari ulangan uch fazali tizimlarda har bir fazani reaktiv quvvatini kompensatsiyalash sxemalari ham keltirilgan.

Резюме: В данной статье приведены сведения о компенсации реактивной мощности с использованием бесконтактных устройств в однофазных электрических сетях и у потребителей электроэнергии, питающихся только от возобновляемых источников энергии. Кроме того, представлены схемы компенсации реактивной мощности в каждой фазе в трехфазных системах с однофазными потребителями электроэнергии.

Kalit so'zlar: avtonom tizimlar, qayta tiklanuvchi energiya manbalari, fotoelektr stantsiya, reaktiv quvvat kompensatsiyasi, avtomatik rostlash, mikrokontroller, kontaktsiz qurilma.

Ключевые слова: автономные системы, возобновляемые источники энергии, фотоэлектрическая станция, компенсация реактивной мощности, автоматическое регулирование, микроконтроллер, бесконтактное устройство.

**THE ISSUE OF INTRODUCING ALTERNATIVE ENERGY SOURCES FOR
RESIDENTIAL AND PUBLIC BUILDINGS IN THE CITY POWER SUPPLY SYSTEM**

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Summary : *The article covers the issues of applying alternative energy sources in the system, taking into account the change in the electrical load of electricity consumers of the city power supply system. The relevant recommendations for the installation of solar photovoltaic plants in the power supply of residential and public buildings and structures located on the territory of the city, the results of the study are presented.*

Key words: *city power supply system, alternative energy sources, solar photovoltaic plants, electrical load.*

Introduction

At present, special importance is attached to ensuring reliability and stability in the energy system through the integration of electrical energy systems at the expense of photovoltaic plants in matters of diversification of energy using renewable energy sources on a global scale. Currently, renewable energy technologies are rapidly developing in developed countries. In this regard, renewable energy technologies are rapidly developing in countries that are dependent on energy imports and have high energy tariffs. In this regard, special attention is paid to assessing the possibility of integrating photovoltaic plants into a single electric power system, forecasting their active capacity, as well as studying the impact on the efficiency of the electric power system.

The various accident situations and power shortages found in the power supply of building structures located in the city area are also being addressed by the introduction of a solar photovoltaic power plant in the system.

Problem statement

Solar energy – the use of sunlight by converting it into another type of energy [1].

Sunlight radiates from the sun in a straight line to the ground. When it reaches the atmosphere, part of the light breaks, part reaches the ground in a straight line, part is absorbed by the atmosphere. Broken light is usually called diffuse radiation or diffuse light. The part of sunlight that reaches the surface of the earth without scattering or swallowing is direct radiation.

Since solar panels convert radiation from the sun into electricity, solar radiation must be maximally steep on the surface of the panel to obtain maximum energy. There must be conditions for the installation of solar panels to receive the energy coming from the sun during the day in the maximum upright position. An important role in this is played by the angle of installation of the panels, the configuration of the panels. In the location where the angle of installation of the panels is located, the location relative to the sun is taken into account [2].

Solar panels generate electricity even in the absence of direct sunlight. Therefore, even in weather conditions with an index of openness, the photovoltaic system produces electricity. However, the best conditions for generating electricity will be in the bright sun and with panels oriented perpendicular to the sunlight. Panels for the northern hemisphere should be oriented to the south, for the southern - to the north (table 1).

The issue of using solar energy by installing solar panels in residential and public buildings is also considered important in the city area. From this, it is possible to obtain electricity, thermal energy.

Table 1

The effect of various light conditions on the production of solar panels
(% of full power)

<i>Lighting conditions</i>	<i>Full power %</i>
Bright sun, panels perpendicular to the sun's rays	100
Partially cloudy	60-80
Cloud	20-30
Behind the window sill, a layer, a panel perpendicular to the glass and sunlight	91
Behind the window sill, two layers, glass and panel perpendicular to sunlight	84
Behind the window glass, one layer, glass and panel at an angle of 45° to sunlight	64
Artificial lighting in the office, on the surface of the table	0,4
Artificial lighting in a bright room (for example, a store)	1,3
Artificial light inside the living space	0,2

In addition, the effectiveness of solar panels is influenced not only by the degree of sky openness index of the weather, but also by the climatic conditions of the location of the panels.

Indicators must meet the established standards of the characteristic of solar panels. The same indicators are written on the device passport. And we buy products based on this characteristic. The problem is that the values of the characteristic indicated in the passport corresponding to the climatic conditions of the mediterranean sea are presented. That is, in order for the characteristic shown in the passport to be fully manifested in practice, winter should be mild (10-16° C), and summer-dry and moderately warm (22-30° C). Air humidity should be 50-65% in summer and 65-80% in winter. Solar panels are tested in conditions close to this climate, the characteristic of which is written. To be even more precise, the conditions with a radiation of 1000 W/m², an air mass coefficient of 1,5 for the solar spectrum, and a temperature of 25° C for the panels are standard test conditions (STC). Therefore, the characteristic information shown by the manufacturer differs from its actual value on the ground, which is different from the laboratory conditions. In general, the performance effect of solar panels depends on 5 main factors: the annual distribution of the intensity of solar radiation, the change in the efficiency of the panels in accordance with this intensity, the annual temperature distribution, the temperature coefficient of the panels and the speed of degradation by time. The most fundamental factor that directly affects efficiency is the temperature of the environment. As the air temperature increases, the efficiency of solar panels decreases. At first glance, it may seem that the more radiation content falls on the surface of the panel, the more electricity generation will take place, but in fact, it is not. An increase in temperature leads to an increase in internal resistance in the solar element. Temperature creates an increase in the flow of electrons. This leads to an increase in current strength and a voltage drop. But since the voltage drop is greater than the current increase, the total power decreases. It assesses how different the temperature coefficient of the panels is from the standard characteristic indicated under a certain temperature. The temperature coefficient varies depending on the type of solar panels. The best-selling monocrystalline silicon-based panels in our country at temperatures above 25° C – at each degree, the efficiency decreases by 0,5%. For example, consider the best-selling monocrystalline silicon panel in the Uzbek market, which has an efficiency of 17 %. In his passport, the temperature coefficient is indicated – 0,45% from the total efficiency. That is, a panel with an efficiency of 17% loses its

effectiveness at a temperature of 25°C – 0,077 % per degree. The efficiency is 16,6% when the temperature is 30°C and 16,2 % at 35°C . If the temperature exceeds 40°C , the efficiency drops from 10 %. In the summer season in our country, a similar situation is observed. During the heat of the day, the efficiency of solar panels will drop to double, and the amount of electricity-energy being generated will also decrease by the same [3].

The advantages of solar energy are the convenience of achieving it and the fact that the source does not run out. From a theoretical point of view, despite the fact that it is absolutely safe for the environment [*there are opinions that, as a result of its numerous uses, the earth's level albedo (the property of the earth's surface to repel electromagnetic waves and particles) can lead to SI disruption and climate change*]. However, at the level of current (*relatively low amounts*) consumption of energy, this risk has nowhere to be feared. At that time, solar collectors were developed and several houses were built and experimental tests were carried out.

When choosing solar panels on the territory of the city, the following should be taken into account. In order to understand how to choose the right solar panels for a house, cottage or other object, you need to clearly formulate the problem that you are going to solve with such an installation. It is important that, in terms of its energy efficiency, the solar battery covers the needs of the facility in generating electricity. Ask yourself if you need a large solar power plant or enough portable solar panels and how to choose them? It is also necessary to take into account the type and location of the object for which you will use solar panels (figure 1).

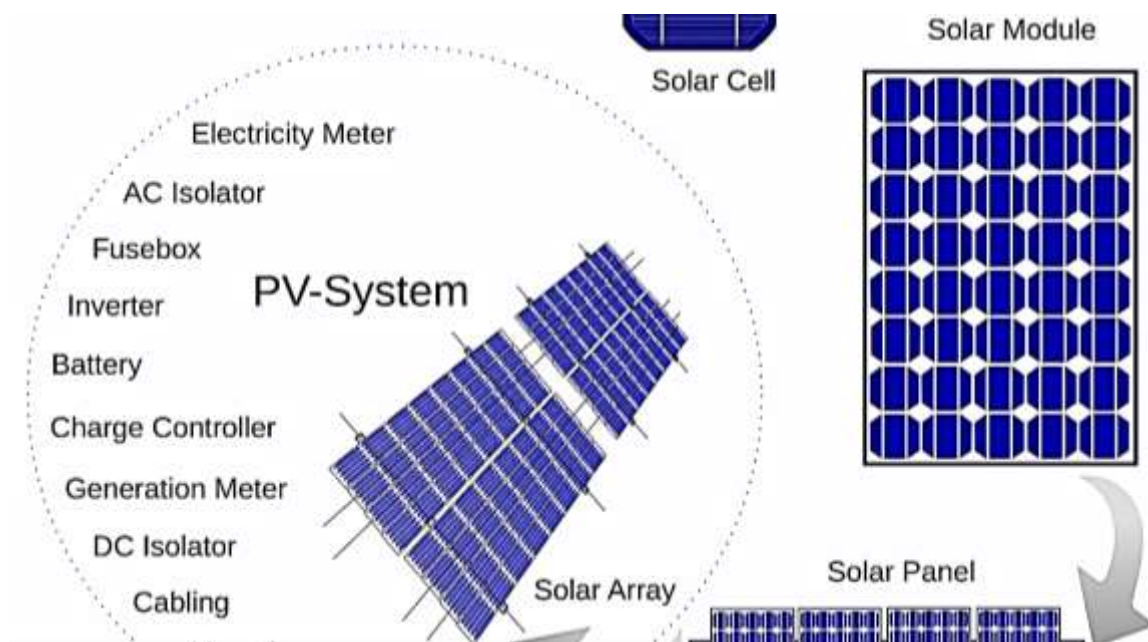


Fig. 1. A set of structural elements in the use of solar energy.

When purchasing a solar panel, calculate in advance the rated power of all electrical appliances that are planned to be powered from this energy source, determine the installation location of the panel itself and its allowable overall dimensions.

Power. This is one of the most important indicators of the efficiency of the solar battery, influencing the choice of a particular device. In this case, it is important to pay attention to such a parameter as the permissible error of the rated power. This value shows how much the actual power

value can deviate from the specified values in the device data sheet, which affects the final performance of the panel.

Panel dimensions. It largely depends on what object needs to be provided with electricity. How to choose solar panels for a summer residence is one question, a completely different question is how to choose solar panels for a home, and if we are talking about an industrial or agricultural facility, this is generally a separate task that needs to be solved with specialists. In any case, the size of the solar battery is directly related to the power of the device – the more power, the larger the size of the solar battery. For example, a 300W panel is much larger than a 100W panel – this must be taken into account. Therefore, when choosing a panel of a certain power, it is important to understand in advance the dimensions of the place where it will be mounted – so that it is enough or there is an opportunity to expand it if necessary.

Solar panel type. It is also associated with the features of the panel operation and affects its overall dimensions. There are several types of panels: polycrystalline, monocrystalline, thin-film. What to choose depends on where and how you plan to use the solar panel. For example, *you need to choose one type of solar panels for a private house, another* for enterprises or public facilities.

Coefficient of performance (COP) or the efficiency of the FEP (photocells). Shows how much solar energy received on the plane of the panel as a whole is then converted into electric current. The efficiency partly depends on the type of panel, although there is little difference in efficiency between mono- and polycrystalline panels. This indicator will be essential in the case when the area for installing the panel is limited. In this case, choosing solar panels with a higher efficiency, you can reduce the area of their installation.

Price. Thin-film panel models are considered the most inexpensive and affordable. However, in terms of productivity, they are significantly inferior to other types of panels and, with a much larger area, generate less energy. Monocrystalline solar panels are recognized as the most efficient and most compact in size, but they are also the most expensive. They are definitely recommended to choose in the case when the budget is not limited. Polycrystalline panels today are considered the most optimal choice in terms of price, parameters and performance. They work better in cloudy weather, they have good performance, a harmonious combination of efficiency and economy.

In addition to the main characteristics, there are a number of other features that you need to consider when choosing solar panels for your home or cottage, or for any other building.

For example, the performance of a solar panel is made up of components such as efficiency and climatic operating conditions. Therefore, before purchasing and choosing solar panels, you need to take into account the wind speed, air temperature, luminous flux, geographic location, tilt angles. The efficiency is also affected by the correct selection of the load on the solar panels, the presence or absence of an anti-reflective coating. It is advisable to determine in advance the daily consumption of generated energy, the total power of solar panels required for a particular object, the required battery capacity and the number of panels. In order for the efficiency of the solar structure to be full-fledged, and all solar panels to work properly at any time of the year and in any weather, you need to correctly select the components that are used to install and connect the modules.

You should not chase cheapness, because the final cost depends on the manufacturer, build quality, power, warranty and other factors. For example, the most inexpensive option – thin-film solar panels – require additional costs for cable, supporting structures and other components.

When choosing solar panels, it is necessary to study different manufacturers, familiarize yourself with all the certificates, including the device testing certificate.

One of the most important rules for the competent choice of a solar battery is consultation with professionals. Even if you yourself have studied everything in detail and made a preliminary choice, the opinion of a specialist will not be superfluous.

When choosing solar panels and related equipment, the rule works – to purchase solar devices from those who can not only sell, but also install solar panels, and they know the issue to the smallest detail, have been doing this for more than one year and have a good reputation in the specialized market. That is, it can correctly design a solar power plant, calculate the city power supply system and guarantee the quality. Keep this in mind, and even being sure of your choice, still double-check the nuances with specialists. After all, the choice and installation of solar panels is not cheap, designed for many years. This means that everything must be sound, high-quality and professional.

The trend of switching to clean electricity attracts more and more people every year. Therefore, today solar panels in Tashkent, operated in private farms, are a common phenomenon. If you are also thinking about installing them, then you should know the specifics of their choice. In this article, we will tell you what you should pay attention to.

The main element that is used in a solar power plant is solar panels. However, in order for them to perform their main function, additional equipment must be connected to them:

inverter — converts current from DC to AC, which is used to power all household appliances;

battery — accumulates energy and makes it possible to use it when the sun has set;

controller — controls solar panel photocells and ensures optimal battery charge.

When choosing equipment for a solar power plant, it is important that it be close to each other in terms of its technical parameters. One cheap element can reduce the efficiency of the whole system.

Solar panels for a green tariff, which can be purchased at the link <https://elektro.in.ua/alternativnaja-energetika/zelenyj-tarif/>, are presented in two types depending on the material from which they are made. The first type is monocrystalline batteries. They are characterized by a high efficiency of 22 % and a long service life of up to 25 years. The second type is polycrystalline batteries. They are less efficient, as the efficiency level is 18 %. However, despite this, they are more attractive in terms of their cost, therefore they are more popular among consumers.

Before buying equipment, it is important to determine the amount of energy needed. If the calculation is incorrect, then you can leave part of the household without electricity and make it impossible to use powerful equipment, such as welding machines, microwaves, irons.

To calculate, you need to know the following data:

- number of energy consumers;
- rated power of all devices;
- the real load on the system, since not all electrical appliances are switched on at the same time.

It is best to install solar panels on the roof. To determine the required area, the level of insolation should be taken into account. It is lower in the northern regions than in the southern ones. Therefore, with the same calculated indicator, the battery area should be larger there.

Thus, the purchase and installation of solar panels is a complex process. However, by approaching it responsibly, it is possible not only to provide the entire economy with environmental energy, but also partially sell it to the state at a favorable "*Green tariff*".

Another important point in drawing up a plan "*How to choose solar panels for a home power plant*" is the effectiveness of financial investments. Many batteries, if chosen correctly, pay off quickly enough, since the electricity produced using solar energy is free. The output rated voltage of solar panels is a multiple of 12 V and 24 V, but there are also 20 V panels with 60 elements. The actual output voltage of the solar panels is usually higher than the nominal one. So a heliopanel with an output rated voltage of 12 V outputs 17 V at the point of maximum power, and outputs 23 V at idle. Similarly, batteries with a rated output voltage of 20 V and 24 V work. A

twenty-volt battery outputs a voltage of 30 V at the maximum power point and 39 V at idle, and a twenty-four-volt battery outputs 37 V and 45 V, respectively.

When assembling a solar power plant on your own, mistakes related to the selection of equipment are most often made, we note the main ones:

- incorrectly selected voltage of batteries and solar panels used in the same system;
- using a PWM controller with a 60 cell solar panel;
- an unaccounted temperature coefficient associated with a voltage change when the temperature changes;
- using different batteries, when connected in series;
- incorrectly selected cross section of the jumpers between the inverter and the battery;

After selecting the equipment, the mistakes of amateurs do not end, because installation is ahead. When installing a solar power plant with your own hands, mistakes are more often made such as:

- incorrect spatial installation of the solar panels themselves;
- shadow falling on cells from trees and neighboring buildings;
- incorrect connection of the equipment. If there are even only two batteries in the system, the serial connection may be confused with the parallel one. Not to mention several batteries when you need to make a series – parallel connection. This also applies to the connection of solar panels;
- poor contact in electrical connections. With regard to the manufacture of jumpers in an artisanal way, without the use of special tools. The use of twisting, soldering of MC4 connectors and other unreliable connections.

These are only the most common mistakes, but in practice there are many more. If you decide to assemble a solar power plant yourself, consult with specialists, this will help you avoid mistakes, save money and yes, you can get advice from us for free.

The choice of the type of solar station depends on the task that needs to be solved using alternative energy sources (figure 2).

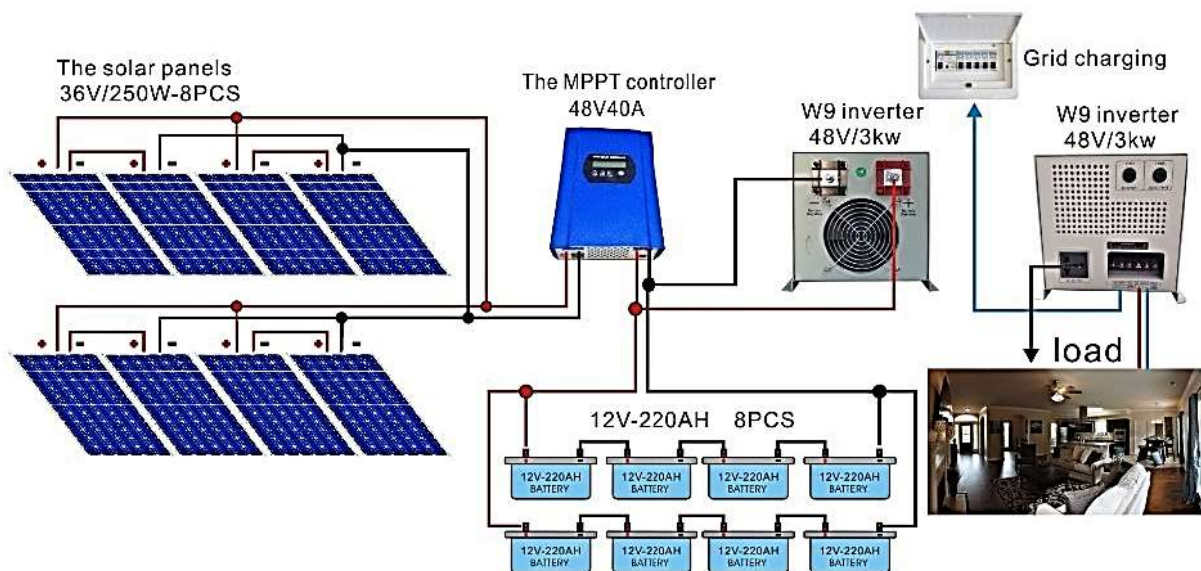


Fig. 2. Structure of the application of an alternative energy source in the power supply of building structures in the city area.

Currently, three types of solar power plants are most widely used:

Autonomous. In places where there is no connection to the central network, in gardens, in cottages, autonomous solar power plants are the most in demand, well suited for lighting and other vital electrical appliances. The use of autonomous solar stations allows you to significantly save money on liquid fuel for generators, especially in areas with a large number of sunny days.

Combined with the network. If there is a central network, then you do not need to abandon it, it is better to make a system joint with the network. The automatic operation of the inverter, which is part of such a station, will independently choose the power source of electrical appliances. And the batteries included in the solar panels will be a source of backup power supply, in case of network outages.

Network on-grid. Grid-based solar power plants are the most profitable and quickly recouped, since they do not contain batteries and energy conversion occurs with high efficiency. Moreover, they allow you to transfer (sell) excess generated electricity to the grid, thereby speeding up the payback process. In many countries, with such generation using renewable sources, a "green tariff" is in effect for the sale of electricity. The purchase by the guaranteeing supplier of electricity from microgeneration facilities will be mandatory. The income of individuals arising from the sale of excess electricity produced for the needs of their household will not be subject to taxation.

Regardless of the type of solar power plant chosen, it is worth understanding that for reliable and efficient operation it is better to purchase high-quality solar panels. Despite the higher cost, they are more efficient and durable. The battery life can reach 30 years or more. No need to think that the battery will work worse because of the cold. Precipitation in the form of snow, which must be removed, plus a shorter daylight duration with high clouds, have a negative effect on work efficiency – this is what negatively affects electricity generation in winter. In summer, the solar battery generates less voltage than in winter. In the heat, the temperature on the surface of the heliopanel can reach 50-55° C, which reduces efficiency.

As a result of the application of solar panels in the city power supply system, a load state is obtained in electrical networks, power losses that occur in electrical networks are reduced, the possibility of uninterrupted supply of electricity to consumers is created.

Conclusion

In conclusion, it should be said that in the construction and design of the power supply of buildings located in the city power supply system, renewable energy sources should be introduced. In this case, the state of overload is also limited in the power system, which distributes. This situation is important in the implementation of their work in the transition to green energy. In the conditions of digitization, it is necessary to properly organize the stage of implementation of this system at the design stages.

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Rezyume: *Maqolada shahar elektr ta'minoti tizimini elektr energiyasi iste'molchilarining elektr yuklamasining o'zgarishini hisobga olgan holda tizimda muqobil energiya manbalarini qo'llash masalalari yoritilgan. Shahar hududida joylashgan turar-joy va jamoat binolari va inshootlarini elektr ta'minotida quyosh fotoelektr stansiyalarini o'rnatish bo'yicha tegishli tavsiyalar, tadqiqot natijalari keltirilgan.*

Резюме: *В статье рассматриваются вопросы применения альтернативных источников энергии в системе с учетом изменения электрической нагрузки потребителей электроэнергии городской системы электроснабжения. Даны соответствующие рекомендации по установке солнечных фотоэлектрических установок при электроснабжении жилых и общественных зданий и сооружений, расположенных на территории города, представлены результаты исследования.*

Kalit so'zlar: *shahar elektr ta'minoti tizimi, muqobil energiya manbalari, quyosh fotoelektr stansiyalari, elektr yuklama.*

Ключевые слова: *система электроснабжения города, альтернативные источники энергии, солнечные фотоэлектрические установки, электрическая нагрузка.*

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DIGITAL TWINS AND EXTENDED REALITY IN ENGINEERING LABS

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Summary: *The engineering laboratories of Technology are undergoing a revolutionary transformation. By integrating Digital Twins and Extended Reality (XR), we are pushing the boundaries of traditional hands-on education. This article delves into the practical application of these technologies in enhancing the learning experience for students in the field of control engineering.*

Keywords: *Digital Twins, Extended Reality (XR), Virtual Reality (VR), Real-Time Data Synchronization, Big Data in Education, Immersive Learning Environments, Interactive Learning Tools, Virtual Laboratories, Engineering Simulation, Distance Learning, Technological Innovation in Education.*

In the vanguard of engineering education, providing an experiential learning environment that simulates the complexities of real-world engineering challenges is critical. The advent of Digital Twins and Extended Reality (XR) technologies has catalyzed a paradigm shift in how we approach this educational imperative [1,2]. Digital Twins serve as the technological bridge, offering a virtual counterpart to the tangible lab assets that students would traditionally interact with. These sophisticated digital constructs enable learners to engage in real-time control and monitoring, providing a dynamic educational experience that mirrors the operational conditions of actual engineering work.

Extended Reality, a spectrum that encompasses Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR), complements Digital Twins by delivering a multi-sensory immersion into the engineered world. VR envelops students in a completely fabricated environment where they can manipulate variables and observe the consequences without physical constraints. AR overlays digital information onto the real world, enhancing the tangible with supplemental digital details, which is invaluable for conceptual understanding. MR merges the best of both VR and AR, creating environments where physical and digital objects coexist and interact in real-time.

At the heart of our methodological framework, as illustrated in the accompanying figure, is the Power Supply Lab Asset. This asset, a cornerstone of our laboratory, is intricately connected to a Big Data Server, which serves as the repository and analytical brain for the data harvested from the lab asset [2,3]. The server performs dual roles—it is the custodian of the real-time operational data and the steward of the Digital Twin's integrity, ensuring the digital representation is continuously synchronized with its physical counterpart.

This convergence of the physical and digital realms via the Big Data Server is not a mere replication but a deep, algorithmic integration that allows for an unprecedented level of precision and fidelity in the Digital Twin. This integration enables not just a snapshot but a living, breathing digital mirror of the Power Supply Lab Asset, complete with its own lifecycle, capable of evolving with every data point collected.

Furthermore, the data and insights gleaned from this close interaction feed into a broader educational ecosystem, informing pedagogical strategies and curricular development. As students interact with these systems, they are not just passive recipients of knowledge but active participants

in a learning journey that is as much about understanding the present state of their lab asset as it is about predicting and optimizing its future states.

The profound implication of this methodology is a learning experience that transcends the traditional lecture-lab dichotomy. It is an approach that not only fosters a deeper understanding of engineering principles but also cultivates the necessary skills for innovation and problem-solving in a rapidly advancing technological landscape. As this methodology continues to evolve, it holds the promise of redefining the educational pathways for aspiring engineers, equipping them with the knowledge and skills to excel in the digital era of engineering. Synchronization between the physical asset and the Digital Twin occurs in real-time, providing a dynamic and responsive learning tool [5,6]. Students can directly manipulate and observe the lab asset through a PC interface or engage with the Digital Twin via XR devices. This dual approach allows for a comprehensive understanding of the systems in question.

In educational settings, the use of Digital Twins and XR devices provides a multitude of benefits. Students can experiment with the systems in a controlled virtual environment, which can simulate a variety of scenarios that may not be feasible or safe to replicate in the real world. The immediate feedback from the Digital Twin allows for a deeper understanding of the cause and effect within the systems.

Moreover, the XR devices extend this learning by offering an immersive, interactive experience. Through XR, students can engage with the laboratory from remote locations, breaking down geographical barriers and providing access to those who may not be able to physically attend the lab.

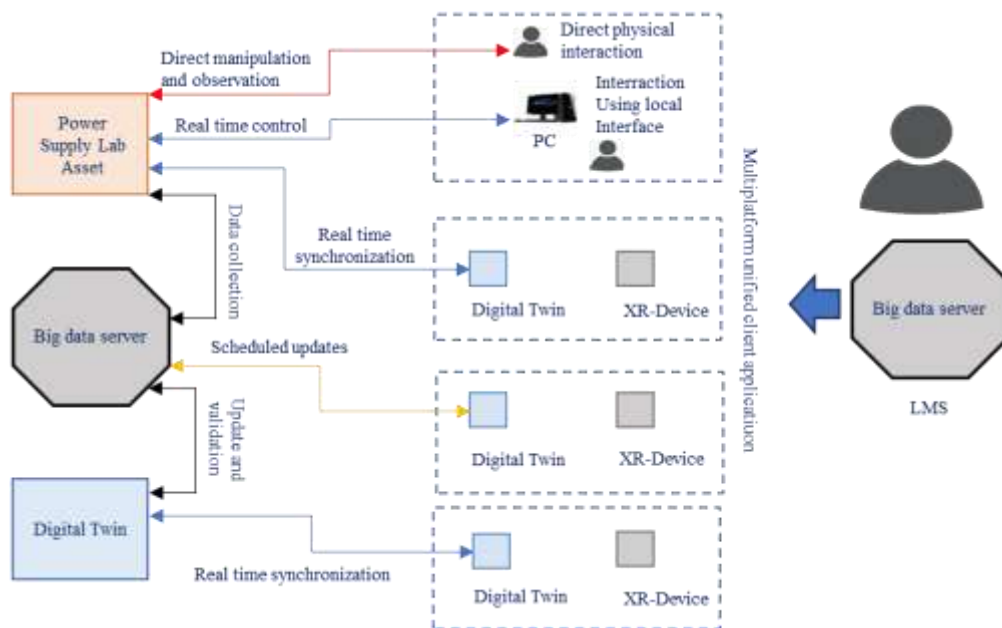


Figure 1. Integration of Digital Twins and XR Devices in Engineering Education

Figure 1 illustrates the infrastructure for enhancing control engineering laboratories with Digital Twins and Extended Reality (XR). Central to the framework is the Power Supply Lab Asset, which is the primary physical component used for instructional purposes. This asset is directly connected to a Big Data Server that manages data collection, analysis, and scheduled updates, ensuring the Digital Twin—a virtual representation of the lab asset—is current and accurate [7,8].

The synchronization between the physical lab asset and its Digital Twin occurs in real-time, allowing for immediate data exchange and system updates. On the user end, students and educators can interact with the system through two primary interfaces: a local PC interface for direct

manipulation and observation, and XR devices that provide an immersive interaction with the Digital Twins.

The Big Data Server also interfaces with a Learning Management System (LMS), suggesting that the educational content and student progress are closely monitored and integrated into the larger educational framework of the university. This setup provides a comprehensive, interactive, and dynamic learning environment, combining hands-on and virtual experiences for enhanced engineering education.

The incorporation of Digital Twins and Extended Reality (XR) into the engineering laboratories of Technology has dramatically enriched the pedagogical landscape. The feedback from students underscores a marked increase in their involvement with educational materials, fueled by the immersive and interactive nature of these technologies. A deeper comprehension of intricate engineering principles is reported, attributed to the dynamic and responsive learning environment facilitated by Digital Twins and XR.

Through the lens of Digital Twins, students can safely navigate and manipulate complex systems, granting them the liberty to experiment boldly. This freedom is transformative, diminishing the trepidation associated with potential damage to expensive laboratory equipment. Consequently, this fosters a culture of innovation and intellectual curiosity, which is essential for budding engineers. The ability to test theories, observe outcomes, and adjust parameters in real-time within a virtual space accelerates the learning curve and enhances cognitive retention.

Extended Reality, encompassing Virtual, Augmented, and Mixed Reality, propels this engagement further by allowing students to step inside a layer of reality where the physical and digital worlds converge. This symbiosis creates a platform for experiential learning, where theoretical knowledge is applied in virtual scenarios that closely mimic real-world applications. Whether on campus or remotely, XR bridges the gap, offering a uniform learning experience to all students, regardless of their physical location [9,10].

The strategic fusion of these two technologies in the engineering labs not only augments the learning experience but also signals a progressive shift in educational methodologies. As we delve deeper into the capabilities of Digital Twins and XR, we are crafting an educational model that is not confined by traditional boundaries. This model promises to equip students with a robust skill set that is attuned to the evolving demands of the engineering sector.

Anticipating the future, the ongoing development and refinement of these digital tools are poised to set a new benchmark in engineering education. The goal is to cultivate an educational ecosystem that is adaptable, scalable, and reflective of the rapid technological advancements shaping our world. By transcending the physical confines of the university, we are pioneering an approach that could redefine engineering education, making it more accessible, inclusive, and aligned with the digital age. The implications of this are far-reaching, with the potential to transform how future engineers are trained, thus ensuring they are well-prepared to tackle the challenges of tomorrow's technological frontiers.

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Rezyume. *Texnologiya universitetining muhandislik laboratoriyalari inqilobiy o'zgarishlar boshdan kechirmoqda. Raqamli ikkilliklar va Kengaytirilgan Haqiqat (XR) texnologiyalarini integratsiyalash orqali, an'anaviy amaliy ta'lim chegaralarini kengaytirmoqdamiz. Ushbu maqolada ushbu texnologiyalarning amaliy qo'llanilishi va nazorat muhandisligi sohasidagi talabalar uchun o'quv tajribasini yaxshilashga qaratilgan.*

Резюме. *Инженерные лаборатории Технологического университета переживают революционные преобразования. Интегрируя цифровые двойники и технологии расширенной реальности (XR), мы расширяем границы традиционного практического образования. В этой статье рассматривается практическое применение этих технологий для улучшения учебного процесса студентов в области управления инженерными системами.*

Kalit so'zlar. *Qishloq elektr tarmoqlari, reaktiv quvvat, sutkalik elektr yuklamalar grafigi, kompensatsiyalash, kondensator batareyasi, kuchlanish.*

Ключевые слова. *Raqamli ikkilliklar, Kengaytirilgan Haqiqat (XR), Virtual Haqiqat (VR), Real vaqt rejimida ma'lumotlar sinxronizatsiyasi, Ta'limdagi Katta ma'lumotlar, Sho'ng'in o'quv muhitlari, Interaktiv o'quv vositalari, Virtual laboratoriyalar, Muhandislik simulyatsiyasi, Masofaviy ta'lim, Ta'limdagi Texnologik innovatsiyalar.*

METHODS OF PROCESSING SODA ASH PRODUCTION WASTE BY THE SOLVAY METHOD

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Summary: The volume of distiller liquid discharged by LLC JV Kungrad Soda Plant is more than 5,500 - 6,000 m³ per day (more than 2 million m³ per year).

The technology of this plant does not process waste from the production of distiller liquid. In order to develop a waste-free technology, the directions and methods of processing liquid waste from soda ash production into marketable products were studied.

It is determined that the distiller liquid can be processed into marketable products in several directions, and ready-made products that meet the requirements of the relevant state standards can be obtained:

- Meliorant for liming acidic and saline soils (TU 6-18-37-85);
- Complex mineral additives for balancing the diets of farm animals (TU 6-18-3-80) and poultry (TU 6-18-25-0- 79);
- Production of silicate bricks based on a belite binder;
- Calcium chloride technical GOST 450-77;

Keywords: soda ash, Solvay method, distillery liquid, sludge, waste.

Of the existing methods for producing soda ash, the ammonia method is the most widely used (70%). In the synthesis of soda ash, according to the Solvay technology, the degree of sodium utilization is 70-72% (wt.).

LLC JV Kungrad Soda Factory is the only enterprise in Central Asia producing soda ash. The annual production capacity of soda ash in the enterprise is 200,000 tons. Distiller liquid after the distillation process in the ADKF workshop (Absorption Distillation Carbonation Filtration) I and II stages of soda ash production are discharged into a sludge storage tank for liquid waste. The volume of distiller liquid discharged is 9.08 - 10 m³ per 1 ton of finished products (since the volume of soda ash production per year in both stages of this plant is 200 thousand tons, the volume of distiller liquid discharged is more than 5,500 - 6,000 m³ per day, more than 2 million m³ per year).



Drawing 1. Type of sludge accumulator of liquid waste (distiller liquid) of soda ash production by the ammonia method LLC Joint venture "Kungrad soda factory".

Currently, due to the filling (outlet of distiller liquid from sludge storage dams) and the planned expansion of soda ash production in LLC JV Kungrad Soda Plant (2024-2026) from the current 200 thousand tons of annual capacity to 450 thousand tons, the issue of complex processing of distiller liquid, using inexpensive components to obtain marketable products.

Considering that soda ash is produced from natural minerals (table salt, limestone or chalk), wastewater from soda production (distillery liquid) contains ions Ca^{+2} , Na^{+} and Cl^{-} in the form of chlorides CaCl_2 and NaCl .

Table – 1. Chemical composition of distiller liquid from the workshop of ADKF LLC Joint Venture "Kungrad Soda Plant"

Component	Actual analysis results for 2023. % (mass.)			
	January	February	March	April
I – stage of production				
NaCl	4,79	5,56	4,85	4,88
Na_2SO_4	0,063	0,063	0,06	0,12
CaO (common)	0,16	0,28	0,22	0,22
CaCO_3	0,68	0,49	0,39	0,39
MgO	0,036	0,036	0,036	0,036
CaCl_2	9,16	8,36	9,52	9,57
II – stage of production				
NaCl	4,63	4,49	4,03	4,75
Na_2SO_4	0,19	0,19	0,12	0,17
CaO (common)	0,11	0,16	0,28	0,28
CaCO_3	0,39	0,28	0,49	0,5
MgO	0,036	0,036	0,017	0,072
CaCl_2	9,68	9,57	9,69	9,21

The solid precipitate (distillation sludge) consists mainly of calcium carbonate and sulfate (Table 2).

Component	Standards and technical indicators according to the regulations % (by weight)	The light part of the sample (transparent liquid) % (common)	The slurry part of the sample (solid) % (by weight) on dry matter
NaCl	4,16	6,79	5,84
Na_2SO_4	0,29	0,06	-
CaSO_4	-	-	6,40
CaO (common)	0,49	0,11	-
CaCO_3	0,52	0,19	84,09
MgCO_3	-	-	2,52
MgO	0,08	0,034	-
CaCl_2	10,81	12,90	-
Insoluble residues in water	-	-	0,4
R_2O_3	-	-	0,4

The excess of chlorides, carbonates and sulfates from the norm in the composition of the light and slurry parts of the distiller liquid from the sludge accumulator is explained by the fact that in addition to the distiller liquid, wastewater (concentrate, evaporated water, water from KNS-3) is discharged into this sludge accumulator, which contain a large amount of chlorine, carbonates and sulfates.

The following products described below can be obtained from distiller liquid, soda ash production by the Solvay method.

Meliorant for liming acidic and saline soils (TU 6-18-37-85). Lime meliorant based on the solid residue of soda production with a mass fraction of Cl⁻ ion of no more than 2% has a positive effect on the physico-chemical properties of soils. At the same time, the intake of nitrogen, phosphorus, and calcium into plants increases, which makes it possible to increase the yield of winter wheat, barley, corn, peas, oats, and sugar beet by 10-20%. It is currently planned to release this product on a pilot installation in small quantities.

Complex mineral additives for balancing the diets of farm animals (TU 6-18-3-80) and poultry (TU 6-18-25-0- 79). The complex mineral supplement is designed to balance the diets of cattle according to the main macro- and microelements. The use of feed additives will ensure the livestock of cattle and birds with macro- and microelements necessary to balance and increase the nutritional value of diets, increase the efficiency of feed use by 2-5%, as well as increase the live weight gain of livestock products by 300-400 kg per 1 ton of feed additive. It is currently planned to release this product on a pilot installation in small quantities.

Production of silicate bricks based on a belite binder. To obtain a lime-belite type binder, a raw mixture of distillation sludge and sand is used. The raw material mixture is fired in rotating furnaces with the decomposition of carbonate, hydroxide, and other calcium compounds to form free calcium oxide and bicalcium silicate (belite), as well as small amounts of calcium aluminates and aluminoferrites. The resulting clinker after cooling and grinding is used for the production of silicate bricks and aerated concrete. A trial batch of this product has been received at the pilot plant at this time.

The use of a belite binder in the production of silicate bricks does not change its traditional technological scheme of production. There is only a replacement of lime obtained from natural carbonate raw materials with a belite binder. Such a replacement makes it possible to significantly improve the molding properties of the mass with a reduction in the time of its storage in the silo to 1.5 hours, the steam pressure in the autoclave decreases to 5 atm., and the grade of the resulting brick increases.

Table 3. Strength characteristics of silicate bricks made on the basis of lime-belite binder

Density, kg/m ³	Tensile strength, MPa				Frost resistance
	When compressed	Flexural tension	With axial tension	When cutting	
2000	28,0	$\frac{6,92}{0,23}$	$\frac{20,9}{0,07}$	$\frac{6,10}{0,22}$	More 100 cycles

Note. The denominator shows the ratio of the bending, tensile and shear strength of the brick to the compressive strength.

It is necessary to note the high bending strength of the brick, equal to 6.92 MPa, which is 2 times higher than the requirements for silicate bricks when bending this brand.

Calcium chloride is technical. The technology for producing liquid calcium chloride is based on pool evaporation using solar energy and obtaining clarified distiller liquid. This method provides for the concentration of solar energy of this liquid to the level of industrial mineralization – 390-480 g /dm³. With such mineralization, the crystallization of NaCl in the evaporation pool is ensured, and the mass fraction of CaCl₂ at the same time approaches 30%. The mass fraction of other chlorides, including MgCl₂ in terms of NaCl, is approaching 5%. The final concentration to the requirements of GOST 450-77 should be carried out in evaporators to obtain technical (liquid) calcium chloride.

GOST 450-77 establishes the following requirements for technical – liquid calcium chloride:

- the mass fraction of CaCl₂ is not less than 35%; the mass fraction of other chlorides, including MgCl₂ in terms of NaCl, should not exceed 3%.

The most important component of the high profitability of the production of technical (liquid) calcium chloride will be a high initial mass fraction of CaCl₂ up to 30% in the initial solution obtained through the use of solar technologies. According to world analogues, the initial mass fraction of CaCl₂ in purified chloride-calcium-sodium solutions of soda production is 2 or more times lower, i.e. does not exceed 10-13%.

At this time, a trial batch of this product has been obtained under laboratory conditions, production is planned at a pilot plant in small quantities.

The following traditional applications of calcium chloride are possible:

- operation of highways (removal of snow and ice formations in winter and dedusting in summer);
- construction industry (accelerator of hardening of concrete and cement mortars, antifreeze additive);
- oil and gas industry (well repair, drilling);
- chemical industry (desulfurization of solutions, drying of gas and liquid media, air conditioning systems);
- prevention of freezing of bulk materials during transportation (sand, ores, coal, etc.);
- coal industry (dust suppression);
- ballasting of automobile and tractor tires;
- refrigeration equipment (preparation of coolant).

In modern conditions, great attention is paid to the protection of the natural environment from harmful industrial influences from industrial waste. In particular, chemical wastes such as distillery liquid, which contain a sufficient amount of calcium and sodium chlorides, are of particular importance.

From them can be obtained:

- Meliorant for liming acidic and saline soils (TU 6-18-37-85);
- Complex mineral additives for balancing the diets of farm animals (TU 6-18-3-80) and poultry (TU 6-18-25-0- 79);
- Production of silicate bricks based on a belite binder;
- Calcium chloride technical GOST 450-77;

The proposed technology is environmental-friendly and has been developed for the purpose of recycling soda production waste.

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Rezyume: maqolada soda kuli ishlab chiqarish chiqindilarini tuzlash usuli bilan qayta ishlash usullari muhokama qilinadi. Olingan tayyor mahsulotlarning tarkibi va foydalanish sohasi ham o'rganildi.

Резюме: В статье рассматриваются способы переработки отходов производства кальцинированной соды методом Сольве. Также изучены составы и отрасль использования полученных готовых продуктов.

Kalit so'zlar: soda kuli, Solve usuli, distillangan suyuqlik, loy, chiqindilar.

Ключевые слова: кальцинированная сода, метод Сольве, дистиллерная жидкость, шлам, отходы.

TYPES OF WOOD USED IN CREATING FURNITURE

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Summary: *The article provides information on the main kinds of wood made from tree species used in the creation of furniture, which tree species are used, and their texture appearance. Brief information about the main characteristics of the tree species, i.e., soft, medium-hard and very hard wood species, the types of wood corresponding to their density indicators and the appearance of furniture made from it are given as an example.*

Keywords: *furniture, texture, pine, birch, oak, ash tree, spruce.*

From an environmental point of view, furniture made from wood species has no equivalent material. The service life of wooden furniture is several decades and hundreds of years. For example, the furniture found among the archeological finds in Ancient Egypt has not lost its characteristics.

In order for the created furniture to keep its appearance and working condition well for a long time, the type of tree should be chosen correctly and in accordance with the purpose. The density of the tree variety should be taken into account. Density is defined as the ratio of mass to volume. The density of the tree variety directly depends on the following indicators: the strength of the wood taken from the tree, resistance to decay and deformation. In nature, tree varieties are divided into several types according to their density. These are: soft, moderately hard and very hard wood species. The tree species corresponding to the above-mentioned tree species and their density indicators are considered:

Soft – suitable for this type of tree species: cedar, spruce, beech, linden (lipa) and pine. Their density is up to 540 kg/meter³. Most of them are used to create facades and decorative elements in construction.

Medium hard – suitable for this type of tree species: ash, larch, birch, maple, oak, walnut, beech and cherry tree. Their density is 550-740 kg/meter³. Most of them are furniture and equipment.

Extremely hardy – tree species suitable for this type: acacia, hevea (geveya), grab, redwood, Karelian birch (karelian beza) and tis. Their density is higher than 750 kg/meter³. They are used in furnishing load-bearing columns, humid and temperature rooms.

Wood species are widely used in the production of furniture:

Pine is the most common type of coniferous tree, and this wood texture gives it a milky brown color. It fades well without losing its natural texture (Pic.1).



a)



b)

Picture 1. Product from pine tree:
a-its texture; b-wood for furniture.

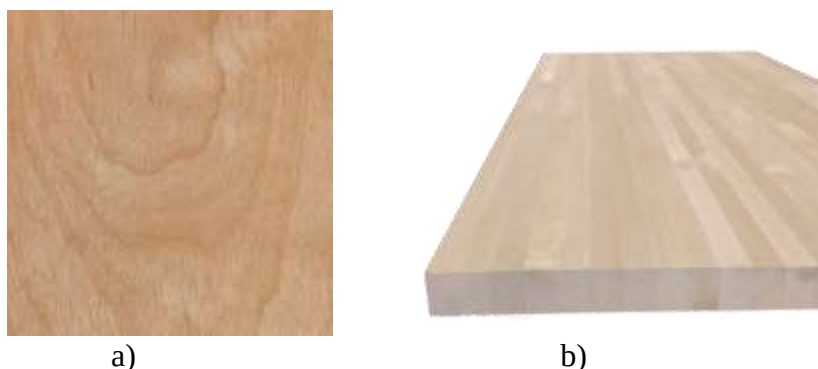
The main advantage of pine wood: pine wood is a very flexible type of tree. It is easily processed and does not lose its properties. Due to its content of tars (resin) and the density of its structure, furniture made from pine wood is resistant to moisture. Because of its coniferous origin, the tree has a pleasant smell.

Disadvantages: heavy weight has a negative effect. It can form cracks as a result of mechanical impact (Pic.2)



Picture 2. Furniture made of pine wood.

Birch is an ecological fresh raw material made of wood, which is widely used in the creation of children's furniture. The texture of the wood is light in color, and it combines soft milky, yellow and pink colors. The surface made of birch wood reflects the light beautifully (Pic.3).



Picture 3. Birch tree product:
a-its texture; b-wood for furniture.

Advantages: birch wood structure is uniform and density belongs to medium hardwood species, that's why furniture made from this wood is durable. Furniture made of birch wood is very comfortable, resistant to load and deformation.

Disadvantages: birch wood is not resistant to moisture, so furniture made of it- is not suitable for rooms with high humidity. It is easy to be affected by pests, so the raw material should be treated additionally (Pic.4).



Picture 4. Furniture made of birch wood.

Oak is a type of wood that is often used in furniture making, as it is one of the hardwood species. Because of its beautiful texture, it is used to make all kinds of luxury furniture. Texture color ranges from gold and pink to chocolate and dark (Pic.5).



a)



b)

Picture 5. Oak products:
a-its texture; b-wood for furniture.

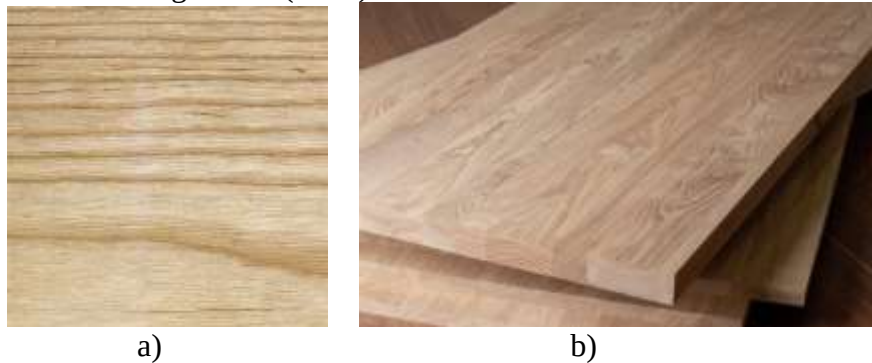
Advantages: Although it is very strong, the steamed wood bends well and works well. Moisture, pests do not affect. Since then, furniture made from it keeps its condition for several decades. It can carry a certain amount of weight without deformation.

Disadvantages: the price of the material is much higher than its analogues (Pic.6).



Picture 6. Oak furniture.

Ash tree is similar to oak tree in its characteristics. It is resistant to mechanical influences and can bear heavy weight. It has a woody texture and can be pearl gray, milky, yellow, pink, or lilac in color. It reflects sunlight well (Pic.7).



Picture 7. Ash tree product:
a-its texture; b-wood for furniture.

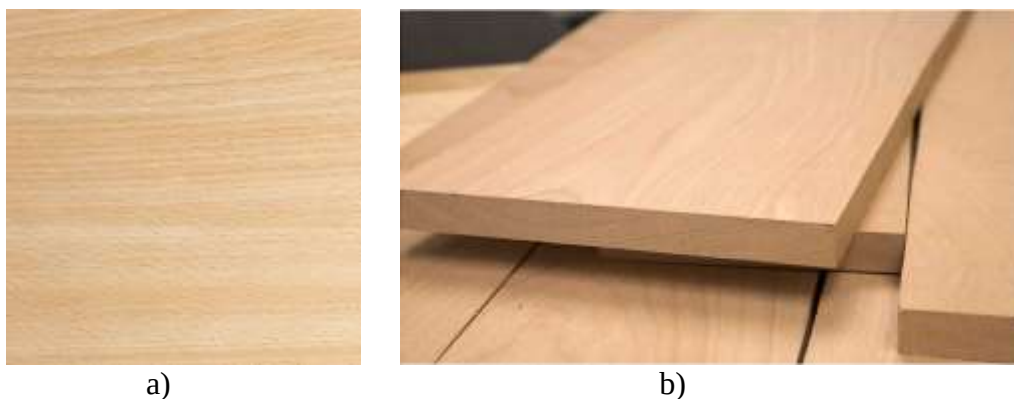
Advantages: easy and simple to processing . It bends and shears well. Therefore, it is possible to make beautiful furniture from ash wood. Since its structure is very dense, there will be no cracks in it. After a long period of use, its color becomes interesting.

Disadvantages: the grinding process is difficult. Due to its susceptibility to pests, raw materials are processed with an antiseptic before making furniture (Pic.8).



Picture 8. Ash tree furniture.

Black birch is a type of wood widely used in furniture production, and its strength is comparable to birch and oak. This wood is used in the production of furniture, as well as in the creation of various decorative elements. The color of this wood texture ranges from milky to pale pink. The curved Viennese chair created by Australian Michael Tonet from this wood is widely distributed around the world (Fig. 9).



Picture 9. Products from the birch tree:
a-it's texture; b-wood for furniture.

Advantages: due to it's high strength and density, furniture made of black birch keeps it's condition well for a long time. It is resistant to splitting and cracking, dries well and easy to work with. Because of it's beautiful appearance of the antique texture and the light color, birch tree widely used in the creation of luxury furniture. It almost does not lose it's natural color when processed and varnished.

Disadvantages: moisture resistance is low, therefore furniture made of black birch wood is not recommended for use in kitchens or bathrooms (Pic.10).



Picture 10. Birch wood furniture.

Resume

The article provides information on choosing furniture suitable for a people's lifestyle, and especially what types of wood furniture is made of. Based on this information, the selected target furniture will serve for a long time, maintaining it's appearance and working condition.

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Rezyume: Maqolada mebel yaratishda ishlatiladigan daraxt turlaridan tayyorlangan yog'ochning asosiy turlari, qaysi daraxt turlaridan foydalanilganligi va ularning tekstura ko'rinishi haqida ma'lumot berilgan. Daraxt turlarining asosiy xususiyatlari, ya'ni yumshoq, o'rta qattiq va o'ta qattiq yog'och turlari, ularning zichlik ko'rsatkichlariga mos keladigan yog'och turlari va undan tayyorlangan mebellarning ko'rinishi haqida qisqacha ma'lumotlar keltirilgan.

Резюме: В статье представлена информация об основных породах древесины, из пород деревьев, используемых при создании мебели, о том, какие породы деревьев используются, их фактурном внешнем виде. В качестве примера приведены краткие сведения об основных характеристиках пород деревьев: мягких, среднетвердых и очень твердых породах, породах древесины, соответствующих их показателям плотности и внешнем виде мебели из нее.

Kalit so'zlar: mebel, tekstura, qarag'ay, qayin, eman, kul daraxti, archa.

Ключевые слова: мебель, фактура, сосна, берёза, дуб, ясень, ель.

UDC 004.4

FEATURES OF HEURISTIC APPROACHES BASED ON THE REQUIREMENTS FOR SCHEDULING

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Summary: *The development of information technology does not stand still. They are used everywhere: be it medicine with the most modern equipment for diagnosing and treating various diseases, finance with the fastest algorithms for forecasting currency markets, agriculture with the latest equipment for watering and irrigating crop areas. The education sector cannot do without information technology. Today, the education system and learning processes in the world have undergone a radical change: innovations are being introduced, approaches are changing, and methods are being developed.*

For modern Uzbekistan, the accelerated modernization of educational technologies is even more relevant than for countries with developed market economies, since the potential of the national education system is currently the main social resource that provides a real opportunity for an innovative breakthrough to a higher level of economic development (3). The use of information technologies in education that corresponds to the world level is the only possible way today for the progressive development of the domestic education system, and, first of all, higher education.

Key words: *automation, scheduling, heuristic approach, database, data formalization, technology, requirements, higher education.*

1. Introduction

Automation of scheduling is a classic task in educational institution management systems, but at the moment there is no single, generally accepted way to solve it.

All approaches to scheduling are based on heuristic methods that come to a person with work experience. It is problematic to formalize these methods, since they involve decision-making by the scheduler, who is guided by experience and intuition. Often the employee himself who draws up the schedule cannot answer the question of why he chose a certain option for class placement and not some other acceptable one. But, despite the complexity of formalizing the algorithms, it is possible to highlight the features of such heuristic approaches based on the requirements for scheduling.

The quality of training of specialists in universities and especially the effectiveness of using scientific and pedagogical potential depend to a certain extent on the level of organization of the educational process. One of the main components of this process - the class schedule - regulates the work rhythm and affects the creative output of teachers, so it can be considered as a factor in optimizing the use of limited resources - teaching staff and classroom funds (8).

The development of algorithms for drawing up work schedules and schedules is carried out by a special branch of discrete mathematics - scheduling theory. The tasks of scheduling theory, of course, are related to the construction of schedules, i.e. with the ordering of some work (classes, lessons) by time and/or by performer (teacher). In this case, it is necessary to take into account restrictions on the sequence of work, restrictions associated with performers, etc. The goal of solving such problems is to construct admissible schedules in which all restrictions are met, or, what is more difficult, to find the optimal admissible schedule according to one or another optimality criterion.

The first stage of solving the problem was the search for an algorithm for creating an optimal schedule. The algorithm first highlighted the requirements for the class schedule.

When drawing up a schedule, the problem of optimal resource management arises: teaching staff and classroom resources (9). In the process of solving a problem, it is necessary to take into account mandatory restrictions, as well as additional requirements that may be violated in some cases (only mandatory restrictions were taken into account when writing our software). Mandatory restrictions include:

- a group of students or a teacher can be engaged in only one lesson at a time;
- no more than one lesson can be conducted simultaneously in a room (auditorium, gym);
- there are various restrictions on whether a particular lesson can be held in a particular classroom;
- the number of available premises is significantly limited ;

The capacity of the classrooms should be sufficient for the groups that study in it, and it is possible that classes are held simultaneously for several groups of students in one classroom.

2. Schedule automation

2.1. Requirements for the schedule

Of course, these requirements are different for each educational institution, because they are historically determined by the peculiarities of the organization of the educational process itself. However, even with all the particulars, it is possible to identify general requirements for the schedule:

1. Minimum number of classes per student per day;
2. Maximum number of hours of teaching load per week for each student;
3. Maximum number of classes per student per day;
4. Minimizing windows for students;
5. Taking into account temporary distances between buildings when students change buildings ;
6. Taking into account the wishes of teachers;
7. The cycle of classes in a discipline should not end with a lecture session if there are seminar (practical) classes;
8. The cycle of classes in the discipline should not begin with a seminar (practical) lesson if there are lecture classes;
9. All groups of the stream must approach each lecture lesson having received the same number of hours of seminar (practical) classes;
10. Do not conduct more than two lectures on the same discipline per day and no more than one/two seminar classes on the same discipline per day;
11. Minimum number of lessons with a teacher per day;
12. Maximum number of lessons with a teacher per day;
13. Minimizing windows for teaching staff (hereinafter referred to as teaching staff);
14. Minimizing overtime for teachers according to staffing schedules;
15. Minimizing the number of simultaneously conducted identical disciplines in an educational institution at the same time. This directly affects the amount of teaching staff allocated to ensure the teaching load;
16. Maximum use of the classroom fund. This includes requirements for the densest placement of students in classrooms according to the capacity of the latter, as well as minimizing downtime of premises;
17. Taking into account temporary distances between buildings when a teacher changes buildings (5).

Each requirement for the schedule being drawn up, from those listed above (1–17), imposes its own characteristics on the preparation of the schedule. For example, if requirements 3, 4, 10, 11, 12, and 15 are simultaneously present in a problem, for optimal placement of classes for problems of group 1 within the teacher and stream, you have to try to place the load that is read by the teacher for all groups of the stream. For optimal placement of classes for tasks of group 2, due to the lack of information about the teacher within the stream, you have to try to place lectures first, and then, in the next pairs, seminar classes in the disciplines for which lectures were given in the previous pairs, which allows you to combine the load one at a time and the same discipline. This is what allows us to indirectly take into account requirements 11, 12, 15 related to the teacher.

Requirement №16 can be most optimally fulfilled if all classes in an educational institution are conducted in a fixed grid of a single (general) call plan. If an educational institution conducts classes that do not belong to the bell plan grid or in the bell plan grid that is different from the general one, then the intersection of such classes with classes of the general bell plan leads to downtime of the classroom for 20–40 minutes, both during the entire semester the total downtime of the premises accumulates.

A separate problem can be identified in the placement of classes in specialized disciplines (if the stream groups were not staffed according to the profile), elective disciplines, foreign language, physical education and elective disciplines. The essence of the problem is that it is not always known from which academic groups this or that group was recruited to attend the above-mentioned disciplines, which can lead to difficulties for students if classes in compulsory subjects and the above-mentioned disciplines are held at the same time. The way out of this situation is either to allocate separate days for such disciplines, or to place these classes first or last.

Another problem in the scheduling problem is threads. Threads can be created not only during lectures (perhaps the simplest case), but also for other classes, for example, seminars. Using streams for seminar classes complicates the task, because posting streams is always more troublesome than classes for one group. There may also be a division of groups into subgroups for laboratory classes, classes conducted in special facilities, premises, etc. When drawing up a schedule in such cases, they use the placement of classes for one subgroup on weeks of one parity, and for another subgroup on another parity, while classes are placed on a separate day or at the beginning/end of classes in the day, so that students of the other subgroup do not have windows. In addition, it is recommended to place such activities first.

Another important feature in the scheduling problem is how the schedule input operator takes into account the requirements: the weight (importance) of requirements (1–17) can change dynamically depending on local conditions at each scheduling step. The algorithm for changing weight is also heuristic.

The behavior of the operator when creating a schedule is more similar to the behavior of “greedy” algorithms: the operator sequentially places classes, does not try to build or consider more than one option for class placement, because very rarely he has to delete posted classes and choose another placement option. But the operator, based on his experience and intuition, in the process of each decision on choosing an option for placing classes, overestimates the importance of each of the criteria/constraints, which allows the required result to be added very effectively and efficiently(1).

Precisely because it is very difficult to formalize all the requirements for the compiled schedule, and it is also difficult to take into account the uniqueness of the business processes of each educational institution, the use of “greedy” optimization algorithms without the use of heuristic approaches leads to a result that does not satisfy each specific educational institution. That is, it will not be possible to develop an algorithm that would take into account all the features of all educational institutions.

Thus, the most correct approach in such situations is to design an automatic scheduling algorithm for the needs and taking into account the characteristics of each specific educational

institution using heuristic approaches that are closest to the operator's actions. This leads to the conclusion: the algorithm for automatic scheduling in each educational institution is still different.

Thus, for optimal use of automatic scheduling, it is necessary to design heuristic algorithms that take into account the specifics of each educational institution separately, and the use of stages gives the heuristic greater flexibility in decision making. This is the only way to achieve a good result.

2.2. Technologies for using databases

Using a database in a curriculum automation program plays a key role in effectively organizing and storing information about classes, teachers, audiences and other parameters necessary for scheduling. Here are a few ways a database can be used in a curriculum automation program(3):

1. Storing information about students, teachers and audiences: The database can contain data about all participants in the educational process, their contact information, preferences for time and place of classes and other important information.

2. Taking into account current information about the curriculum: The database may contain information about subjects, courses, groups of students, curricula and other parameters necessary for scheduling.

3. Optimization of class distribution: The database allows the curriculum automation program to take into account various restrictions and rules when creating a schedule, such as the availability of teachers, classrooms, student preferences, etc.

4. Monitoring changes and updates: The database allows you to track all changes in the schedule, automatically update information and promptly inform all interested parties about any changes.

5. Analysis and Reporting: The database can be used to analyze the effectiveness of the schedule, identify problem areas or bottlenecks in the teaching process, and generate reports on the implementation of the curriculum.

Thus, the use of a database in a curriculum automation program can significantly improve the process of creating and managing a schedule, increase the efficiency of an educational institution, and provide better student learning.

Any application for scheduling at a university must have its own database, from which it can read source data, as well as save the results of the algorithm for distributing classes in the schedule.

During the work I had to face a choice between MySQL and SQLite .

SQLite is a compact, embedded relational database. The word “embedded” means that SQLite does not use the client-server paradigm, that is, the SQLite engine is not a separate process with which the program interacts, but is a library with which the program is linked, and the engine becomes an integral part of the program. Thus, function calls (API) of the SQLite library are used as the communication protocol . This approach reduces overhead, response time, and simplifies the program. SQLite stores the entire database (including definitions, tables, indexes, and data) in a single standard file on the computer on which the program is executed. Simplicity of implementation is achieved due to the fact that before the start of a write transaction, the entire file storing the database is locked; ACID ⁶functions are achieved , among other things, by creating a log file (6).

Several processes or threads can simultaneously read data from the same database without any problems. Writing to the database can only be done if no other requests are currently being served; otherwise, the write attempt fails and an error code is returned to the program. Another option is to automatically repeat recording attempts within a specified time interval.

⁶ ACID (Atomicity, Consistency, Isolation, Durability) describes the requirements for a transactional system (for example, a DBMS) that ensures its most reliable and predictable operation.

It was the above-mentioned difficulties of working with SQLite that became the reason for the transition to the MySQL DBMS .

MySQL is a free relational database management system. MySQL is the solution for small and medium-sized applications. Included in the WAMP, AppServ , LAMP servers and in portable server builds Denver, XAMPP, VertrigoServ . MySQL is typically used as a server accessed by local or remote clients, but the distribution includes a back-end library that allows MySQL to be included in standalone programs (7).

The flexibility of the MySQL DBMS is ensured by the support of a large number of table types: users can choose both MyISAM tables that support full-text search and InnoDB tables that support transactions at the individual record level. Moreover, the MySQL DBMS comes with a special EXAMPLE table type that demonstrates the principles of creating new table types. Thanks to the open architecture and GPL licensing, new types of tables are constantly appearing in the MySQL DBMS .

Advantages of MySQL :

- Easy to use - Installing MySQL is quite simple. Additional applications, for example, GUI, make it quite easy to work with the database
- Rich functionality - MySQL supports most of the functionality of SQL.
- Security - a large number of security features supported by default
- Scalability - MySQL handles large amounts of data easily and scales easily
- Speed - Simplifying some standards allows MySQL to significantly improve performance.

2.3. The task

About the curriculum used in the educational process, there is information of the following type: names of groups combined into streams, names of subjects, hours allocated to a group in a particular subject, full names of teachers, types of classes, names of all faculties and departments, lists audiences. Develop an application (information system) that allows you to create a study schedule for both full-time and part-time studies.

2.4. Objectives of solving the problem

In accordance with the conditions of this problem, the program being developed must distribute classes in space (audiences) and time (day of the week, pair number), using an algorithm for assessing the freedom of location of classes in the schedule.

2.5. Results form

Present the schedule in three versions: for students, for teachers and for classrooms.

In order to automate planning, a solution was developed that simplifies the process of creating a curriculum based on an analysis of the existing curricula of specialties, allowing one to analyze the structure of the workload, as well as plan structural refinement and some unification of existing curricula(14).

You can formulate the condition of the problem as follows: about the curriculum used in the educational process, there is information of the form: the name of the groups combined into streams, the name of the subjects, the hours allocated to the group in a particular subject, the full names of teachers, types of classes, names of all faculties and departments, lists of audiences. Develop an application (information system) that allows you to create a weekly educational schedule using all the available data in the database. It is necessary to provide for the entry, correction and deletion of database records.

Objectives of solving the problem: in accordance with the conditions of this problem, the program being developed must distribute classes in space (audiences) and time (day of the week, pair number). Provide a list of classes in the form of tables, distributed by faculties (for groups and streams) and by departments (for teachers).

When writing the program code, classes were used. For each data type, its own class was written with its own methods and nested types (classes here). Class objects are combined into dynamic lists.

The main part of the program's work is concentrated on the "Compose New" button. After pressing the button, the algorithm starts. The algorithm works according to the following plan:

1. Removing old results from the database. Here, using a cycle, every record of the existing schedule in the database is deleted.

2. Create a dynamic list with days of the week.

3. Create dynamic lists of class start times

Since studies at TUIT take place in two shifts, two named lists are created. In this case, it is considered that the first shift runs from 1st to 4th pairs, and the second - from 3rd to 6th pairs.

4. Creation of dynamic lists with faculties and departments.

5. Generating lists of audiences of different types. Here 4 dynamic lists are created with audiences: lectures, practical, laboratory and gyms.

6. Create dynamic lists with groups, streams and teachers.

7. Formation of lists of activities. At this stage, the cycle also calculates an estimate of the freedom of location of each lesson in the schedule.

8. Sorting the list of activities by location freedom assessment.

9. Starting the distribution of classes in the schedule.

10. Release of all streams, groups, teachers, classrooms, classes.

11. Start a cycle that will distribute activities in space and time until all activities are ready. If it is impossible to cover all classes due to incorrect input of initial data into the database, the cycle will be repeated only 4 times.

Within this main cycle there are three more - a cycle by day, by pair, and a cycle by lesson. Each lesson is checked for readiness, the shift is checked, and depending on the type of lesson (lecture, practice, laboratory, gym), a cycle is started along the list with the corresponding type of audience. Next, the conditions are checked and, if they are satisfied, the day of the week, pair number and audience are assigned to the activity class object.

Access database and entering into it the initial data necessary to implement the algorithm. The result of the program is recording activities distributed in space and time into the database and displaying them in the main application window.

The proposed algorithm can be used to create a class schedule at an individual university. Among the advantages, we can note the ability to generate acceptable schedule options already from the first iteration. The algorithm provides for the possibility of significantly improving the schedule by adding additional criteria for assessing the freedom and quality of the arrangement of classes in the schedule; the principle of scheduling in a higher educational institution has been studied and, on its basis and conclusions, an information system "class schedule of an educational institution" has been developed.

Any application for scheduling at a university must have its own database, from which it can read source data, as well as save the results of the algorithm for distributing classes in the schedule. To do this, the database must contain a number of tables, information from which will be used in the process of creating dynamic lists of various objects. Here you will need knowledge in the use of object-oriented programming, creating templates and dependencies between classes.

The minimum requirement for automatic scheduling is the presence of lists of groups combined into streams, teachers, classrooms, subgroups, days and pairs, types of classes and curriculum. Therefore, the existence of appropriate tables is assumed.

Considering that at TUIT faculties alternate between shifts of study, a table was created that contains the names of faculties and their shifts. The table with the list of streams contains the ids of faculties and the corresponding student streams. This table is needed so that while the program is

running, all flow groups are at the same lecture, in the same classroom, at the same time (day, pair). The Groups table contains threads with their corresponding groups.

The table with the curriculum assumes the presence of information such as class id, group, names of subjects taught, hours of instruction, teacher names, class type, subgroup id .

It is worth noting that the presence of subgroups in the database is very important, because sometimes in the educational process there is such a situation that the lesson of one or another group implies the division of the group into smaller subgroups with their own teachers. This means the “Subgroups” table should contain columns such as group, subgroup id , subject, teacher, lesson type. The type of lesson means lecture, practice, seminar or laboratory session. The information system will use this table to ensure that subgroup classes are scheduled at the same time, but (often) in different classrooms (usually in foreign language classes). In this case, there must be a mandatory check on the freedom of all teachers of subgroups at one time or another (13).

As the program runs, this list of activities is converted into another table in which these activities will be duplicated depending on the hours recorded. For example, at our university, 18 hours is when a lesson takes place once every two weeks, 36 hours - every week, 54 hours - one and a half times every two weeks, 72 hours - twice a week, etc. This calculation of hours depends on the number of school weeks. We have 18 of them. The number of school weeks should be stored in a table with information about the schedule being compiled. For example, this table can also store information such as the name of the schedule being compiled, the academic year, the compiler, etc.

The new curriculum, distributed by hour, will have an order of magnitude more lesson recordings than its original source, because A lesson conducted once a week will appear in this table only once, and a lesson conducted twice a week - twice, then in order to introduce half-time lessons into it, another column was created, which contains information about the integrity of the lesson . For example, the number 1 will mean half, and 2 will mean the whole lesson. Also, in order to reduce the running time of the algorithm, it is worth adding shift and flow columns to the table.

3. Result

The given database structure was used in the operation of the algorithm, which is described as follows:

1. Removing old results from the database. Here, using a cycle, every record of the existing schedule in the database is deleted.
2. Search for subgroups in the table with the curriculum and automatically record them in the corresponding table with subgroups. This is done so that the user of the information system does not waste time manually entering each lesson of the subgroups of all groups.
3. Create a dynamic list with days of the week.
4. Creation of dynamic lists of class start times. Since studies at TUIT take place in two shifts, two named lists are created. In this case, it is considered that the first shift runs from 1st to 4th pairs, and the second - from 3rd to 6th pairs.
5. Formation of lists of audiences of different types. Here 4 dynamic lists are created with audiences: lectures, practical, laboratory and gyms.
6. Formation of lists of activities.
7. Starting the distribution of classes in the schedule. Start a cycle that will distribute activities in space and time until all activities are ready. If it is impossible to cover all classes due to incorrect input of initial data into the database, the cycle will be repeated only 7 times.

4. Conclusion.

The resulting table contains data such as the course in which students of a particular class group are studying, the group itself, the teacher, the subject, the audience, the type of lesson, the number of the pair, the parity of the week, and the day. The parity of the week is determined by the whole and “half” classes mentioned above. Depending on the design of the information system, the data in this table is displayed in the appropriate form, while having the ability to filter information

by faculties, courses, groups, audiences, departments (if the appropriate table is available), and teachers.

The method of organizing a database described above is the most optimal and practical. It should be noted that in this way it is also possible to organize databases of information systems for automatic scheduling not only in universities, but also in schools, colleges and other educational institutions.

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Rezyume: *Axborot texnologiyalari doimiy ravishda rivojlanishda. U hamma joyda qo'llaniladi: xoh turli kasalliklarni tashxislash va davolash uchun eng zamonaviy uskunalarga ega tibbiyot, xoh valyuta bozorlarini prognozlashning eng tezkor algoritmlari bilan moliyalash, xoh qishloq xo'jaligi ekin maydonlarini sug'orish va sug'orish uchun eng yangi uskunalar. Ta'lim sohasini axborot texnologiyalarisiz tasavvur qilib bo'lmaydi. Bugungi kunda dunyoda ta'lim tizimi va ta'lim jarayonlari tubdan o'zgardi: innovatsiyalar joriy etilmoqda, yondashuvlar o'zgarib bormoqda, metodlar ishlab chiqilmoqda.*

Zamonaviy O'zbekiston uchun ta'lim texnologiyalarini jadal modernizatsiya qilish bozor iqtisodiyoti rivojlangan mamlakatlarga qaraganda ko'proq dolzarbdir, chunki milliy ta'lim tizimining salohiyati hozirgi vaqtda yuqori darajadagi innovatsion yutuq uchun real imkoniyatni ta'minlovchi asosiy ijtimoiy resurs hisoblanadi. Ta'limda jahon darajasiga mos axborot texnologiyalaridan foydalanish bugungi kunda mamlakatimiz ta'lim tizimini, birinchi navbatda, oliy ta'limni izchil rivojlantirishning yagona mumkin bo'lgan yo'lidir.

Резюме: *Развитие информационных технологий не стоит на месте. Они применяются везде: будь то медицина с самым современным оборудованием диагностики и*

лечения различных заболеваний, финансы с наибо́льшими алгоритмами прогноза валютных рынков, сельское хозяйство с новейшим оборудованием полива и орошения посевных площадей. Без информационных технологий не обходится и сфера образования. На сегодняшний день система образования и обучающие процессы в мире подверглись коренному изменению: внедряются инновации, меняется подход, разрабатываются методики.

Для современного Узбекистана ускоренная модернизация обучающих технологий является еще более актуальной, чем для стран с развитой рыночной экономикой, поскольку потенциал национальной системы образования в настоящее время выступает основным социальным ресурсом, обеспечивающим реальную возможность инновационного прорыва на более высокий уровень экономического развития. Использование информационных технологий в обучении, соответствующих мировому уровню – единственно возможный сегодня путь поступательного развития отечественной системы образования, и, в первую очередь, высшей школы.

Kalit so'zlar: avtomatlashtirish, dars jadvalini tuzish, evristik yondashuv, ma'lumotlar bazasi, ma'lumotlarni rasmiylashtirish, texnologiya, talablar.

Ключевые слова: автоматизация, составление расписания, эвристический подход, база данных, формализация данных, технология, требования.

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STUDY OF THE PROCESS OF NITRIC ACID DECOMPOSITION OF SPENT CATALYSTS

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Summary: To physicochemically substantiate the process of producing complex NPK fertilizers with microelements, the physicochemical properties and the process of ammoniation of the resulting nitric acid extract (NAE) with ammonia gas after the decomposition of the catalysts were studied. It was found that when the HNO₃:AMC ratio increased from 7:1 to 15:1, the ratio in the reaction mass increased from 7.5:1 to 8:1, and the filtration rate decreased, the moisture content of the formed sediments was in the range of 10.00-16.07%. The resulting AQV was ammoniated in the pH range from 1 to 7, and as experiments showed, with ammoniation with increasing pH, the color of the resulting solutions changed from slightly blue to dark blue. After reaching pH=6.5, a sediment appeared in the system.

Key words: Catalyst, fertilizer, Niap 01-01, microelement, concentration, ammoniation, temperature, suspension.

Introduction. It is known that fertilizers play an important role in increasing crop yields. Therefore, it is important that the agricultural sector is provided with all the vital nutrients. Since nitrogen, phosphorus and potassium are carried out with plants, there is an acute issue of providing plants with nutrients for full growth and development through the use of fertilizers. Along with solid granular fertilizers, the demand for liquid types of fertilizer has increased greatly. This is explained by a more effective impact on the growth and development of plants when used. In addition, liquid complex fertilizers (LCF) require less costs when producing them, which is explained by the elimination of such energy-intensive processes as granulation, classification, dust collection and operation of the return cycle. There is also no need for packaging in bags, no caking, clumping and segregation during storage and transportation processes. The process can be completely mechanized or automated, which reduces labor costs. Most importantly, when using liquid fertilizers, nutrients are distributed more evenly in the soil layer. It also becomes possible to jointly use herbicides, insecticides, microelements, growth substances and etc. [1, 2].

It has been proven that the absorption of macroelements by plants, in comparison with solid fertilizers, occurs through the leaf surface of plants up to 80, 50 and 50%, respectively for N, P and K. Whereas when using solid fertilizers this figure is 40% for nitrogen, 15% and 20% for phosphorus and for potassium – 40% [3, 4].

Feedback, containing a significant amount of macroelements, is well valued in agriculture. Therefore, in [5], a comprehensive study of the multicomponent system NH₄H₂PO₄ - (NH₄)₂PO₄ - CO(NH₂)₂ - H₂O was carried out. The possibility of obtaining NP-LCD grades, such as 18:22 and 10:35 by introducing 25% urea from the total mass of the given system has been shown.

In work [6], the composition of liquid fuels was developed based on scientific studies of the system CO(NH₂)₂ - (NH₄)₂SO₄ - K₂SO₄ - H₂O and (NH₄)₂SO₄ - K₂SO₄ - H₂O. As a result, the optimal composition for obtaining liquid fuels under production conditions was found.

However, in the dry climate of Central Asia, in particular the Republic of Uzbekistan, where there is an acute shortage of water and the issue of providing the population with agricultural products, housing and communal services play a key role.

The fact is that today the problem of producing water-soluble complex fertilizers in Uzbekistan has not been solved; in the conditions of the republic, technologies for their production from local raw materials have not been developed. When developing new liquid-commodity compositions, along with macroelements, microelements are also important. They support metabolism and enzymes, and contribute to the normal process of photosynthesis. Typically, their application dose does not exceed the range of 50-300 mg per ha [7].

Thus, the organization of production of complex fertilizers in the republic is relevant and promising.

In this regard, for the physicochemical substantiation of the process of obtaining complex NPK fertilizers with microelements, we studied the physicochemical properties and the process of ammoniation of the resulting nitric acid extract (NAE) with ammonia gas after the decomposition of spent nitrogen industry catalysts, which accumulated in amounts exceeding hundreds of tons.

Materials and methods. The pH of solutions was measured according to the method in [7] using a universal ion meter Bante 210, the error of which was ± 0.1 .

Mass spectrometric (ICP-MS) analysis of the samples was carried out according to the method [8].

The viscosity of solutions was measured using a VPZh viscometer, the maximum deviation of which was ± 0.02 [9].

The process of acid processing of catalysts was carried out as follows. In laboratory conditions, 30% concentration nitric acid was taken to treat 10 g of catalyst waste.

The decomposition process of the catalyst, crushed to a particle size of 0.016 mm, was carried out in a laboratory facility consisting of a tubular glass reactor equipped with an electric stirrer and thermostat placed in a water. The temperature in the thermostat was maintained using a TK-300I thermometer and an RT-230U electronic relay. At all concentrations of nitric acid, the temperature was constant and equal to 45°C. The rotation speed of the mixer was 250-300 rpm.

The interaction of the components lasted for 120 minutes. At the end of the decomposition process, the reaction mass was separated into liquid and solid phases by means of filtration. That is, the entire contents of the reactor were filtered on a Buchner funnel using a Bunsen flask at a vacuum of 0.60 mm Hg through one layer of filter paper called <<white>> tape. The taken filters were priorily weighed.

The sediment remaining on the filter was washed once with 10 g of water at a given temperature and, together with the filter, dried at 100°C to constant weight.

Results and discussion. To obtain copper-zinc-containing complex NPK fertilizers, we used solutions obtained by nitric acid decomposition of spent catalysts (AMTs brand) used in the production of the nitrogen industry.

At the same time, the influence of technological parameters on the process of nitric acid decomposition of catalyst waste was studied (Table 1).

As followed from Table 1, with an increase in the HNO₃:AMC ratio from 7:1 to 15:1, the ratio in the reaction mass increased from 7.5:1 to 8:1, and the filtration rate decreased, the moisture content of the formed sediments was in the range of 10.00%-16.07%.

Table 1. Influence of technological parameters on the decomposition process

No.	Ratio starting components: AMC:	Ratio in the reaction mass L:T	Filtration speed kg/h.m ²		Humidity, %
			Liquid	Solid	
1	7:1	7.5:1	400.12	340.56	11.85
2	10:1	7.8:1	420.45	351.12	16.07

3	15:1	8.0:1	450.32	353.16	10.0

* Decomposition time - 120 min

** Process temperature – 45 °C

***HNO₃ concentration - 30%

Figure 1 shows the elemental composition of the resulting suspension during the decomposition of catalyst waste.

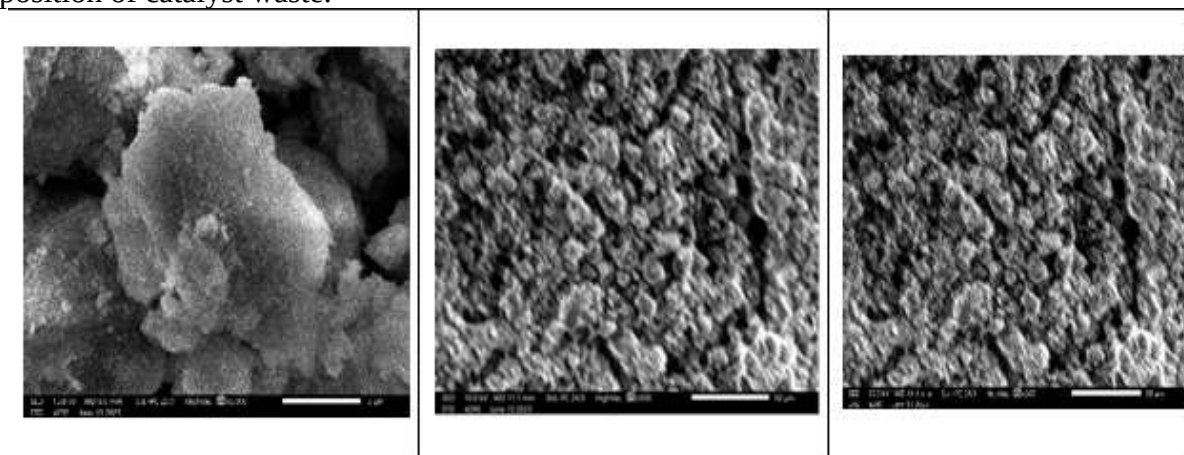


Figure 1. Energy-dispersive spectrum of sediment after nitric acid decomposition

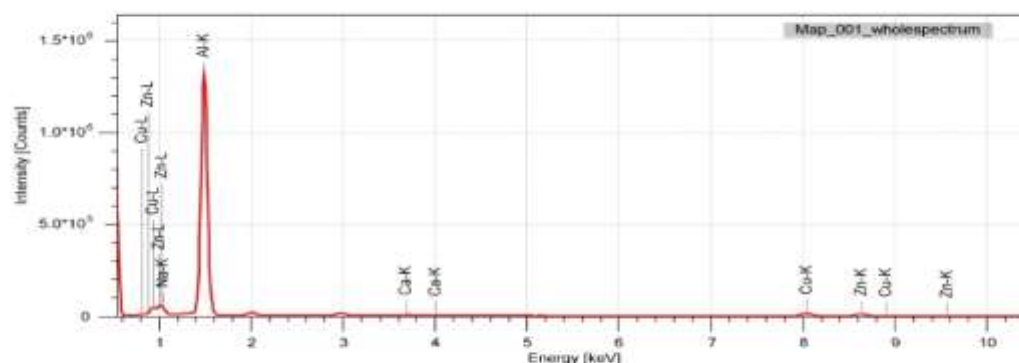


Figure 2. EMF of these sediments after nitric acid treatment

Element	Line	Mass%	Atom%
O	K	49.14±0.02	64.10±0.03
Na	K	0.88±0.01	0.80±0.00
Al	K	41.98±0.02	32.47±0.01
Ca	K	0.23±0.00	0.12±0.00
Cu	K	3.87±0.01	1.27±0.00
Zn	K	3.89±0.01	1.24±0.00
Total		100.00	100.0

Table 2

Elemental composition of the suspension after nitric acid decomposition according to the results of mass spectrometric analysis (content in µg/l)

Sample numbers correspond to table number 1	TB 1.1	Диагностический измерительный элемент									
		Li	Be	B	Na *	Mg *	Al	P	K *	Ca *	Sc
3		3.51	2.31	30.2	220679	47252	1287812	489	36326	151663	8.69
2		6.52	3.86	38.5	151839	216763	1704572	626	175193	239939	8.69
1		12.2	2.57	46	322379	3210220	2027238	13508	43396	283340	8.69
Sample numbers correspond to table number 1	B 1	Диагностический измерительный элемент									
		Ti	V	Cr	Mn	Fe *	Co	Zr	Nb	Mo	Ag
3		134	37080	2827	672	6033	182	17.3	4.31	858	27
2		191	51792	3644	1049	9191	1171	30.1	3.65	5222	21.3
1		223	59618	4696	1466	8192	297	31.8	2.18	1079	30.7
Sample numbers correspond to table number 1	B 1	Диагностический измерительный элемент									
		Ni	Cu	Zn	Ga	As	Se	Br	Rb	Sr	Y
3		143	1085872	29288	230	29.2	5.0	10	16.5	268	2.92
2		197	1463870	38424	287	34.3	5.0	10.9	57.4	426	3.41
1		160	1718697	39347	322	68.9	5.0	11.7	23.4	505	4.35
Sample numbers correspond to table number 1	B 1	Диагностический измерительный элемент									
		Sn	Sb	Te	I	Cs	Ba	La	Ce	Pr	Nd
3		60.9	114	<0.50	8.71	13.1	96.1	4.15	7.08	1.1	4.66
2		96.5	49.6	<0.50	6	60.3	86.4	5.4	7.88	1.42	5.2
1		96.4	65.2	<0.50	6.83	17.4	76.7	6.31	10.7	1.35	4.66
Sample numbers correspond to table number 1	B 1	Диагностический измерительный элемент									
		Cd	In	Sm	Eu	Gd	Tb	Dy	Ho	Hg *	Tl
3		27.6	1.78	1.7	<0.05	1.34	0.115	<0.05	0.153	1.29	14.2
2		31.7	0.713	1.24	<0.05	1.34	0.138	<0.05	0.127	4.09	20.2
1		50.3	0.713	2.63	<0.05	1.34	0.346	0.766	0.178	1.84	22.4
Sample numbers correspond to table number 1	B 1	Диагностический измерительный элемент									
		Er	Tm	Yb	Lu	Hf	Ta	W*	Re	Pt	Au
3		0.498	<0.05	<0.05	<0.05	2.06	17.9	20.8	0.798	<0.05	<0.05
2		0.427	<0.05	<0.05	<0.05	4.47	<0.05	11.6	1.76	<0.05	<0.05
1		<0.05	<0.05	0.795	<0.05	5.01	10.7	8.14	1.12	<0.05	<0.05

Sample numbers correspond to table number 1	Диагноз измерения элементов			
	Pb	Bi	Th	U
3	6162	93.1	2.84	22.6
2	8189	36	3.33	29.9
1	9050	27.9	3.11	36.1

From the results of mass spectrometric (ICP-MS) analysis of the liquid phase (Table 2), obtained after the decomposition of the spent AMC catalyst with nitric acid, it is clear that with an increase in the HNO_3 :AMC ratio from 7:1 to 15:1, the content of trace elements in the liquid phase decreases, for example, Cu: from 1718697 to 1085872 $\mu\text{g/l}$; Zn: from 39347 to 29289 $\mu\text{g/l}$; Co: from 297 to 182 $\mu\text{g/l}$.

Analysis of the solid phase after decomposition showed that the type and state of sediments changed greatly, despite the fact that the mass of sediments of macro-elements (Na, K, Ca, Mg and Al) and micro-elements (Cu, Zn and Co) increased compared to the mass of the initial sediment, which passed into the liquid phase by almost 1.5 times, which was associated with the formation of aluminum hydrate. This was confirmed by the obtained EMF of the samples (Figure 2).

From the elemental composition of the sediment based on EDS, it could be seen that the constituent elements were mainly aluminum and oxygen, which constituted to 41.98 and 49.14%, and the content of Cu and Zn were 3.87 and 3.89%, respectively.

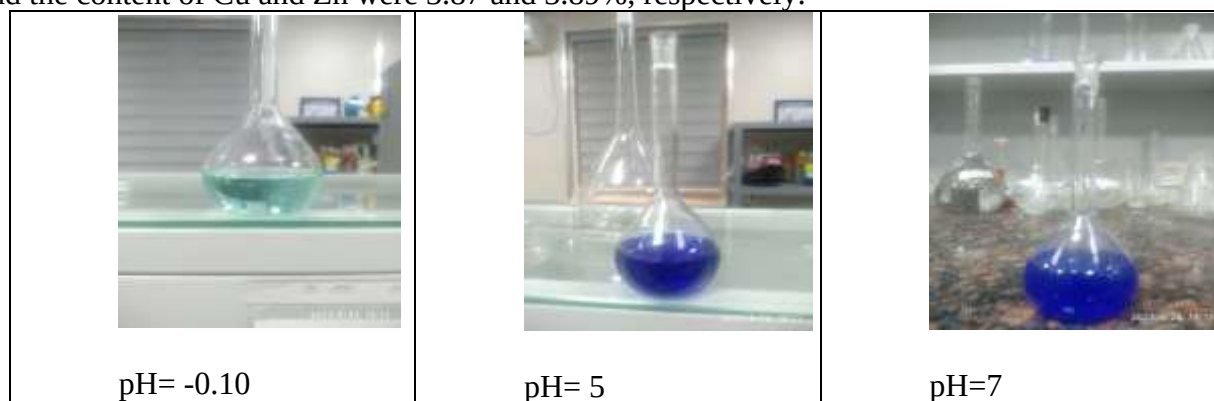


Figure 3. ACB state at different system pH

The concentration of hydrogen ions in the nitric acid extract was -0.10 (Fig. 3). AKV also contained a sufficient amount of heavy metals such as Cr and Pb. Their content was in the range of 2827-4896 and 6162-8050 $\mu\text{m/l}$, respectively. Therefore, to reduce the content of heavy metals in the solutions and microelement-containing complex fertilizers, the resulting AQV was ammoniated in the pH range from 1 to 7, as experiments showed, with ammoniation with an increase of the pH, the color of the resulting solutions changed from slightly blue to dark blue. After reaching $\text{pH}=-6.5$, a sediment appeared in the system.

The results of the ICP analysis of the formed liquid and solid masses were shown in Tables 3 and 4. From Table 4 it follows that at $\text{pH}=-7$ in the liquid phase there was a significant decrease in the Cr content, which were 0.00155%, and the Pb content - 0%. Heavy metals mainly passed into the solid phase.

Table 3

Influence of pH of the system environment on the elemental composition of the liquid phase (according to ICP)

No.	pH	Ratios F: T	Liquid phase mass, g	Mass of solid phase, g
1	5	8.15:1	60.74	7.45
2	7.0	7.32:1	94.88	12.96

Table 4

Elemental composition of the liquid phase of ACV at pH-7

Names samples	Content, wt. %							
	Cu	Zn	Cr	Pb	Ca	Al	Mg	K
Liquid phase	1.67	0.035	0.00155	-	0.088	1.96	-	0.145

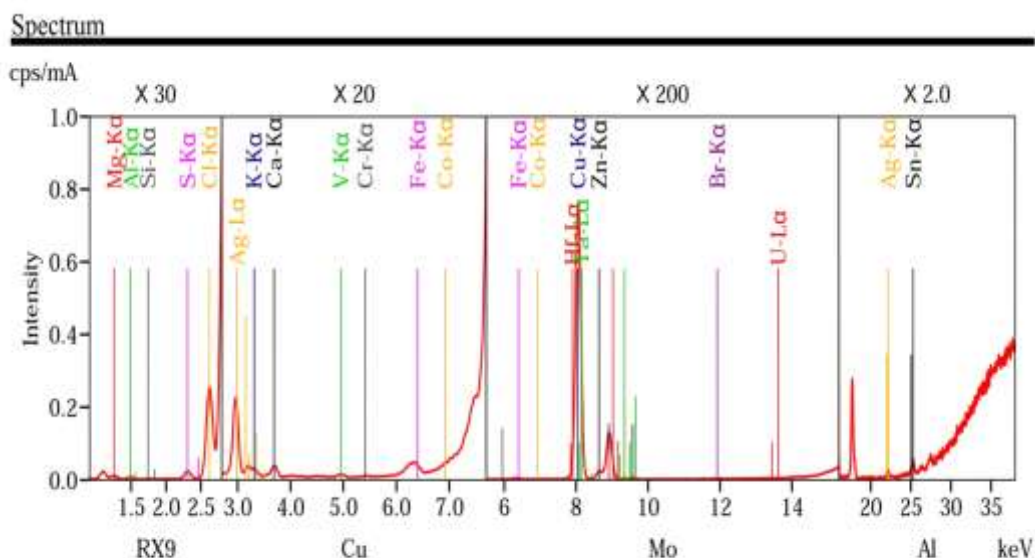


Figure 4. Elemental analysis spectra of the liquid phase

Conclusion. Thus, the process of decomposition of the spent catalysts, crushed to a particle size of 0.010 mm with nitric acid was studied. It has been established that the optimal conditions for the decomposition process were 120 minutes and a 30% concentration acid. The influence of technological parameters on the decomposition process was studied, it was found that with an increase in the HNO_3 :AMC ratio from 7:1 to 15:1, the ratio in the reaction mass increased from 7.5:1 to 8:1 and the filtration rate decreased, the moisture content of the formed sediments was in the range of 10.00- 16.07%. The results of mass spectrometric (ICP-MS) analysis of the liquid phase of AMC after decomposition showed that with an increase in the HNO_3 :AMC ratio from 7:1 to 15:1, the content of trace elements in the liquid phase decreased, and the solid phase after decomposition changed greatly.

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Rezyume: Mikroelementlar bilan murakkab TPK o'g'itlarini olish jarayonini fizik-kimyoviy asoslash uchun katalizatorlar parchalanganidan keyin hosil bo'lgan nitrat kislota ekstraktini (AQV) ammiak gazi bilan ammonizatsiya qilishning fizik-kimyoviy xususiyatlari va jarayoni o'rganildi. HNO₃:AMS nisbati 7:1 dan 15:1 gacha ko'tarilganda, reaksiya massasidagi nisbat 7.5:1 dan 8:1 gacha ko'tariladi va filtrlash tezligi pasayadi, hosil bo'lgan yog'ingarchilikning namligi 10.00-16.07% oralig'ida bo'ladi. Olingan AKV 1 dan 7 gacha bo'lgan pH oralig'ida ammonlashtirildi va tajribalar shuni ko'rsatdiki, pH oshishi bilan ammonizatsiya qilinganida, hosil bo'lgan eritmalarining rangi zaif ko'kdan to'q ko'k ranggacha o'zgaradi. PH-6.5 ga erishgandan so'ng, tizimda cho'kma paydo bo'ladi.

Резюме: Для физико-химического обоснования процесса получения сложных НРК-удобрений с микроэлементами были изучены физико-химические свойства и процесс аммонизации газообразным аммиаком полученной азотнокислотной вытяжки (АКВ) после разложения катализаторов. Установлено, что при повышении соотношения HNO₃:АМЦ от 7:1 до 15:1 соотношение в реакционной массе повышается от 7.5:1 до 8:1, а скорость фильтрации снижается, влажность образованных осадков находится в пределах 10.00-16.07 %. Полученную АКВ аммонизировали в интервале рН от 1 до 7, и как показали эксперименты, при аммонизации с повышением рН цвет образованных растворов изменяется от слабо синего до темно синего. После достижения рН-6.5 в системе появляется осадок.

Kalit so'zlar: Katalizator, o'g'it, Niap 01-01, mikroelement, konsentratsiya, ammonizatsiya, harorat, suspenziya.

Ключевые слова: Катализатор, удобрение, Ниап 01-01, микроэлемент, концентрация, аммонизация, температура, суспензия.

UDC 541.123.3

POLYTHERM OF SOLUBILITY OF AMMONIUM SALT OF PHOSPHORIC AND 2-CHLOROETHYLPHOSPHONIC ACID IN AN AQUEOUS SYSTEM

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Summary: The article presents the solubility polytherm of the system 2-chloroethylphosphonic acid - ammonium dihydrogen phosphate - water from the temperature of complete freezing -49.9°C to 90°C . The system was examined using nine internal sections. The eutectic point of the system has been established, corresponding to the joint crystallization of ice, 2-chloroethylphosphonic acid, α - and ammonium dihydrogen phosphate. On the phase diagram, solubility isotherms are plotted every 10°C .

Due to the good solubility of 2-chloroethylphosphonic acid in this system, it has a greater salting-out effect on ammonium dihydrogen phosphate than the latter on 2-chloroethylphosphonic acid.

Key words: solubility polytherm, system, ammonium dihydrogen phosphate, 2-chloroethylphosphonic acid, temperature, diagram, crystallization.

Introduction. Cotton growing is one of the most important branches of agriculture. In improving and enhancing the structure of raw cotton production with high technological qualities, pre-harvest defoliation of cotton with the help of chemicals called defoliant plays an extremely important role. Defoliation is the artificial removal of leaves, usually using chemicals. Defoliation is carried out using defoliant chemicals, which cause processes in plants similar to those occurring during the natural aging of leaves [1,2]. Timely treatment of cotton with defoliant causes leaf fall, accelerates the ripening and opening of mature bolls, and increases the harvest of the first varieties before frost [3,4]. Cotton, as a deciduous plant, is very sensitive to ethylene [5-9] and sheds its leaves under the influence of this substance. In this regard, it seems more promising to use compounds that can decompose in plants to form ethylene as defoliant. Such ethylene producers include 2-chloroethylphosphonic acid. 2-chloroethylphosphonic acid and its salts with various bases are defoliant and stimulants for the opening of cotton bolls. When phosphate salts are introduced into the composition of 2-chloroethylphosphonic acid, its physiological activity increases [10].

Based on the above, we studied the interaction of components in an aqueous system with the participation of 2-chloroethylphosphonic acid and ammonium dihydrogen phosphate in a wide range of temperatures and concentrations using the visual-polythermal method [11].

Methods and materials. The objects of study are ammonium dihydrogen phosphate and 2-chloroethylphosphonic acid. Ammonium dihydrogen phosphate of the reagent grade was used in the work, and a 50% solution of 2-chloroethylphosphonic acid is obtained according to TU 6-00-0210054-006-90 [12].

To study the solubility of components in the system, a visual-polythermal method was used, the error of which is $\pm 0.50^{\circ}\text{C}$ [11,13].

The essence of the visual-polythermal method is visual observation of the temperature of the appearance of the first crystals with uniform and slow cooling or the disappearance of the last crystals with uniform heating and continuous stirring of the solutions. The device for determining solubility is a test tube closed with a stopper, a glass stirrer, and a thermometer with a division value of 0.10°C . For uniform cooling, the test tube is placed in an outer tube - a coupling - located in the cooling mixture. Heating is also carried out through the coupling. Cooling is carried out in dewar

flasks with liquid nitrogen. Elemental analysis for carbon, nitrogen and hydrogen was carried out accordingly [14].

Results and discussion. For the physicochemical substantiation of the process of synthesis of ammonium salt of phosphoric acid used as additives to ethylene-producing defoliants, it is of interest to study the behavior of 2-chloroethylphosphonic acid and ammonium dihydrogen phosphate in an aqueous system.

To characterize the behavior of the source components when they are present together in a wide concentration and temperature range, the solubility in the system 2-chloroethylphosphonic acid – ammonium dihydrogen phosphate – water from the temperature of complete freezing, which is from -49.90°C to 900°C was studied.

The binary systems 2-chloroethylphosphonic acid – water, ammonium dihydrogen phosphate – water have been considered by a number of authors [15,16]. The data we obtained are in good agreement with the literature. The polythermal solubility curve of the 2-chloroethylphosphonic acid - water system consists of crystallization branches of the source components intersecting at the cryohydrate point 50.4% $\text{ClCH}_2\text{CH}_2\text{PO}(\text{OH})_2$ and 49.6% H_2O at -47.00°C, and the ammonium dihydrogen phosphate - water system is 18.0% $\text{NH}_4\text{H}_2\text{PO}_4$ and 82.0% H_2O at -4.20°C.

The fusibility diagram of the 2-chloroethylphosphonic acid – ammonium dihydrogen phosphate system shows the liquidus lines of the source components intersecting at the eutectic point: 82.2% $\text{ClCH}_2\text{CH}_2\text{PO}(\text{OH})_2$ and 17.8% $\text{NH}_4\text{H}_2\text{PO}_4$ at 32.80°C.

The solubility polytherm of the 2-chloroethylphosphonic acid – ammonium dihydrogen phosphate – water system was studied using nine internal sections. Based on the data of polytherms of binary systems and internal sections, a polythermal solubility diagram of this system was constructed, on which the crystallization fields of ice, 2-chloroethylphosphonic acid, α - and ammonium dihydrogen phosphate are delimited.

The eutectic point of the system has been established, corresponding to the joint crystallization of ice, 2-chloroethylphosphonic acid, α - and ammonium dihydrogen phosphate.

On the phase diagram, solubility isotherms are plotted every 100°C. Projections of polythermal solubility curves onto the corresponding water lateral sides of the system were constructed. Most of the polythermal solubility diagram is occupied by the crystallization field of ammonium dihydrogen phosphate due to its low solubility relative to other components of the system. With an increase in the concentration of 2-chloroethylphosphonic acid to 36.0%, the solubility of ammonium dihydrogen phosphate in the system increases slightly up to 300°C, and above 36.0% it decreases.

When the starting components are present together, their solubility in water decreases, i.e. In the system, a mutual salting out effect of 2-chloroethylphosphonic acid and ammonium dihydrogen phosphate on each other is observed. Moreover, due to the good solubility of 2-chloroethylphosphonic acid in this system, it has a greater salting effect on ammonium dihydrogen phosphate than the latter on 2-chloroethylphosphonic acid, which is clearly seen from the data presented in Table. 1.

Table 1

Salting out coefficient of components in the system 2-chloroethylphosphonic acid – ammonium dihydrogen phosphate – water

Temperature, °C	Salting coefficient	
	2-chloroethylphosphonic acid to ammonium dihydrogen phosphate	Ammonium dihydrogen phosphate to 2-chloroethylphosphonic acid
0	-	0.0636

10	0.0719	0.0548
20	0.1613	0.0331
30	0.2318	0.0037

Conclusion. According to the data presented, the formation of new chemical compounds based on the source components does not occur in the system under study. The system belongs to the simple eutonic type. The temperature range, which is from -49.9°C to 32.80°C , corresponds to the joint crystallization of 2-chloroethylphosphonic acid with ammonium dihydrogen phosphate from an equilibrium solution. Above 32.80°C , pure components crystallize from the equilibrium liquid phase.

In this case, the salting out effect of 2-chloroethylphosphonic acid on ammonium dihydrogen phosphate increases as the temperature increases, while the salting effect of ammonium dihydrogen phosphate on 2-chloroethylphosphonic acid, on the contrary, changes in the opposite order. The data obtained indicate a complex nature of the mutual solubility of the components in the system under study.

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Rezyume: Maqolada 2-xloroetilfosfon kislota - ammoniy digidrofosfat – suv sistemasining to'liq muzlash haroratidan $-49,9^{\circ}\text{C}$ dan 90°C gacha bo'lgan eruvchanlik politermasi ko'rsatilgan. Sistema to'qqizta ichki bo'lim yordamida tekshirildi. Muz, 2-xloroetilfosfon kislota, α - va ammoniy digidrofosfatning birgalikda kristallanishiga mos keladigan sistemaning evtektik nuqtasi o'rnatildi. Faza diagrammasida eruvchanlik izotermalari har 10°C da chizildi.

Ushbu tizimda 2-xloroetilfosfon kislota yaxshi eruvchanligi tufayli, ammoniy digidrofosfat 2-xloroetilfosfon kislota qaraganda ko'proq tuzlashnash ta'siriga ega.

Резюме: В статье представлена политерма растворимости системы 2-хлорэтилфосфоновая кислота – дигидрофосфат аммония – вода от температуры полного замерзания -49.9°C до 90°C . Система исследована с помощью девяти внутренних разрезов. Установлено эвтектическая точка системы, отвечающая совместной кристаллизации льда, 2-хлорэтилфосфоновой кислоты, α - и дигидрофосфат аммония. На диаграмме состояния через каждые 10°C нанесены изотермы растворимости.

Благодаря хорошей растворимости 2-хлорэтилфосфоновой кислоты в данной системе он оказывает большей степени высаливающее действие на дигидрофосфат аммония, чем последние на 2-хлорэтилфосфоновую кислоту.

Kalit so'zlar: eruvchanlik politermasi, sistema, ammoniy digidrofosfat, 2-xloroetilfosfon kislota, harorat, diagramma, kristallanish.

Ключевые слова: политерма растворимости, система, дигидрофосфат аммония, 2-хлорэтилфосфоновая кислота, температура, диаграмма, кристаллизация.

UDK. 661.662:661.56

OBTAINING FERTILIZER PRECIPITATE FROM PHOSPHORITES WITHOUT SEPARATION OF INSOLUBLE RESIDUES

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Summary: *Central Kyzylkum phosphate raw materials are burned at a high temperature in the process of phosphorite concentrate, and a large amount of waste containing phosphorus is formed - mineralized mass. Due to this, in our research, methods of obtaining simple phosphorus fertilizer - fertilizer precipitates from MM and low-quality phosphorites (phosphorite uni-FU) without separating the insoluble residues contained in them have been revealed.*

Key words: *Hydrocarbon, gasoline, diesel fuel, propane / butane mixture, catalyst, platinum, palladium, a metal oxide, cobalt oxide, Nickel oxide, aluminium oxide, manganese oxide, carbon monoxide, oxide of cadmium.*

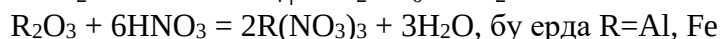
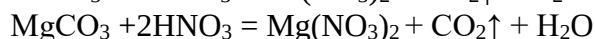
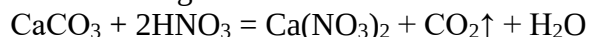
There is a lack of scientific research on obtaining simple phosphorus fertilizers by processing phosphate raw materials of Central Kyzylkum with nitric acid. It should be emphasized again that large amounts of phosphorus-containing waste - mineralized mass (MM) is formed during the process of phosphorite concentrate by burning MQ phosphate raw materials at high temperature. Therefore, in our research, we used MM and low-quality phosphorite (phosphorite uni-FU) to obtain simple phosphorus fertilizer - fertilizer precipitates without separating the insoluble residues contained in them [1-3].

Mineralized mass and low-quality phosphorite flour were used for experiments conducted in laboratory conditions. At the beginning of the experiments, MM was decomposed with nitric acid, in which unconcentrated nitric acid (TSh 00203068-08:2013) was used. It is known that during the decomposition of high-carbon phosphorites, large amounts of foam appear, and this situation has a negative effect on the productivity of reactors and significantly reduces the productivity of obtaining fertilizers[4,5]. To minimize this situation, the phosphorites were treated with nitric acid as a solid phase medium.

In experiments, nitric acid 45; 50 and 55% solutions were used. The amount of this acid was taken as 100% relative to the amount of complete conversion of calcium oxide in phosphorite to calcium nitrate. In this case, the following reaction is observed:



The following additional reactions also occur:



18-20% suspensions of calcium hydroxide were used to precipitate phosphoric acid contained in mobile suspension in the form of brushite ($\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$) by adding a certain amount of water to the resulting slurry containing phosphoric acid, calcium nitrate and insoluble residue. The pH values of the environment at the time of deposition are 2.5; 3.0; 3.5; 4.0; 4.5; 5.0; The cases when 5.5 and 6.0 are equal were studied. The precipitated suspensions formed are filtered through a Buchner vacuum funnel and separated into precipitate (solid phase) and calcium nitrate solution (liquid phase). Wet precipitates are dry precipitate: $\text{N}_2\text{O}=1.0:2.5$ and $1.0:2.0$ or boiling water (80- 90°C) is washed twice. Samples of wet fertilizer precipitate formed from washing are dried at a temperature of 80-90°C. Samples of dried fertilizer precipitate were analyzed according

to the methods given in § 2.2.2. The results of obtaining a simple phosphorus fertilizer - precipitate from MM are presented in Table 1.

Table 1

The main chemical composition of the precipitates obtained at different concentrations of nitric acid and pH of the solution

№	pH	Composition of precipitates, %								P ₂ O ₅ %
		P ₂ O ₅	2-% P ₂ O ₅ жыл.	CaO	2-% CaO	CaO	N	$\frac{2\text{-}\% P_2O_5 \text{ жыл}}{P_2O_5 \text{ жыл}}$	$\frac{2\text{-}\% CaO \text{ жыл}}{CaO \text{ жыл}}, \%$	
HNO ₃ concentration - 45%										
1	2,5	19,31	18,95	20,42	20,01	6,29	1,57	98,14	97,99	14,95
2	3,0	20,56	19,53	21,62	20,34	5,11	1,27	94,99	94,08	10,29
3	3,5	21,47	19,78	22,25	20,27	3,84	0,99	92,13	91,10	8,06
4	4,0	22,35	19,92	23,57	20,80	2,56	0,85	89,13	88,25	6,01
5	4,5	23,26	20,05	24,66	21,21	1,68	0,56	86,20	86,01	4,99
6	5,0	24,15	20,14	26,57	21,94	1,26	0,47	83,39	82,57	3,75
7	5,5	24,99	19,71	28,74	22,42	1,11	0,42	78,87	78,01	3,05
8	6,0	25,25	18,94	29,80	22,09	1,05	0,39	75,00	74,13	2,51
HNO ₃ concentration - 50%										
9	2,5	19,22	18,90	20,48	20,09	6,35	1,63	98,34	98,10	13,86
10	3,0	20,46	19,48	21,69	20,42	5,16	1,31	95,21	94,14	9,25
11	3,5	21,38	19,74	22,36	20,40	3,89	1,05	92,33	91,23	7,81
12	4,0	22,27	19,99	23,70	20,96	2,60	0,89	89,76	88,44	5,82
13	4,5	23,18	20,03	24,78	21,36	1,72	0,60	86,41	86,20	4,56
14	5,0	24,09	20,14	26,71	22,08	1,30	0,51	83,60	82,67	3,42
15	5,5	24,90	19,67	28,83	22,54	1,14	0,45	78,99	78,18	2,86
16	6,0	25,09	18,87	29,91	22,20	1,08	0,42	75,21	74,22	2,23
HNO ₃ concentration - 55%										
17	2,5	19,12	18,84	20,56	20,19	6,40	1,68	98,54	98,20	12,88
18	3,0	20,28	19,35	21,75	20,51	5,20	1,35	95,41	94,30	8,98
19	3,5	21,27	19,68	22,42	20,48	3,93	1,10	92,52	91,35	7,49
20	4,0	22,21	19,89	23,76	21,06	2,64	0,95	89,55	88,64	5,61
21	4,5	23,11	20,02	24,84	21,45	1,76	0,64	86,63	86,35	4,26
22	5,0	24,01	20,02	26,75	22,17	1,33	0,51	83,38	82,88	3,28
23	5,5	24,79	19,61	28,87	22,60	1,17	0,47	79,10	78,28	2,71
24	6,0	24,95	18,80	29,96	22,28	1,11	0,44	75,35	74,37	2,11

It can be seen from the given results that the R₂O₅ in the precipitate formed when the pH of the suspensions increased from 2.5 to 6.0 while the concentration of nitric acid was the same. the amount is observed to increase. For example, total R₂O₅ in phosphorous fertilizers obtained when

the pH of the medium increases from 2.5 to 6.0 at a concentration of 45% nitric acid. The value of increases from 19.31 to 25.25%.

CaO. and the amount reaches from 20.42 to 29.80%. The amounts of absorbed forms of P_2O_5 and CaO in 2% citric acid in the obtained fertilizers are in the range of 18.94-20.14% and 20.01-22.42%, respectively, that is, their relative values are 75.00-98, 14% and 74.13-97.99% lies in the intervals, and in general, the amount of absorbed form decreases. CaO and the amount of nitrogen decreases from 6.29 to 1.05% and from 1.57 to 0.39%, respectively. Relative values of P_2O_5 , CaO and the decrease in the amount of nitrogen indicates a more complete course of the reaction, that is, the formation of $CaHPO_4 \cdot 2H_2O$ as a product increases.

The transition rates of P_2O_5 into solutions, that is, its wastage, are reduced from 14.95 to 2.51%. The same pattern is observed in other concentrations of nitric acid. If we look at the effect of the concentration of nitric acid, the total P_2O_5 content of the phosphorus fertilizer obtained at 45, 50 and 55% concentrations of the medium at a pH of 2.5. amounts of 19.31 respectively; equal to 19.22 and 19.12%. At 3.0 pH value of the solution medium, these amounts are 20.56, respectively; It can be seen that it is equal to 20.46 and 20.28%.

Total P_2O_5 in the precipitates obtained as the values of the dissolution medium increased. is observed to increase, and this situation can be explained by the transfer of the total amount of phosphorus to the composition of the fertilizer, that is, by the reduction of its wastage. In general, P_2O_5 in fertilizers obtained when the acid concentration increases. there is a slight decrease in the amount of . In addition, CaO in fertilizer samples obtained with increasing acid concentration. a slight increase in value is observed.

Concentrations of nitric acid and pH environments of the solution were studied in obtaining simple phosphorus fertilizer precipitates by processing mineralized mass and low-quality phosphorite flour with nitric acid, which is a waste of the high-temperature enrichment technology of central Kyzylykum phosphorites. It can be seen from the obtained results that all concentrations of nitric acid and values of pH equal to 5.0 and 5.5 can be considered acceptable values.

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Rezyume: Fosforit konsentratini olish jarayonida Markaziy Qizilqum hududidan fosfat xomashyosi yuqori haroratda kuydiriladi, natijada tarkibida fosfor bo'lgan ko'p miqdorda chiqindilar – minerallashgan massa hosil bo'ladi. Shu tufayli bizning tadqiqotlarimiz oddiy fosforli o'g'itlar – MM dan o'g'itlar va ular tarkibidagi erimaydigan qoldiqlarni ajratmagan holda past sifatli fosforitlar (fosforit uni-FU) olish usullarini aniqladi.

Резюме: В процессе получения фосфоритового концентрата фосфатное сырье Центральных Кызылкумов обжигается при высокой температуре, при этом образуется большое количество отходов, содержащих фосфор – минерализованная масса. Благодаря этому в наших исследованиях выявлены способы получения простых фосфорных удобрений - удобрений из ММ и низкокачественных фосфоритов (фосфоритных уни-ФУ) без отделения содержащихся в них нерастворимых остатков.

Kalit so'zlar: Uglevodorod, benzin, dizel yoqilg'isi, propan/butan aralashmasi, katalizator, platina, palladiy, metall oksidi, kobalt oksidi, nikel oksidi, alyuminiy oksidi, marganets oksidi, uglerod oksidi, kadmiy oksidi.

Ключевые слова: Углеводород, бензин, дизельное топливо, смесь пропан/бутан, катализатор, платина, палладий, оксид металла, оксид кобальта, оксид никеля, оксид алюминия, оксид марганца, оксид углерода, оксид кадмия.

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ACTIVITY AND SELECTIVITY OF THE CATALYST FOR THERMOCATALYTIC SENSOR OF HYDROGEN SULFIDE.

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Summary: *The results of experiments studied the activity, selectivity and stability of catalysts based on metal oxides with the additive and without the addition of Pt and Pd in the oxidation process of hydrocarbons.*

Experiments on the oxidation of combustible gases on different catalysts show the possibility of manufacturing the selective catalytic thermal sensors for detection of hydrocarbon vapors from industrial gaseous emissions (from the emissions of boilers, furnaces, exhaust gases, etc.)

Key words: *Hydrocarbon, gasoline, diesel fuel, propane / butane mixture, catalyst, platinum, palladium, a metal oxide, cobalt oxide, Nickel oxide, aluminium oxide, manganese oxide, carbon monoxide, oxide of cadmium.*

Exhaust flue gases from combustion plants, exhaust gases from internal combustion engines and gaseous emissions from chemical technological processes, where constant control of the amount of carbon monoxide and hydrocarbons is required, is a complex multicomponent mixture containing water vapor, nitrogen and sulfur oxides that can poison oxide catalysts [1]. In this regard, special requirements are imposed on the catalyst of thermocatalytic sensors CO and CnHm.

When studying the catalytic activity in relation to the reaction of complete oxidation of hydrocarbons, we found that the highest degree of oxidation is achieved in the presence of a CoO-based catalyst where at 400 °C the degree of gasoline conversion is 89.5%. Complete 100% oxidation of hydrocarbons (gasoline vapors) in the presence of the most active metal oxides is achieved only at temperatures above 400°C.

The use of high-temperature catalysts in the thermocatalytic method leads to a reduction in the operating life of the sensor [2, 3]. As was noted, maintaining high activity and service life of catalysts can be achieved by introducing Pt, Pd, etc. into their composition [4]. An analysis of literature data and preliminary experimental studies shows that the most promising thermocatalytic sensor catalyst for determining hydrocarbons in exhaust and flue gases are: oxides of cobalt, manganese, nickel, etc. with the addition of platinum group metals [2-4].

During experiments on selecting a catalyst for a low-temperature thermocatalytic hydrocarbon sensor, the catalytic characteristics of the following systems were studied: Pt/Al₂O₃, Pd/Al₂O₃, Pt-NiO/Al₂O₃, Pt-MnO₂/Al₂O₃, Pt-CoO/Al₂O₃, Pt-CoO-MnO₂/Al₂O₃, Pt-CoO-NiO/Al₂O₃, Pt-NiO-MnO₂/Al₂O₃.

The catalysts used in the work were pre-activated by heat treatment at 700 °C for 4 hours. Considering that the pre-treated catalyst may initially have a reduced or, conversely, increased activity, which can cause underheating or overheating, leading to undesirable physical and chemical changes, therefore, catalyst training was required. In this regard, before starting work, uninvestigated catalysts were trained under conditions limiting the reaction rate: at low temperature (150 °C and 300 °C) and low feed rate of the vapor-gas mixture. In the experiments, the mass of the catalyst loaded into the reactor was 10 g, onto the surface of which a vapor-gas mixture was supplied at a speed of 10 l/h. Experiments to study the activity and stability of catalysts for the oxidation of hydrocarbons were carried out at a temperature of 150-450 °C, a steam-gas mixture supply rate of 10 l/h and a vapor content of PBS - 0.25 vol%, gasoline - 0.23 vol%, diesel fuel - 0.18 rev. %.

The results obtained show that on the studied catalysts, temperatures ensuring complete (100%) oxidation of AI-92 gasoline vapors have the following values: Pt/Al₂O₃-250⁰C; Pt-CoO-MnO₂/Al₂O₃-300⁰C; Pt-CoO/Al₂O₃-350⁰C; Pd/Al₂O₃-350⁰C; Pt-NiO-MnO₂/Al₂O₃ -400⁰C; Pt-MnO₂/Al₂O₃ - 400⁰C; Pt- NiO-CoO-/Al₂O₃ -450 ⁰C; Pt-NiO/Al₂O₃ more than 450⁰C. Low yields of carbon dioxide were obtained on the Pt-NiO/Al₂O₃ catalyst, which indicates incomplete oxidation of hydrocarbons under the selected conditions. The increase in the temperature of complete oxidation of diesel fuel on selected catalysts compared to gasoline and PBS is explained by the fact that diesel fuel contains a large amount of hydrocarbons of various classes, which are characterized by a low oxidation rate.

The activity of the Pt-NiO/Al₂O₃, catalyst is lower than that of Pt/Al₂O₃, Pt-CoO/Al₂O₃, but this catalyst is more stable. The catalysts Pt/ Al₂O₃, Pt-CoO/ Al₂O₃, Pt-CoO-MnO₂/Al₂O₃ are characterized by high activity and stability under the conditions studied. In the presence of these catalysts, the degree of deep oxidation of gasoline at a temperature of 325 ⁰C and a mixture feed rate of 10 l/h is 99.5-100.0%. These catalysts retained their original activity almost constantly during 1500 hours of operation. The studied catalysts for the oxidation of hydrocarbons can be arranged in the following sequence in terms of operational stability: Pt/Al₂O₃>Pt-CoO-MnO₂/Al₂O₃>Pt-CoO/Al₂O₃>Pd/Al₂O₃>Pt-NiO-MnO₂ /Al₂O₃>Pt-MnO₂/Al₂O₃>Pt-CoO-NiO/Al₂O₃>Pt-NiO/Al₂O₃. The results of studying the activity of catalytic systems during the oxidation of hydrocarbons show that for the thermocatalytic determination of hydrocarbons (PBS vapors, gasoline and diesel fuel in exhaust and flue gases, it is more advisable to use the following catalysts: Pt/Al₂O₃, Pt-CoO-MnO₂/Al₂O₃. Therefore, all further experiments were carried out on them.

The influence of the initial hydrocarbon products (diesel fuel and gasoline vapors) and oxygen on the oxidation of hydrocarbons was studied in the presence of Pt/Al₂O₃ and Pt-CoO-MnO₂/Al₂O₃ catalysts in the temperature range 250-350 ⁰C. The experiments were carried out in the range of hydrocarbon concentrations of 500 - 2500 ppm and oxygen concentrations of 10, 21 and 99 vol.%. When studying the effect of oxygen concentration, a mixture of oxygen (O₂ -10 vol.%) and nitrogen (up to 90 vol.%), air (O₂ -21 vol.%) and technical oxygen (O₂ -99 vol.%) were used as an oxidizing gas. %). Experiments have shown that in the studied concentration range, oxygen in the mixture does not have a significant effect on the degree of fuel oxidation.

In the presence of Pt-CoO-MnO₂/Al₂O₃ at a temperature of 350 ⁰C in the range of gasoline vapor concentrations of 500 - 1500 ppm, ~100% conversion of gasoline, diesel fuel and PBS vapors is observed. Consequently, the oxidation rate under these conditions is of zero order in relation to the studied concentrations of fuel vapor and oxygen. The results obtained are of particular importance if we keep in mind that the technique will be recommended for determining the concentration of petroleum product vapors in the exhaust gases of internal combustion engines and in the air near gas stations , KZP, oil depots, etc.

As is known, each combustible substance has its own specific oxidation temperature with atmospheric oxygen, which can be used to ensure selectivity of the catalytic oxidation of combustible substances on the surface of thermosensitive elements, using catalysts of the same composition. Our research has shown that the use of this method of ensuring selectivity involuntarily clutters and complicates the design of the device due to the use of two autonomous power supplies [4,5].

In this regard, in our work we used a method for ensuring the selectivity of thermocatalytic methods, based on the use of thermosensitive elements - sensors containing catalysts with different activities towards the components of the gas mixture. In this case, the output signal of the first element is proportional to the total concentration of hydrogen, carbon monoxide and hydrocarbons (methane, gasoline vapor, diesel fuel, etc.), the output signal of the second element is proportional only to the concentration of hydrogen and carbon monoxide, and the difference between the signals

of the first and second elements is proportional to the concentration of the determined hydrocarbon component.

When developing selective thermocatalytic hydrocarbon sensors based on the use of measuring and compensation elements containing catalysts with inadequate activity to different components of the gas mixture, it was found that Pd-NiO /Al₂O₃ can be used as a comparative element catalyst. As we have found, in the presence of this catalyst, 100% oxidation of hydrogen and carbon monoxide in the presence of hydrocarbons is ensured. As a result of the experiments, highly efficient (active and stable) catalysts were selected for comparative (Pd-NiO/Al₂O₃) and measuring (Pt-CoO-MnO₂/Al₂O₃) sensitive elements of the TCS of hydrocarbons and optimal conditions for the oxidation of gasoline, diesel fuel and PBS vapors, optimal oxidation conditions which in the range of their concentrations 500 - 1500 ppm are the temperature of 275-350 °C and the rate of supply of the vapor-gas mixture to the surface of the catalyst, no more than 15 l/h.

Conclusion. As a result of the experiments, the activity, selectivity and stability of metal oxides with and without the addition of Pt and Pd in the process of hydrocarbon oxidation were studied. A selective method for thermocatalytic monitoring of carbon monoxide and hydrocarbons in a wide range of their concentrations in exhaust, flue and process gases has been developed.

Experiments carried out on the oxidation of flammable gases on various catalysts show the possibility of manufacturing selective thermocatalytic sensors for determining carbon monoxide and hydrocarbon vapors from industrial gaseous emissions (from boiler installations, roasting furnaces, vehicle exhaust gases, etc.).

When developing selective thermocatalytic sensors for hydrocarbons based on the use of measuring and compensation elements containing catalysts with inadequate activity to different components of the gas mixture, it was found that for the thermocatalytic determination of hydrocarbons in exhaust and flue gases, it is more expedient to use the following catalysts as a catalyst for the measuring sensitive element of the sensor: Pt/Al₂O₃, Pt-CoO-MnO₂/Al₂O₃.

Pd-NiO/Al₂O₃ can be used as a comparative element catalyst. As we have found, in the presence of this catalyst, 100% oxidation of hydrogen and carbon monoxide in the presence of hydrocarbons is ensured.

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Rezyume: *Eksperimental natijalar asosida uglevodorod oksidlanish jarayonida Pt va Pd qo'shilgan va qo'shilmagan metall oksidlari asosidagi katalizatorlarning faolligi, selektivligi va barqarorligi o'rganildi.*

Yonuvchan gazlarni turli katalizatorlarda oksidlash bo'yicha tajribalar sanoat gazlari chiqindilaridan (qozonlardan, pechlardan, chiqindi gazlardan va boshqalardan) uglevodorod bug'larini aniqlash uchun selektiv katalitik issiqlik sensorlarini ishlab chiqarish imkoniyatini ko'rsatadi.

Резюме: По результатам экспериментов изучена активность, селективность и стабильность катализаторов на основе оксидов металлов с добавкой и без добавки Pt и Pd в процессе окисления углеводородов.

Эксперименты по окислению горючих газов на различных катализаторах показывают возможность изготовления селективных каталитических термосенсоров для обнаружения паров углеводородов из промышленных газовых выбросов (из выбросов котлов, печей, выхлопных газов и т.п.)

Kalit so'zlar: Uglevodorod, benzin, dizel yoqilg'isi, propan/butan aralashmasi, katalizator, platina, palladiy, metall oksidi, kobalt oksidi, nikel oksidi, alyuminiy oksidi, marganets oksidi, uglerod oksidi, kadmiy oksidi.

Ключевые слова: Углеводород, бензин, дизельное топливо, смесь пропан/бутан, катализатор, платина, палладий, оксид металла, оксид кобальта, оксид никеля, оксид алюминия, оксид марганца, оксид углерода, оксид кадмия.

GROWTH OF KARAKALPAK LOCAL WHEAT VARIETIES AND THE FACTORS AFFECTING THEM

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Summary: *This article describes the development of local wheat varieties in Karakalpakstan and the variables that influence them. Its flour, which is primarily formed of gluten and has a high protein and carbohydrate content, is used to make bread of superior quality. After being processed, wheat groats are utilized in the pasta and candy sectors, and their leftovers are valued as premium feed. The productivity of the wheat type, which is farmed throughout the world, varies according to factors including temperature, light, water, and dietary habits. Wheat development is specifically impacted by alterations in the climate of the Republic of Karakalpakstan and biological elements.*

Key words: *Wheat bread, Food quality, Protein and starch, Use in pasta and confectionery industry, Productivity, Climate and food regime.*

Among the most widely grown cereal crops is wheat. More over half of all people in the planet eat wheat bread. Abundant-quality bread is created from wheat because it is abundant in protein and starch, with the majority of protein elements found in gluten. Wheat bread is prized for its flavor and ease of digestion. Protein content in wheat grains ranges from 11.0% to 18–19%, depending on the variety and growth environment. Wheat bread has a 95% digestion rate for protein. Furthermore, wheat grain is used to make groats; its flour is utilized in the pasta and confectionery industries; wheat chaff and straw are given to cattle; and the waste from threshing is used to make high-quality feed [2, 5–10].

Through this process, wheat grains are converted into a variety of substances, including alcohol, starch, gluten, dextrin, and glue. A number of countries, including Canada, Argentina, France, India, China, the United States of America, and Russia, are major wheat-growing nations.

Autumn wheat yield is a variable indication that is influenced by the biological traits of the variety, weather patterns, water, light, and agrotechnological practices used in the feeding schedule. The production and grain quality of autumn wheat are strongly impacted by every environmental element. The total yield of plants in a given unit is called productivity. The productivity of a single plant declines with increasing bush thickness, although output does increase somewhat. In this instance, the maximum yield is obtained by optimizing the number of plants per unit space, after which the yield is seen to gradually decline.

Under the influence of light, any crop, regardless of variety, grows and develops to become its matching crop. However, crops and their types respond differently to light and light in general.

The growth of wheat types planted in the southern areas of the republic is impacted by the climate of the Republic of Karakalpakstan, which includes water scarcity, salinity of the soil, and abrupt changes in the ecological situation due to the influence of the Aral issue. Features of the local wheat varieties Zemnitsa and Shortonbay during growing

№	Wheat variety	1000 weight,gr	Amount of protein %	Amount of gluten %	indicator indicator
1	Shortonbay	46,4	14,3	25,9	92,9
2	Zemnitsa	47,4	13,2	21,4	97,7

This circumstance has led to the beginning of scientific and applied research on the manufacturing of high-quality meals in Karakalpakstan using wheat flour and bread products.

Local wheat cultivars in several parts of the Republic of Karakalpak contain insufficient amounts of protein. Therefore, the development of wheat types high in protein that are appropriate for the population's consumption of baked goods continues to be a challenge.

Furthermore, there is a deficiency in protein intake from food, as well as in some physiological consumption of protein and physiologically active substances [4, 15]. It is well known that one of the most pressing problems in the storage and processing of agricultural goods is the creation of nutrient-dense, physiological food items that are essential to human health and the preservation of functionality based on cutting-edge, creative processing methods.

In dry ground, the soil is plowed down to a depth of 20–22 cm, and in wet land, up to 28–30 cm. It is advised to use a spring plow to plow fields extensively contaminated with weeds 40–45 cm in the first year, 20–25 cm in the second year, and an additional 40–45 cm in the third year, taking into consideration the state of the soil and the depth of plowing in previous years. Sorghum, root remnants, weed seeds, disease sources, and pest fungus transform into fully developed humus in the deep layer for two years, during which time the soil's overall structure is partially recovered. The soil fertility, seed quality, and production are all increased by this tillage strategy. Such intense driving should be repeated every three years.

The speed and technique of planting determine the bush's thickness. The number of plants, branching, productivity, and mass of 1000 seeds all drop with increasing planting rate, yet productivity can rise. In this instance, the grains are uniform and the crop is primarily developed at the cost of the main stem. Second and subsequent stems arise when clumping increases in a sparse field (wide rows, ribbons). Although they contain a mass of 1000 seeds instead of many grains, a single plant can produce more.

The highest-grade seed is created prior to the fullest possible crop production. For instance, 4 million hectares of autumn wheat that is irrigated. The largest yield was noted at 6.0 mil, but when germinated seed was sown, it generated higher quality seed than 6.0 mil and 2 mil. The production and quality of wheat are higher when it is sown in simple rows as opposed to scattering, wide rows, or narrow rows. The ideal planting rate has been found to be either the same as or 10–15% lower than the pace of commercial grain farming. Propagating seeds (new varieties) is done through wide row sowing. According to experiments, phosphorous fertilizers buried five times deeper are absorbed than those buried shallowly, and when buried shallowly, they are absorbed 1.5 times more by plants. Phosphorus hardly ever migrates or moves in the soil. Even with sufficient water in the soil, phosphorus is rapidly adsorbed to the absorbing complex and can spread 1.0–4.0 cm in width. Even in years with adequate atmospheric precipitation, 85–95 percent of solid phosphorus fertilizers applied to the soil surface migrate 2 cm below the soil's surface when the soil is sufficiently moist [3, 34–39]. Since the soil layer is drying out quickly in this deep soil layer, plant roots cannot spread. As a result, plants barely absorb phosphorus fertilizers that are applied to the soil's surface. Nitrogen uptake is enhanced when a plant receives an adequate amount of phosphorus. Additionally, the plant absorbs more phosphorus, potassium, calcium, and several trace elements when nitrogen feeding is optimized. A surplus of phosphorus hinders the plant's ability to absorb manganese, iron, and copper.

As of right now, autumn wheat soil should receive 80% of phosphorus fertilizers applied before plowing and 20% after sowing. For autumn wheat on irrigated land, take into account the anticipated yield and soil agrocartogram. Based on the findings of several tests carried out in the Zarafshan Valley, nitrogen fertilizers are distributed as follows when the annual norm is 180 kg/ha: 1. 30 kg per hectare with pre-planting cultivation, 75 kg early in the spring, and 75 kg tube during the phase. 2. Before planting, 60 kg with cultivation, 90 kg in the early spring, and 30 kg at the earing stage.

While it does not boost yield, applying a part of nitrogen fertilizers at 30 kg/ha during the earing phase increases the grain's protein and gluten content. Feeding during the earing phase is

crucial for vigorous wheat cultivation. Nitrogen fertilizer feeding needs to be done in conjunction with irrigation or rainfall. It is ineffective to apply nitrogen fertilizers to dry soil surfaces. It enters the air as a gas, which is the cause.

The plant's resistance to cold, drought, and disease rises if it receives adequate potassium nutrition.

It enhances seed production and ripening, allows the plant to utilize nitrogen—especially nitrogen—and speeds up the development of the plant's side roots. The need for phosphorus-potassium nutrition rises in the early stages of autumn wheat development, which helps the plant take root well, expand swiftly, and store a lot of sugar. In turn, this keeps everything from freezing. Plants that receive adequate phosphorus and potassium nourishment are more resilient to drought.

The coefficient of plant utilization rises by 10-15% when potash and nitrogen fertilizers are combined, and by 5-10% when phosphorus is added. When combined with irrigation water, they boost output by 8-15%, reduce labor expenses by 25%, and increase the rate at which nutrients from fertilizer are utilized by 20-30%. Autumn wheat on irrigated areas is currently fertilized with 60-100 kg of potassium fertilizers; it is advised to apply the entire amount prior to tilling the soil. Every three hectares, a trench measuring 3 by 4 by 1.5 meters is dug for irrigation with juice, and each hectare receives three to five tons of manure. After placing manure in the bag, irrigation is done.

There are occasional mixings of the manure. Water use efficiency is increased while watering at night. Concurrently, irrigating grain using the juice method boosts productivity by three to five centimeters. In the areas where seepage water is found near the earth's surface, there are only one or two irrigations per field. In addition to other micronutrients, manure contains nitrogen, phosphorus, and potassium. When manure is added to the soil or consumed in liquid form, it breaks down in the presence of microorganisms, producing carbon dioxide that changes the solubility of phosphate in the soil. In addition, it makes sure that the soil retains moisture well and makes crops more drought-resistant. Taking into consideration the nutrients provided to the field with manure, the indicators of the soil agrocartogram, and the projected harvest, adjustments are made to the standard of mineral fertilizers based on the amount of nutrients in the manure. In open fields, moisture-accumulating irrigation is applied at a rate of 1000-1200 m³ per hectare ten to fifteen days before to planting, and it is watered three to five times (500-600 m³/ha) throughout the growing season while accounting for rainfall, seepage depth, and the mechanical makeup of the soil.

Watering autumn wheat between cotton rows occurs 10-12 days prior to planting or after seeding. The growth season is when irrigation occurs just as it does in open fields. In this case, moisture-accumulating irrigations will be the basis of the irrigation regime. It is best to make irrigation 60-80 m between the ditches, 50-60 cm instead of 1 m, to minimize water use without compromising production.

Depending on the mechanical makeup of the soil, irrigation rates in this instance should be 500-600 m³ rather than 700-750 m³. If the field is lengthy, extra care should be taken when watering it, beginning at the bottom and working your way up to the top to ensure that the grain field is evenly moist all the way around. When the ditches are 60-80 meters apart, the irrigation time should not exceed 7-10 hours, depending on the mechanical makeup of the soil [5, 66].

Grain crops are more resistant to fungal diseases and drought when they are sprayed with 7 kg of potassium salt, 7 kg of ammophos dissolved in 100 l of water, or 1-2% suspensions of Rosassol complex fertilizer at a rate of 150 l per hectare. There are now further suspension options available. It is common in Uzbekistan's desert areas, where it primarily damages perennial grasses, rye, oats, millet, rice, corn, winter and spring wheat, and white sorghum. The pest establishes colonies when it grows rapidly. Sucking tissue sap from branches and leaves causes the plant to wilt and its leaves to become yellow, curled, and dry. Spikes are not produced by plants that are severely diseased from an early age.

Requirements for wheat seed quality according to the standard

Indicators	Classes		
	1	2	3
Cleanliness, at least, %	99,0	98,0	97,0
The amount of seeds of other crops in 1 kg of seeds, piece	10	40	200
Including weed seeds in 1kg piece	5	20	70
Fertilization is at least, % soft wheat	95	92	90
hard wheat	90	87	85
Moisture as possible, %	14,0	14,0	14,0
A mixture of blackberry bags and its parts, %	Not allowed		

During the plant's earing phase, observations were made regarding each plant's appearance, the length of the earing period, the color of the plants' ears, and other indicators.

Out of the 29 Saratov varieties, the following were rejected: variety purity was 93%; plant mix: 1, development: 2, morphological characteristics: 2, productivity: 2. A total of 7 months were rejected. Following the conclusion of the Sumurug variety's field testing, which measured the variety's productivity, development, morphological features, and combination with other plants—all two—eight families were discarded, and the variety's purity was 92%. Following the trial, seed grain from the studied types was produced at the seed nursery for breeding exceptional seeds.

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Rezyume: Qoraqalpog'iston sharoyitida bug'doy navlarini o'sishiga ta'sir qiluvchi omillar, ushish jarayonida bug'doy navlariga suv tanqisligi, yerlarni sho'rланishini, hisobga olsak bo'ladi.

Резюме: Могут быть приняты во внимание факторы, влияющие на рост сортов пшеницы в условиях Каракалпакстана, нехватка воды у сортов пшеницы в процессе посадки, засоление земель

Kalit so'zlar: Mahalliy bug'doy, bug'doy navlari, funktsional ovqat.

Ключевые слова: Местная пшеница, сорта пшеницы, функциональное питание.

THE INFLUENCE OF ALUMINOSILICATE MICROSPHERES ON THE PROPERTIES OF THERMAL INSULATION MATERIALS

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Summary: The paper presents the results of the development of compositions of heat-insulating composite mixtures and products based on them, where a mineral binder was used as a binder, while aluminosilicate hollow microspheres formed at the New-Angren State District Power Plant were used as a light filler.

The results showed that the thermal conductivity rate of the developed lightweight thermal insulation materials with an average density of 475 - 700 kg/m³ with a content of aluminosilicate microspheres of 35,0 – 45,0 % is equal to 0,170 – 0,190 W/m·K. Thus, the results of laboratory studies indicate the prospects of using aluminosilicate ash microspheres in compositions of composite binders for the manufacture of various heat-insulating building products with a low thermal conductivity rate.

Key words: heat-insulating materials, fillers for building mixes, composite binders, aluminosilicate ash microspheres

Composite binders of various purposes, consisting of mineral binders and inorganic aggregates with low bulk weight, have been widely used in the building complex of the Republic. The use of inorganic fillers in the production of composite binders makes it possible to adjust and improve the construction, technical and thermal insulation properties of mineral binders to the specified quality criteria [1].

New inorganic composite thermal insulation materials consisting of a mineral binder, filler and micro-filler are increasingly being applied in the world's practice of the construction complex, which requires the selection of the most effective porous aggregates in terms of its technical, economic and environmental characteristics.

Current trends in the development of competitive production require the creation of new promising composite materials using inorganic aggregates with low bulk weight. Such materials include aluminosilicate microspheres with such exceptional properties as the ability to withstand high temperatures, significant mechanical loads, chemically active media, radiation and, most importantly, readiness for long-term operation in these harsh conditions.

Currently, the use of non-traditional thermal insulation materials with low volume weight in the field of construction is becoming widespread. Examples include compositions of aluminosilicate glass microspheres with various mineral binders and water-soluble polymers [2, 3], which also act as a binder. The use of microspheres as a component in cement or gypsum mixtures provides the material with thermal insulation properties, and has good adhesion and increases strength.

In the present work, we used mineral binders and finely dispersed aluminosilicate microspheres with low volume weight as binders for the development of compositions of thermal insulation composite mixtures and products based on them. Microspheres are lightweight fillers with a volumetric weight of 350-550 kg/m³ [4]. They are used in any technical problems where a decrease in thermal conductivity, increased strength and volume savings, as well as increased resistance to erosion and aggressive environments are required.

Aluminosilicate ash microspheres are a unique material with a wide range of applications. These are hollow glass-crystalline aluminosilicate balls with a number of names (light fly ash fraction, ash microspheres, or microspheres). The aluminosilicate microsphere is formed during high-temperature flaring of coal at thermal power plants, due to granulation of the melt of the

mineral part of the coals by crushing them into separate small droplets and swelling of the latter due to an increase in gas inclusions.

To develop the compositions of thermal insulation composite mixtures and products based on them, we applied a mineral binder as a binder along with aluminosilicate hollow microspheres formed at the New-Angren State District Power Plant which were used as a light filler. Aluminosilicate ash microspheres obtained from ash slags are a light gray mineral expanded finely dispersed bulk product consisting of hollow spherical particles of regular shape with a diameter of 5 to 500 microns with solid non-porous walls with a thickness of 5 to 10% of the particle diameter, and the chemical composition corresponds to the basic composition of impurities of burnt coals. The inner cavity of the particles is filled with nitrogen and carbon dioxide.

Laboratory studies have shown that aluminosilicate ash microspheres have the lowest density, which is several times less than the density of water. This in turn is essential for the effective gravitational separation of microspheres from fly ash in an aqueous medium. The chemical composition of aluminosilicate microspheres is dominated by oxides of silicon, aluminum, iron and magnesium (SiO_2 – 54-64%, Al_2O_3 –20-32%, Fe_2O_3 – 1,5-6% and MgO up to 3%).

Optical studies conducted to study the physical characteristics of ash microspheres have shown that the sizes of aluminosilicate microspheres vary from 50 to 400 microns, with microspheres ranging in size from 100 to 200 microns predominating; wall thickness – from 2 to 30 microns; bulk weight in the uncompressed state from 350 to 540 kg/m³, specific heat capacity 730-880 J/(kg·K); melting point exceeds 1350 °C.

On the basis of the conducted laboratory studies, we have developed composite compositions for the production of thermal insulation building materials. Thermal insulation composite compositions for forming materials with low bulk weight were prepared in the laboratory. The process of homogenization of the starting materials is carried out on a laboratory mixer for 20 minutes [5].

The analysis of the physico-mechanical characteristics of the developed compositions was carried out taking into account the average density, compressive strength, water absorption and thermal conductivity rate on solutions with different types of mineral binders with different ratios of aluminosilicate microspheres.

The results of the study showed that the spherical shape and a wide range of granulometric composition are ideal factors for bulk filler, since the material in this form has increased fluidity and, due to the effective ratio of surface area to occupied volume, provides the most compact installation. This minimizes shrinkage deformation of finished products based on microspheres compared with fillers of other shapes.

In the process of manufacturing heat-insulating composite products with spherical fillers, less binding components of any aggregate state and type, as well as liquid constituent solutions, are required to moisten and envelop the surface of the latter than for fillers of any other shape. This makes it possible to significantly save on binders, which, as a rule, have a higher cost relative to the filler, which allows for a high economic effect. In addition, the spherical shape of microspheres, having such a property as increased fluidity, gives a technological advantage at the stage of production of lightweight thermal insulation materials.

The main property of light thermal insulation mixtures is low density and thermal conductivity. Laboratory studies have shown that aluminosilicate microspheres have a heat-insulating effect. The quantitative characteristic of thermal conductivity is the rate of thermal conductivity of light thermal insulation mixtures and materials based on them.

Based on the conducted research, we have found that the rate of thermal conductivity of composite materials depends on the density of the material. The thermal conductivity of the obtained materials was studied by the method [6, 7]. The change in the thermal conductivity rate of materials obtained using aluminosilicate microspheres is shown in Table 1.

Table 1

Change in the thermal conductivity rate of composite products depending on the density of products

№	Indicators	Meaning				
1	Material density (volume weight), kg/m ³	475	515	565	635	695
2	Thermal conductivity rate, W/m·K	0,170	0,173	0,178	0,185	0,190

Analyses of the obtained results revealed that depending on the amount of light filler, the thermal and physico-mechanical properties of materials can be adjusted. The results showed that the thermal conductivity rate of the developed lightweight thermal insulation materials with an average density of 475 – 700 kg/m³ with an aluminosilicate microspheres content of 35,0 – 45,0 % is equal to 0,170 – 0,190 W/m·K.

Concerning the results of determining the thermal conductivity rate of products with low bulk weight based on light thermal insulation composite mixtures, they showed that thermal conductivity increases with increasing sample density.

The compressive strength of the obtained composite thermal insulation binders using aluminosilicate microspheres is 40-50 kg/sm². The thermal engineering parameters of the obtained solutions can be characterized by an average density and the rate of thermal conductivity. A distinctive feature of aluminosilicate microspheres is a low degree of contamination with a dusty fraction, which makes it possible to obtain higher-quality materials. This directly affects both the strength characteristics of composites and the consumption of binders.

It has been established that building products on the basis of the developed compositions have heat-protective characteristics comparable to traditional thermal insulation materials. This meets the requirements for wall materials in terms of vapor permeability and thermal protection properties.

Based on the conducted research, it was found that for the production of thermal insulation materials with high strength and low rate of thermal conductivity and volume savings, increased resistance to aggressive media, it is advisable to use aluminosilicate microspheres.

To sum up, the results of laboratory studies indicate the prospects of using aluminosilicate ash microspheres in compositions of composite binders for the manufacture of various heat-insulating building products with a low thermal conductivity rate.

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Rezyume: Maqolada issiqlik izolyatsion kompozit aralashmalar va ular asosidagi materiallarning kompozitsiyalarini ishlab chiqish natijalari keltirilgan bo'lib, unda bog'lovchi sifatida mineral bog'lovchi ishlatilgan va Yangi-Angren davlat elektr stansiyasida hosil bo'lgan

aluminosilikatli g'ovakli mikrosferalar to'ldiruvchi sifatida foydalanilgan. Natijalar shuni ko'rsatdiki, ishlab chiqilgan o'rtacha zichligi $475 - 700 \text{ kg/m}^3$ bo'lgan, tarkibida $35,0 - 45,0 \%$ alyumosilikatli mikrosferalar saqlagan engil issiqlik izolyatsiyalovchi materiallarning issiqlik o'tkazuvchanlik koeffitsienti $0,170 - 0,190 \text{ Vt/m}\cdot\text{K}$ ga teng. Shunday qilib, laboratoriya tadqiqotlari natijalari past issiqlik o'tkazuvchanlik koeffitsientiga ega bo'lgan turli xil issiqlik izolyatsion qurilish materiallarni ishlab chiqarishda kompozit bog'lovchi tarkibida alyumosilikatli kul mikrosferalaridan foydalanish istiqbolini ko'rsatadi.

Резюме: В работе приведены результаты разработки составов теплоизоляционных композиционных смесей и изделий на их основе, где в качестве связующего использовалось минеральное вяжущее в качестве легкого наполнителя алюмосиликатные полые микросферы, образующиеся на Ново-Ангренском ГРЭС. Результаты показали, что коэффициент теплопроводности разработанных легких теплоизоляционных материалов с средней плотностью $475 - 700 \text{ кг/м}^3$ при содержании алюмосиликатных микросфер $35,0 - 45,0 \%$ равняется $0,170 - 0,190 \text{ Вт/м}\cdot\text{К}$. Таким образом, полученные результаты лабораторных исследований свидетельствуют о перспективности применения алюмосиликатных зольных микросфер в составах композиционных вяжущих для изготовления различных теплоизоляционных строительных изделий с низким коэффициентом теплопроводности.

Kalit so'zlar: issiqlik saqlovchi materiallar, qurilish aralashmalar uchun to'ldiruvchilar, kompozit bog'lovchilar, alyumosilikatli kul mikrosferalar.

Ключевые слова: теплоизоляционные материалы, наполнители для строительных смесей, композиционные вяжущие, алюмосиликатные зольные микросферы.

ASSESSMENT OF THE ROLE OF MIGRATION IN THE WORLD ECONOMY

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Summary: *The article describes how important the role of migration is in the world economy and the impact of migration on the exchange of labor resources, goods and money transistors on the world economy.*

Keywords: *Migration, negative impact on the economy, migrants, remittances, tensions and discrimination.*

Introduction. Migration is a complex phenomenon that has been taking place throughout human history. The movement of people across borders has played a crucial role in shaping the world economy. Today, there are more than 258 million international migrants, and this number is expected to increase in the coming years. This essay aims to assess the role of migration in the world economy. It will examine the economic, social, and political impacts of migration on both the sending and receiving countries.

Economic Impacts of Migration. Migration can have positive and negative economic impacts on both the sending and receiving countries. In the sending countries, migration can lead to brain drain, which refers to the loss of skilled workers to other countries. This can have a negative impact on the economy as it reduces the pool of skilled workers available for economic development. However, migration can also lead to the transfer of remittances, which are funds sent by migrants back to their home countries. Remittances can be a significant source of income for many developing countries and can contribute to poverty reduction and economic development [1].

In receiving countries, migration can lead to an increase in the labor supply, which can have positive economic impacts. Migrants often take up low-skilled jobs that native workers are unwilling to do, which can help to fill labor shortages in certain sectors of the economy. Migrants also pay taxes and contribute to the economy through their consumption of goods and services. However, migration can also lead to wage suppression and job displacement for native workers, particularly in sectors where there is already a surplus of labor.

Overall, the economic impact of migration depends on various factors such as the skill level of migrants, the size of the migrant population, and the policies implemented by host countries to manage migration.

Social Impacts of Migration. Migration can have significant social impacts on both the sending and receiving countries. In sending countries, migration can lead to family separation and social disruption. Migrants often leave behind family members and communities, which can have a negative impact on social cohesion and family dynamics. However, migration can also lead to cultural exchange and the transfer of knowledge between different societies [2].

In receiving countries, migration can lead to cultural diversity and the enrichment of society. Migrants bring with them different cultures, traditions, and perspectives, which can contribute to the social fabric of the host country. However, migration can also lead to social tensions and discrimination, particularly in situations where migrants are perceived as a threat to national identity or security.

Political Impacts of Migration. Migration can also have significant political impacts on both the sending and receiving countries. In sending countries, migration can lead to political instability and conflict. Brain drain can lead to a shortage of skilled workers, which can undermine

economic development and exacerbate political tensions. However, remittances can also contribute to political stability by providing a source of income for families and communities [3].

In receiving countries, migration can lead to political polarization and the rise of populist movements. Migrants are often seen as a threat to national identity and security, which can lead to anti-immigrant sentiment and the rise of far-right political parties. However, migration can also lead to political integration and the development of multicultural societies.

Migration and Trade. Migration can also have a significant impact on trade between countries. Migrants often maintain strong ties with their home countries and can act as a bridge between their home country and the host country. This can lead to increased trade and investment between countries. For example, remittances sent by migrants to their home countries can provide a source of foreign exchange and contribute to the development of local economies.

Furthermore, migration can also lead to the transfer of knowledge and technology between countries. Migrants often bring with them skills and expertise that can be applied in the host country. This can lead to increased innovation and productivity, which can have positive effects on trade and economic growth.

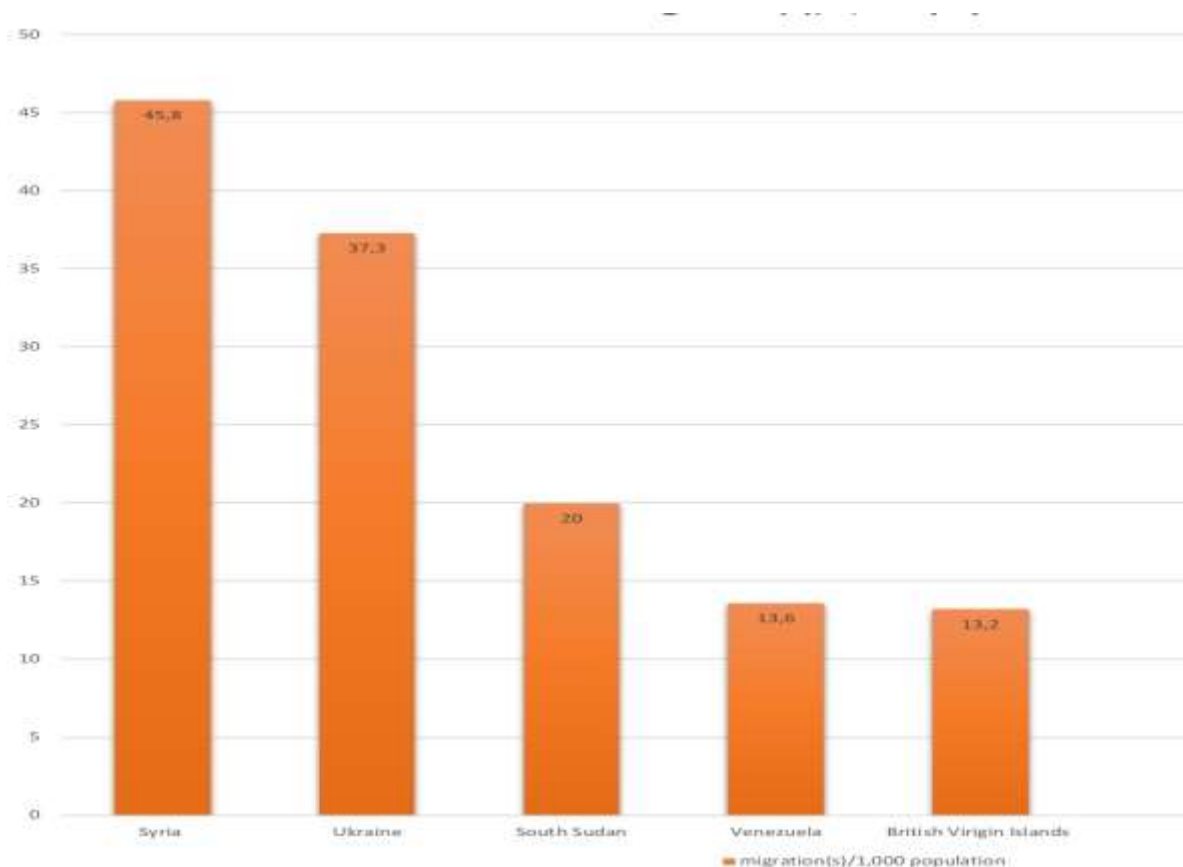


Figure 1. Currently, 5 countries have the highest net migration [4].

However, migration can also have negative effects on trade. For example, if a large number of skilled workers migrate from a developing country to a developed country, it can lead to a brain drain, which can have adverse effects on the development of the home country. In addition, if migration leads to an increase in protectionist policies, it can lead to a decline in trade between countries.

Migration and Development. Migration can play a significant role in the development of countries. For example, remittances sent by migrants to their home countries can provide a source of income for families and contribute to poverty reduction. Remittances are estimated to be the

largest source of external finance for developing countries, surpassing foreign aid and foreign direct investment [5].

Furthermore, migration can also lead to the transfer of knowledge and skills between countries. Migrants often bring with them skills and expertise that can be applied in the home country. This can lead to increased innovation and productivity, which can have positive effects on economic growth and development.

However, migration can also have adverse effects on development. For example, if a large number of skilled workers migrate from a developing country to a developed country, it can lead to a brain drain, which can have adverse effects on the development of the home country. In addition, if migration leads to an increase in protectionist policies, it can lead to a decline in trade and economic growth, which can have negative effects on development.

Conclusion. In conclusion, migration is a complex phenomenon that has significant economic, social, and political impacts on both the sending and receiving countries. While migration can lead to brain drain and family separation in sending countries, it can also contribute to poverty reduction through the transfer of remittances. In receiving countries, migration can lead to an increase in the labor supply and cultural diversity, but it can also lead to wage suppression and social tensions. Therefore, it is essential to develop policies that balance the economic benefits of migration with the social and political costs. To maximize the benefits of migration, it is essential for countries to implement policies that promote the integration of migrants into the labor market and society while also addressing the challenges associated with migration.

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Rezyume: Ushbu maqolada migratsiyaning jahon iqtisodiyotidagi o'rni va mehnat resurslari, tovarlar va pul tranzistorlari almashinuviga migratsiyaning jahon iqtisodiyotiga ta'siri qanchalik muhimligi haqida so'z boradi.

Резюме: В статье описано, насколько важна роль миграции в мировой экономике и влияние миграции на обмен трудовыми ресурсами, товарами и денежными потоками на мировую экономику.

Kalit so'zlar: Migratsiya, iqtisodiyotga salbiy ta'sir, migrantlar, pul o'tkazmalari, keskinlik va diskriminatsiya.

Ключевые слова: Миграция, негативное влияние на экономику, мигранты, денежные переводы, напряженность и дискриминация.

**OVERSEAS EXPERIENCE IN IMPROVING INNOVATION SYSTEM
FOR MANAGING DEVELOPMENT OF REGIONAL INDUSTRY**

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Summary: *This article deals with the issues of improving the innovative system for managing the development of regional industry in the Republic of Uzbekistan and abroad. It is shown that the growth of innovative activity, formation of favorable conditions for dynamic development of the country, modernization and diversification of the economy, the growth of competitiveness of production are among the key strategic goals in the socio-economic development of the regions of the Republic of Uzbekistan. As a result of the analysis, the author proves: the most important goal of economic development at the present stage should be, mainly, increase of the investment potential through the growth of its innovative component and modernization of the economy through introduction of innovative technologies into industry.*

Key words: *innovative development, innovative potential, research center, innovative entrepreneurship, R&D (research and development), industrial complex.*

In recent years, targeted measures in the field of innovative development of sectors of the economy and social sphere of the republic, comprehensive support and improvement of the effectiveness of science and scientific activity have been taken.

A strategic program aimed at including our republic in the list of 50 leading countries in the world in the global ranking in the field of innovation was approved, new mechanisms for financing scientific projects were introduced, additional conditions for material incentives for highly qualified personnel in the field of science were created.

Despite this, large-scale reforms being implemented at the current stage of the country's development show the need to improve the mechanisms of public administration in the field of science and innovation, to increase transparency in the formation of state programs for scientific activity and to accelerate the process of introducing scientific achievements and innovative technologies in economic sectors and regions [1].

The developed countries of the world actively use innovations to compete in world markets. Fast-growing countries, in particular some Asian countries, are gradually approaching them [2]. Today, Uzbekistan is also one of the countries that declare the importance of innovation for solving the country's pressing socio-economic problems. At the same time, the structural and technological changes that occurred during the years of independence were largely spontaneous in nature, and the main growth mechanisms continue to be concentrated in a group of industries whose competitiveness mainly depends on the extensive use of production factors and needs due to the low level of innovative activity based on the export of raw materials and products of lower industrial stages, which causes low competitiveness of the economy, unequal exchange and a significant lag of the country in socio-economic development [3].

Traditional economic systems typically pursue the goal of economic growth and prosperity, but economic growth does not always produce intense economic development. Countries with economies in transition must take a comprehensive view of the factors necessary for economic development. In economic science and practice, the issues of implementing a new theory of economic development that takes into account the innovative orientation of technological, managerial, organizational, institutional and other systemic transformations in the world economy are relevant.

Unfortunately, in Uzbekistan, economic growth is achieved mainly through following an extensive, resource-intensive and secured way, through development of extractive industries,

creation of intensive economic development through an innovative model of economic development indicating the low efficiency of political and economic decisions unable to ensure sustainable socio-economic development of the country and increasing the level of well-being of its residents is ignored.

Analysis of experience in formation of innovative development of industrial production in the USA, Great Britain, France, Germany, Sweden, and China shows that it is mainly based on development and implementation by government authorities of these countries of targeted programs for development of science and technology financed by the state budget [5].

Countries with the developed manufacturing industry (Great Britain, Germany, China, USA, France, Japan, etc.) provide various benefits to enterprises that introduce new technologies and produce high-tech goods.

Moreover, participation of the state in enhancing innovation activity is the key factor and is included in the strategic directions of their development.

This is due to the fact that implementation of the innovation process at enterprises requires the most effective participation of each subject and involves combined efforts of all participants to ensure maximum effectiveness.

The necessary basis for such participation is interrelation and sequence of implementation of stages of the innovation cycle, since the process of implementing innovative activity includes a mechanism for stimulating innovative activity of economic entities.

The most important areas of the state support for industrial enterprises in foreign countries are the following:

- considerable attention is paid to development of technology transfer as a source of ensuring formation of high-tech businesses.

As a result, use of technologies characterized by a high level of automation, computerization, and focus on market interests made it possible to ensure high incomes and consumption standards in these countries.

- Associations and networks of organizations supporting innovation processes are being formed.

State authorities and governments coordinate and establish relationship between research centers and industrial enterprises (Germany, USA);

- system of financial intermediaries is actively developing;

- significant support for creation of small innovative enterprises (SIE) is given.

The state provides significant funding for R&D in various forms: government procurement and orders (USA, UK), subsidies, direct financing, grants (Germany, China). In addition, the state provides assistance to innovative enterprises through use of a large number of financing instruments (guarantees, loans on preferential terms, guarantees) including increase of the equity capital of startups, which increases their access to capital markets or alternative sources of financing. Other governmental measures to stimulate innovation include awarding innovation awards and funding public research centers and universities.

Enterprises that use new technologies and produce high-tech products are provided with benefits by the state, including tax benefits (Great Britain, China, USA, etc.), accelerated depreciation, equipment leasing, rental of premises on preferential terms, reduced tax rate on capital income - all these are also used to stimulate the direction of investment resources in innovative high-tech enterprises.

An important area of state's assistance to innovative development is stimulation of fundamental research in state research and educational institutions, which are the basis for continuous process of change, restoration and optimization of the national economy. State forms

infrastructure necessary for innovative development of industrial enterprises (technoparks, production clusters, industrial parks and technopolises, etc.).

Thus, the experience of the foreign countries shows that creation of conditions and prospects for development of innovative entrepreneurship is impossible without proper state support. Support for innovative projects must necessarily be carried out on the basis of estimation of competitiveness and expected economic and social result, for what enterprises must constantly improve efficiency of their current activities (reduce costs, look for ways to increase sales volumes, etc.), improve manufactured products, for what a commercial demand is formed (innovation in the range of manufactured products); constantly strive to release new products based on new technologies [7].

In the context of increasing internal and external threats in order to ensure a satisfactory level of innovative development in the context of limited state budget resources, the main source of increasing R&D expenditures, in our opinion, could be a reduction in those items of budget expenditures that do not directly affect the rate of economic growth (for example, expenses for all-national functions).

At the same time, state funds in the Republic of Uzbekistan are the main source of investment in R&D. Across OECD countries, the average share of corporate R&D expenditures in national research and development expenditures is close to 70%. In the Republic of Uzbekistan, the situation is the opposite: the business sector finances only about 0.25% of research and development costs. Their share in the revenue of domestic enterprises is 4–6 times less than that of foreign competitors (Table 1).

Table 1.**Domestic research and development costs, as a percentage of GDP [9]**

№		2010	2015	2020	2021	2022
1	Israel	3.9	4.3	4.5	4.8	5.0
2	South Korea	3.5	4.2	4.2	4.6	4.8
3	Sweden	3.2	3.3	3.3	3.4	3.3
4	Japan	3.1	3.3	3.2	3.2	3.3
5	Austria	2.7	3.0	3.1	3.1	3.2
6	Germany	2.7	2.9	2.9	3.0	3.1
7	Denmark	2.9	3.1	3.1	3.0	3.1
8	USA	2.7	2.7	2.8	2.8	2.8
9	Belgium	2.1	2.5	2.6	2.7	2.8
10	Finland	3.7	2.9	2.7	2.8	2.8
11	France	2.2	2.3	2.2	2.2	2.2
12	China	1.7	2.1	2.1	2.1	2.2
13	Holland	1.7	2.0	2.0	2.0	2.2
14	Norway	1.6	1.9	2.0	2.1	2.1
15	Iceland	-	2.2	2.1	2.1	2.0
16	Slovenia	2.1	2.2	2.0	1.9	1.9
17	Czech	1.3	1.9	1.7	1.8	1.9
18	Great Britain	1.7	1.7	1.7	1.7	1.7

19	Canada	1.8	1.7	1.7	1.7	1.6
20	Hungary	1.1	1.4	1.2	1.3	1.6
21	Estonia	1.6	1.5	1.2	1.3	1.4
22	Italy	1.2	1.3	1.4	1.4	1.4

Additional direction for increasing expenses for innovation activities could be introduction of a mandatory requirement for large state-owned enterprises to develop and adopt innovation programs aimed at technological renewal of production, reducing resource and energy intensity of products. Introduction of this norm will promote to increased demand for innovation. In addition, in order to stimulate enterprises to invest in innovation, taking into account the foreign experience of the countries such as Germany, Belgium, and the USA [6], it is advisable to develop public-private partnerships in implementation of the innovative projects by business.

The focus of domestic entrepreneurship on a short-term perspective caused by instability of the economic situation in the country and the lack of “long-term” money hinders implementation of the innovative projects. In this regard, importance of the state in ensuring the processes of innovative development increases. At the same time, effectiveness of implementation of the government programs continues to remain low. For example, for all 12 indicators of the “Conception of the Development Strategy of the Republic of Uzbekistan until 2035” [4] the result is lower than predicted, and for the main ones there is stagnation. As researchers note, “spontaneous market control” in relation to the scientific and technical sphere was untenable. During the reform, one of the key factors of the country's development - production of scientific knowledge - was undermined what was largely one of the reasons for increasing decline in the technical and technological level of industry and insignificant share of the innovative products [8].

As it follows from the results of the research conducted, it is important for the Republic of Uzbekistan to review the state policy and develop preventive measures to switch the economy to a leading type of development taking into account long-term goals, the state and conditions of the innovation activity. Nowadays only separate components of the NIS (National Innovation System) are functioning in our country; the phases of the innovation process are loosely interconnected, and, consequently, effect of the innovation activities remains underestimated.

At the same time, the leading countries in innovative development are actively forming national and regional innovation systems and, within their framework, providing a favorable business climate, creating clusters and other necessary infrastructure, i.e., actively providing a favorable external environment for innovative development of industrial enterprises. At the same time, it cannot be realized only due to the external environment. The key role here is played by organization of the innovation process within the enterprises themselves.

Analysis of various sources has shown that at the present stage of development of socio-economic relations, the most important factor in increasing competitiveness of the industrial complex is innovation activity, and the level of scientific and technological development, in its turn, forms foundation of economic growth and determines the further development of the enterprises [6]. Each state with a developed economy implements its own scenario for supporting national industrial complex, focusing primarily on the development of innovative high-tech industries. In this regard, we consider it advisable to consider global experience in stimulating innovation activity in order to identify the most effective tools for supporting industry.

In our opinion, we should proceed from the fact that industries and technologies of various levels coexist in the structure of any economy. Real technological leadership, like technological backwardness, is of a local nature and can be correctly defined only in relation to individual industries, sub-sectors, and rarely to aggregated sectors of the national economy. None of the

countries is a leader in the technological level of production across the entire range of activities represented in its national economy.

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Rezyume: *Maqola O‘zbekiston Respublikasi va xorijda hududiy sanoatni rivojlantirish uchun innovatsion boshqaruv tizimini takomillashtirish masalalariga bag‘ishlangan. Innovatsion faollikni oshirish, mamlakatimizning mintaqqlarinig jadal rivojlanishi uchun qulay shart-sharoitlarni shakllantirish, iqtisodiyotni modernizatsiya va diversifikatsiya qilish, ishlab chiqarish raqobatbardoshligini oshirish mamlakatimizni ijtimoiy-iqtisodiy rivojlantirishning asosiy strategik maqsadlaridan ekanligi ko‘rsatilgan. Tahlil natijasida hozirgi bosqichda iqtisodiyotni rivojlantirishning eng muhim maqsadi, birinchi navbatda, innovatsion komponentni oshirish hisobiga investitsiya salohiyatini oshirish va sanoatga innovatsion texnologiyalarni joriy etish orqali iqtisodiyotni modernizatsiya qilish bo‘lishi kerakligi dalillangan.*

Резюме: *Статья посвящена вопросам совершенствование инновационной системы управления развитием региональной промышленности в Республике Узбекистан и за рубежом. Показано, что рост инновационной активности, формирование благоприятных условий для динамичного развития страны, модернизация и диверсификация экономики, рост конкурентоспособности производства являются одними из ключевых стратегических целей в социально-экономическом развитии регионов Республики Узбекистан. В результате анализа автор доказывает: важнейшей целью экономического развития на современном этапе должно быть, главным образом, повышение инвестиционного потенциала за счет роста его инновационной составляющей и модернизация экономики за счет внедрения инновационных технологий в промышленность.*

Kalit so‘zlar. *innovatsion rivojlanish, innovatsion salohiyat, tadqiqot markazi, innovatsion tadbirkorlik, ilmiy-tadqiqot, ishlab chiqarish majmuasi.*

Ключевые слова. *инновационная развития, инновационный потенциал, научно-исследовательский центр, инновационное предпринимательства, НИОКР, промышленный комплекс.*

**THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN
HIGHER EDUCATION: PROS AND CONS**

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Summary: *This article analyzes the processes of using information and communication technologies in teaching business disciplines at universities. The level of provision of economic subjects with domestic and international software, its advantages were studied, and proposals to improve the efficiency of education were developed.*

Key words: *Information and communication technologies, educational effectiveness, teacher, student, SWOT analysis, software, business disciplines.*

The article focuses on the role, challenges and benefits faced by an educational institute in integrating ICT (Information and Communication Technologies) tools in the business class teaching process. ICT in education has become the most essential part of educational system without which contemporary education can't be imagined. Education has lost its traditional face. It is now less confined to the class room boundaries. The learning process never stops due to influence of IT in educational industry. ICT is to support pedagogic practices that provide learning environments that are more student-centered than it used to be. schools and colleges or universities have to provide ICT capacity to ensure that all teachers and students have immediate access to all software that is required to support the curriculum and adequate support to implement its use.

The issues traced are related post implementation of tools and applications. When using the tools the teaching process face different issues right from labor market demand orientation to executing the curriculum itself. Similarly the student community also face a lot of challenges while being a part of the whole system. Also in the perspective of employers` requirement or expectations from graduates for the use of ICT in the work places vary by work types.

ICT is a rapidly developing field, which is the reason that preparing teachers for their role in helping youngsters and young adults to become skilled and versatile ICT users can be quite difficult [1.149]. The use of information and communications technology (ICT) in education is widely regarded as a good thing [2.287]. Today the knowledge and use of ICT has become an almost essential requirement when it comes to finding employment in our society. This fact has caused future workers, schools and universities to begin to relativize their use to the point that future workers enroll in ICT courses to increase their employability and that schools and universities, in addition to giving specific training in ICT tools, require their use in most of the subjects of the programs they offer (tools that students must subsequently use in the labor market).

For this reason, in this whole process of digital literacy this paper is focused more on universities and their programs for establishing standards of competence and technological skills in their students, and has as its main objective to analyze the importance that students give to the acquisition of ICT skills for their future professional performance and the domain they have over them (achieved throughout their years of learning). And for this specific case, we will analyze the example of the Department of accounting and auditing of the Karakalpak State University (Uzbekistan), where the majors of «Accounting and auditing», «Statistics» and graduate students are taught.

When studying literature and questioned student and professors we found out many outcomes from using ICT in teaching business classes. They are as following:

- Positive academic outcomes, interactivity, individualization of learning, quality.
- Better understanding of concepts
- Access to remote location

- Speedy exam (quiz) scores availability
- Just-in-time learning
- Access to multi sources (library, publications, movies, documentaries, images, audios etc.)
- Delivery efficiency (time saving, coverage)
- Off-line recourse availability
- Contemporary ICT technologies efficiency (3D Hologram
- Technology (3DHT) for distance Learning, deep learning technology)

So what are the business classes taught at the department? They are financial accounting, managerial accounting, statistics, IFRS, information technology in accounting, government accounting, auditing and assurance services, accounting theory, accounting for agricultural businesses, accounting of taxation, internal audit, financial analysis, managerial analysis and others.

As we know using ICT during classes have its good impacts on raising learning outcomes but it has many obstacles and difficulties in introducing them. The use of ICT cannot succeed on its own merits [3], but needs the actions of a teacher. Numerous studies have pointed to the importance of the teacher's role in integrating ICT into classroom teaching [4.131]. Having studied the area and after some surveys taken by both students and professors we tried to summarize the challenges faced by them:

- Lack of infrastructure;
- Unaffordability, not feasible, economically costly;
- Mind work decrease;
- Distraction from study material (different porn sites, ads, chats...);
- Inability or improper keeping track of learning material;
- Losing of working by hand or computing ability loss;
- Too much information burden.

We can see from the table 1 that though there are 26,67% of software for 15 disciplines, none of them is thought using them for which there are some reasons. When we asked the professors and students if they are eager to use ICT in classes they respond positively but the lack of the ICT they can't accomplish what they plan or aim. We tried to classify the issues related to this issue.

Table 1.

Usage of ICT in business classes

Subjects of the business administration disciplines, number	Market availability of national (local) software (%)	Market availability of Software of International companies (%)	Being used software during classes (Y-yes, No-N)	Issues of implementing	Microsoft office software	Whether special software being used during classes (Y-yes, No-N)	Issues of implementing
15	26.67	100	N	No tutorial software, language obstacle, incompetence of faculty in practice, expensive	excel	N	Lack of infrastructure, incompetence of faculty, no tutorial material adapted to the excel spreadsheets

Though there are a lot local software is available, the department (institute) hasn't negotiated with proper firms (companies) to supply and maintain such programs periodically. Moreover, all the software must be developed or revised due to the needs of business or state entities (bodies) needs. The ministries or other interested parties should handle this issue because graduates after finishing schooling have to get trained or study themselves paying relatively big amount of money and spending 2-4 months. Another very important issue is about time spending during class time for a particular topic or practical work. Faculty members should be intensified to use spreadsheets or other ICT tools during classes to have immediate and technically correct outcome and making the figures more illustrative. For this reason, excel spreadsheets and other software are also very valuable when delivering too many computing work being done.

Table 2.

Percentage of provision of ICT for 3 categories

Categories	Computers	projectors	Smart boards	TV-sets	Printer-copy-scanners	Scanner-copier	Internet access
Total student number	23%	18%	4%	-	-	-	100%
Total faculty number	27%	Not considered			100%	100%	100%
Total room (class)	10%	25%	5%	0%	0%	0%	100%

*As there is academic group student number mustn't exceed 25 students (group session are conducted more than 2 academic group), calculations for projectors are made due.

The ICT are inevitably important to grasp huge information in short time given for contemporary class work. As we have already known about the supply level of the department, the lower the provision, the worse the class quality and time saving (spending efficiently). The department needs more data projectors and periodical maintenance during the school year (table 2.). 18% of coverage of all students computed as for 50 students per isn't good for both faculty and attendees. It makes delivery of class material or concept more complicated and unachievable. Insufficient data projector means no PPT or other Microsoft tools can be used during class time. So faculty have to shift to traditional methods, trying to illustrate all the things by hand writing on the chalk board as there are too few white boards (4%) on which dry erase markers are used for. Saying all this, ICT should be provided in accordance with the number of students so that the faculty would have all the proper tools to fully demonstrate and deliver in what way they think is very effective.

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Rezyume: *Ushbu maqolada oliy ta'limda iqtisodiy fanlarni o'qitishda axborot kommunikatsion texnologiyalardan dars jarayonida foydalanish jarayonlari tahlil qilingan.*

Iqtisodiy fanlarning milliy va xalqaro dasturiy ta'minot bilan ta'minlanganlik darajasi, uning afzalliklari o'rganilgan va ta'lim berish samaradorligini oshirish bo'yicha tavsiyalar ishlab chiqilgan.

Резюме: В данной статье анализируются процессы использования информационно-коммуникационных технологий в преподавании экономических предметов в ВУЗах. Изучен уровень обеспеченности экономических предметов отечественным и международным программным обеспечением, его преимущества и разработаны рекомендации по повышению эффективности образования.

Kalit so'zlar: Axborot kommunikatsion texnologiyalar, ta'lim samaradorligi, o'qituvchi, talaba, SWOT tahlili, dasturiy ta'minot, iqtisodiy predmetlar.

Ключевые слова: Информационно-коммуникационные технологии, эффективность образования, преподаватель, студент, SWOT-анализ, программное обеспечение, бизнес-предметы.

THE ROLE OF STATISTICAL METHODS IN ECONOMIC RESEARCH

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Summary: *The article presents the principles and elements of statistical methodology. It is suggested to categorize the primary ways of using statistical information processing techniques for more comprehensive economic analysis. A particular focus is placed on the elements that analysts must take into account when selecting statistical instruments and the significance of economic content when utilizing computational techniques.*

Keywords: *statistical methodology, scientific research, system of methods, measurement, classification*

According to the law "On official statistics" of the Republic of Uzbekistan (No. ZRU-707 of 11.08.2021), the official statistical methodology is described as "the system of methods, rules, and principles used in the production and dissemination of official statistics" [1]. Stated differently, statistical methodology is the set of techniques and methods that statistics use to examine a variety of socio-economic items, processes, and phenomena.

The peculiarity of statistical methodology is that it covers with its content the whole set of methods, principles, regulations, recommendations, manuals, and guidelines, formed both at the national and international level, aimed at creating and improving the mechanism of data collection, their groupings and classifications, and the calculation of summary indicators. Elements of statistical methodology are traditionally considered in two aspects: by stages of statistical research and by areas (subject fields) of socio-economic statistics. In the first case, statistical methodology is linked with three stages of statistical research, which are described in detail in any statistical textbook. It is about the collection of statistical information, data processing (summary and grouping), analysis, and forecasting of data through a system of indicators and models (relative and average values, different coefficients and indices, balance, and correlation-regression models).

The directions (subject field) of statistics allow to divide the methodological tools according to the spheres of coverage by statistical science in all areas of social life. In this sense, statistical methodology appears as a branch of methodology aimed at the elaboration of principles and methods of analysis of concrete socio-economic problems. Thus, the methodology of demographic statistics consists of the following blocks:

Methodology of a statistical population survey, including:

- principles of organization and technology for conducting continuous and sample population observation (micro and general population censuses);
- organizational and program-methodological provisions on household surveys (surveys of household budgets, consumer expectations of population, population surveys on employment, etc.).

1. Methods of formation and calculation of demographic indicators, such as:

- indicators of available and permanent population, average annual population size;
- indicators of population structure (by sex, age, nationality, etc.);
- demographic load indicator;
- absolute and relative indicators of the natural and mechanical movement of the population;
- indicators of social characterization of the population - indicators of other branches of statistics indirectly related to demography (education, health care, science, etc.).

2. Methods of standardization of general indicators of natural population movement (allow to smooth out differences in age structure when comparing different population groups in space and time).

3. *Methods of constructing demographic tables* (fertility and mortality tables) and calculating the corresponding indicators (life expectancy at birth, probability of survival, age-specific fertility rates, etc.).

4. *Methods of calculating the prospective population size* (demographic forecast).

Similarly, the methodology of statistics of prices, environment, labor resources, national wealth, and other branches of socio-economic statistics can be presented. In any case, branch methodology uses both general provisions and rules of statistical science and develops its own principles and methods of collection and grouping of statistical information and calculation of generalizing indicators. In other words, relying on the methodological basis of statistical theory, branch statistics applies it for its own narrow purposes. For example, the index method-is one of the most important methods of statistics because it allows us to compare heterogeneous objects in time or space by some characteristics. The statistical science has developed general principles and conditions for the application of indices, unified classification, methods of calculation, and technologies for using indices as tools of factor analysis. Branch statistics uses all this to solve applied problems and construct specific indices. Thus, statistics of macroeconomic indicators calculate indices of the physical volume of GDP and deflator indices; statistics of the production sphere—indices of industrial production; statistics of prices—indices of consumer prices for goods and services; indices of producer prices, etc. As a result of such a wide use of theoretical and methodological provisions, practical tasks are solved.

In the modern market economy, the need for managers to improve the efficiency of decision-making, qualitative calculation, and forecasting of possible directions of enterprise development is constantly increasing. Predominantly, these problems are solved with the help of economic analysis, namely by using modeling in the process of analyzing the financial and economic activity of the enterprise. This fact is one of the prerequisites for the wide application of statistical methods of analysis. They constitute a significant part of the methods of economic analysis. This is explained by the fact that the use of statistical methods in the economic analysis of enterprise activity allows for a significant increase in responsiveness to various changes in market conditions, as well as the receipt and management of information that allows managers to make informed and timely management decisions.

Thus, within the context of this article, let us consider a set of statistical methods that can or have been used in economic analysis, based on the publications of authors such as Averina T.N. [2], Gabdullina G.K. [3], Denisenko R.M. [4], Margieva N.T. [5], Nosov V.V. [6], Pankova S.V. [7], Prokofiev V.A. [8], Tsypin A.P. [9, 10], and others. The most popular statistical methods for economic analysis are shown in Table 1, along with the primary applications for which they are used.

Table 1
Types and uses of statistical methods in economic analysis

Statistical method	Direction of application in the process of economic analysis
Summarizing and grouping economic indicators	1) Collection and analysis of accounting data; 2) Analysis of accounting reporting indicators; 3) Processing of statistical and management reporting data
Sampling method and statistical observation	Analysis of individual, complex, and generalizable components of product quality characteristics
Calculation of relative values (growth and growth rates)	1) Assessment of changes in the structure of indicators over time; 2) Analysis of coefficients; 3) Factor analysis of relative differences
Calculation of means (arithmetic mean - simple and weighted, geometric mean)	1) Determination of mean and structural values presented in the form of variation, as well as dynamic series; 2) Construction of forecasts based on calculated indicators
Definition of aggregate and	1) Methods of deterministic factor analysis to assess the

average indices	interrelationships of phenomena; 2) Identification of seasonal component of fluctuations in economic analysis
Correlation and regression analysis	1) Assessment of the degree of interrelation of phenomena on the basis of pair and multiple regression equations; 2) Trend analysis; 3) Forecasting by constructing regression equations
Estimation of indicators of variation	1) Analysis of changes in output and sales, cash, and resource flows; 2) Carrying out comparative rating assessment; 3) Evaluation and analysis of investment processes

Table 1 makes it abundantly evident that statistical methods are often applied in a variety of economic study contexts. The popularity of statistical methods can be attributed to their ability to predict the behavior of economic indicators, analyze and assess different options for the development of economic processes, and account for various risk factors (probabilities) of events.

We believe that estimating the future financial state of the company and developing and refining the current financial forecasting techniques are the most critical tasks in economic research. Three categories comprise all forecasting techniques utilized to assess the current status of the business and develop future activity directions:

1) Expert evaluation methods, which comprise a multi-phase expert survey carried out in accordance with specifically created schemes and a subsequent processing of the data gathered via the use of economic statistics tools. Expert opinions are useful not only for predicting but also for creating new weighting factors and controlled indicator threshold levels.

2) Deterministic techniques applied in functional relationship cases, where a certain non-random value of the resultant is correlated with each value of a component attribute. Examples of how these models are used include the DuPont company's factor analysis model and profit and loss statement structure, among others. These methodologies' primary benefit is their ability to quantify the influence of several factors on the value of an economic indicator.

3) The use of stochastic approaches in situations where there is a probability link between the indicators and, consequently, the probability involved in creating such a forecast. As the amount of data being studied rises, there is a greater chance of getting a more accurate forecast. This group's approaches are widely applied in economic analysis and include a wide range of techniques with varying levels of algorithm complexity. It should be mentioned that while statistical approaches are susceptible to the impact of random fluctuations in data, predicting findings acquired through these methods may not always result in correct projections.

Statistical techniques are also used in the development of methods for assessing the level of risks, for example, the characteristic of business risk is based on the analysis of the continuity of cash flows, i.e. current assets, and allows to predict the level of liquidity and solvency of the organization.

Economic analysis has also found a place for statistical approaches like nonparametric analysis. It makes use of techniques that allow one to quantify a characteristic's quantitative values in order to assess the link between phenomena without the need for distribution parameters.

In summary, statistical approaches are widely employed in several domains of economic analysis of firm activity, owing to their numerous benefits, including the ability to analyze data at a high level of detail.

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Rezyume: Maqolada statistik metodologiyaning tamoyillari va elementlari keltirilgan. To'liq iqtisodiy tahlil qilish uchun statistik ma'lumotlarni qayta ishlash usullaridan foydalanishning asosiy usullarini tasniflash taklif etiladi. Statistik vositalarni tanlashda tahlilchilar e'tiborga olishlari kerak bo'lgan elementlarga va hisoblash usullaridan foydalanishda iqtisodiy tarkibning ahamiyatiga alohida e'tibor beriladi.

Резюме: В статье представлены принципы и элементы статистической методологии. Предлагается классифицировать основные способы использования методов обработки статистической информации для более полного экономического анализа. Особое внимание уделено элементам, которые аналитики должны учитывать при выборе статистического инструментария, и значимости экономического содержания при использовании вычислительных методов.

Kalit so'zlar: statistik metodologiya, ilmiy tadqiqotlar, usullar tizimi, o'lchash, tasniflash.

Ключевые слова: статистическая методология, научное исследование, система методов, измерение, классификация

EFFECTIVENESS OF FACTOR ANALYSIS OF OPERATIONS' PROFITABILITY

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Summary: *The analysis of the profitability of Vavilon allows us to draw the following conclusions: in general, the enterprise operates at a profit, but there is a negative trend towards a decrease in the amount of profit against the backdrop of a decrease in the efficiency of using property and equity capital.*

Key words: *enterprise, restaurant business, equity capital, financial and economic activities*

Introduction. The modern restaurant business is an integral sector of the national economy in the Republic of Uzbekistan. This is justified by the fact that it is in the activities of restaurant enterprises that a fairly large amount of added value is formed. Restaurants that operate in our country today are not only the result of a process of quality customer service and delicious dishes prepared by chefs, but are also an integral system of economic relations that arise in connection with the use of a fairly large volume of production, human and creative resources. In this connection, a rather important element of the activities of modern restaurant enterprises is the activity of taking into account various aspects. In particular, it is accountants who are entrusted with the functions of generating information about the cost of producing each specific dish, the results of the financial and economic activities of a restaurant enterprise, etc. Thus, it is through accounting that the conditions for increasing the efficiency of a business entity are formed, since through accounting an understanding of the adequacy of the planning system, the level of revenue, etc. is formed.

Methods: we use more clearly methods to describe our research, such as: Literature search, Study participants, Statistical analyses

Discussion: Retail trade turnover, including the turnover of food establishments, per capita increased by 1.3% and amounted to 5,691.8 thousand soums (in 2019 – 4,946.2 thousand soums). The highest average per capita trade turnover was noted in the city of Tashkent (17,404.9 thousand soums), Tashkent (7,100.4 thousand soums) and Navoi (7,732.4 thousand soums) regions, the lowest - in the Republic of Karakalpakstan (3 455.9 thousand soums).

The success of financial and economic activities is determined by profit indicators, the analysis of which is carried out using a horizontal and vertical method, and the effectiveness of activities is determined by profitability indicators, the most important of which are:

- profitability of sales; characterizes the profitability of manufactured products and is calculated using the formula [2, p. 123]:

$$R_{sales} = \frac{\text{Gross profit}}{\text{Revenue}} * 100\%, \quad (1) [2]$$

- profitability of core activities; characterizes the feasibility of the costs incurred and is calculated using the formula:

$$R_{core \text{ business activities}} = \frac{\text{Revenue}}{\text{Cost of goods sold}} * 100\%, \quad (2) [2]$$

Return on assets characterizes the efficiency of using available resources and is calculated using the formula:

$$R_{assets} = \frac{\text{Profit before tax}}{\text{Average annual assets}} * 100\%, \quad (3) [3]$$

Return on equity; characterizes the efficiency of using own funds and forms the investment attractiveness of the enterprise:

$$R_{equity} = \frac{\text{Net profit}}{\text{Average annual equity}} * 100\%, \quad (4) [4]$$

Profit from the sale of goods depends on changes in the volume of trade turnover, the average level of gross income and the average level of distribution costs. The effect of changes in turnover on the amount of profit is calculated using the formula:

$$\Delta T = \frac{[P_0(T_1 - T_0)]}{100} \quad (5) [5]$$

Where

ΔT - change in the volume of trade turnover, sum.;

P 0 - level of profitability in the previous year (or according to plan),

% of turnover;

T 1 - actual volume of trade turnover in the reporting year, sum;

T 0 - volume of trade turnover in the previous year (according to plan), sum

The profitability of an enterprise refers to its ability or ability to generate profit, which is measured by the return on capital employed. The profit margin of a catering enterprise is globally influenced by two main factors: trade turnover and distribution costs. The cost of purchased goods, of course, also has an impact, but not to such a significant extent as the first mentioned factors, since the enterprise, when selling manufactured products, adds a trade margin, and in any case sells its products at a price higher than the purchase price. To assess the impact of the volume of trade turnover, profitability indicators will be required that characterize the efficiency of core activities and the use of resources, the calculation formulas for which are presented in formulas. There are many profitability indicators, but the most indicative and widely used are four: return on sales, profitability of core activities, 60 return on assets and return on equity (Table 1).

Table 1

Analysis of Vavilon profitability indicators for 2021-2022. [6]

No.	Indicators	2021	2022	Change (+,-)
1	Revenue, thousand sum	26473.04	329591.05	303118
2	Cost of goods sold, thousand sum	23825.74	266740.63	242914.9
	Gross profit	2647.3	62850.42	60203.12=
3	Profit before tax, thousand sum	1726.66	7388.42	5661.76
4	Average annual assets	1239040.7	1027361.83	-211678.87
5	Net profit,	1467.67	6280.22	4812.55
6	Average annual equity capital,	4817.0	5000.0	183
7	Calculation of profitability indicators			
8	Return on sales, % (1/2)*100	111.1	123.6	12.5
9	Return on assets, % (3/4)*100	0.1	0.7	0.6
10	Return on equity (5/6)*100	30.5	125.6	95.1

Analyzing the obtained estimated profitability indicators, one cannot help but pay attention to the low profitability indicators in 20 21. It seems that the main reason in this case is that this restaurant opened in 2021 and the financial results report for 2021 was incorrectly compiled, so as in the report there is no data on line 94200 "Sales expenses", and this cannot be, since all distribution costs of a public catering enterprise are charged to account 9420 "Sales expenses" and are displayed precisely on line 9420. In the "Vavilon" report for 2021 distribution costs are fully included in the cost of production and are reflected in line 9120 "Cost of sales". This conclusion is justified by the following provisions: the enterprise operated, paid wages to employees, calculated insurance premiums, and incurred business expenses. Without these expenses, referred to as "distribution costs" in relation to trade and public catering enterprises, the enterprise, in principle, cannot function. Therefore, factor analysis will be carried out over two years: 2021-2022.

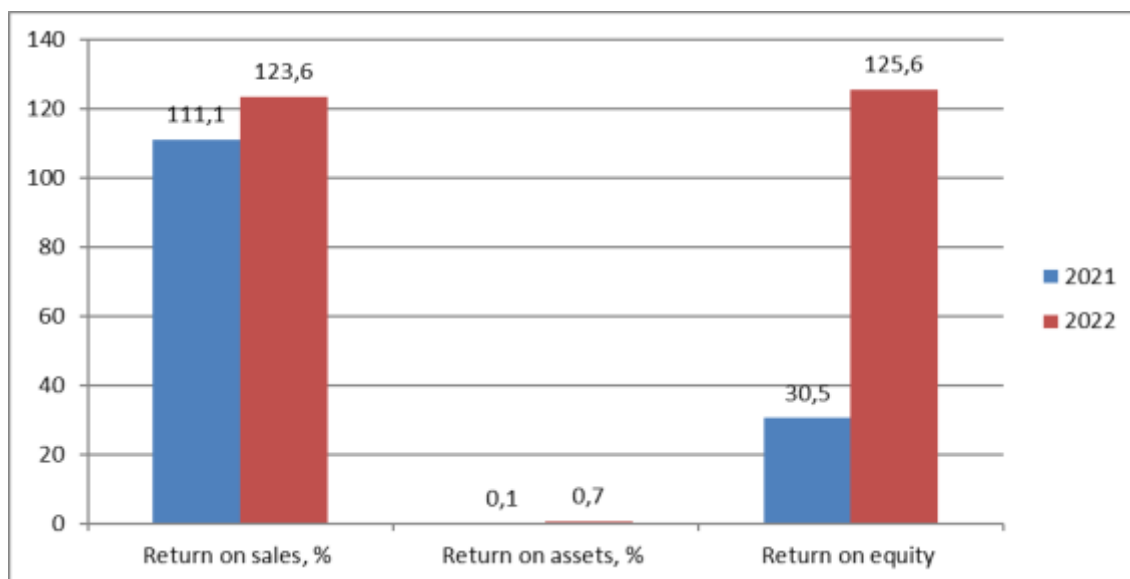


Illustration-1. Dynamics of Vavilon profitability indicators for 2021-2022.

So, according to Table 8, it can be seen that there is a pronounced negative trend in profitability indicators: return on sales increased from 11.1% to 23.6%. The dynamics of profitability indicators are clearly presented in Figure 5. The efficiency of use of property increased by 12.5%, as evidenced by the increase in return on assets from 0.1% to 0.7%. Equity capital also began to be used more efficiently, as evidenced by an increase in return on equity from 30.5% to 125.6%.

Net profit increased in 2022 relative to 2021 by 4812.55 thousand soums . The influence of trade turnover on its reduction will be determined by formula (23): $\Delta T = [111.1 (329591.05 - 26473.04)]/100 = 336764$ thousand soums . Thus, an increase in trade turnover by 303,118 thousand soums . contributed to the shortfall in net profit in the amount of 336,764 thousand soums

We will determine the impact of changes in the average level of gross income. To do this, you will need to determine the level of gross income: $UVDO = 2647.3 / 26473.04 = 0.09$

$$ATC\ 1 = 2647.3 / 329591.05 = 0.08$$

$$\Delta ATC = [329591.05 (0.09 - 0.08)]/100 = 32.9$$

Thus, the level of gross income had an impact on profit. What factors influenced the increase in profit in 2015 can be determined by factor analysis of sales profit.

The initial data for analyzing sales profits are presented in Table 2.

Table 2

Initial data for factor analysis of profit from sales of “Vavilon” for 2022, thousand soums. [6]

Components of sales profit	Based on the 2021 earnings report.	Sales volume for 2022 in comparable prices	According to the financial results report for 2015
Sales Revenue (S)	26,473.04	309,590.05	329,591.05
Total cost (cost + selling expenses) (C)	24746.8	108310.42	118312.42
Profit from sales (P)	1726.24	201,279.63	211,278.63

$$\Delta P = 211,278.63 - 1726.24 = 209552.39 \text{ thousand sum}$$

We determine the impact on sales profits of changes in prices for sold products ΔP_1

$$\Delta P_1 = S_{\text{тп}} - S_1 = 329,591.05 - 309,590.05 = 20,001 \text{ thousand soums}$$

Where:

S_{cp} - sales volume in the current period in prices of the current period;

S_1 - sales volume in the current period in comparable prices.

We determine the impact on profit of changes in product sales volume (ΔP_2)

$$\Delta P_2 = P_{pp} * k_1 - P_{pp} = 1726.24 * (4,36-1) = 5800.1$$

Where:

P_{pp} - profit from sales of the previous period;

k_1 - coefficient of change in the cost of goods at prices of the previous period:

$$k_1 = C_1 / C_{pp} = 108310.42 / 24746.8 = 4.36$$

Where C_1 - cost of goods sold for the current period in prices of the previous period;

C_{pp} - cost of goods sold in the previous period.

Determining the impact on profit of changes in sales volume

products due to changes in product structure (ΔP_3):

$$\Delta P_3 = P_{pp} (k_2 - k_1) = 1726,24 (11,69 - 4,36) = 12653,33 \text{ thousand } \_ \text{ with mind } \_$$

Where

k_2 - sales growth rate at prices of the previous period:

$$k_2 = \frac{S_1}{S_{nn}} = \frac{309\ 590,05}{26\ 473,04} = 11,69$$

Where:

S_1 – sales volume in the current period at prices of the previous period;

S_{pp} – sales volume in the previous period.

We determine the change in profit from sales due to changes in cost due to changes in prices for consumed resources (ΔP_4):

$$\Delta P_4 = C_1 - C_{cp} = 108310.42 - 118312.42 = -10002 \text{ thousand soums } .$$

Where:

C_1 - cost of products sold for the current period in comparable prices;

C_{cp} - actual cost of products sold for the current period. We determine the impact on profit of changes in cost due to structural changes in the composition of products (ΔP_5):

$$\Delta P_5 = C_{pp} * k_2 - C_1 = 24746.8 * 11.69 - 108310.42 = 180979.672 \text{ thousand soums } .$$

By adding up the changes in profit under the influence of each factor, we obtain the total expression of the influence of all factors on profit from sales (ΔP)

$$\Delta P = 20001 + 5800.1 + 12653.33 + (-10002) + 180979.672 = 209432.102 \text{ thousand soums.}$$

Table 3

The total influence of factors on the profit from sales of Vavilon

Factors	Amount, sum	Structure, %
Impact of price changes	20001	9.55
Impact of sales volume	5800.1	2.77
Impact of Product Structure	12653.33	6.04
Impact of cost due to changes in prices for consumed resources	-10002	-4.78
Impact of cost due to structural changes in product composition	180979.672	86.41
Total	209432.102	100.00

The discrepancy in the final indicator is 209,432 soums. formed due to rounding in calculations.

Conclusion: the main factor in reducing profits from product sales was caused by price changes (9,55 %). The analysis of the profitability of Vavilon allows us to draw the following conclusions: In general, the enterprise operates at a profit, but there is a negative trend towards a decrease in the amount of profit against the backdrop of a decrease in the efficiency of using property and equity capital. So, to improve accounting in “Vavilon” it is proposed:

1. Accounting for wages and mandatory insurance contributions to extra-budgetary funds of main production workers, as well as indirect production costs, should be carried out on account 2010 “Main production”, which will increase the reliability of information on actual production costs incurred.

2. Form an on-farm compensation reserve for natural loss norms on account 9510, which will allow losses to be predicted in advance and avoided.

3. To account for finished products, use account 2810 “Finished Products”, which will allow you to identify deviations from the standards in the manufacture of products.

4. Keep records of semi-finished products of own production on account 2110 “Semi-finished products of own production”, which will allow them to be identified in accounting from the rest of work in progress.

5. Enter a record of defective products on account 2610 “Defects in production”, which will allow you to keep track of losses from defects and the costs of correcting them.

6. Improve the professionalism and competence of accounting employees represented by the chief accountant through training in specialized courses, participation in accounting seminars, and study of specialized literature. It seems that the proposed measures will increase the efficiency of Vavilon’s accounting and will allow the generation of more reliable information for making management decisions aimed at increasing the financial and economic activities of the enterprise.

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6. Financial reportments of Vavilon restaurant in 2022-2023 уу.

Rezyume: Vavilonning rentabelligini tahlil qilish bizga quyidagi xulosalar chiqarishga imkon beradi: umuman olganda, korxona foyda bilan ishlaydi, ammo foydalanish samaradorligining pasayishi foyda miqdorining pasayishiga, mulk va o'z kapitalining salbiy tendentsiya mavjud.

Резюме: Анализ рентабельности «Вавилона» позволяет сделать следующие выводы: В целом предприятие работает с прибылью, однако наблюдается негативная тенденция к уменьшению суммы прибыли на фоне снижения эффективности использования имущества и уставный капитал.

Kalit so'zlar: korxona, restoran biznesi, o'z kapitali, moliyaviy-xo'jalik faoliyati.

Ключевые слова: предприятие, ресторанный бизнес, собственный капитал, финансово-хозяйственная деятельность.

**THE ROLE OF THE ORGANIZATIONAL-ECONOMIC MECHANISM IN THE
DEVELOPMENT OF INNOVATION PROCESSES IN AGRICULTURE**

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Summary: *The article examines the main aspects of the formation and operation of the organizational-economic mechanism for the development of innovative processes in agriculture. The purpose and tasks of such a mechanism are defined. The diagram and main elements of the organizational-economic mechanism, the success criteria of its activity are presented.*

Key words: *organizational-economic mechanism, agriculture, innovation process, blocks and elements, incentives.*

A distinctive feature of the modern era of development of all branches and fields of agro-industrial production is the need to accelerate scientific and technical progress based on innovative processes that allow continuous renewal of production based on the development of scientific achievements; technology and best practices. World experience shows that innovation processes, as a rule, are not only encouraged, but also regulated by the state through the formulation of appropriate policies and systematic organization of innovative activities [1].

The strategic priority of the social development of any country is the stable operation of agriculture based on the rapid development of scientific and technical achievements. All this is done in innovation processes [3].

The innovative process in agriculture can be presented as a continuous and continuous activity aimed at transforming scientific developments, organizational, economic, technical and technological ideas into new processes and technologies that increase the efficiency of agricultural production. The main participants of this process are scientific and educational institutions, regional authorities, infrastructure elements, as well as direct agricultural producers [4].

Effective implementation of the innovation process is possible with its optimal organization and established economic relations between different structures. Therefore, for the successful management of innovative activities, it is necessary to form and apply a holistic organizational and economic mechanism for the development of innovative processes in agricultural production, which ensures the precise ordering and efficiency of elements. from their interaction.

In the modern economic dictionary, organizational-economic mechanism means "organizational structures, specific forms and methods of management, as well as a set of legal norms, with the help of which the economic laws that apply in certain conditions and in the process of reproduction are implemented." [5].

Revealing the definition of "organizational-economic mechanism of increasing efficiency, rationalization and harmonization of the management system for the development of the innovative environment" and justifying the possibilities of using it as a complex scientific, innovative and organizational-technical tool. A set of economic tools aimed at harmonizing the innovative environment of the organization, network, region with one existing resource, scientific-innovative, competitive potential allows management entities to manage both in the conditions of innovative and economic changes in the state of macro and micro environments. acting as institutional components of external (administrative and coordinating state bodies), and internal innovation environment management system, implements complex organizational-economic and financial-investment measures, management functions, planned innovative, organizational-economic co

implements methods and strategies to eliminate existing deviations from indicators. long-term development of the innovative environment of facility management[2].

In a general sense, the organizational-economic mechanism can be expressed as a specific hierarchical system of subjects and objects of management, which determines the order, methods, principles, methods and means of their balanced and harmonious interaction.

Systematic and institutional approaches are the basis of forming the organizational-economic mechanism of innovative development.

A systemic approach involves considering the mechanism as an integral set of elements in a set of relations and connections between them. The institutional approach determines the conditions for the formation of the mechanism by the effectiveness of institutions that stimulate the innovative activity of economic entities.

The formation of an organizational-economic mechanism requires, first of all, to determine the purpose and main tasks of its activity, as well as its parameters and characteristics.

- The main tasks of the organizational economic mechanism for the development of innovative processes in agriculture are as follows:

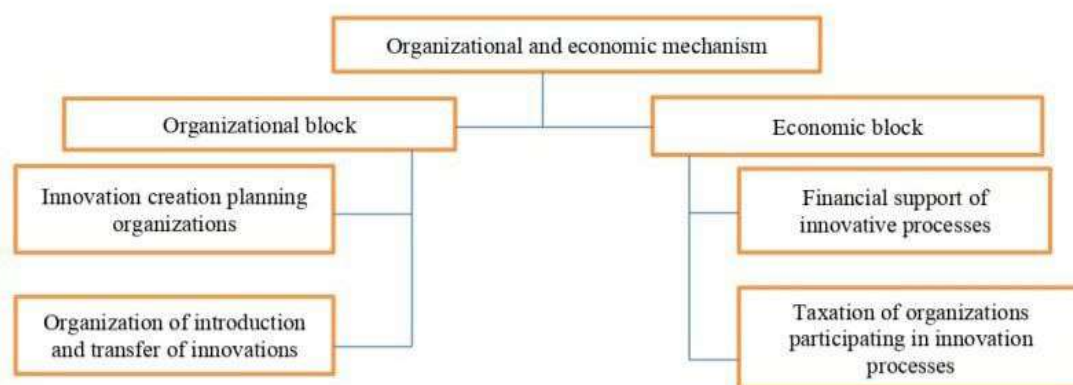
- determining the priority of tasks for the innovative development of the industry;
- optimization of resource allocation in the most important areas of agricultural development;

- ensuring the rapid development and effective use of the innovative potential of agricultural producers through continuous organizational, economic, and technical production forces;

- technological upgrading that ensures the compatibility and proportionality of infrastructure development for innovative processes in agriculture;

- coordinating the interests of all participants of the innovation process in the industry.

The ultimate goal of such a mechanism is to increase the competitiveness of industrial production. The organizational-economic mechanism is characterized by a complex structure and consists of two blocks - organizational and economic block (Fig. 1) [3].

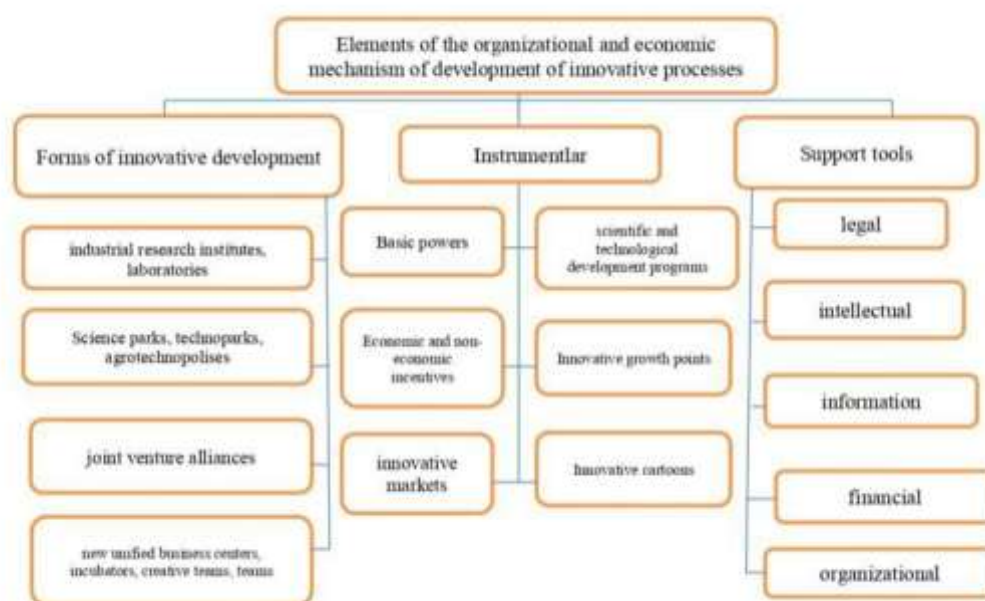


Picture. 1. Scheme of the mechanism of organizational and economic development innovative processes in agriculture.

The economic block of the mechanism is designed to create conditions for the expansion of the re-production of agricultural products.

The organizational block is aimed at creating a flexible and clear organizational system for managing innovative processes in the network.

The main structural elements of the organizational-economic mechanism of innovative development should include innovative development tools, support tools and forms (Fig. 2).



Picture. 2. Elements of the organizational and economic mechanism, innovative development.

- The variety of organizational forms of the innovation process is related to the characteristics of agricultural production, scientific institutions, different nature of innovative formations and their relationship with agricultural producers [4].

- When forming the organizational and economic mechanism for the development of innovative processes in agriculture, it is necessary to take into account the following branch characteristics:

- characteristics of the used means of production;
- spatial concentration of participants of innovative processes in agricultural production;
- characteristics of production and labor organization caused by inconsistency between working periods and production periods;
- much lower investment attractiveness (compared to other sectors);
- variety of organizational forms of management;
- low price elasticity of demand for agricultural products;
- fundamental differences between formations;
- due to the nature of financing various types of products, there is a high level of resource intensity;

The success of the formation and operation of the organizational-economic mechanism of innovative development is determined by the level of internal (material and technical equipment, professional personnel, financial resources, intellectual property) and external (production and technological, financial, information) development. , educational and consulting organizations) innovative infrastructure.

Since the main interested objects of the development of the innovation process are both producers and consumers of scientific products, the target indicators of the formation and operation of the organizational-economic mechanism of the development of innovative processes are indicators of productivity (technological efficiency).) and profitability (economic efficiency). In addition, the operation of such a mechanism can ensure that the production, technological, scientific, personnel and commercial potential of regional agricultural production is maintained at the required level and effectively used.

The internal incentives for innovation related to the need to replace outdated equipment and adopt new technologies to increase the competitiveness of products are still very weak today [4]. In such conditions, external incentives play a decisive role in the activation of innovative processes in agriculture. This makes the process of forming an organizational and economic mechanism for the development of innovative processes in agriculture urgent.

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Rezyume: *Maqolada qishloq xo'jaligida innovatsion jarayonlarni rivojlantirishning tashkiliy-iqtisodiy mexanizmining shakllanishi va faoliyatining asosiy jihatlari ko'rib chiqiladi. Bunday mexanizmning maqsadi va vazifalari belgilangan. Tashkiliy-iqtisodiy mexanizmning diagrammasi va asosiy elementlari, uning faoliyatining muvaffaqiyati mezonlari keltirilgan.*

Резюме: *В статье рассмотрены основные аспекты формирования и функционирования организационно-экономического механизма развития инновационных процессов в сельском хозяйстве. Определены цель и задачи такого механизма. Представлены схема и основные элементы организационно-экономического механизма, критерии успешности его деятельности.*

Kalit so'zlar: *Tashkiliy-iqtisodiy mexanizm, qishloq xo'jaligi, innovatsion jarayon, bloklar va elementlar, rag'batlantirish.*

Ключевые слова. *Организационно-экономический механизм, сельское хозяйство, инновационный процесс, блоки и элементы, стимулы.*

THE HOUSING ISSUE OF THE CITY OF NUKUS IN THE 50- 80S OF THE XX CENTURY ON THE BASIS OF MEMOIRS, MEMOIRS, BASED ON MATERIALS FROM THE MEDIA

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Summary: *The article, based on memories, memoirs and media materials, studies the housing issue in the capital of Karakalpakstan, the city of Nukus, in the 50-80s of the 20th century. The current appearance of the city of Nukus, the capital of Karakalpakstan, cannot be compared with Nukus of the last century. Nukus is rapidly changing its appearance. According to old residents of the city, Nukus was very clean, neat and beautiful. In the post-war years, Nukus was neither multi-storey nor crowded and could not boast of asphalt either. In those years there were more green fields there than in other places. And in general, in appearance it looked more like a large village than a capital city. Despite the fact that Nukus has been the capital of Karakalpakstan since 1932, the city has not yet resembled a capital. At the beginning of the 60s of the 20th century, a new stage in the construction of Nukus began. To solve the housing problem at that time, "Cheryomushki" was built in the city center - the 60th, 61st blocks and the first microdistricts - the 21st and 22nd microdistricts.*

In the mid-70s of the 20th century, the next stage of construction of residential buildings began. Two 9-story residential buildings are being built in Nukus. In the 80s, the central streets of the city were transformed. According to the master plan dedicated to the 60th anniversary of Karakalpakstan "60 years - 60 houses", brick houses are appearing.

Key words: *Karakalpakstan, Nukus, city, housing, house, apartment, street, microdistricts, construction.*

The current appearance of the city of Nukus, the capital of Karakalpakstan, cannot be compared with the Nukus of the last century. Nukus is rapidly changing its appearance. The first master plan of Nukus was drawn up in 1924 by the scientific research institute "Lengorproekt" [1]. The total area of the future capital was determined in 10 square meters. km with a ten-year perspective on 20 thousand people. The site for the new city was chosen on the right bank of Kyzketken, 12 kilometers from the head of the canal. This site was chosen by the government commission, which submitted its opinion on January 10, 1929 [2]. Nukus began to be built on April 1, 1932. But in 1933, doubts arose about the correctness of choosing a site for the city - in terms of its flooding, the presence of suitable hydrological conditions, soil salinity and etc. For the developing of the first stage, the administrative center and the four residential quarters adjacent to it were determined.

By the time the capital's institutions were relocated, there were 12,600 square meters of housing in Nukus. According to the old-timers of the city, Nukus was very clean, neat and beautiful. 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 [3]. 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 a capital city "[4].

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]. Despite the fact that Nukus has been the capital of Karakalpakstan since 1932, the city still did not resemble the capital, recalls Gulaysh Esemuratov. If you describe life in Nukus of that period, you can write a whole poem [6]. In those years, there

were only 3 houses in Nukuya, 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. When the institute opened, it was impossible to enter it, the premises for classes were full of dust.

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 Faina 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, Charjau, Urgench passed and arrived in Nukus on August 19, 1953. The first impression is a huge river, an empty bank, no twigs. "[7]

I was surprised by the cleanliness of this small, cozy and green town. Although there were very few paved roads, there was no dust, because the towns people themselves watered and cleaned the area near their houses. They loved their city and cared about its cleanliness. The first brick houses stood along Kuibyshev street (now Garezsizlik), a very cozy post office building was built and the construction of the Republican hospital was underway. There were only four schools in the city then. [8].

In Nukus of the late 1950s, "the condition of the streets was very difficult. In summer, dust, in winter, cars hardly moved on slush. The central street was Karl Marx street, where the buildings of today's bank, polygraph factory and the Ministry of agriculture were located. In the north and east of the modern building of the Council of Ministers, the buildings of the Pedagogical institute and prisons were visible. We can say that there were no other notable buildings. There were four two-story residential buildings on the former Kuibyshev street, the same 4-5 houses on the former Engels street. All these buildings and houses were built in 1935-1939 by the builders of the Dzerzhinsky district of Moscow ". In the early 60s of the XX century, the next stage in the construction of Nukus. To meet the needs of the growing population, some of the residential buildings needed to be built. These were houses - boxes with the maximum concentration of people on the minimum territory. To solve the housing issue at that time, Cheryomushki was being built in the city center - the 60th, 61st quarters and the first microdistricts - the 21st and 22nd microdistricts. Gas, cold and hot water came to the apartment through the pipes.

These houses, regardless of the number of storeys, the majority were two- and one-room apartments. Despite the fact that these complexes do not meet the requirements, but at that time the housing problem, providing apartments with an increasing population of the city, these buildings were a big step in solving housing problems. In the 1960s, development began in the city limits of typical one- and two-story residential buildings. The housing crisis, for example, in Nukus during this period escalated very much. The construction of these houses allowed young families to somehow settle in the city, have their own roof over their heads, the population called these houses "apartments." "Each room in the apartment is inhabited by individual families, including kitchens," archival sources indicate, "due to the lack of kitchens, residents are forced to cook food in the rooms throughout the year, it is not always possible to ventilate the room and not everywhere, which is why excessive temperature is created in summer in the premises [10].

Houses were usually inguinal, built of raw brick, the foundation was folded yellow stones of shell origin. Usually, the housing of the city dweller was built on the basis of traditional, local types of houses. In Nukus, houses were more built up on the basis of mud bricks, a form of building house made of clay was widespread. For rural youth, a trip to Nukus in those years was a big event, recalls J. Sultabaev. I got to Nukus for the first time from Takhtakupir in 1961, at that time I studied on the 6th grade and arriving in Nukus, was very surprised by the city. Although now remembering those years, I think how I was still very small, because Nukus at that time was small, it had only two large streets - Turtkulskeya and Kalinin (now A. Dosnazarova). Later, Lenin street (now I. Karimov) appeared, along which there were locations of the Regional committee building, the Council of Ministers, these buildings seemed very large. In 1965 year, after graduating from Tashkent, I returned to Nukus, after some 4-5 years, Nukus became even more beautiful than it was. New houses were built a new large street appeared - Mira street, 21 microdistricts were built and commissioned in 1966. In 1967, house number 17 was erected in this area for theatre employees who do not have their own housing [11].

In the mid-70s of the XX century, the next stage of construction of residential buildings began. Two nine-stored residential buildings are being built in Nukus. The construction of these nine - stored buildings was a big event at that time. According to the general plan, such houses were to be located along the street to the central market [12]. But due to lack of funds, this project was not completely completed. In the 80s, two central streets of the city were transformed - Berdakh Avenue (formerly Turtkulskeye shosse) and Dosnazarov street (formerly Kalinin street). According to the master plan dedicated to the 60th anniversary of Karakalpakstan "60 years - 60 houses," brick houses consisting of three and four-room apartments appear.

In 1978, 90% of housing was connected to the water supply system, and gasification of apartments began in 1959. The number of subscribers of the city telephone exchange is increasing.

In connection with the sharp increase in the volume of industrial, agricultural, housing and cultural and household construction in the republic, the construction industry base is developing in Nukus. A house-building plant and a building materials plant were put into operation.

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Rezyume: *Memuarlar, xotiralar, ommaviy axborot vositalari materiallari asoslangan maqolada 20-asrning 50-80-yillarida Qoraqalpog‘iston poytaxti Nukus shahridagi uy-joy masalasi o‘rganiladi. Qoraqalpog‘iston poytaxti Nukus shahrining bugungi qiyofasini o‘tgan asrdagi Nukus bilan solishtirib bo‘lmaydi. Nukus o‘z qiyofasini shiddat bilan o‘zgartirmoqda. Shaharning keksa aholisining aytishicha, Nukus juda ozoda, ozoda va chiroyli edi. Urushdan keyingi yillarda Nukus na ko‘p qavatli, na gavjum, asfalt bilan maqtana olmasdi. O‘sha yillarda u yerda boshqa joylarga qaraganda yashil maydonlar ko‘proq edi. Va umuman olganda, tashqi ko‘rinishida u poytaxtdan ko‘ra katta qishloqqa o‘xshardi. 1932-yildan buyon Nukus Qoraqalpog‘istonning poytaxti bo‘lganiga qaramay, shahar haligacha poytaxtga o‘xshamagan. 20-asrning 60-yillari boshlarida Nukus qurilishida yangi bosqich boshlandi. O‘sha paytdagi uy-joy muammosini hal qilish uchun*

"Cheryomushki" shahar markazida - 60, 61-kvartiralarda va birinchi mikrorayonlarda - 21 va 22-mikrorayonlarda qurilgan.

20-asrning 70-yillari o'rtalarida turar-joy binolarini qurishning navbatdagi bosqichi boshlandi. Nukus shahrida ikkita 9 qavatli turar-joy binosi qurilmoqda. 80-yillarda shaharning markaziy ko'chalari o'zgartirildi. Qoraqalpog'istonning 60 yilligiga bag'ishlangan "60 yoshga – 60 uy" bosh rejasiga asosan g'ishtdan qurilgan uylar barpo etilmoqda.

Резюме: В статье на основе воспоминаний, мемуаров и материалах СМИ изучается жилищный вопрос столицы Каракалпакстана-города Нукуса в 50- 80 –е годы XX века. Сегодняшний облик города Нукуса, столицы Каракалпакстана нельзя сравнить с Нукусом прошлого столетия. Нукус стремительно меняет свой облик. По словам старожилов города, Нукус был очень чистым, аккуратным и красивым. В послевоенные годы Нукус не был ещё ни многоэтажным, ни многолюдным и асфальтом тоже не мог похвастаться. В те годы зеленых полей в нем было больше, чем в иных местах. Да и вообще внешне он скорее напоминал большой аул, нежели столичный город. Несмотря на то, что Нукус являлся столицей Каракалпакстана с 1932 года, город еще никак не походил на столицу. В начале 60- х годов XX века начинается новый этап в строительстве Нукуса. Для решения жилищного вопроса в тот период в центре города возводится «Черемушки»- 60-й, 61- й кварталы и первые микрорайоны- 21 и 22 ые микрорайоны.

В середине 70- х годов XX века начинается очередной этап строительства жилых домов. В Нукусе возводятся два 9- этажных жилых домов. В 80-е годы преобразуются центральные улицы города. Согласно генеральному плану, приуроченному к 60 летию Каракалпакстана «60 лет- 60 домов» появляются кирпичные дома.

Kalit so'zlar: Qoraqalpog'iston, Nukus, shahar, uy-joy, uy, xonadon, ko'cha, mikrorayon, qurilish.

Ключевые слова: Каракалпакстан, Нукус, город, жилища, дом, квартира, улица, микрорайоны, строительство.

**IN KARAKALPAKISTAN, THE PROBLEMS OF PROVIDING THE POPULATION
WITH DRINKING WATER ARE BEING SOLVED STEP BY STEP**

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Fundamentals of Legal Education"*

Summary: *The problem of drinking water is becoming one of the biggest problems in the world today. Problems of drinking water in the Republic of Uzbekistan and the Republic of Karakalpakistan is one of the biggest issues today. To solve this problem, our President Sh. Mirziyoyev's decree of the Oliy Majlis, the Jokargi Kenes, and the inspectors of all kinds of organizations, which came from behind, were of great service.*

Key words: *Hydrogeology, Takhtakopir, Amudarya, Karauzak, Turtkul, Boston Canal, Airaqua, irrigation, melioration, geology, ecology*

In recent years, in the period of water scarcity, large-scale projects are being carried out in order to supply drinking water to the people. Drinking water is a precious wealth. Because on our planet, rivers and lakes are not evenly undivided, but in some territories, water supply is considered a resource that is very slowly restored. At the time when the population of the world is growing rapidly, more than 2 billion people are not yet provided with quality drinking water. Providing people with clean drinking water is of great importance. Drinking water must meet the requirements of specific national standards and is also a concern of sustainable health care in the spotlight. State standards require that water sources also comply with sanitary protection zones of vacant water supply facilities.

In 2021, works worth 179.7 billion soms were completed in 128 villages and neighborhoods in order to improve drinking water supply for the residents of the Republic of Karakalpakistan.

It was informed that within the framework of these works, 680.6 km of drinking and wastewater networks and 51 water structures are being constructed and reconstructed in 131 objects.

In particular, construction and reconstruction of 112.1 km of drinking water networks are being carried out at the cost of 27.6 billion soums in 19 objects within the framework of the implementation of the "Prosperous village" and "Prosperous neighborhood" programs.

Construction and reconstruction of 12.7 km of drinking water networks are being carried out in 5 facilities with a project value of 3.75 billion soums within the framework of the "Development of the Aral Bay Region" program.

It was added that as a result of the planned works, 58,000 people will be provided with drinking water for the first time, and the drinking water supply of 104,800 people will be improved.

Before that, the Chairman of the Council of Ministers of the Republic of Karakalpakistan, Kahramon Sariyev, used the word "water" many times in his address to the people of Karakalpakistan.

Based on the decision of the President of May 24, 2021 "On additional options for increasing the level of provision of drinking water and waste water services to the population", providing the population with clean and high-quality drinking water, waste water service Intensification of improvement works, large-scale works are being carried out in the direction of diverting citizens' gatherings, where the supply of drinking water is difficult. Pursuant to the implementation of the decision, 4 URB 25 and 6 URB 600 high-tech drilling machines were brought from Tashkent, and digging of underground wells is being carried out in areas with a difficult supply of drinking water. These machines are capable of extracting underground water from a depth of 700 to 1000 meters.

A hydrogeological map for drilling wells was drawn up in the places, and it was determined at what depth should be dug. The use of these techniques makes it possible to provide water to carttle and grain farms, as well as to the agricultural lands with a house lining, without harming the supply of drinking water.

A seminar was held on the advantages of these techniques and their drinking mechanism and their effective use. It was attended by A. Orinbaev, the head of the Council of the Republic of Karakalpakstan, leaders of relevant fields, deputies, representatives of farmers and grain farms, and livestock.

As it was mentioned, in order to improve the productive use of the people's fertile land from the , it was mentioned that the fund under the Council of Farmers, Grain Growers and Land Owners is providing subsidies for digging artesian wells. Our experts have mentioned, these subsidies are given in two ways, that is, the first one is for small circle artesian wells for citizens' families, and the second one is for wells with a depth of 30 meters, which will supply 30 families with water. With the help of the imported equipment, well digging works were carried out in the arid areas of Takhtakopir, Amiwdarya, Karauzak and Tortkul districts.

The water distribution station will be restored in Takhtakopir district of Karakalpakstan by the end of the year. This is within the framework of the project "Improving Drinking Water Supply in Rural Areas on the Island" with the financial support of the New World Program (NWP), implemented as a result of the cooperation of the Coca-Cola Foundation and the Global Water will be implemented within the project.

As a result of the drying up of the Aral Sea, a number of socio-economic and ecological problems have arisen in Karakalpakstan. As a result, only 50.8% of the local population has the opportunity to use the services of the centralized water supply system. Residents of remote districts consume water from water sources installed on the ground and from artesian wells with a depth of 400-500 meters.

In the "Makpal-kol" farm in the territory of the "Ata-kol" village, where a school, kindergarten and other social institutions are located in Takhtakopir district, drinking water is supplied only through hand pumps. Or it is possible to bring the cisterns to the village gathering. This creates health and sanitation problems.

As part of the project, it is planned to install new equipment for water purification, repair the water distribution station and install water pipes. After the completion of the project, 1,950 local residents will have access to clean artesian water. The Coca-Cola Foundation will allocate 100,000 dollars to the project.

The project envisages the establishment of initiative groups to ensure the reliable operation of the station and the use of water supply systems. Training and seminars on sanitation and hygiene rules are held in educational and medical institutions.

The initiative is implemented within the framework of the joint UN program "Strengthening the potential of the living conditions of the population affected by the Aral tragedy through the establishment of a multilateral fund for human security for the Aral region", which was launched a year ago.

The project "Development of drinking water supply systems in the western part of Uzbekistan" is also being implemented. ADB allocated a loan of 145 million dollars. 1280 km of water network, 3 water treatment facilities with a daily capacity of 300 thousand cubic meters, 24 water distribution facilities and 45 reservoirs were built, 84 districts of Amudarya, Moynak, Nukus, Beruni, Karauzak and Kungirod districts, where more 320 thousand people live allows to improve the supply of drinking water in the community.

The next destination in the direction is the project "Improving water resources management in South Karakalpakstan". Within its framework, water resources management will be and improvement 100,000 hectares of irrigated land in Beruniy, Tortkul, and Ellikkalla districts. A loan

of 214.8 million dollars from the World Bank was allocated for the implementation of the project. 9 out of 20 planned construction work packages have been completed, 11 are being implemented.

Also, the ongoing work on the project "Restoration of the Boston Canal (Eastern part)" in Tortkol district was studied, and appropriate instructions were given to accelerate the introduction of the SCADA system.

According to us, nowadays the problem of providing drinking water to remote areas of our Republic is in the first place. A lot of work is being done to solve this problem.

At the initiative of "Uzgidromet", the "atmospheric water generator" (Airaqua - consists of 7 purification filters) device for the production of drinking water from atmospheric air was put into operation at the weather station of Shimboy district in the Republic of Karakalpakstan as an experiment (test).

According to the information service of "Uzsuvtaminot" JSC, this device is adapted to regions where drinking water does not reach and the supply is economically expensive.

This innovative technology was launched as a test, and it is planned to be installed in other weather stations in our republic using the statistical data obtained from it.

Considering that the atmospheric air is a huge reservoir of moisture, the installation of an atmospheric water generator can be said to be the most effective device for producing atmospheric water in the world.

It should be noted that this device allows you to get water cleaner than distilled water. Depending on the humidity and temperature of the atmosphere, the device allows you to supply drinking water from approximately 12 to 30 liters per day. It does not require a lot of power (1 kW), is compact, environmentally friendly, and technically safe for human life in use is one of its convenient aspects.

With the initiatives of our President, many works have been carried out in our country. The President Sh. Mirziyoyev issued a number of decrees to the people. The decision of the President of the Republic of Uzbekistan on November 11, 2020 "On comprehensive social and economic development measures of the Republic of Karakalpakstan in 2020-2023" became a historical document in this regard. On the basis of this decision, a three-year plan for the rapid development of our cities and districts, and the improvement of people's living conditions, including 2,788 areas, was determined. Among them, the decision of the leader of our nation on December 5, 2020 "On effective use of water resources in the Republic of Karakalpakstan and urgent measures to improve land reclamation conditions" serves to further improve the living conditions of our people.

Today, our president pays great attention to the remote districts of our republic. As an example of this, we can mention the work done in Moynak district.

President Sh. Mirziyoyev During his visit to the Republic of Karakalpakstan in November 2018, visited Muynok and thoroughly studied the living conditions for the socio-economic development of the district. On January 16, 2019, the Cabinet of Ministers of the Uzbekistan Resolution No. 37 of the Republic of Karakalpakstan "On measures of integrated socio-economic development of Moynaq district" was adopted.

According to the decision, during the period of 2019-2021, improvement of the infrastructure of pre-school and general education, sports, health care, creation of culture and recreation parks, public roads and internal roads at the expense of the authorities repair, reconstruction and modernization of the electric power system, supply of natural gas, development of drinking water and waste water networks, introduction of information and communication technologies, youth problems, tourism, agriculture, irrigation, melioration, geology, ecology, the investment of 1 trillion 485 billion soums was allocated to 62 objects covering all sectors of the economy. 28 of those objects are social, 20 are aimed at the implementation of construction and repair works in other areas, such as improvement of drinking conditions of the people, development of engineering and communication infrastructure.

In the end, it is necessary to mention that nowadays in the Republic of Karakalpakstan, all the work is being done to ensure the quality of drinking water for the population and the health of the people. In this field, our President Sh. Mirzyoyev's contribution should be highlighted.

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Rezyume: *usi maqalada hâzirgi künde Qaraqalpaqstan respublikasinda xalıqqa sapalı ishimlik suwin jetkerip beriw boyınsha jumislar atap ótilgen*

Резюме: *В статье упоминаются работы по обеспечению качественной питьевой водой населения Республики Каракалпакстан.*

Kalit so'zlar: *Gidrogeologiya, Taxtakopir, Amiudaryo, Karaozek, Tortkul, Boston kanali, Airaqua, irrigatsiya, melioratsiya, geologiya, ekologiya.*

Ключевые слова: *Гидрогеология, Тахтакопир, Амивдорью, Караозек, Торткуль, Бостонский канал, Айраква, ирригация, мелиорация, геология, экология.*

THE SIGNIFICANCE OF SPIRITUAL-GENERAL ASSESSMENT IN SOCIAL PLANNING

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Summary: *The article discusses the reforms in the spiritual and educational sphere of our country. The role of spiritual and ideological education in the development of society is interpreted.*

Keywords: *spirituality, enlightenment, society, youth, tolerant worldview.*

The support, source of strength and power of any nation and society is spirituality. Mentally strong and determined population can determine the path of development by themselves, find the right path to the future by taking inspiration from their historical roots. Therefore, our nation has been trying to create the richest spiritual world in its children since ages.

Since the days when our country was on the path of steady development, the improvement of the mental and moral sphere has been brought to the level of state policy, and its legal foundations have been created. As a successful continuation of these, the Ministry of Education, the Ministry of Population Education, the Ministry of Education of the Republic of Uzbekistan, the Ministry of Higher and Secondary Education, the Ministry of Health, and the "Family" Scientific and Medical Research Center have developed the "Concept of Continuous Spiritual Education" [1] place was developed after the discussion at the international level, this concept 2019 j. On December 31, it was approved by the decision of the Cabinet of Ministers of the Republic of Uzbekistan No. 1059.[2] One of the priority directions of improving the concept of "Continuous Spiritual Education" is to increase people's knowledge of child education, to increase pedagogical culture, to introduce citizens to the effective methods of continuous spiritual education, and to continuously introduce them to the forms of improving their education.

The goal of the concept is to provide our young generation with high-quality, well-educated people based on gradual development of social skills and qualities important for national and modern life.

The concept covers four stages: the first stage:

in families (home age, age from birth to 3 years old);

second stage: pre-school education up to 3-6 (7) years old;

third stage: general secondary education (primary class up to 7 (6)-10 years old, 11-17 (18) years old);

the fourth stage: young people who are not working in production, and therefore are accompanied, young people in the system of secondary vocational and higher educational institutions.

Human education has been recognized as one of the most important issues in every age and society. Historically, a society in which the moral maturity and spiritual perfection of the individual is not in the first place will face a crisis.

Today, the nature of the times is different. The opportunities offered by Doir are both new and impressive. The power of globalization, the development of information technology, communication technology, and rapid change. These processes are in line with the improvement of society's life, directly affecting the human spirit, spiritual and moral qualities in various degrees, giving birth to a single class of teachers. From the perspective of those eyes, for us, for all mankind, the spiritual education of the individual takes the place of the previous important and important issues of the society spirituality . In particular, the "Concept of Continuous Spiritual Education" which was developed with the participation of the organizations serving in one line in the work of

the Republican Center for Mental Health and Morality is aimed at the solution of such problems. Its main goal is to continuously improve society.

Since "spirituality" is closely related to the personality and spirituality of a person, and it is the moral content of a person, these waters are a source of inspiration and beauty. In the cultural world, water is in the first place, and for the soul, spirituality has the same value. It is the main thing to bring a person to the spiritual level. The factor is morale. Since time immemorial, all geniuses have recognized that spirituality is the most basic content of a person. It is no coincidence that Abu Nasr Farabi's goal in life was "pazil" and the dream of Navoiy was a "perfect" person.

The fact that our region is one of the largest centers of civilization in the world is determined by the fact that education and spiritual life of the community are paid special attention, and the education of the child is in the first place. The great thinker Alisher Navoiy, who held the spiritual well-being as the main mission, said: "Brighten the face of the world with wisdom, and make the world happy again" The wisdom of being created as a human being is in spiritual and moral perfection, striving for spiritual humanity, improving human qualities.

The idea of the great mayor Abdirauf Fitrat's that "the future and development of any country is related to the education and upbringing of young people" shows that the education of the young generation should not only be a matter of family, but the whole society and the country should be involved.

In Uzbekistan, which is making great strides in the new stage of development, continuous spiritual education, as defined in the concept, is implemented systematically and purposefully, family separations and cases of guilt, the indicators of which are increasing day by day, will be prevented, the population and young people's morals, consciousness - the feeling is poor, the spiritual perfection is aspired to, the life of the society will be improved several times. After all, the main source of success is mentality and character. In particular, our people's national talents, national heritage, religious, cultural and spiritual heritage are the only powerful force that unites the population, nation, and society and raises them to higher heights.

In fact, every nation and state relies on its own development tendencies, education, national furniture, local customs and traditions, and educational principles. The "Continuous Spiritual Education Concept" developed at the initiative of the Republican Center for Spirituality and Morality, which is not a state institution, but a public institution, covers all of these disciplines. In its preparation, national, religious values, and foreign experiences of our great ancestors were deeply studied, relative analyzed, and appropriate conclusions and recommendations were given based on these.

The main directions of the concept, the aim and the missions, and all the steps that seem to determine the executive officers have been taken into consideration. If it is a government decision, it is the legal basis of this concept, it is the *dölepki* step of the implementation mechanism. It is free from any ideological constraints. The existence of this important direction, which includes the citizens, the nation, the people of their homeland, the criteria of humanity, and the younger generation, is fully supported.

Today, the main goal of the "Concept of Continuous Spiritual Education" is to educate spiritually mature, highly gifted, educated people, and this national movement has stepped forward step by step. gives results. On the basis of this concept, we aim to achieve the following common goals:

- to create an identity that meets modern requirements, is free from ideological attacks, can resist any information attacks, has a firm position in life, and the ability to think;

- our country is spiritual and physical healthy, well-educated, socially and politically stable society, strengthening its place on the world stage;

- increase our great values that have been inherited from our ancestors to our children, and ensure the prosperity of our Motherland. Based on the decision on additional options for increasing

the effectiveness of spiritual and moral work, one line of directions was included in this concept. In particular:

- scientifically based indicators of spiritual education assessment;
- forms of effective use of national educational methods and advanced achievements of modern pedagogy in child education;
- mechanisms for effective cooperation between family, educational institutions, community, mass media and other social structures in the implementation of spiritual education;
- a system of continuous spiritual education that aims to continuously improve the knowledge and skills of the trainees;
- different qualities of spiritual training, starting from the point of friendship and at each stage of training;

- spiritual education is based on the principles of gradualism and continuity. Today, one of the most important issues in the field of spirituality and morals is the development of a tolerant world among young people. This is one of the problems facing society today. Systematic organization of spiritual and moral activities in our country in order to create a tolerant world of young people, increase the effectiveness of the activities aimed at this, increase the intellectual capacity of the population, society, and youth. The issues aimed at expanding competence, consciousness, and worldview, strengthening ideological immunity, adapting to the people, living with a sense of love and loyalty to the people, have been raised to the level of state policy.

One of the most important issues considered in the above directions is the issue of tolerant youth development. If the people around us are not able to be tolerant to changes, social, political, economic and other innovations, then they will not be able to accept the reforms properly, and they will be mistrusted and negative. will lead to. Therefore, the development of tolerant worldview of young people, i.e. their wide worldview, being up-to-date with the times, leads to an increase in the sense of belonging to the real changes that are being carried out.

In accordance with this, the Uzbeks National News Agency, the Uzbek National Association of Electronic Mass Media, the Inter-Popular Press Club and other mass media will discuss the intellectual potential of young people and develop a tolerant world on current topics. It is appropriate to organize articles, talk shows, social videos, shows, journalistic performances, aimed at education, strengthening ideological immunity, and cultural education. It is not a secret that in today's world, when ideological-ideological struggles are intensifying and spiritual forces are growing stronger, there are cases where young people are disillusioned with national abilities, influenced by harmful foreign ideas, and mistakenly join terrorism and extremism movements. In order to prevent such negative situations, in order to create a tolerant world among young people in our country, moral and moral

It is necessary to increase the effectiveness of work, fight against internal and external threats in the field of spirituality, strengthen the ideological immunity of the society, state organizations and institutions of civil society, and improve the following activities:

- to improve the position of an active citizen in the international community, - to develop a tolerant culture based on national and general human values in the society. st1 qaliplestiriw ;
- to deliver the results of political, economic, social, spiritual and ethical reforms, the contents of adopted legal documents to the general public;
- participation in activities aimed at studying and improving the social and spiritual environment in family, community, educational institutions and work organizations, wide introduction of modern information and communication technologies in order to create a tolerant society of young people;
- development of strategic directions, effective, creative and innovative methods of organization of continuous spiritual and moral education and campaigning work in the society

based on the idea of "Knowledge against Ignorance" in order to create a tolerant society of young people;

- to carry out effective propaganda-intentional work against various internal and external groups that promote peace and harmony among young people, stable development of our country, values, tradition and humanity;

- we believe that it is appropriate to strengthen the creative ideas of young people in the social and spiritual life, to increase the pace of work on strengthening the atmosphere of religious broadness and inter-ethnic cooperation, and to enrich it with new content. The social situation of students and pupils of high and medium specialized, vocational educational institutions in our country and in the world

Creating and maintaining a virtual information space (website, portal, forum, channels in messengers, etc.) designed to quickly inform about political, cultural news and interesting events, and provide them with current content. at the same time it will have its positive effect. In conclusion, it is necessary to constantly improve the work in the field of spirituality and behavior, and bring to life various methods, forms and mechanisms. Because every field in our life today and in the future is related to the level of spiritual maturity of our personnel.

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Rezyume: Maqolada mamlakatimizda ma'naviy-ma'rifiy sohadagi islohatlar to'g'risida so'z yuritiladi. Jamiyat taraqqiyotida ma'naviy-g'oyaviy tarbiyaning roli talqin qilinadi.

Резюме: В статье рассматриваются реформы в духовно-просветительской сфере нашей страны. Интерпретируется роль духовно-идеологического воспитания в развитии общества.

Kalit so'zlar: ma'naviyat, ma'rifat, jamiyat, yoshlar, tarbiya, tolerant dunyoqarash.

Ключевые слова: духовность, просвещение, общество, молодёжь, толерантное мировоззрение.

TRANSFORMING THE ARTISTIC PROCESS UNDER THE INFLUENCE OF VIRTUALIZATION

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Summary: *The article deals with virtual reality has become a tool for gaining unique experience, participating in experiments that require physical and mental high courage. The various new situations that can arise in virtual reality create new tests for the human body, which are the interface of the human body.*

Key words: *virtual reality, computer communicative, technology, phenomena, absorption, internet, multimedia, improvement, civilization, formation.*

Introduction. In the 20th century, the media became the main factor in the formation of our way of thinking, as well as lifestyle. Virtual reality has become a tool for gaining unique experience, participating in experiments that require physical and mental high courage. The various new situations that can arise in virtual reality create new tests for the human body, which are the interface of the human body. Based on this approach, the main function of the body is to transmit impulses and signals to the brain from the outside, as well as to maintain the vital activity of the body.

This means that the body will be approached purely pragmatically, the body will be ordered and improved that is why it will be refused in the future. Supplementing the human body with technical means, new methods and levels of interaction between people through machines can lead to incompatibility of the subject, so it will be possible to recall the views of Delaise and Guattaria on this subject.[1.624] Therefore, the boundaries between internal and external, mine and unique, natural and artificial disappear in them. This state can be considered as a terminal point of mutual absorption of the body and technology.

Virtual reality eliminates the catalytic hierarchy of ideas and phenomena and is limited to the proposition of relativism instead. The symbol of virtual reality is the relativity of experience and opinions, diversity, centralization, loss of reality (reality) and respect for artificiality. Through the improvement and widespread adoption of technology, these virtual reality traits can be observed to have a strong impact on cultural processes, daily practices and modern values. True, the folk language describes it in its own way. M. Heidegger expressed the opinion that "the technology will essentially not be technological." [2.221-238]

That is why, technical knowledge is not enough to solve urgent issues in the framework of the transformation of technologically oriented situations and the connection of this technique with man.

It should be tasted if the immersive (English immersive - noise, existence) virtual reality studied above is open to a relatively small number of people today, and as another computer communicative virtual reality, the Internet, on the contrary, managed to occupy one of the central places in the modern cultural space.

In the virtual world of the Internet, people learn, work and relax, spend their free time (effective, ineffective), communicate, argue; trades and struggles, takes credit and returns money, escapes the world or travels; someone ignores gambling, someone becomes a business broker, loves, cheats or dies, "becomes recognisable and popular, realizes his desire, finds memory and much more, so the Internet is not only an information space (by origin and basic functions), but also a global means of social communication. The internet is not just a huge database, it's a space where people live and it's impossible to imagine.

Virtual reality is a man. Human activity on the Internet is almost always inextricably linked with interpersonal communications. Of course, the hacker movement could not develop without the development of network technologies, as a result of which the global Internet was actually created.

However, despite the fact that science fiction is a particular importance for the formation of cyberpunk ideology, they cannot be identical to them. Better-known galleries and museums display works of virtual reality. At one of the most famous exhibitions of modern art in New York, this work was by American artist Jordan Wolfson who was presented.

In January, the American artist presented his virtual reality project at New York Public Library KAWS. As you know, virtual reality technology appeared in the 1990s, but now it is going through a real stage of development. Soon virtual reality glasses will be in demand not only for each gamer, but also in many professions.

The creators are mastering the new media space of artists and designers equipped with virtual reality mirrors. At the same time, they use integrated video screens. As well as motion sensors and special technical interfaces will increase the effectiveness of this activity. DW presents four artists and their views on virtual reality art.

Since the 20th century, various aspects of all art have gradually begun to move to a new format and this process continues. The theatre has changed significantly. He moved from classics to modern innovative technique through avant-garde, modernism, postmodernism. Given the changes in the public consciousness of art, it is necessary to look for ways to attract all the opportunities that virtuality in its current activities give to this art.

Computer multimedia technologies have radically changed the features of theatrical art. The illusion of relationships with the imaginary world creates visual and sound effects. Interactive solutions, three-dimensional simulation (3D) provide real contact between the environment and the viewer, projection and screen creates the illusion of entry and existence. Instilling a person in other realities, influencing his mental, spiritual, emotional spheres is one of the main priorities of theatrical art. The activation of the right and feelings affects the well-being of a person, which begins his deep empathy.

The use of innovative technical potential will create a new understanding of theatrical art. Digital technologies will help to the world of imagination created by a playwright and director. New technologies give the creative team the opportunity to present their wishes and dreams. At the same time, artistic images are fully reflected. Combining and interacting live actors with projection video clips will create a new artistic technique in the theatre defined by digital technologies.

These technologies create the basis for the restoration of any kind and space. It created special graphic programs that allow you to imitate characters of any type, imaginary, surreal drawings, landscapes, images, etc. All these processes will be carried out using computer graphics with great technical capabilities and creative potential. These opinions are substantiated by the Russian cultural scientist A.Ya. Flier, who studied culture as a virtual reality. In his opinion, the emergence of virtuality will lead to a period of formation of the first urban civilizations and division of society into layers. [3.492]

The study of virtual moral principles requires reverse analysis of virtual discourse culture into its ancient roots. Discourse may indicate magic as the ancient roots of culture. Virtue returns to practice not as magic and wonder, but as the "perfect expression" of virtual discourse. The magic of verbal impact remains valid, but the words themselves are updated.

D. Freser says every culture is on a caltice glacier, under which magic is hidden, which is not guaranteed by either one or the most developed culture. Therefore, the innovations of theatrical art in the use of all types of technical means increase the importance of the artistic context. This means that each work becomes a virtual phenomenon.

This atmosphere allows the viewer to dive deeply into the events taking place. Allowing to the spectators to get into virtual reality, formed or opened with him.

The idea of virtuality allows a person to think fundamentally differently. Develops a new paradigm of thinking that reveals the complexity of building the world.

This led to a change in the traditional language of art to technological practices. He also created new genres in the field of art. When we consider a phenomenon of virtualism in other words, we are trying to combine theatrical art and virtual reality, we must turn to the basic theoretical and methodological principles of modern researchers V.V. Bychkova and N.B. Mankovskaya.

They own the classification of five types of "virtual reality" related to the field of art and aesthetic experience. These are such arts as natural virtuality - a dream, universes, the sphere of moral and mental activity of a person, realized in imaginary hallucinations, children's games, imagination, virtual reality. Art creates a major-symbolic world. This world can be compared to the virtual world. They also have several properties of their own. Virtual reality in art is manifested only in the act of aesthetic perception.

All forms and elements of virtuality will be created on the basis of modern computer technologies. It includes an electronic reality. Virtual reality that is arising in this area is created using a specific environment, computer graphics, which determines the special stability of space and time. The subject is in a mental state, goes beyond aesthetic experience.

This applies to any human activity and is the basis of artistic and aesthetic culture. Theatrical reality has similarities with seven features of the virtual phenomenon developed by N. A. Nosov. The features proposed by scientists: a) extraordinary - every time any events happened, it is tested in an extraordinary way. Theatre events will be created by the actor every time the play is played; b) surprise - virtual surprise and inevitability; it cannot be seen as a conscious process, on the contrary, elements of the subconscious prevail.

The viewer is immersed in theatrical actions regardless of desire or unwillingness; c) split - in virtual reality, a person acquires some special feeling. He separates parts of his body from himself. Experiences any feelings from euphoria to joy; d) objectivity - she does not speak of herself, let alone a person.

These opinions are manifested to a greater extent. The audience in the theatre is always influenced by external forces. In the work of the scene, a bright object is formed, including thoughts, feelings, movements. It includes a change in the state of the body. In virtual reality, a person leaves the usual reality and enters another, unusual reality. Execution is in fact, the acquisition of a different body. Both the viewer and the actor are in a state of deep immersion; the right position changes, that is the nature of the work of consciousness in the virtual world changes.

In virtuality, the range of human activities is expanding - a person easily moves and processes all the necessary data. It can also observe a change in personality status. At the same time, in virtual, a person tries to interpret himself and his capabilities in a completely different way. In the magnificent pageant, the audience, along with the actors, feel that they are getting into events. The concept of "virtuality" calls us to a new approach to old ideas in the field of objectivity of the "real" world.

Virtualization has become a characteristic feature of postmodernism formed in the information society. Personality virtualization is a new life strategy that has a strong impact on theatrical arts activities. The viewer takes an active part in art and becomes a participant in the event from a passive receiver. Thanks to this, the modern viewer becomes an integral, system-forming part of theatrical performance. The traditional reception model available between the viewer and the stage field will be created through theatrical practice. This practice includes psychological, cosmic and aesthetic distance. It transforms the viewer from an analyzing evaluator to an active participant. This process requires taking into account the specific psychological states of a person.

The emergence of a new aesthetic has strengthened the use of the innovative technical potential of theatrical art. Digital technologies have opened up new possibilities for creating an

imaginary world, images of its desires and experiences. Displays images created by the ignorance mechanism. Over time, along with the image, its Zira and shoe features begin to appear. The controversial nature of this man unites. It can look the opposite of physical and spiritual life.

This allows us to understand the unity of the objective and subjective sides of consciousness. Multimedia and interactive technologies have opened up the real prospect of a new image. A graphic image created on a computer screen reduced the differences between real life. To connect with younger generations of viewers who are growing up online, the theatre needs to create a new language. This language should be based on artificial technology.

The latest multimedia capabilities, computer graphics are preparing the basis for creating multilayer electronic decorations instead of large, heavy and not very functional decorations. The reason for the growing expansion of the theatrical technology market today can also be attributed to its widespread use. Various exhibitions, seminars, festivals are held, where you can also learn how to use technical means.

At these events, the creators will be presented with various multimedia tools. The virtuality of theatrical art changes the form and content of the stage order. It moves on to new representations with classical clarity, documentary (verbal), multimedia, digital video effects, 3D graphics, animation, morphing. The theatre acts as a way to change one object. The capabilities of the virtual artifact allow you to change not only the stage space, but also aesthetic perception.

The virtual lifestyle of culture, which includes virtual art, symbolizes a new qualitative stage in the development of culture. All these realities of our time and their appearance contribute to the enrichment of modern culture. Virtuality before artistic creativity is manifested as an integral side of culture. Theatrical and virtual space will contribute to the implementation of new models of art.

It should be noted that an active change in public consciousness in our time forms a new type of culture. In this process, the status of knowledge is determined mainly through a new type of screen, an audiovisual culture based on technologies for pragmatic use of information. In the realities of the modern world, theatrical art uses many technological, multimedia and interactive solutions. No one denies that light sound systems and other means should expand the artistic and functional capabilities of the theatre.

These additional technical means influence the peculiarities of the creation and perception of the scenic art space by the viewer. This suggests that modern theatre and the viewer play the role of "virtual reality" in relationships. Virtuality is created using computer graphics. Its effect is enhanced by video projections and sound effects. The influence of virtual reality on theatrical art allows you to understand the different types of this environment and atmosphere.

The researchers point out that one of the main features of virtual reality is objective reality. This feature is related to his attempt to create a new world. Theatrical art takes a person into another atmosphere - a creative, imaginary, outstanding, ideal world. This process is carried out in the form in which the stage work basically does not lose touch with the reality of life. Immersion technology is based on the nature of the theatre's stage performance to create the same virtual reality.

The virtuality of theatrical art can be interpreted as a new view of theatrical nature. This requires taking into account the historical, cultural and psychological aspects of the theatre. In addition, one of the important points determining the relevance of this study can be called a change in the essence of its presentation by processes that improve modern theatre with the most artificial technical term. At the same time, we see the influence of virtual culture on the spheres of art.

It makes it possible to find mechanisms to stimulate the art sphere. Secondly, theatre is also important for theoretical contributes to the growth of knowledge about art. Such processes clarify our views on the essence and forms of influence on the person of theatre and other types of art.

Theoretical and historical analysis of understanding the essence of virtual reality testifies to a multifaceted interpretation of this concept. Features of theatrical art are presented in a two-sided interpretation of the viewer's perception. This is a traditional, imaginary world of virtuality, based

on the actual existence (productions, scenery, actors) and a subjective feeling of participation in events under construction. Virtuality begins to surround the creative, imaginary, outstanding, perfect or imperfect, but capable of being connected to the reality of life. Theatrical art manifests itself as immersion technology that creates a special virtual reality. In each style of theatrical art, virtuality through metaphor and major-symbolic foundations takes on a specific meaning. In this case, methods such as metaphor, metabolism, fantasy are used.

The dynamics of the manifestation of the virtual nature of the theatre can be seen on the example of the main dramatic systems of the 20th century. We see this in the work of great directors. These cases allow you to define differences in virtual relationships at a broader level. Through the following programs, you can understand the virtuality of theatrical art: psychological virtuality (K.S. Stanislavsky), pro-virtual screen technological virtual reality (V.E. Myrhold), surreal virtuality (A. Arto), meta-realistic virtuality (T. Kantor), meditation virtual reality immersion (E. Grotovsky), realistic virtuality (P. Bruk), etc.

The technological component of information, computer and technical means is an important tool for modern theatrical art. They indicate the stage of the development of the theatre they have become an urgent factor in the virtualization of this art form. The development of the literary genre, called "documentary virtualization" means a combination of documentary and artistic principles. A striking example of such virtualization of theatrical realities. The theatre venue creates a reality existing in the human mind combined with psychological documentary foundations ("documentary virtualization") and artificial multimedia technologies (technological virtual reality of the theatre movement).

Virtual space defines the consideration of several directions of development of a particular idea, scheme or model. For a person, it has become a potential opportunity for entering virtual reality, creation or creativity. If we consider creativity as the potential for creating new forms and models that a person needs, then virtualization is a replacement for this reality with images, symbols. It follows that the virtualization process is a necessary step for a creative person. Thus, the person himself aims to create surrounding realities by creating ideas in virtual reality.

Conclusion. Assumes that virtual creativity will materialize its products in existing realities. It follows from this that we must pay special attention to the realities of virtuality. We can conclude that virtuality creates reality. Virtuality can be considered a copy of the objective world. Therefore, it is wrong to interpret virtuality as contrary to reality. Do not say that virtuality will be hidden or parallel to the existing reality. Virtuality is active all the time, it exists in connection with the outside world through human thinking.

With unlimited content, virtual reality differs from objective. It functions as a space so that the creative person does not have obstacles in choosing images and freely use ideas.

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Rezyume: Bu maqolada virtual haqiqatga bag'ishlangan o'ziga xos tajriba olish, jismoniy va ma'naviy yuqorilikni talab qiladigan tajribalarda ishtirok etish vositasi haqida bayon qilingan.

Virtual haqiqatda yaratilishi mumkin bo'lgan turli yangi vaziyatlar inson tanishi uchun yangi sinovlar yaratmoqda.

Резюме: В данной статье приведены виртуальной реальности, стала инструментом для получения уникального опыта, участия в экспериментах, требующих физической и умственной высокой смелости. Различные новые ситуации, которые могут возникнуть в виртуальной реальности, создают новые тесты для человеческого тела, которые являются интерфейсом человеческого тела.

Kalit so'zlar: virtual haqiqat, kompyuter kommunikativligi, texnologiyalar, ko'rinishlar, absorptsiya, internet, multimedia, takomillashtirish, civilizaciya, shakllanish.

Ключевые слова: виртуальная реальность, компьютерная коммуникативность, технологии, явления, абсорбция, интернет, мультимедиа, совершенствование, цивилизация, формирование.

UDK:9 (069)

STUDY OF ETHNO-POLITICAL PROCESSES IN THE LOWER AMU DARYA BASIN

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Summary: *In this article, a number of local and Russian historians, tourists, ethnopolitical and ethnocultural processes that took place among the inhabitants of the Lower Amudarya basin, especially the parallel ethnonyms between the Turkmen-Uzbek, Turkmen-Karakalpak, Turkmen-Kazakh clans, written sources, archival materials, statistics It is said that it was conducted and studied based on data and ethnographic research.*

Key words: *Lower Amudarya, Zarafshan, Armeni Vamberi, T. Zhdanko, "Hubby", Yu. Bregel, Ya. Ghulamov, Karakalpak, Turkmen, Kazakh, Uzbek*

INTRODUCTION

The history of the political and ethno-cultural processes that took place in the late Middle Ages in the Lower Amudarya basin, in general, the northern part of the Khorezm oasis and the Southern Aral coast, has not been sufficiently studied, and it can be seen that this issue has been briefly touched upon in some studies conducted on the history of the peoples of Central Asia. Although partially, the studies dealing with the history of the population of the Lower Amudarya basin in the classic middle and late middle works can be conditionally divided into several groups as follows:

Group 1. Studies conducted in the second half of the 19th century - the first quarter of the 20th century (mainly during Tsarist Russia).

Group 2. Studies conducted during the Soviet period (1920-1990).

Group 3. Studies of the period of independence (1991-2023).

Group 4. Foreign studies (second half of the 19th century - 2023).

As mentioned above, the division of the research into the history of the Lower Amudarya basin is actually conditional, and there are some problems in including the research on the history of the region in the neighboring republics of Kazakhstan and Turkmenistan into the group of the period of independence or foreign research. Also, there are some complications in the issue of whether or not to include the works of foreign authors who came to the region in the research conducted in the second half of the 19th century - the first quarter of the 20th century. Also, there is no consensus on whether the notes of the Hungarian Armeni Vambery [1], who was in the Khorezm oasis and nearby regions in the 1860s, should be considered as a source on the subject or should be evaluated as a research work. A similar situation is encountered in the matter of the notes of the American journalist McGahan, who was in the Khiva Khanate in the first half of the 1870s [2].

The researches of the first group are mainly written by Russian authors, written by Russian ambassadors, travelers, merchants, prisoners, and so on. Among them, notes written by Russian soldiers have a special place [3]. Also, scientific studies written by Russian orientalists during this period also play an important role in illuminating the history of the Lower Amu Darya basin. Especially, the famous Russian orientalist and historian V.V. Barthold's research on the historical and geographical geography of the region was also little touched upon [4].

The second group of studies belongs to the Soviet period, and they are distinguished by their consistency and accuracy. At the same time, the researches of this period can be divided into several types according to their content: researches based on the data collected during the activities aimed at establishing the Soviet ideology, purely scientific researches, etc. As in the whole region, socio-political and administrative-economic reforms were carried out in the Lower Amudarya basin in the

1920s-1930s, and in the process of the elimination of private ownership and the introduction of collectivization, that is, collective ownership, among the local population, collecting oral information from them, a group of Russian-speaking researchers who conducted research based on them came out. Thanks to their efforts, later - between 1960-1990, a group of dozens of historians, ethnographers, archaeologists and other sociologists was formed among representatives of the local people.

Among the scientists who were the first to pay attention to the political and ethnic history of the population of the Lower Amu Darya basin in the last middle ages, P.P. Ivanov's researches stand out separately [5]. His research was conducted on the basis of written sources, archival materials, statistical data and ethnographic research, and is among the first scientific works that started the scientific study of the history of the people of this region, in particular, the Karakalpak people.

When we talk about the history of the Lower Amu Darya basin during the last Middle Ages, especially the service of the ethnographer T. Zhdanko in elucidating the ethnocultural processes that took place here, is incomparable [6. 110-120.]. The researcher was one of the first to carry out extensive research on the ethnic composition of the Karakalpak people, the system of tribes and clans, kinship traditions, genealogies, the location and distribution of Karakalpak clans, legends and legends. At the same time, he paid great attention to the ethnic composition of the Uzbek, Kazakh and Turkmen population in the Lower Amudarya basin, as well as to the tribal and clan system characteristic of them. In carrying out this work, T. Zhdanko relied on written sources and archival materials, as well as oral and ethnographic materials, and was able to collect primary data from the local population. It is noticeable that the researcher met face-to-face with representatives of almost every Karakalpak clan and tried to collect ethnographic information from them.

Uzbek scientist Ya. Ghulomov also paid great attention to the collection of oral information and ethnographic materials related to the region. In his monograph "The History of Khorezm Irrigation", he made good use of the information preserved among the Uzbeks and Karakalpaks, while studying the traditions of the local population of the oasis related to irrigation, farming and fishing. In particular, it is worth noting that the information about "Hubbi" (Er-hubbi) related to the water cult among the local population existed among the ancient Khorezm people and was recognized in the world of science as a historical memory preserved until the last Middle Ages. Also, we can understand that Ya. Ghulamov got to know the Uzbek, Karakalpak, Kazakh and Turkmen residents of the oasis closely, and touched on the ethnic composition of clans and peoples, geography of distribution, migration issues [7].

It should be mentioned that among Soviet ethnographic researchers, G.P. Sneseva's research is distinguished by its depth and consistency. In particular, her articles on the ethnic composition of the Uzbek and Karakalpak population in the Khorezm oasis, especially in the Lower Amudarya basin, the clan-tribal system, their customs, etc., attract attention with their primary and originality [8. 75-94].

It should be mentioned that in a number of scientific studies devoted to the ethnic history and ethnography of the peoples of Central Asia, for the purpose of mutual comparison, the population of the Aral Bay, in particular, the Lower Amudarya basin was also touched upon. In particular, it is noteworthy that philologist V.G. Moshkova's research focused on the aspects of the residents of this area related to the residents of Nurota and Zarafshan oasis [9. 141-149].

Turkmen philologist S. Ataniyazov compared the ethnonyms of the Turkic peoples of Central Asia with the Turkmen ethnonyms in his research on the ethnic composition of the Turkmen people and was able to observe many similarities and ethnic affinities between them [10]. In particular, it is noticeable that in the process of identifying parallel ethnonyms between the Turkmen-Uzbek, Turkmen-Karakalpak, Turkmen-Kazakh clans, he also referred to clan names of the Lower Amudarya population.

In 1960-1970, the orientalist Yu. Bregel published hundreds of documents related to the Karakalpak, Turkmen, Kazakh and Uzbek people in the region based on written sources, especially the documents of the Khanate of Khiva [11]. Through researches in Russian and English written by the researcher, we will have certain information about the location of various ethnic groups living in the Lower Amudarya basin in the late Middle Ages, and the extent of their geographical distribution. Yu. Bregel is known to have conducted extensive research on the information after moving to the United States in the 1990s. It is noteworthy that in his monograph "Historical Atlas of Central Asia", one of the major scientific works that introduced him to the world, he mapped almost all historical-geographical countries and regions of Central Asia from the earliest times to the Soviet era, along with a brief introduction to the political and ethnic history [12]. In particular, it should be mentioned that he showed the ethno-political and migration processes of the late Middle Ages in the framework of the khanates, as an example of centuries and decades, and also that he touched on the Lower Amudarya basin while showing the clan-tribal structure of the Turkic peoples in the region at the beginning of the 20th century.

Uzbek orientalist B. Akhmedov who conducted deep research in the Soviet era and continued such research even in the years of independence. His invaluable monographs and articles are extensive, and the above-mentioned researchers are not left behind in their research. Even some of his scientific works are distinguished by the wealth of written sources [13]. He also studied the history of nomadic Uzbeks, Shaibanis and Ashtarkhani, mainly based on Persian and Turkish written sources. The information given by Ahmedov is valid for the period of the last Middle Ages of the peoples of the region. In particular, in dozens of written sources studied by the researcher, it is possible to observe the historical processes in the Lower Amudarya, Syr Darya basins and the Aral region.

CONCLUSION

Also, with the exception of some studies, the history of the ethnic relations of the people of Lower Amudarya with Tashkent and Zarafshan oasis, Fergana valley has hardly been touched upon. A similar situation can be seen in the example of large migration processes that took place in the late Middle Ages.

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Rezyume: Bu maqolada bir qator mahaliy va rus tarixchi olimlar, sayyohlar tomonidan Quyi Amudaryo xavzasi aholisi urtasidagi yuz bergan etnosiyosiy va etnomadaniy jarayonlar, ayniqsa, turkman – o‘zbek, turkman – qoraqalpoq, turkman – qozoq urug'lari orasidagi parallel etnonimlari yozma manbalar, arxiv materiallari, statistik ma'lumotlar va etnografik izlanishlari asosida olib borilganligi va urganilishi haqida so‘z boradi.

Резюме: В данной статье рассматривается ряд местных и российских историков, туристов, этнополитические и этнокультурные процессы, происходившие среди жителей бассейна Нижней Амударьи, особенности параллельных этнонимов между туркмено-узбекскими, туркмено-каракалпакскими, туркмено-казахскими родами, письменными источниками. , архивные материалы, статистические данные и сказано, что оно проводилось и изучалось на основе этнографических исследований.

Kalit so‘zlar: Quyi Amudaryo, Zarafshon, Armeni Vamberi, T. Jdanko, “Hubbi”, Yu. Bregel, Ya. G‘ulomov, qoraqalpoq, turkman, qozoq, o‘zbek

Ключевые слова: Нижняя Амударья, Зарафшан, Армени Вамбери, Т. Жданко, «Хубби», Ю. Брегель, Я. Гуламов, каракалпак, туркмен, казах, узбек

COMPACT TECHNOLOGY OF ACETONE PRODUCTION

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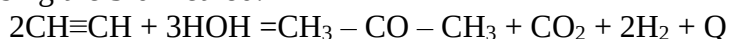
Summary: *In the work, a nano catalyst with high productivity, activity and selectivity was created for the catalytic hydration reaction of acetylene from local raw materials based on "Wet" and suspension technology. The textural characteristics of the selected high catalytic activity $\text{ZnO}:\text{Fe}_2\text{O}_3:\text{Cr}_2\text{O}_3:\text{MnO}_2:\text{V}_2\text{O}_5/\text{HSZ}$ catalyst were studied. The kinetic laws of the acetone synthesis process with the presence of the created nano catalyst were studied, the material balance of the process was calculated, and an improved technological scheme of the vapor phase acetone synthesis was proposed.*

Keywords: *acetylene, water, acetone, catalyst, "wet" and suspension technology, technological scheme.*

In developed countries, acetone is mainly obtained in several ways:

1. Oxidation and hydrogenation of isopropyl alcohol.
2. Oxidation of isopropyl benzene (Kumolo method).
3. Acetylene hydration.

Due to the lack of isopropyl alcohol and kumol in the republic, we obtained acetone by hydrating acetylene using the 3rd method.



There are conditions in our Republic for obtaining acetone by hydrating acetylene. It is known that JSC "NAVOIYAZOT" has a pyrolysis device based on the production of 30-35 thousand tons of acetylene per year.

Based on the above, creation of new, cost-effective, waste-free methods and technologies of acetone production, as well as effective catalysts with high selectivity, activity and productivity, modelling of technological and working parameters of the process is one of the urgent tasks.

For the complete analysis of the products of the catalytic hydration reaction of acetylene, the ability to separate several phases under the same analytical conditions was studied when choosing a stationary liquid phase. The most effective of the studied immobile liquid phases were proven to be dinonyl phthalate and Apiyezon-M. It was found that the products of the catalytic hydration reaction of acetylene are very well separated in Apiyezon-M. Therefore, further investigations were carried out in Apiyezon-M. In order to choose optimal conditions for the analysis, the influence of various factors on the process of separation of substances: carrier gas flow rate, column thermostat temperature, column length, etc. was studied. The influence of the amount of stationary phase on the chromatographic separation process was studied in the range of 10-25%, the length of the column was in the range of 1-3 m, and the temperature of the column thermostat was in the range of 80-150 °C.

The qualitative and quantitative composition of the reaction products was studied by the gas-liquid chromatographic method under the following optimal conditions. The stationary phase is 15% Apiyezon-M in Svetochrom, the temperature of the column thermostat is 80°C, the consumption of nitrogen gas is 40 ml/min, the detector is DIP. Quantitative analysis was performed using the method of internal standards.

Based on the above, we selected a catalyst with high activity, selectivity and productivity, high selectivity, and thermal stability based on local raw materials. The effect of various factors (temperature, volume velocity, acetylene:water ratio, catalyst composition, etc.) on the product yield and process selectivity in the catalytic hydration reaction of acetylene was studied.

When the effect of temperature on the productivity of acetone formation was studied in the presence of catalyst No. 9 with high activity and productivity, it was found that the optimal temperature for the acetylene hydration reaction is 425-430°C (Table 1).

Table 1. The effect of temperature on the conversion of acetylene to the yield of acetone and the selectivity of the process (category №9)

№	Temperature, °C	Total conversion of acetylene, %	Yield of acetone, %	Selectivity to acetone S %
1	300-320	45.1	22,9	50.7
2	325-350	66,2	47,6	71.9
3	355-370	79,4	62.2	78,3
4	375-390	87.2	73.2	83.9
5	395-420	89.9	77.7	86.4
6	425-430	97,2	93.6	96.3
7	435-475	90.1	82.4	91.4
8	480-500	82.4	70.5	85.5

As can be seen from the table, when the temperature reaches 425-430°C, the productivity of acetone formation is 93.6%, and the selectivity of the process to acetone is 96.3%.

The effect of volumetric speed on the yield of acetone and conversion of acetylene was also studied, and the experimental results are presented in Table 2.

It can be seen from Table 2 that the total conversion of acetylene decreases as the volume speed of acetylene increases.

Table 2. Effect of volume velocity on acetone yield and acetylene conversion (cat. 9; T= 425-430°C)

№	Volumetric speed hour ¹	Acetylene cycle level, %		S, %
		General	To acetone	
1	80	45.1	22,9	50.7
2	100	66,2	47,6	71.9
3	120	79,4	62.2	78,3
4	140	87.2	73.2	83.9
5	160	89.9	77.7	86.4
6	180	97,2	93.6	96.3
7	200	90.1	82.4	91.4
8	220	82.4	70.5	85.5

As can be seen from the table, the total conversion of water increases with the increase in the volumetric rate of acetylene in the reaction mixture. The volumetric rate of primary acetylene is 96.3% selectivity to acetone up to 180 h¹. When the volumetric rate of initial acetylene exceeds 180 h¹, the selectivity of acetone formation decreases due to the formation of additional substances (acetaldehyde, 3-oxybutanal, croton aldehyde, butanal, ethylacetate and paraldehyde).

In addition, the effect of C₂H₂:H₂O mole ratio on the yield of acetone and conversion of acetylene was also studied. The results of the experiment are presented in Table 3.

Table 3. Effect of C₂H₂:H₂O molar ratio on acetone yield (T=425-430°C, catalyst №9)

№	C ₂ H ₂ :H ₂ O mole ratio	Conversion of acetylene, %		Selectivity, S %
		General	To acetone	
1	3:1	45.1	22,9	50.7
2	2:1	66,2	47,6	71.9
3	1:1	79,4	62.2	78,3
4	1:2	87.2	73.2	83.9
5	1:3	89.9	77.7	86.4
6	1:4	97,2	93.6	96.3
7	1:5	90.1	82.4	91.4
8	1:6	82.4	70.5	85.5

As can be seen from the table, the total conversion of water increases with the increase in the mole amount of acetylene in the reaction mixture. When the mole ratio of starting materials exceeds

1:4 ratio, the productivity of acetone production decreases due to the formation of additional substances (acetaldehyde, 3-oxybutanal, croton aldehyde, butanal, ethylacetate and paraldehyde).

The effect of temperature, volume velocity, acetylene:water ratio, etc. on acetone yield was studied. When the acetylene:water mole ratio is 1:4, the catalyst works continuously for more than 300 hours. At this time, the conversion of acetylene is 96.5-97.2%.

When the effect of temperature was studied in the range of 10-500°C, it was found that the conversion of acetylene increases and the selectivity of acetone decreases with increasing temperature.

When the effect of temperature was studied in the range of 10-500°C, it was found that the conversion of acetylene increased and the selectivity of acetone decreased with increasing temperature. The obtained results are presented in Figure 1.

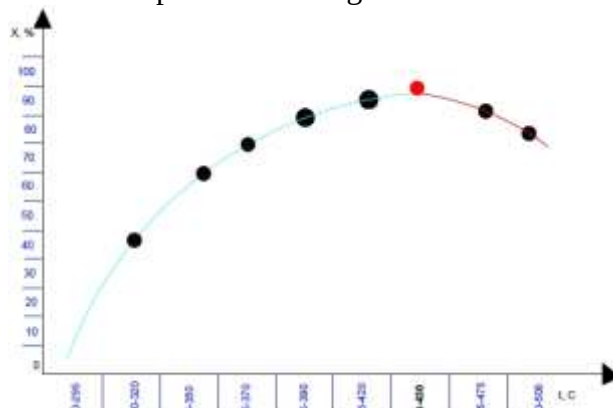


Figure 1. Effect of temperature on acetone yield

As a result of studying the effect of temperature on the yield of acetone, it was found that the relationship between the yield of the reaction and the temperature in the range of 10-500°C has an extreme character, and the yield has a maximum value at 425-430°C.

It is of interest to study the effect of $C_2H_2:H_2O$ ratio on catalyst performance during acetone synthesis. For this purpose, the molar ratio of $C_2H_2:H_2O$ at 355-370°C, 375-390°C, 395-420°C, 425-430°C and 435-475°C at constant volume velocity value of gas-steam mixture from 1:5, we conducted experiments. The obtained results are presented in Figure 2.

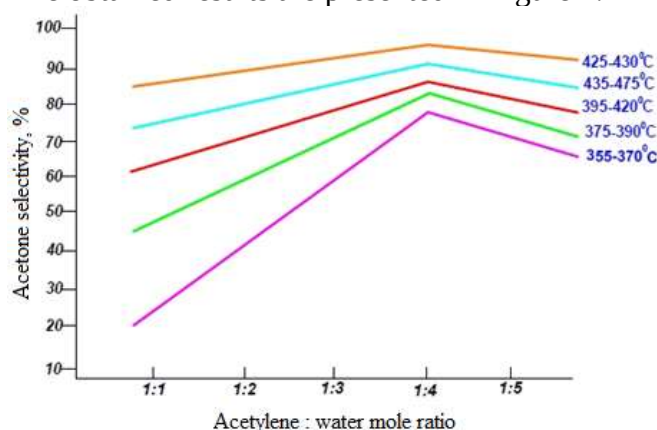


Figure 2. Effect of acetylene:water mole ratio on acetone yield

As can be seen from Figure 2, the activity of the catalyst increases up to 425-430°C as the amount of acetylene increases. When the temperature exceeds 430°C, the yield of the reaction decreases due to the formation of additional substances (acetaldehyde, 3-oxybutanal, croton aldehyde, butanal, ethyl acetate and paraldehyde). So, the speed of the reaction depends on the amount of acetylene and not on the amount of water.

To keep the acetylene conversion constant at 96.5-97.2%, the temperature is increased by 5-10°C for 20-22 hours. The effect of acetylene volumetric rate on acetone yield and acetylene conversion was studied in the range of 80-220 h⁻¹. The obtained results are presented in Figure 3.

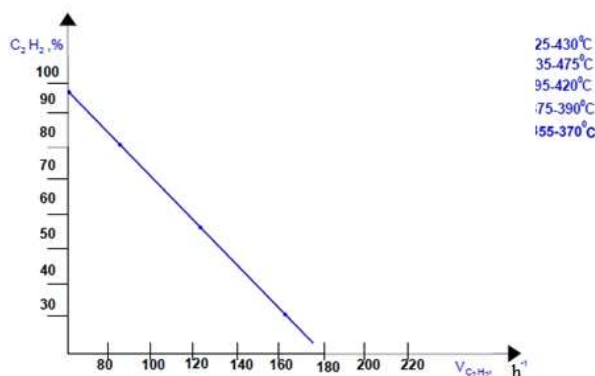


Figure 3. Effect of acetylene volumetric rate on acetylene conversion

As can be seen from Figure 3, the acetylene conversion and acetone yield increase when the volumetric rate of the mixture of acetylene and water vapor is increased from 80 h⁻¹ to 180 h⁻¹. When the volumetric rate of the mixture of acetylene and water vapor is increased from 180 to 220 h⁻¹, the acetylene conversion and acetone yield decrease due to the formation of additional substances (acetaldehyde, 3-oxybutanal, croton aldehyde, butanal, ethylacetate and paraldehyde). This leads to the conclusion that the process takes place in the external diffusion field.

The volumetric rate of acetylene was studied in the range of 50-350 hours/liter. Dependence of volumetric rate on catalyst performance at different temperatures is presented in Figure 4.

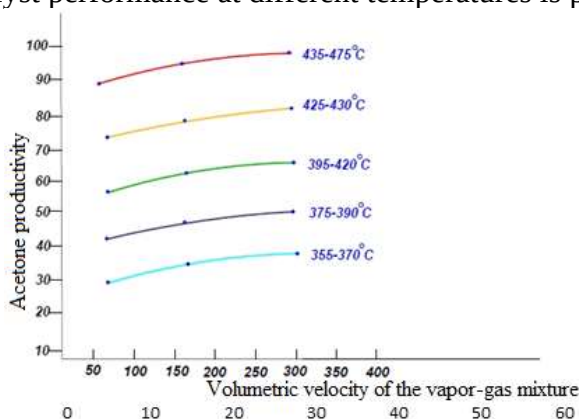
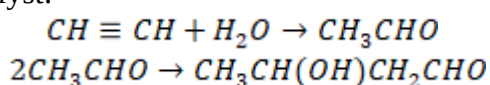


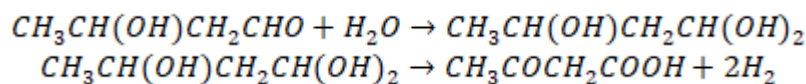
Figure 4. Effect of Acetylene:Water Mixture Volumetric Velocity on Acetone Yield

As can be seen from Figure 4, when the volume velocity of the acetylene:water mixture is up to 50-200 hours/liter, the residence time of the steam-gas mixture in the catalyst layer increases with the decrease of the volume velocity of the catalyst, which means that additional (acetaldehyde, 3-oxybutanal, croton aldehyde, butanal, ethylacetate and paraldehyde) leads to formation of substances.

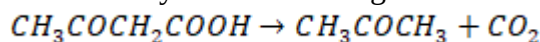
Based on the results of the experiments and the qualitative and quantitative composition of the reaction products, we propose the following mechanism of acetone formation in the presence of the given catalyst:



Hydration of 3-oxybutanal produces trihydric alcohol and dehydrogenation of the resulting product produces acetoacetic acid:



In turn, acetoacetic acid decarboxylates under the given conditions to form acetone:



The above-mentioned method of obtaining acetone is a promising method for Uzbekistan. In order to create a scientific basis for the process of obtaining acetone by hydrating acetylene, it is necessary to study the kinetic laws of the reaction on the selected catalyst and to give schemes of the mechanism of the processes based on them.

It is known from the scientific literature that the kinetic laws of this process have been studied very little in the presence of a small number of catalysts, and there is no unified point of view about the mechanism of the process. Based on this, a number of experiments were conducted to study the kinetic laws of the catalytic hydration reaction of acetylene.

During the operation of the catalyst, it is turned off due to the deposition of resinous products on its surface. The rate of catalyst deactivation was assumed to be proportional to the rate of acetylene conversion. This means that in practice, a certain fraction of the acetylene reacted in the by-products is formed.

Based on these suggestions, the equation representing the catalyst deactivation process takes the following form:

$$\frac{dK}{dt} = -K^1 W$$

Here:

K^1 is the deactivation constant of the catalyst, m³/mol.

The flow continuity equation is used to describe the dependence of the gas mixture rate in the reactor on the current acetylene concentration:

$$p_0 \cdot U_0 = p \cdot U$$

Here:

U_0 — feed rate of the initial gas mixture in the reactor, m/s;

P_0 — density of the gas mixture at the reactor inlet, kg/m³;

p — density of the gas mixture in the reactor, kg/m³;

The following conclusion follows from the equation:

$$U = \frac{p_0 U_0}{p}$$

p_0/p to get the ratio, we write the stoichiometric equilibrium equation for the synthesis process of acetaldehyde and acetone.

$$B = b_0 - \frac{1}{3}(a_0 - a), \quad d = h \frac{2}{3}(a_0 - a)$$

Here:

a_0, b_0 — the number of moles of acetylene water entering the reactor per time unit, mol/s;

a, b, d, h — the number of moles of acetylene, water, hydrogen and CO₂ passing through the reactor section per unit of time, mol/s.

$$A_0 = \frac{a_0}{V_0}; B_0 = \frac{b_0}{V_0}; A = \frac{a}{V}; B = \frac{b}{V}; H = \frac{h}{V}; D = \frac{d}{V};$$

Here:

A_0 — volume of gas mixture entering the reactor per time unit, m³/s;

V — the volume of the gas mixture passing through the reactor section per unit of time, m³/s.

On the basis of "wet" and suspension technology, thermally stable, high activity, selectivity and productivity nanocatalysts were created for catalytic hydration of acetylene from local raw materials ZnO:Fe₂O₃:Cr₂O₃:MnO₂:V₂O₅/HSZ. Catalytic hydration reactions of acetylene were

based on thermodynamics. In the presence of selected $\text{ZnO}:\text{Fe}_2\text{O}_3:\text{Cr}_2\text{O}_3:\text{MnO}_2:\text{V}_2\text{O}_5/\text{HSZ}$ catalysts, the process of catalytic hydration of acetylene was studied in a wide range of gas flow rate, temperature and catalyst size. The kinetic laws of the catalytic hydration reactions of acetylene were studied and their mechanisms were proposed.

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Rezyume: *Ishda “Ho’l” va suspendirlash texnologiya asosida mahalliy xom-ashyolardan asetilenni katalitik gidratlash reaksiyasi uchun yuqori unumdorlik, faollik va selektivlikka ega bo’lgan nanokatalizator yaratilgan. Tanlangan yuqori katalitik faollikka ega bo’lgan $\text{ZnO}:\text{Fe}_2\text{O}_3:\text{Cr}_2\text{O}_3:\text{MnO}_2:\text{V}_2\text{O}_5/\text{YuKS}$ tarkibli katalizatorning tekstur xarakteristiklari o’rganilgan. Yaratilgan nanokatalizator ishtirokida aseton sintezi jarayoni kinetik qonuniyatlari o’rganilib, jarayonning material balans hisoblangan hamda bug’ faza aseton sintezining takomillashtirilgan texnologik sxemasi taklif etilgan.*

Резюме: *В работе создан нано катализатор с высокой производительностью, активностью и селективностью для каталитической реакции гидратации ацетилена из местного сырья на основе «мокрой» и суспензионной технологии. Изучены текстурные характеристики выбранного катализатора $\text{ZnO}:\text{Fe}_2\text{O}_3:\text{Cr}_2\text{O}_3:\text{MnO}_2:\text{V}_2\text{O}_5/\text{цеолит}$ с высоким содержанием кремнезема высокой каталитической активности. Изучены кинетические закономерности процесса синтеза ацетона с использованием созданного нано катализатора, рассчитан материальный баланс процесса и предложена усовершенствованная технологическая схема парофазного синтеза ацетона.*

Kalit so’zlar: *asetilen, suv, aseton, katalizator, “ho’l” va suspendirlash texnologiya, texnologik sxema.*

Ключевые слова: *ацетилен, вода, ацетон, катализатор, «мокрая» и суспензионная технология, технологическая схема.*

**ISSUES OF FORMING THE MISSION OF THE BUILDING MATERIALS INDUSTRY OF
THE REPUBLIC OF KARAKALPAKISTAN**

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Summary: *The essence and formation of the mission of enterprises and the regional construction materials industry is examined in this article. The growing relevance and need to ensure the objectivity of the content of the mission of the enterprise, the construction materials industry, has been identified. It was determined that the content of the mission should take into account the specifics of the industry. The mission of the industry under study has been formed, taking into account its subordination to the construction complex and the presence of enterprises using natural raw materials.*

Key words: *enterprises producing construction materials, enterprise mission, industrial production in conditions of increasing variability and the emergence of new challenges.*

By Determining the essence and purpose of the mission of an enterprise or industry we found a certain significance. There are many interpretations of this important concept.

The mission brings people together, ensures harmony in the company's interaction with the external environment, and helps determine positions and interests in relation to different social groups [1].

Mission is the philosophy and purpose, the meaning of existence of an organization [2].

The main general goal of the organization, a clearly expressed reason for its existence, its purpose. The concept of a corporate mission is a reliable element of the ideological basis for the formation of an organization [3].

Mission - philosophy of existence, strategic goal, fundamental purpose of the organization [4]

Based on the study of a number of literary sources and agreeing with many authors, this article substantiates and provides the author's own interpretation, which, in our opinion, is more adequate takes into account the specifics of the construction materials industry.

It is obvious that the status and structure of an enterprise or industry largely depends on the goals set for which they were created and operate. Indeed, the goals of the industry, the concept of its development in strategic terms and the main directions and scale of its business activity, and most importantly, characterize the future of the industry to achieve which its activities are dedicated.

Of course, it is necessary to distinguish between general and specific goals. At the same time, general goals reflect the concept of industry development and are developed for the long term. Specific goals are subordinated to general goals for the main activities in each production department of the organization and can be expressed in quantitative indicators.

In essence, the general goals of an industry are a piece of space for setting goals for its production, financial, social, economic activities, etc. Goals are the starting point for planning, control and evaluation of the final results of economic activity. The motivation system is based on them and organizational and economic relations are built.

Let us note that in general terms, the target beginning in the activities of the industry reflects the goals and interests of various groups of people (owners, employees, business partners, consumers of products, society as a whole) associated with the activities of the industry and involved in the process of its functioning. Depending on the field of activity and the characteristics of the economic environment, each organization sets its own goals, which differ both in the set of parameters and in their quantitative assessment.

A properly organized process of goal development involves four main phases:

- identification and analysis of trends that are observed in the environment;
- setting goals for the organization as a whole;
- building a hierarchy of goals;
- setting individual goals.

The goals of an individual enterprise or an association of business structures can be understood as the goals pursued by the owners, i.e., the founders.

It is clear that for many of them, profit is a necessary condition for their existence. But still, profit is not the main and only goal of any business enterprise or company. Among the needs, very noticeable are such spiritual needs as one's own employment and the creation of conditions for the employment of other people, self-realization through achieving set goals.

However, upon deep consideration of the goals, content of activity and attitude to results, one cannot help but come to the conclusion that, ultimately, thoughts and actions are based on nothing more than the desire to acquire a higher society real significance through the effective operation of an enterprise that satisfies a specific need of society, fulfillment of the mission entrusted to it.

From here comes a true deep understanding of the mission of the organization, which can be considered the purpose of the company's existence, but a purpose oriented not only towards oneself, but also towards society.

Thus, the mission represents the public service of the enterprise for the reason why it exists in society.

The correct formation and choice of the mission of the enterprise and the awareness of all employees of the goals set are the key to the successful activities of the team.

Let us note that the choice of the mission of the organization is always the prerogative of not only the owner, but also the top management.

An adequate mission allows you to identify the real and optimal trajectory of the enterprise (industry).

The problem of mission formation is the problem of activity orientation.

When the creation of a creative, highly productive team fades into the background and becomes a secondary matter, the effectiveness of the activity declines and the organization dies in the competitive struggle. This was repeatedly noted by Kazuma Tateishi, who is one of the founders of the "Japanese economic miracle" [5].

To better understand the essence of the mission, I would like to give an example from the field of high fashion. The famous couturier, when selecting candidates to demonstrate his products, was primarily interested not in anthropometric characteristics, but in the inner world of future employees, asking questions about the last thing he read a book, a performance seen, a favorite artistic masterpiece.

In our understanding, the mission, being a primacy in the organization of a new enterprise, draws the contours of the status of the enterprise and provides direction and guidelines for the subsequent determination of goals and strategies at all levels of the management hierarchy management.

In understanding the mission, the following characteristics of the organization are usually included:

- scope of activity and description of products (services) produced;
- market characteristics (main consumers, clients, partners);
- technology (characteristics of equipment, technological processes, innovations);
- philosophy (basic views and values of the enterprise, industry);
- internal concept (opinion about oneself, factors and sources of development, increasing the level of competitiveness, etc.);

- external image of the enterprise, its image, emphasizing its economic and social responsibility to partners, consumers and society as a whole.

The period of existence of the mission is chosen, it can be different and depends on external factors and features of the field of activity. The content of the mission must be reflected in the mission statement, while the sequence and combination of its articles may vary depending on the specifics of the activity.

Thus, a mission is the purposeful purpose of an organization (enterprise, industry), including both internal and external guidelines for which the organization exists and which should be the basis of its activities.

We believe that the mission of an enterprise or industry means a public objective function that has certain limitations.

The special significance of the organization's mission lies in the fact that it is the basis, support for planning decisions, determining its local and tactical goals and objectives. The mission guarantees consistency, transparency, interconnection of lower-level and horizon goals, coordinates the efforts of employees, unites their actions, ensures mutual understanding and support from shareholders and financial structures etc.

The dynamism and unpredictability of the modern market and economic development dictate their conditions for business development. In these conditions, a strategy is objectively necessary, and its development becomes the main task of planning. Let us note that M.V. Bgashev, adhering to the definition of strategy as a single general comprehensive plan to implement the mission of the organization and achieve goals. In his opinion, the strategic advantage of an organization is its mission, which orients and optimizes internal resources [6].

Based on the research conducted by the author on the development of the construction materials industry in the Republic of Karakalpakstan, a preliminary selection of factors for the sustainable development of enterprises in the construction materials industry was carried out fishing in Karakalpakstan and using expert survey methods, the priority of these factors was revealed.

Thus, the most significant factors in ensuring the effective development of construction materials enterprises in Karakalpakstan are, in descending order of priority:

- innovative development of enterprises in the construction materials industry;
- increasing the competitiveness of enterprises based on increased resource conservation;
- improvement of marketing activities of enterprises;
- ensuring the safety of the environment (ecological factor).

Objectively, the composition of priority factors is not constant with the development of enterprises in the construction materials industry and with changes in the external environment, the composition and ranking of factors must certainly be adjusted.

Taking into account modern identified factors influencing the effective development of the industry, we believe that the mission of the industry is as follows: construction materials enterprises in the region are called upon to provide the investment and construction complex of the region with modern high-quality materials with reasonable prices in the fullest possible volume and within the required time frame in compliance with environmental safety requirements environment and efficiency of use of raw materials.

It is planned that this version of the industry mission will be presented to regional governing structures for discussion and subsequent inclusion in regulatory documents.

The main conclusions are as follows:

the concept of "mission" of an enterprise (industry) in conditions of increasing variability of external factors and intensifying challenges takes on special significance;

the essence of the concept of "mission" has its own specifics, depending on the characteristics of the industry, the variability of technologies, the pace of the innovation process;

The construction materials industry, being a collecting industry (enterprises for the extraction, enrichment of raw materials, processing of raw materials and production of construction materials and products) “serves” the investment and construction complex and is designed to provide a number of requirements as part of the material and technical base of the complex;

The industry, having mining and processing enterprises, bears responsibility for ensuring the rational use of natural resources;

The developed original interpretation of the mission of the construction industry quite adequately and objectively reflects its features and will allow the industry to carry out its activities more efficiently.

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Rezyume: Maqolada korxonalar va hududiy qurilish materiallari sanoatining missiyasining mohiyati va shakllanishi ko'rib chiqilgan. Korxonalar va qurilish materiallari sanoati missiyasi mazmunining xolisligini ta'minlash dolzarbligi va bunga ehtiyoj ortib borayotgani aniqlandi. Missiya mazmuni sohaning o'ziga xos xususiyatlarini hisobga olishi kerakligi aniqlandi. O'rganilayotgan sohaning missiyasi uning qurilish kompleksiga bo'ysunishi va tabiiy xom ashyodan foydalanadigan korxonalar mavjudligini hisobga olgan holda shakllantirildi.

Резюме: В статье рассмотрены сущности и формирования миссии предприятий и региональной отрасли строительных материалов. Выявлен рост актуальности и необходимости обеспечения объективности содержания миссии предприятия, отрасли строительных материалов. Определено, что содержание миссии должно учитывать специфику отрасли. Сформирована миссия исследуемой отрасли с учетом подчиненности ее строительному комплексу и наличия предприятий использующих природно-сырьевые ресурсы.

Kalit so'zlar: qurilish materiallari ishlab chiqaruvchi korxonalar, korxona missiyasi, o'zgaruvchanlik va yangi muammolar paydo bo'lishi sharoitida sanoat ishlab chiqarishi.

Ключевые слова: предприятия по производству строительных материалов, миссия предприятия, промышленное производство в условиях роста изменчивости и появления новых вызовов

**PROSPECTS FOR THE DEVELOPMENT OF OUTSOURCING IN THE ERA OF
GLOBALIZATION**

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Summary: *In this article are discussed the prospects for the development of outsourcing in the era of globalization, as well as the positive and negative aspects of outsourcing.*

Key words: *outsourcing, globalization, scientific and technological progress, modern organizations, customer, outsourcer.*

In recent years, the process of globalization has been rapidly developing in the world. Countries are actively expanding trade turnover with each other. Production and supply chains connect several countries. Organizations use foreign technologies, resulting in their own development.

The term “globalization” was introduced into scientific circulation by the scientist T. Levitt in 1983: “Globalization is the process of merging markets for individual products produced by transnational corporations, as well as strengthening integration in the economic, political, cultural, religious and other spheres of life of society in different countries ”

As a result of globalization, the migration of labor, the international division of labor, the movement of capital, the standardization of the legislative framework of different countries occur, a common market space is formed for several states, and a single global network market economy is born. In addition, globalization helps bring together the cultures of different countries and liberalize foreign economic relations. Systems of interstate regulation are being created. There is a transnationalization of production.

The history of globalization can be considered according to the following stages of development:

1. the emergence of capitalism, the emergence of world trade, the formation and development of the world market and the formation of basic world economic relations, which occurred at the beginning of the 14th – the end of the 19th centuries;

2. expansion of forms of international economic relations, migration of means of production between countries, movement of capital abroad (late 19th century - early 20th centuries);

3. restructuring of international economic relations after the First and Second World Wars, increased economic growth in developed countries, increased labor productivity, liberalization of foreign trade policy, scientific and technological progress, the emergence of international organizations (1945-1990s);

4. transnationalization of social reproduction processes, internationalization of economic activities, formation of regional trade unions by states (1990s of the 20th century - present) [1].

• The current stage of development of the global world economy, called the post-industrial stage, is characterized by the following features:

- relevance of knowledge and know-how in production;
- application of modern information technologies, technologization of all spheres of life at the base;
- blurring of boundaries between participants in the global production process;
- the ability to use the most suitable resource.

The integration of the Republic of Uzbekistan into the international economic community and the deepening processes of globalization of the world economy necessitate increasing the competitiveness of domestic industrial enterprises. In such conditions, it is necessary to look for ways to overcome the negative consequences caused by globalization processes and take full

advantage of the advantages that it opens up for enterprises. In addition to expanding the sales market, it is necessary to use the opportunity to access the latest technologies and resources to ensure the required level of product competitiveness. The tool for realizing these opportunities is outsourcing, which is already quite actively used in business practice in foreign countries [1].

The concept of “outsourcing” (from the English out “external”, source “source”) implies the transfer by an organization, on the basis of a contract, of certain types or functions of production business activity to another company operating in the desired area. The essence of outsourcing is the following principle: do what you can do better than others. The employees of another company are given what they can do better than the customer’s company’s personnel. The main purpose of transferring functions to other companies is to concentrate all the efforts of the enterprise on its own competitive advantages.

Outsourcing services help the customer reduce company costs such as paying taxes, sick leave, vacations, contributions to pension funds and others. The customer also saves time on organizing the work of employees and forming a staff of workers. Outsourcing helps the customer concentrate on their own main production, without wasting time and money on additional activities, because subcontractors have more experience.

The classification of outsourcing:

a) depending on the location of the customer and the contractor:

1. “onshore” - when the client hires an outsourcing company within the country where the business is conducted;

2. “neashor” - outsource - a company from neighboring countries;

3. “offshore” - outsource - a company from foreign countries.

b) depending on the tasks transferred to the performers:

1. professional outsourcing (accounting, purchasing, administration, legal services, digital marketing, etc.);

2. multisourcing (the use of several outsourcers to solve various problems, for example, legal services and IT);

3. IT outsourcing (a highly specialized type of outsourcing, including various tasks from support to application and solution development);

4. business process outsourcing (used for regular operations such as administration, correspondence, planning, etc.);

5. production outsourcing (manufacture of products by third parties).

6. outsourcing of personnel (transfer of all or part of the project to an outsourcing company due to a lack of human resources) [2].

The positive aspects of outsourcing include budget savings, access to necessary skills and resources, accelerated achievement of business goals, increased efficiency of actions and functions, minimization of personnel disputes and disagreements, and expansion of the company's capabilities.

The negative aspects of outsourcing include: insufficient involvement in the process, language, cultural barriers, differences in time zones, the risk of leakage of internal information despite non-disclosure agreements, lack of quick response to tasks, lack of control, possible misunderstandings between outsource employees and internal team.

An important aspect for domestic enterprises is access to high-quality components, which will significantly strengthen the competitive position of products compared to foreign brands, allowing to create the basis for the development and implementation of a successful strategy for differentiation and positioning of products.

The main risks in this case will be associated with the lack of experience in implementing such projects and possible financial losses associated with the wrong choice of outsourced functions and service providers. Risks can be mitigated by implementing long-term consulting projects with the involvement of third-party specialists to work at the enterprise.

Outsourcing is beneficial for entrepreneurs, and without using the services of competent third-party companies, it is not possible to conduct business. Europe and the USA went further and transferred production to China, where cheap and hardworking labor is quite capable of producing goods at the required level of quality: from the lowest to the prestigious.

The leader in outsourcing is India. It accounts for 50-80% of outsourcing revenues worldwide. The leading Indian companies in this industry are the three giants Wipro Technologies, Tata Consultancy Services (TCS) and Infosys Technologies, followed by Satyam, Cognizant, Polaris, Patni, etc. According to a study conducted by Brown-Wilson Advisors in 2006, out of the 50 most effectively managed outsourcing companies - Indian, and in the top ten - Satyam, Cognizant, Infosys, Patni and Tata.

The success of Indian companies is largely due to sound government policies. It was the Indian government that at first, in the late 1970s-1980s, when the country was still closed to foreign companies, determined the direction of development of the information technology industry, being, under the conditions of a state-planned economy, the only customer of high-tech products produced in India. The Government of India took an active part in the creation of export production zones (EPZs) with preferential tax regimes (a state act on the creation of EPZs was adopted in 1976). And when, under the influence of cooling relations with the United States, the Indian-based division of the American company IBM closed in 1978, and about 1,200 highly qualified specialists became unemployed, it was government support that helped them create their own software companies [3]. This was the first wave of creation of Indian information technology companies. The 1990s ushered in a second wave of Indian software companies that specialized in providing business services to overseas clients. In 1998, Prime Minister Vajpayee's government established the National Working Group on Information Technology and Software Development[4]. All this testifies to the high degree of interest of the Indian government (no matter which party is at the head of the country) in the development of the information technology sector, and outsourcing is understood as one of the main ways to achieve this goal.

Many researchers consider outsourcing only unilaterally from the user's point of view, while within industrial cooperation outsourcing is a bidirectional process. Many Uzbek enterprises can act as suppliers of outsourcing services, using in this case the advantages of specialization by analogy with foreign companies that produce several types of components and provide them to all manufacturers in the industry.

One of the most important advantages of working as an outsourcer is the ability to concentrate efforts to achieve sustainable competitive advantages in the long term by occupying a niche that is unattractive for multinational companies, but profitable for domestic enterprises. Along with positive factors, there are risks, primarily financial and managerial, which are associated with the need to accumulate significant financial resources and create a fundamentally new enterprise management system, which remains incomprehensible to most large industrial enterprises accustomed to working in a closed cycle environment [5].

Therefore, the decision to use outsourcing by a company should be made based on an analysis of the effectiveness of implementing such schemes. It is primarily necessary to carry out the following work related to the collection and systematization of information necessary for making management decisions:

- marketing research, the purpose of which is to analyze the situation in existing and potential markets for the company's products or services for indicators of demand, competition, and consumer preferences;
- internal audit of the enterprise, which allows you to identify functions that should be used to a greater extent or outsourced without harming the strategic goals of the company;

- research of existing technologies and resources that can be used by the enterprise and search for appropriate suppliers; in the case of outsourcing, marketing research is carried out in the reverse order, similar to research for the launch of a new product [6].

Further integration of Uzbekistan into the world community, along with opportunities, may pose a number of threats to local enterprises in the short term, the lack of an adequate response to which may cause a systemic economic crisis. Effective implementation of outsourcing schemes at enterprises requires significant time from the moment a management decision is made. Therefore, the tasks of developing a mechanism for preparing management decisions are more than relevant [7]. Due to the peculiarities of the domestic economy, foreign methods require significant refinement and adaptation, thereby opening a new direction of scientific research related to the search for tools to increase the competitiveness of enterprises.

Conclusion. Today, outsourcing is the main trend in the development of the world economy in the context of globalization, because digitalization allows the use of the most suitable and highest quality resources, regardless of where they are located. This effect significantly neutralizes the competitive advantages of companies and individuals that are associated with their location. Ultimately, cost and service quality factors are critical today.

Each participant in the emerging global economy has the opportunity, having carefully studied its competitive advantages, to find or create a niche in which it can realize itself most fully and profitably.

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Rezyume: *Ushbu maqolada globallashuv davrida autsorsingning rivojlanish istiqbollari, shuningdek, autsorsingning ijobiy va salbiy tomonlari ko'rib chiqqan.*

Резюме: *В этой статье рассмотрены перспективы развития аутсорсинга в эпоху глобализации, а также положительные и отрицательные аспекты аутсорсинга.*

Kalit so'zlar: *autsorsing, globallashuv, ilmiy-texnik taraqqiyot, zamonaviy tashkilotlar, mijoz, autsorser.*

Ключевые слова: *аутсорсинг, глобализация, научно-технический прогресс, современные организации, заказчик, аутсорсер.*

**WAYS TO IMPROVE THE EFFICIENCY OF INNOVATION MANAGEMENT USING
INFORMATION SYSTEMS**

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Summary: *The article examines some complications of the innovative development of the economy, and develops theoretical, methodological and practical proposals and recommendations on the directions of improving the organizational and economic mechanisms of growing the efficiency of the management of the infrastructure of innovative activities with the help of information technologies.*

Key words: *infrastructure, innovation, information system, innovative project, start-up projects, investment, cluster, cluster method, modernization.*

Introduction

The development of market associations in our country leads to the sharpening of competition, and the formation of market mechanisms and methods of increasing competitiveness by local producers creates a need. Thus, increasing competitiveness in all sectors of our national economy remains one of the urgent issues. Consequently, in the process of liberalization and modernization of the economy of our republic, in order to ensure its systematic and continuous development, it is of great importance to accelerate the pace of innovation in all fields, to increase productivity based on the continuous introduction of modern information technologies.

As it happens, in 2017-2021, the Uzbek Republic's Action Strategy for the Five Goals of the Republic's Development states "... extending structural changes and continuous progression of agricultural production, strengthening the state's food and beverage protection and, in this respect, ecological The need to expand the production of clean products, to encouragingly increase the export level of the agricultural sector" is defined as the basic task of modernization and rapid development of agriculture [1]. Therefore, the implementation of these tasks entails the use of innovative, resource-saving technologies and the improvement of economic foundations with the help of IT-technologies in our republic.

Innovative actions are scientific, technological, institutional, financial, commercial, marketing actions that lead to the implementation of the innovation or designed to do so. Innovative activity comprises research and development related to the creation of a specific innovation.

Therefore, one of the economic categories based on the methodology, theory and practice of the innovative movement is its productivity, which shows the participation between the results obtained from the innovative processes and the results produced by the results. Productivity of innovative activity is a relatively complex and multi-meaningful concept, but in general, it means the ability to maintain a certain amount of labor, cultural and financial resources of one unit created by innovation [2].

World experience realistically proves that innovative technologies have become the most important effective means and condition for the development of modern production as well as the economic potential of the state. They combine advanced scientific achievements, the possibility of implementing the latest engineering and technical solutions and modernization of production, mastering the production of new types of products, their mass distribution and market sales.

At the present stage of economic liberalization in Uzbekistan, the introduction and commercialization of innovations is becoming one of the key factors in increasing the competitiveness of economic sectors. "Today we are moving to the path of innovative development aimed at deeply improving all spheres of life of the state and society. In addition, this is natural. In the end, who wins in today's rapidly developing world? Only the state that is based on a new

thought, a new idea, innovation. Innovation means the future. If we initiate to build our great future today, we must do it mainly on the basis of innovative ideas, an innovative approach" [3].

Incidentally, the development of scientifically based recommendations and proposals for improving the efficiency of innovation infrastructure management with the development of theoretical justifications and practical mechanisms for methodological methods to increasing the efficiency of innovation development management and the competitiveness of the economy based on the concept of an innovation cluster is of current importance.

World experience reliably proves that innovative technologies have become the most significant effective tool and condition for the development of modern production and the economic potential of the state. They embody the achievements of advanced science, modern information systems, implementation of the latest engineering and technical solutions, and modernization of production, mastering the production of new types of products, their mass distribution and sale on the market.

At the current stage of economic liberalization in Uzbekistan, the introduction and commercialization of innovations over and done with modern information systems is becoming one of the main factors of increasing the competitiveness of economic sectors.

Nowadays, we are moving on the path of innovative development aimed at the fundamental improvement of all aspects of the life of the state and society. Moreover, that is natural. After all, who wins in today's fast-paced world? Only a new thought, a new idea, a state based on innovation. Innovation means the future. If we start building our great future from today, we should do it first of all on the basis of innovative ideas, innovative approach based on information systems"[4].

In this regard, based on the concept, development of scientifically based recommendations and suggestions on increasing the efficiency of innovative infrastructure management, developing the theoretical foundations and practical mechanisms of methodical approaches to increase the efficiency of innovative development management and the competitiveness of the economy. Creating an innovation cluster is important today.

Analysis and results

In the context of increasing competition in the global economy, our country is taking consistent measures to create a modern, that is, innovative form of the economy. For these purposes, on the initiative of the President of the Republic of Uzbekistan Sh.M.Mirziyoyev, a strong mechanism for interaction between science and production is being gradually developed [5].

The priority strategic direction of innovative development of the economy of Uzbekistan is the creation of a national innovation mechanism, which is a system of organizational, economic and legal measures and the implementation of certain innovative projects.

It must confirm the process of producing new knowledge, the rapid implementation of research results in the real sector of the economy and the process of selling new products to consumers.

In this regard, the formation of an infrastructure for innovation activity and ensuring sustainable innovative development of the country's economy requires not only the presence of a number of research and innovation developments, but also their practical application.

One of the most promising areas in terms of developing infrastructure for innovation is the use of attractive models for the private sector and research organizations. These models confirm the distribution of investment risk in organizing innovative activities and saving public funds.

The mechanism for forming the infrastructure of innovation activity can be implemented based on the following succeeding stages: creation of conditions - organization of investment support - examination - creation of infrastructure facilities. Each stage requires different regulations aimed at ensuring their implementation.

The main problems in the Republic of Uzbekistan related to further increasing the efficiency of science development, strengthening technology transfer and innovative developments are the

following:

Firstly, today almost all large industrial enterprises are interested only in innovative developments that are ready for implementation. Nevertheless, very little attention is paid to most of the developments required to conduct additional practical research for industrial testing of innovative developments, the creation, that is, the implementation of industrial experimental samples.

Secondly, the level of implementation of innovative developments and technologies in the related industries and areas of the economy is low, the main reason for this is not that the financial resources allocated for these purposes are limited, but that, first of all, experience and skills are lacking on the preparation of investment projects and the organization of work of innovation producers-scientists and specialists in post-innovation processes (study of consumer markets, introduction of innovation management methods, use of marketing technologies), on the other hand, in the fact that the feeling of interest of innovation consumers - industry enterprises from the implementation of innovative developments very low.

Thirdly, existing resources, opportunities and reserves for deepening the integration of science, education and production are not fully mobilized [6].

In order to create the necessary conditions for the development of innovation in our country, the state must do the following: create a favorable business environment for private initiative focused on innovative research and optimization of economic policy and structural reform policies; promote the development of innovation infrastructure at the micro-, meso- and regional levels. In the process of solving these problems, private entrepreneurs as well as commodity producers will be able to move from the traditional model of business organization to an innovative model.

Innovative development of the republic's economy in the near future can be achieved by increasing the capacity of investments in innovation activities and developing the structure of innovation clusters.

Innovation clusters serve not only as an effective mechanism for the development of innovation activities, but also generate conditions for effective communication between business, science and the state. Practice shows that thanks to the formation of innovation clusters, the highest level of economic competitiveness is achieved. The key to defining an innovation cluster is the presence of innovation synergy for all participants. Thanks to this synergy, the creation and implementation of innovations will be ensured.

The strategic implementation of the development of an innovation cluster involves the implementation of innovative projects that should play the role of a catalyst for the development of the socio-economic environment of the region.

Projects can be called innovation clusters if they have a substantial impact on the economic structure of the region, a long-term and strong impact on its scientific and technical possibility and will contribute to the positive development of the region and help attract investment. All at once, an important issue is to determine the criteria for inclusion in innovative projects that form an innovation cluster.

When ensuring the integration of the “science-education-production” chain, it is advisable to direct the main forces to the corporate sector, to the processes of creating large integrated structures that meet the general economic conditions and legal framework. The innovation cluster will make it possible to integrate the education, science and production systems that influence the development of the entire economy [7].

The mechanism for forming a targeted comprehensive scientific and technical innovation program within the framework of an innovation cluster should include:

- based on the principle of program-targeted financing for promising innovative projects of strategic importance, funds are allocated from the state budget (without competitive selection);

- financial resources are allocated to the main organization, participants are steadily distributed based on the approved budget in accordance with the calendar plan.

Upon achieving a scientific and technical result, serial production is organized based on the procedure for financing start-up projects and/or the Presidential Fund for the Commercialization of the Results of Scientific and Scientific-Technical Activities.

It should be noted that presently there is no unified methodology for analyzing key indicators and trends in the development of scientific, technological and innovation activities. The current methods are based on the method of numerical and economic analysis.

To create an innovation cluster aimed at creating an infrastructure for innovation, it is necessary to determine the following issues:

- improving the quality of professional education at all levels on the basis of higher educational institutions in accordance with recent labor market requirements;
- ensuring the adaptation of the complex of higher educational institutions to changes in the labor market and the needs of society with superior flexibility;
- implementation of the full cycle of the innovation complex (carrying out fundamental and practical research, commercialization of innovative developments);
- creating conditions for the implementation of programs and projects aimed at introducing innovative technologies.

The integration of science, education and production systems in order to strengthen the process should be formed as an actual economic mechanism in the innovation cluster.

The concession mechanism of public-private partnership can be used in the process of assimilating higher educational and scientific organizations, private and public structures by creating durable connections between them through complex processes such as financing, cross-guarantees and risk redistribution.

Financing of innovative projects that form an innovation cluster in the creation of high-tech companies is crucial; it must establish a flexible, rational and promising system of financing long-term public-private projects based on expected profits, that is, the concept of financing investment projects from the income created by a high-tech company, which can be brought during their work.

The modification between financing high-tech companies and other forms of financing is that there is no dependence on the attracted public-private projects, the amount of assets and interest rates, as well as the terms of the loan.

For participants in innovative projects, successful implementation in the financing of high-tech enterprises is important. They depend on the possibilities of project implementation and exposure to various negative and positive factors [8].

In addition, unlike a simple loan (borrower, investor or project organizer fully assumes all risks), the risk of financing high-tech enterprises is dispersed among all stakeholders of the project, that is, higher education and research institutions, private investors and the state .

In the process of financing the implementation of innovative projects, the main investors are the government, private enterprises, individuals and other interested parties. They have a direct impact on identifying promising innovations that are ready for financing by the information bank of existing innovations. In turn, the innovation information bank consists of developments presented by academic, higher educational institutions, industry and other scientific organizations.

Start-up projects that have received the most favorable assessment from potential investors are used in the activities of existing or recently created high-tech enterprises that are engaged in the commercialization of innovations and the production of the ultimate innovative product.

The state of innovation processes requires the formation of an interconnected system of innovation projects and an innovation cycle of financial institutions intended to finance the infrastructure of innovation activities [9].

When implementing this direction, it is necessary to resolve the following problems:

Firstly, improving the economic mechanism for stimulating innovation activity involves the following:

- changes in depreciation policy in order to assist organizations to increase depreciation charges as a source of investment;
- development of leasing of scientific and technical equipment;
- intensification of foreign economic activity with external associates, providing for the creation of conditions for the production of local high-tech products and the organization of their sales on the foreign marketplace;
- creation of a system of comprehensive support for innovations of scientific institutions with the aim of more fully introducing the scientific potential of the areas and solving scientific, technical, industrial and socio-economic problems;
- development of financial, economic and organizational mechanisms for financing innovative industrial complexes and cores, technology parks, innovative enterprises and individual innovative projects.

Secondly, enhancement of the mechanism for investment support of innovation activities. The priority areas in solving this issue should be innovative projects that can be extremely effective, taking on part of the risk on a joint basis, in cooperation with private investors. In this case, the following issues will be resolved:

- creation of a regulatory framework for the sustainable functioning of the system of financing scientific, technical and innovative projects;
- creating attractive conditions for domestic and foreign investors in order to implement innovative projects;
- introduction of an insurance system for financial risks associated with the implementation of innovative projects^[9].

Thirdly, the formation of an innovation infrastructure is an important part of supporting and endorsing innovation. Work to create an effective infrastructure for innovation activities should organize the following systems:

- a) the information support system for innovation activities requires the following work:
 - implementation of a regional information and systematic scheme of innovation activity, which allows an enterprise to access databases in order to create a unified set of information as a tool for enhancing the production activities of innovation centers;
 - development of a unified information system of innovative processes as well as their gradual implementation;
 - assessment of the development, implementation also commercialization of the results of the inventory of intellectual property of innovative projects;
- b) a certification system related to science requires solving the following enquiries:
 - creation of joint bodies for certification of experimental laboratories and certification bodies in industry;
 - full implementation of certification of the quality system of enterprises in accordance with international quality ethics;
 - improvement of the activities of experimental laboratories.

With the effective development of innovative activities of subjects of innovative activities, it is compulsory to introduce methods for the production of new products and services, develop new production processes, as well as new methods of innovative marketing and management.

Conclusion

At the present stage of liberalization of the economy of Uzbekistan based on the development of innovation, one of the main promising directions for increasing the competitiveness of the economy is the organization and development of innovation clusters based on the rational use of innovative prospective and financial resources.

To ensure the efficient operation and effectiveness of promising innovation clusters, it is necessary to introduce a mechanism for the formation of targeted comprehensive state scientific and technical innovation programs in the context of each innovation cluster.

To increase the efficiency of state innovation policy, it is necessary completely to form the national innovation system of the republic by creating and improving existing elements of the financial substructure of the innovation sphere, as well as developing new types of them.

The introduction of an organizational and economic mechanism for managing the infrastructure of innovation activities will allow us to update the main sectors of the economy with massive and intensive features of innovation, create a modern information technological level of production and create conditions for increasing competitiveness in world markets.

When evaluating the results of the use of innovative technologies, the calculation of indicators in the group of innovative environment allows to better classify the factors that affect the productivity of the activities of product manufacturers and how important are the favorable conditions created for productive and efficient producers.

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Rezyume: *Maqolada iqtisodiyotni innovatsion rivojlantirishning ayrim muammolari ko‘rib chiqilib, innovatsion faoliyat infratuzilmasini boshqarish samaradorligini oshirishning tashkiliy-iqtisodiy mexanizmlarini takomillashtirish yo‘nalishlari bo‘yicha nazariy, uslubiy va amaliy taklif va tavsiyalar ishlab chiqilgan.*

Резюме: *В статье рассмотрены некоторые проблемы инновационного развития экономики и разработан теоретико-методологические и практические предложений и рекомендаций, направлениях совершенствованию организационно-экономических механизмов повышения эффективности управления инфраструктурой инновационной деятельности.*

Kalit so'zlar: *infratuzilma, innovatsiya, innovatsion loyiha, startup loyihalar, investisiya, klaster, klaster usuli, modernizatsiya.*

Ключевые слова: *инфраструктура, инновация, инновационный проект, старт-ап проекты, инвестиция, кластер, кластерный метод, модернизация.*

EFFICIENCY OF INNOVATIVE ACTIVITIES IN AGRICULTURE IN UZBEKISTAN

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Summary: *The article focuses on the sustainable development of agriculture in Uzbekistan, emphasizing the need to improve innovative activity within the industry and enhance the efficiency of its management.*

Key words: *agriculture, innovation management, efficiency, structural changes, farming, farming technology, modernization, development of innovative farming, sustainable agriculture.*

At present, a new paradigm of world economic development is taking shape through the use of innovations. Uzbekistan must ensure the activation of these processes in all sectors of the economy, including agriculture. Special attention is given to these issues of development strategy of new Uzbekistan dated January 28, 2022-2026, PP-60.

The transition to an innovative path of economic development is not only necessary to address the problems that have accumulated in the agricultural sector of the Uzbek economy but also to tackle the challenges facing this sector. In the current situation, innovative entrepreneurship is crucial for the development of agriculture. By maximizing this factor, we can overcome barriers to sustainable development, accelerate political and economic changes, and adapt to the globalization of the world economy. In the short term, our country will be able to accelerate the transition to an innovative path of agricultural development. It is necessary to rehabilitate this strategically important sector of the economy in a qualitatively new technical and technological way that meets modern requirements. Otherwise, the agricultural sector will lag behind in development and will not be able to ensure its competitiveness.

To date, the development of agriculture has been and will remain one of the most important barriers. This is due to the fact that agricultural productivity ensures the economic and food security of our country, as well as the material well-being of not only the rural population but also the entire population of our country. The productivity of our land and its quality are also at stake.

The sustainable development of Uzbekistan's agricultural sector depends on the effectiveness of entrepreneurship. Through the development of innovations, the industrial base in agriculture is being technologically, technically, and economically updated. These updates range from economies saturated with the production of raw materials to industrial economies, post-industrial economies, mixed economies, innovative economies, or knowledge economies.

The innovative economy represents the highest level of development and is a process inherent in an educated society. Currently, various mechanisms and institutional structures are being formed in the national innovation sector to facilitate the widespread introduction and efficient use of scientific and technological achievements. This includes the technological modernization of agriculture, the stabilization of agricultural machine-building enterprises, the increase of their efficiency, and the profitable modernization of production in the sector. Technical and technological modernization aims to enhance the efficiency, modernity, and competitiveness of the agro-industrial complex in both domestic and foreign markets. Efforts are also being made to implement a technical policy.

Today, Uzbekistan has all the necessary political and economic prerequisites to deepen innovation processes and strengthen the innovation base. However, there are some difficulties in transitioning the agricultural sector to the path of innovative development, or in other words, in implementing innovative projects in one or even several farms. These difficulties include:

First, there is a low share of farms and agricultural processing entities in the current system of research prioritization and funding.

Second, in the development of advanced innovative technologies, research and funding cannot be carried out solely by business entities.

Third, to effectively utilize new technologies and agricultural varieties, producers and processors often lack the necessary knowledge. They need to rely on the expertise of scientists, experts, and to some extent, other farmers in the processing and sale of products.

Fourth, there is insufficient demand from developers for innovative developments produced through higher education and research. There is a lack of interaction between developers and researchers.

Fifth, some agricultural products are processed irresponsibly by manufacturers.

In the context of ongoing political and economic changes in the world and the process of interstate integration, Uzbekistan must quickly transition to a path of new innovative development for the agricultural sector and rural areas, including rural infrastructure. This transition offers an opportunity to address the most important challenges facing the country today.

The volume of innovations in the agricultural sector and the gross domestic product (GDP) currently stands at 1-2% of the GDP. In comparison, in other developed countries, this figure is more than 50-60%.

Similarly, the use of modern equipment and technologies in production offers several opportunities, including the development of competitive products that meet world standards, expansion of financial results and opportunities for companies due to significant reductions in product costs, efficient use of raw materials and resources, and reduction of harmful environmental effects. If the equipment and technology are innovative, based on previously unused ideas and concepts, their economic and political significance will be even higher.

The economic results of agricultural production are based on the rationalization of production in agricultural enterprises, the widespread use of scientific and technological achievements, the development of new machines and equipment, and the efficient use of agricultural machinery. Additionally, the economic assessment of agricultural machinery and equipment is crucial for successful implementation.

In agricultural enterprises, such an assessment is crucial for the effective implementation of the national economy. The productivity of social labor and the increase in labor productivity are reflected in the increase in production and national income. This can be achieved by increasing the volume of production at each agricultural enterprise, improving the quality of products, reducing the cost of living and organized labor per unit of output, and increasing net profit.

In accordance with these principles, new methods and techniques of production in agricultural enterprises are used to determine the economic efficiency. This includes indicators such as the amount of high-quality crops per hectare of land and per head of livestock, labor productivity (which is the basis of the product itself), net profit, profitability, capital expenditures, and their replacement. These indicators are interrelated and interdependent.

The larger the product, the better the quality, and the higher the productivity, the lower the price. This leads to higher economic efficiency. New methods and techniques are optimized as necessary. This optimization is crucial to solving economic problems and choosing the most effective options from various possibilities.

Through the implementation of structural changes in agriculture and the gradual development of production, there will be a continuous supply of food products and raw materials to the processing industry. This will increase food security and enhance the level of food self-sufficiency. Additionally, it will boost the export of environmentally friendly products, which is one of the most important tasks to be achieved.

One approach to achieving this is the expansion of the area under potatoes, fruits, melons, fodder crops, and intensive orchards and vineyards. This expansion can be facilitated by reducing the area under cotton and cereal fields.

- Improvement of the reclamation of irrigated crops, development of reclamation and irrigation facilities, and implementation of modern water and resource-intensive technologies in the industry, including the use of high-efficiency equipment.

- Expansion of research work on the development and implementation of new selection varieties of agricultural crops resistant to diseases, pests, local climatic and environmental conditions, and with high productivity.

- Establishment of modern processing enterprises for the production and packaging of food products, as well as for processing agricultural products, including the reconstruction and modernization of existing facilities.

- Development of agricultural production, processing, procurement, and sales, as well as the provision of more services. This includes the establishment of branched farms engaged in sales, construction, and services.

- Development of infrastructure for the storage, transportation, and sale of agricultural products, as well as the provision of agrochemical, financial, and other modern market services.

- Implementation of systematic measures to address global climate change and the development of the Aral Sea dryland economy, including mitigating its impact on the lives of the people.

To fulfill the tasks outlined in agriculture and keep pace with its development in accordance with the requirements of a market economy, it is crucial to have various types of property that can freely operate in the industry. This includes attracting and implementing scientific and technical achievements, developing new equipment and advanced technologies, and clearly defining ways to fully and effectively use limited land, water resources, fixed and variable capital, and labor resources in the short and long term. It would be beneficial to identify ways to increase profits through the prudent use of all funds, increasing labor productivity, and implementing incentive systems for peasants and workers.

The pursuit of innovative development is important for Uzbekistan because only through the mature, extensive, and effective use of advanced technologies can innovative development, while considering the environment, ensure rapid economic growth and stability.

Comparisons of different variants of modern technologies show that minimizing land use, restraining existing and investment funds, and producing products at lower costs while maintaining the same price level can increase productivity by more than one hectare per crop. However, technology change requires a systematic approach, a combined process that involves understanding all the changes that occur in the technological system of the enterprise when transitioning from traditional technologies to new resource-inhibiting technologies. The same applies to technological enterprises in agriculture, where it is necessary to develop process algorithms for the implementation of lean economic innovations.

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Rezyume: *Ushbu maqolada O‘zbekiston qishloq xo‘jaligining barqaror rivojlanishi, tarmoqning innovatsion faoliyati hamda boshqaruvi samaradorligi masalalari yoritib berilgan.*

Резюме: *В статье акцентируется внимание на устойчивом развитии сельского хозяйства Узбекистана, подчеркивается необходимость совершенствования инновационной деятельности внутри отрасли и повышения эффективности ее управления.*

Kalit so‘zlar: *qishloq xo‘jaligi, innovatsion boshqaruv, samaradorlik, tarkibiy o‘zgarishlar, fermer xo‘jaligi, dehqon xo‘jaligi, texnologiya, modernizatsiyalash, innovatsion rivojlanish, chorvachilik, dehqonchilik.*

Ключевые слова: *сельское хозяйство, инновационный менеджмент, эффективность, структурные изменения, фермерство, технологии земледелия, модернизация, развитие инновационного земледелия, устойчивое сельское хозяйство.*

DEVELOPMENT OF THE BEEKEEPING NETWORK IN THE REPUBLIC BASED ON MODERN SCIENTIFIC APPROACHES

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Summary: Innovative development of the agro-industrial complex presupposes the effective use of scientific and technical potential, integration of science, education and production, technological modernization of the economy based on innovative technologies. Solving this complex problem requires creating appropriate conditions for the development of each industry, including beekeeping. The specifics of innovative processes in beekeeping are revealed. The article proves that the modern functioning of the organizational and economic mechanism of beekeeping is impossible without an innovative component, a favorable investment climate and government support.

Key words: organizational and economic mechanism, innovation, innovative activity, beekeeping.

INTRODUCTION

One of the main tasks at the present stage is to ensure the food security of the country, the essence of which lies in the ability and capacity of the state to satisfy the ever-increasing food needs of the population at a level sufficient for normal life activities. At the same time, its achievement should be ensured on the basis of the development of national production. The fulfillment of this task, in turn, is based on the integrated development of the agro-industrial complex as the largest sector of the country's economy, the very principle of operation of which presupposes the establishment of various kinds of relationships with almost all sectors of the national economic complex [1].

MATERIALS AND METHODS

The sustainable development of beekeeping depends on the efficiency of functioning and the qualitative state of the organizational and economic mechanism of the industry, its organization using an integrated approach, taking into account functional areas of activity, which involves the development of priority areas for its improvement.

In modern conditions, the organizational and economic mechanism is an integration of organizational and economic mechanisms, including organizational and economic methods, levers, and tools for influencing the managed object [3].

The principles of managing the functioning of the organizational and economic mechanism of beekeeping are presented in Figure 1.

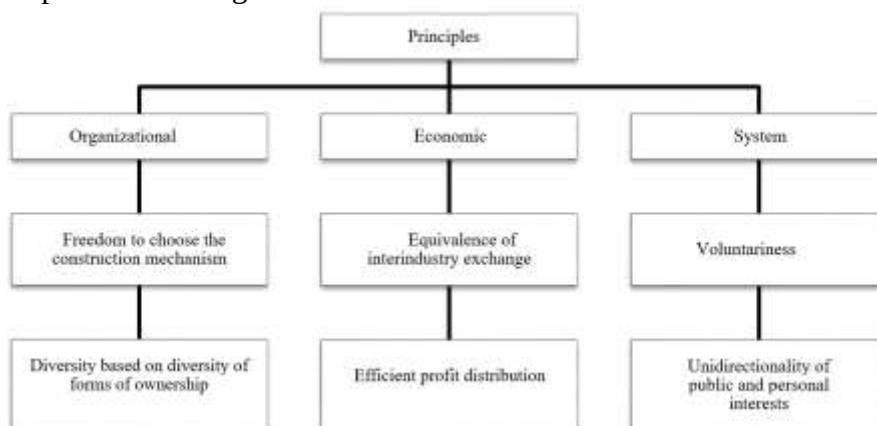


Figure 1. Principles of functioning of the organizational and economic mechanism for the development of beekeeping

RESULTS AND DISCUSSION

However, despite the sufficient maturity and formation of the organizational and economic mechanism for the functioning of beekeeping, its development, as well as directly to economic entities operating in the field of beekeeping, should be given special attention due to the fact that this industry has a number of reproduction features, influencing the formation of the organizational and economic mechanism of beekeeping.

1. Beekeeping is characterized by a short investment cycle, as well as greater payback in terms of costs, compared to other branches of agriculture [2].

2. The organization of production in this industry is such that the processes of mechanization and automation in it are at an extremely low level, which predetermines a higher labor intensity of manufactured products.

3. Lack of effective, efficient leverage to increase the volume of beekeeping production due to the low economic flexibility of the industry.

4. Domestic beekeeping products are not competitive enough compared to foreign production, which is largely due to lower production volumes, worse quality, as well as insignificant amounts of re-equipment of the production process [4].

In our opinion, its achievement can be facilitated by the implementation of the following components of the organizational and economic mechanism:

1) combination of capabilities of fields growing honey crops;

2) the use of bee breeds adapted to territorial climatic conditions, which will make it possible to more fully utilize the potential of their productivity;

3) introduction of intensive technologies for the production of honey and bee products, including resource-saving ones;

4) the use of machinery and equipment that allows the introduction of industrial methods of organizing production;

5) increasing environmental protection of the environment;

6) introduction of a system of continuous training of personnel, including in the workplace [3].

Fundamental improvement of the management system of this profitable and very useful industry, organization of breeding work on a scientific basis, improvement of the efficiency of beekeeping operations, further increase of production volume and types of honey products, introduction of modern technologies for honey processing, In order to increase the export potential, as well as to implement the best practices in beekeeping in all regions of our republic, the President of the Republic of Uzbekistan dated October 16, 2017 No. PQ-3327 “On measures to further develop the beekeeping network in our republic” decision was made.

CONCLUSION

Thus, the characteristics of the effectiveness of the functioning of the organizational and economic mechanism of beekeeping indicate that the development of market relations has not led to the creation of a civilized market for beekeeping products. One of the main reasons hindering the development of the market for beekeeping products at the present stage is the lack of financial support from the state.

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Rezyume: *Agrosanoat majmuasini innovatsion rivojlantirish ilmiy-texnikaviy salohiyatdan samarali foydalanishni, fan, ta'lim va ishlab chiqarishni integratsiyalashuvini, innovatsion texnologiyalar asosida iqtisodiyotni texnologik modernizatsiya qilishni nazarda tutadi. Bu murakkab muammoni hal etish har bir tarmoqni, jumladan, asalarichilikni rivojlantirish uchun tegishli shart-sharoitlarni yaratishni taqozo etadi. Asalarichilikda innovatsion jarayonlarning o'ziga xos xususiyatlari ochib berilgan. Maqolada asalarichilikning tashkiliy-iqtisodiy mexanizmining zamonaviy faoliyat ko'rsatishini innovatsion komponent, qulay investitsiya muhiti va davlat tomonidan qo'llab-quvvatlanmasdan amalga oshirib bo'lmasligi isbotlangan.*

Резюме: *Инновационное развитие АПК предполагает эффективное использование научно-технического потенциала, интеграцию науки, образования и производства, технологическую модернизацию экономики на основе инновационных технологий. Решение этой сложной проблемы требует создания соответствующих условий для развития каждой отрасли, в том числе и пчеловодства. Раскрыта специфика инновационных процессов в пчеловодстве. В статье доказано, что современное функционирование организационно-экономического механизма пчеловодства невозможно без инновационной составляющей, благоприятного инвестиционного климата и государственной поддержки.*

Kalit so'zlar: *tashkiliy-iqtisodiy mexanizm, innovatsiya, innovatsion faoliyat, asalarichilik.*

Ключевые слова: *организационно-экономический механизм, инновации, инновационная деятельность, пчеловодство.*

**RESEARCH OF SOCIOPSYCHOLOGICAL FACTORS ON INCREASING
PROFESSIONAL COMPETENCE OF FUTURE PEDAGOGUES-PSYCHOLOGISTS BY
SCIENTISTS**

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Summary: *This article studies the socio-psychological factors in the formation of educational motivation in students, the professional competence of a teacher-psychologist with knowledge in the field of pedagogy and psychology, as well as the work of a teacher on himself, the effective management of the educational process at school experience.*

Key words: *Professional competence, value competence, subject-information competence, socio-legal competence, methodological and technological competence, communicative competence, control and analytical competence, design and research competence*

Pedagogical competence and professional competence in general, the problem of its improvement has been of interest to scientists all over the world in recent years. In general, we have interpreted the terms related to this phenomenon and their role in the teacher's personality and personality development, and now we will dwell on the opinions of world scientists and experts in these directions.

In professional activity, researches on the process of development of pedagogue's professional competence are of primary importance. A strategy for developing the factors of pedagogue's professional competence is being developed to ensure the effectiveness of the teacher's activity. A model aimed at identifying and researching and improving the indicators of professional competence affecting the effectiveness of the teacher's professional activity is being created. The review of foreign scientific research made it possible to determine the modern problems of professional competence development in professional activity, the factors affecting the efficiency of professional activity.

Taking into account that it is researched within the scope of social psychology, it is worth noting that when social psychology studies an individual, it always studies him within a group and within group and intergroup relations. (G.M.Andreeva, A.A.Asmolov, A.K.Batarshev, M.K.Bityanova, M.V.Bobneva, N.I.Viktorov, Yu.A.Jukov, E.I.Kuzmin, A.A.Krylov, B.F.Lomov, A.V.Petrovsky, K.I. Selchenok, E.I.Shugunova and others). Direct interpersonal relationships and their consequences in the research of a number of foreign, Russian and Uzbek scientists have been studied.

American researchers - Dj.Raven, L.Stross, Dj.Moreno describe competence as - "a set of abilities necessary to perform a specific activity in a person's specialty, a type of thinking that appears as a result of the manifestation of skills, the embodiment of a sense of responsibility" [1].

It implies the integral connection of the complex of psychological factors, which is part of professional competence, and directs the teacher's behavior in a positive direction, with professional knowledge.

Among the Commonwealth States scientists: Sh.A.Amonashvili, V.A.Suxomlinskiy, V.A.Slastyonin, K.D.Ushinsky conducted research on the teacher's pedagogical orientation on the research of the teacher's pedagogical competence; G.A.Kovalyov, Yu.N.Kulyutkin, A.K.Markova, L.M.Mitina, G.S.Suxobskaya conducted research on the development of teachers' professional and personal qualities; scientists such as V.I.Zagvyazinsky, V.A.Kan-Kalik, A.P.Tryapitsina have researched the true nature of pedagogical creativity; V.A.Adolf, S.G.Vershlovsky, S.B.Elkanov, V.I.Zvereva, N.V.Kuzmina, V.P.Simonov, Ye.P.Tonkonogaya conducted modern researches on teacher competence. V.Yu.Krichevsky, A.V.Khutorsky studied competence as one of the important

indicators in the realization of goals in personal activity. In particular, A.V.Khutorsky, one of the pedagogic scientists, describes competence as follows: “Based on the worldview, that is, value and self-awareness are manifested in connection with the teacher’s worldview, imagination and value. He can see and understand the nature of events and phenomena in the environment, orient himself to them, and base his opinion as a pedagogue. He emphasizes that competence provides the mechanism of self-awareness of the teacher in teaching and other activities. Multicultural - having national and universal values; participation in the social life of the country; respect for family, traditions; acquire social skills; ability to understand the impact of science on human life and world development and to be able to explain it to young students; educational and cognitive process - independent cognitive activity of the teacher; logical thinking; be able to evaluate educational activities, analyze knowledge and skills; acquiring knowledge - pedagogical activity, the ability to acquire information about one’s subject; communication skills - knowing the language, communicating with different people, standing in a special place in the team; Socially useful work-family relations and responsibility, participation in the development of society, socially useful work; acquire economic and legal skills; working on oneself means self-development physically, spiritually, intellectually, the teacher controls his emotions” he emphasizes [2].

Competence is an integral quality, consisting of a set of knowledge, professional skills and skills necessary for the successful implementation of activities specific to a certain profession and the same position in a certain organization. Competence describes the pedagogue's spiritual outlook, psychological-pedagogical and organizational-technological potential, that is, the potential of his professional opportunities. V.P. Toporovsky, summarizing his research, proved that competence is the level of the pedagogue’s understanding of management, his individual skills and qualifications, the inclination, aspirations to self-development and continuous independent education, as well as the ability to manage the educational process based on modern requirements. It is obvious from his conclusions that the professional competence of a pedagogue includes the following main components:

A) reflexive skills that serve to analyze and objectively assess the effectiveness of one’s own activity;

B) foresight skills that express the feeling of the results of one’s activity and behavior in the process of interaction and readiness for the process of educational relations;

C) the ability to ensure the activity of subjects and coordinate their activities in problematic situations that may arise in educational processes; the ability to work cooperatively and use pedagogical methods rationally according to situations. Therefore, we can say that the professional competence of the pedagogue is determined by organization, management, pedagogical abilities and skills, the level of their understanding in the direction of organizing and managing the educational process on a scientific basis, inclination towards self-development and continuous independent education, opportunities to organize, manage and improve educational process activities. [3].

A.K. Markova, one of the Russian researchers, looked at professional competence in the general context of work psychology and tried to prove that any work efficiency is related to this phenomenon [4]. And N.V. Kuzmina studied competence in the context of pedagogical activity in his research work called “Personal professionalism of the master of teacher production education” and emphasized it as a “characteristic” [5]. Based on the results of the literature published in Russia and the results of the research presented in them, we were able to distinguish the following forms of professional-pedagogical competence: 1.Axiological competence consists of the following: knowing how to evaluate a person's personality and individuality; knowledge of the purpose and implementation of professional-pedagogical activity; possession of professional-ethical culture; accepting one’s profession as a source of meaning in life; students’ ability to learn the educational process as socio-cultural values; to know the humanistic worldview tasks of pedagogical sciences. 2.Socio-legal competence includes the following: Knowledge in the context of the idea of

modernization of the foundations of legal and regulatory documents of the educational process; Compliance with technical safety, labor safety norms and rules; The ability to protect children and adolescents from various negative effects of the social environment; Ability to ensure protection of health and life of learners during the education process; Training and team record keeping skills. 3. Subject-informational competence consists of the following: Knowledge of the basics of general and special theoretical sciences in the amount necessary to solve issues related to professional activity; Knowledge of pedagogical sciences and the main directions and perspectives of educational development; Ability to work with various sources of information (published, electronic, internet); Knowing how to work effectively with information based on its purpose. 4. Methodological and technological competence consists of the following: Understanding and implementation of creative aspects of professional activity; Readiness for independent education to improve one's skills; Ability to develop educational programs and textbooks, annual, calendar-thematic plans based on them; implementation of education and training of students in educational and extracurricular activities, taking into account the uniqueness of the subject; Ability to use various methods, methods, educational tools (including educational tools, computer); Knowledge of the content and essence of the person-oriented approach, the ability to apply them in order to create motivation for education; Willingness to perform the duties of a group leader related to the formation of a person's culture in all directions; Use of modern pedagogical technologies and effective use of necessary mental mechanisms to achieve the set goal; Interaction of conducting educational and correctional work for the development of the student's personality with various means (student group, family system of additional education, spiritual and educational activities, etc.). 5. Communicative competence consists of the following: Ability to organize educational activities in cooperation; Tolerant behavior skills; Ability to choose an effective strategy in conflict situations; Participation in the democratic management and self-management of the team of the educational institution; Help students socialize; The ability to demonstrate the results of one's scientific-methodical activity. 6. Control-analytical competence consists of the following: the ability to analyze the psychological mechanisms of various elements of the overall pedagogical process; Readiness for reflexive activity at all stages of organizing the educational process; Possession of traditional and modern means of evaluation of educational results (tests, rating, portfolio); Possession of various means of psychological-pedagogical diagnosis of the student's personality and team. 7. Project-research competence consists of the following: Ability to understand defects in one's professional activity and, on this basis, the ability to formulate urgent issues of their elimination; The ability to plan the content and methods of interaction of the participants of the educational process at all stages of its organization; Knowledge of the basics of the development of educational and regulatory documents and the ability to use them to implement the educational content; Forecasting social maladjustment of children and adolescents and planning their prevention. Ability to develop psychological-pedagogical research projects.

Developing the procedure for assessment of professional-pedagogical competence is considered a very complex pedagogical problem, and it is difficult to assess its relevance. The teacher's professional competence is formed in connection with having knowledge of pedagogy and psychology and the teacher's work on himself. The effective management of the educational process by the teacher during work experience is aimed at the formation of educational motivation in students. Another Russian scientist, academician V.A. Slavenin, studied competence as part of a set of communicative, constructive, and organizational abilities of a person. A modern pedagogical-psychologist must ensure the quality and continuity of education and constantly improve his professional level and qualifications, continuously improve the educational process based on the use of innovative technologies, and be inclined to solve professional issues.

In pedagogical research, professional competence is considered within the social skills of the teacher, which are expressed in the following:

- planning, organizing activities, creative approach to it;
- self-expression, ability to analyze the situation;
- social communication with the participants of the pedagogical process; work tirelessly on yourself;
- to assess the situation and solve problems, have management skills, etc.

Thus, the competence of a modern pedagogue-psychologist is determined by having knowledge, skills, and qualifications within the scope of his specialty and specialty and expressed in the manifestation of personal values, qualities, qualifications.

In conclusion, the teacher's role in forming a mature, perfect person in all respects required by our society is incomparable. To become a competent teacher in any field, it is not enough to acquire pedagogical theory. Therefore, general rules and general methodological ideas about teaching and raising children are described in the pedagogical theory. It is emphasized to take into account teacher's age and individual characteristics. School life, practical pedagogical process is very diverse and diverse. There are situations that do not correspond to the pedagogical theory. This requires extensive knowledge, thorough practical training, high pedagogical competence and creativity from the teacher.

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Rezyume: Bu maqolada pedagog psixologning kasbiy kompetentsiyasida pedagogika va psixologiyaga doir bilimlarga ega bo'lishi hamda o'qituvchi o'z ustida ishlashi, ish tajribasida ta'lim jarayonini samarali boshqarishi o'quvchilarda o'quv motivatsiyasini shakllantirishda ijtimoiy psixologik faktorlar o'rganiladi.

Резюме: В данной статье изучаются социально-психологические факторы формирования учебной мотивации у учащихся профессиональной компетентности педагога-психолога, обладающего знаниями в области педагогики и психологии, а также работа учителя над собой, эффективное управление учебным процессом в школе, опыт работы.

Kalit so'zlar: Kasbiy kompetentlik, aksiologik kompetentsiya, predmetli-axborot kompetentsiyasi, ijtimoiy-huquqiy kompetentsiya, uslubiy-texnologik kompetentsiya, kommunikativ kompetentsiya, nazorat-analitik kompetentsiya, loyihaviy-tadqiqot kompetentsiya.

Ключевые слова: Профессиональная компетентность, ценностная компетентность, предметно-информационная компетентность, социально-правовая компетентность, методолого-технологическая компетентность, коммуникативная компетентность, контрольно-аналитическая компетентность, проектно-исследовательская компетентность

MAIN ASPECTS OF IMPROVING THE METHODOLOGY OF TEACHING DIGITAL TECHNOLOGIES IN THE CONTEXT OF VIRTUAL LEARNING

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Summary: *In the modern world, digital technologies are becoming an increasingly important element of education, making a significant contribution to the learning process and the development of student competencies. In the context of virtual learning, it becomes necessary to improve digital teaching methods to ensure effective and high-quality learning. In this article we will consider the main aspects of improving the methodology of teaching digital technologies in the context of virtual learning.*

Key words: *Virtual learning, online platform, virtual reality, augmented reality, individualization of learning, adaptive technologies, cloud technology, critical thinking.*

Introduction

Virtual learning, also known as online learning or distance learning, is the process of acquiring education or knowledge through the use of Internet technologies.

With the development of modern technologies and access to the Internet, virtual learning is becoming increasingly popular and widespread. It provides a unique opportunity to learn anytime, anywhere, overcoming the barriers of distance and time constraints.

One of the main benefits of virtual learning is flexibility. Students can choose the time and pace of study that suits them. This is especially important for people who combine study with work or other responsibilities. Students can independently organize their learning, choosing the formats of materials and learning methods that suit them.

Virtual learning also provides the opportunity to receive education from leading universities and experts in various fields. Many universities and online platforms offer free courses, massive open online courses (MOOCs), certificates, and even online degrees. This expands the boundaries of access to education and allows students to expand their knowledge and skills.

Overall, virtual learning is an effective and flexible way to obtain an education. It opens up new opportunities for learning and growth by providing access to the best content and experts in various fields. Every year, online education becomes more and more popular and changes the traditional education model.

Improving the methodology of teaching digital technologies in virtual learning is an important step in the development of education. The integration of modern technologies makes it possible to create more effective and interesting educational programs that prepare students for the challenges of the modern world.

Using interactive online platforms in training

One of the important innovations in the field of education is the use of interactive online platforms. As technology advances, new online platforms are emerging that provide unique learning opportunities.

An interactive online platform is software that allows students and teachers to interact with each other via the Internet. This could be a web platform, mobile application or online courses. Teachers can use interactive online resources such as webinars, virtual labs, case studies, etc. One of the main goals of such platforms is to create a learning environment that facilitates the learning process and stimulates student interest.

One of the main benefits of using interactive online learning platforms is the ability to personalize learning. Thanks to such a platform, the teacher can adapt materials to the needs of each

specific student. This is especially helpful for students of varying skill levels or those with special needs. Additionally, interactive online platforms allow students to learn at their own pace, review materials, and receive real-time feedback.

Another important aspect of interactive online platforms is the ability to access education from anywhere in the world. With the use of such platforms, learning is not limited by geographic boundaries and class schedule. Students can take part in online courses at a time convenient for them, without leaving their home or office. This is especially true for people who have physical disabilities or those who work and cannot attend regular classes.

Experts say the use of interactive online platforms in learning also helps students develop new skills. This includes developing communication and collaboration skills, as well as developing critical thinking and self-regulation skills. Students need to actively participate in the educational process, solve problems, discuss materials and give their opinions. This develops the skills needed to work successfully in modern society.

Undoubtedly, interactive online platforms have their limitations and disadvantages. They cannot completely replace actual presence in classrooms and personal interaction with teachers and other students. In addition, potential problems with internet connection availability or possible technical problems must be taken into account. However, when used correctly, interactive online platforms can greatly facilitate and enhance the learning process.

Integration of virtual reality and augmented reality into the educational process

In the modern world of information technology, education is constantly undergoing changes and progressive technologies, such as virtual reality (VR - virtual reality) and augmented reality (AR - augmented reality), are playing an increasingly important role in the educational process. Integrating these technologies into the learning environment can significantly improve the level of education and the effectiveness of the learning process.

Virtual reality is a computer technology that allows users to experience simulated real-life situations and environments using special devices such as VR glasses. However, VR, unlike traditional education, allows students not only to gain theoretical knowledge about a certain topic, but also to immerse themselves in a virtual space where they can interact with 3D models, simulations or virtual experiments.

The use of VR in the educational process allows students to gain deeper and more accurate knowledge than traditional lectures. For example, when studying the history of digital technology, students can travel through time and space, visiting historical events and places. This helps them better understand and remember the material. Likewise, VR can be useful in learning modeling and physics simulation, allowing students to interact with 3D objects and see the results of their actions.

Augmented reality is another technology that is being actively integrated into the educational process. It allows you to add virtual elements to a real environment using mobile devices or AR glasses. This often happens using special applications for smartphones or tablets. AR is widely used in education due to its interactivity and ability to visualize information.

Students can use augmented reality to solve problems, conduct experiments, or take virtual quizzes. For example, when studying digital technology, students can use AR technology to create and interact with 3D models of digital technology. This helps them better understand geometric concepts and features of objects and also improves their visual thinking.

The benefits of integrating VR and AR in the educational process are clear. These technologies help create more engaging and interactive learning environments that improve student motivation and engagement. They also contribute to the development of collaboration and communication skills among students, as they can be used for joint learning and knowledge exchange virtually.

However, when introducing VR and AR into the educational process, it is also necessary to take into account some limitations. These technologies require specific hardware and software, and

require time and technical training to use them effectively. Moreover, to successfully integrate VR and AR into education, educators must have a good understanding of these technologies and know how to properly use them to achieve educational goals.

Individualization of learning using adaptive technologies

Adaptive technologies allow you to customize the educational process to the level of knowledge and needs of each student. Electronic educational platforms can provide personalized materials, tests and assignments, taking into account the individual characteristics of the student. Modern technology plays an important role in education, and one of its main advantages is the ability to personalize learning. Personalized learning is an approach that allows teachers to create unique learning paths for each student, taking into account their individual needs, abilities and interests. Adaptive technologies, by offering students personalized learning and feedback, ensure the efficiency and success of this process.

One of the main advantages of individualizing learning using adaptive technologies is a more accurate assessment of the level of knowledge and skills of each student. Instead of traditional classification by age or level, adaptive technologies are able to analyze and evaluate the individual progress of each student, determine his strengths and weaknesses, and offer the necessary materials and tasks to fill gaps in knowledge. This approach allows us to ensure maximum learning efficiency for each student and prevent individual students from falling.

In addition, the use of adaptive technologies in individualized learning helps students develop independence and responsibility for their education. With the help of such technologies, a student can independently control his progress, choose educational materials and methods that are most effective for him. This strengthens his motivation and intuitive understanding of his own learning, which contributes to better assimilation of the material and achievement of his goals.

In addition, adaptive technologies also help teachers cope with heavy workloads and make teaching easier. Thanks to adaptive learning algorithms, teachers can quickly and effectively assess the progress and needs of each student, as well as offer individual recommendations and assignments. This allows educators to use their time more efficiently, which is important for ensuring quality learning for all students.

Learning and teaching using cloud technology

In the modern world, where digitalization plays an increasingly important role in all spheres of life, education also does not stand aside. One of the most effective and innovative technologies used in the field of education is the use of cloud services. Cloud technology encompasses many benefits that greatly enhance the learning and teaching process.

The first advantage of learning and teaching using cloud technology is accessibility. With cloud storage, students and teachers can easily share information and materials, save personal notes and study materials. This allows students to work from anywhere in the world by connecting to the cloud using the Internet. This is especially useful for distance education, where students can access lectures and assignments in real time without leaving their home.

The second advantage is convenience and efficiency. Cloud technology provides the opportunity to use various tools to organize training and conduct classes. Teachers can create and upload presentations, videos, tests and other resources that will be available to students via the cloud. This allows students to study materials not only during class, but also at any other time, which increases the flexibility of their learning.

The third benefit is collaboration and knowledge sharing. Cloud services can enable collaboration, allowing students and teachers to collaborate on documents, create shared projects, and participate in discussions. This contributes to the development of communication skills in students, develops their ability to collaborate and share knowledge.

The fourth advantage is the ability to personalize training. Cloud technologies allow you to adapt training to the individual needs of the student. Teachers can create personalized learning

programs and assignments based on students' individual interests, needs, and progress. This promotes more effective and personalized learning.

Finally, the fifth advantage is scalability. Cloud services make it possible to teach a large number of students at the same time. Teachers can create educational materials that will be available to all students, as well as conduct online lectures or seminars for an unlimited number of students. This avoids the limitations of physical space and time, opening up access to knowledge to a larger number of students.

Developing critical thinking and problem solving skills in learning

Developing critical thinking and problem solving skills is an important aspect of education. The modern world requires us to be able to analyze information, make informed decisions, and solve complex problems.

Critical thinking skills allow us to critically evaluate information, analyze its reliability, and make informed conclusions. In an educational context, developing critical thinking skills helps students become active and independent participants in the learning process. Students with these skills think more deeply and creatively, are capable of self-regulation, and their interests and motivation for learning also increase.

To develop critical thinking skills, it is important to provide students with opportunities to analyze information, formulate and test hypotheses, and draw conclusions based on facts and evidence. Various methods and techniques can be used, such as group discussion, debate, role-playing or project assignments. These methods allow students to actively interact with each other, exchange ideas and opinions, explore problems from different perspectives and find solutions.

An important element in developing critical thinking skills is mentoring from the teacher. The teacher should ask students questions that will help them analyze information, reason logically, and express their thoughts. The teacher can also provide opportunities for students to formulate their own questions and seek answers, which helps develop their independence and independence.

However, the development of critical thinking skills should be integrated across all subject areas and not limited to just one or a few classes. In each lesson, the teacher can encourage students to find solutions to problems and think critically. For example, while studying digital technologies, a teacher may ask students to solve a complex problem that forces them to think and look for alternative solutions. Such activities help students understand the importance of critical thinking in applying knowledge to real life.

Developing problem solving skills is also an important aspect of learning. Solving problems requires analyzing the situation, searching for possible solutions, assessing their effectiveness and choosing the most optimal option. Students with problem-solving skills not only know how to solve specific problems, but also have the ability to apply these skills to a variety of life situations.

To develop problem-solving skills, it is important to create situations in the learning process that will present students with complex problems and challenges. Such situations can be presented in the form of project assignments or real-life problems that students must face and find solutions to. Students can work individually or in groups, exchanging ideas and exploring different ways to solve problems.

Conclusion

Thus, the introduction of innovations into the educational process will ensure not only the acquisition of knowledge, but also the development of key competencies necessary for successful adaptation to a rapidly changing society.

In conclusion, the following conclusions can be drawn:

□ The use of interactive online platforms in teaching has a number of advantages. This ensures personalized learning, allows students to study at a time and place that suits them, and helps them develop new skills. At the same time, it is necessary to remember the possible limitations and disadvantages of such platforms. However, with the development of technology, interactive online

platforms are becoming increasingly popular and are one of the key tools in the education of the future.

□ Integrating virtual reality and augmented reality into the classroom opens up new opportunities for education and helps students acquire deeper, more interactive and effective cognitive skills. Likewise, these technologies promote modernity and innovation in education. They not only make the learning process more interesting and engaging, but also prepare students for the digital world and the real-life challenges they will face in the future.

□ Individualization of learning using adaptive technologies is an important trend in modern education. This approach allows teachers to create personalized learning paths for each student and helps them develop independently and responsibly. Through the use of adaptive technologies, teachers can more effectively assess students' progress and needs, and make their work easier. This is important to ensure a high-quality and successful learning experience for all students, regardless of their level of knowledge and ability.

□ Learning and teaching using cloud technology provides a huge number of benefits for both students and teachers. Knowledge becomes more accessible and flexible, and learning more effective and personalized. This improves the quality of education and contributes to the development of students in the modern digital world.

□ Developing critical thinking and problem solving skills is an important aspect of learning. These skills enable students to become active and independent participants in the learning process, to think creatively, make informed decisions, and solve complex problems. Teachers have a key role in developing these skills by using a variety of methods and techniques in the classroom and supporting students in the process of finding solutions.

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Rezyume: Zamonaviy dunyoda raqamli texnologiyalar ta'limning tobora muhim elementiga aylanib, o'quv jarayoniga va talabalarning malakasini oshirishga katta hissa qo'shmoqda. Virtual ta'lim sharoitida samarali va sifatli o'qitishni ta'minlash uchun raqamli texnologiyalarni o'qitish usullarini takomillashtirish zarur bo'ladi. Ushbu maqolada biz virtual ta'lim kontekstida raqamli texnologiyalarni o'qitish metodikasini takomillashtirishning asosiy jihatlarini ko'rib chiqamiz

Резюме: В современном мире цифровые технологии становятся все более важным элементом образования, внося значительный вклад в процесс обучения и формирование компетентностей учащихся. В условиях виртуального обучения становится необходимым

совершенствовать методики преподавания цифровых технологий, чтобы обеспечить эффективное и качественное обучение. В данной статье мы рассмотрим основные аспекты совершенствования методики преподавания цифровых технологий в контексте виртуального обучения.

Kalit so‘zlar: Virtual o'rganish, onlayn platforma, virtual haqiqat, kengaytirilgan haqiqat, ta'limni individuallashtirish, adaptiv texnologiya, bulutli texnologiya, tanqidiy fikrlash.

Ключевые слова: Виртуальное обучение, онлайн-платформа, виртуальная реальность, дополненная реальность, индивидуализация обучения, адаптивные технологии, облачная технология, критическое мышление.

APPROACHES TO IMPROVE EFL LEARNERS' WRITING COMPETENCE

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Summary: *The article examines various approaches aimed at enhancing the writing competence of English as a Foreign Language (EFL) learners. The annotation provides an overview of key strategies, methodologies, and theoretical frameworks utilized in the teaching and assessment of writing skills among EFL learners. Overall, this article describes a comprehensive resource for educators, researchers, and practitioners interested in exploring diverse approaches to enhancing EFL learners' writing competence. By integrating theoretical insights with practical strategies, educators can create engaging and effective writing instruction that empowers EFL learners to communicate confidently and proficiently in English.*

Key words: *writing, competence, approaches, English as a foreign language (EFL), writing skills, principles.*

INTRODUCTION. The article explores the following aspects:

Process-Based Approaches: Process-based approaches emphasize the stages involved in writing, including pre-writing, drafting, revising, and editing. They focus on fostering students' creativity, critical thinking, and self-expression through guided writing tasks and peer feedback.

Genre-Based Approaches: Genre-based approaches focus on teaching students to recognize and produce different text types or genres, such as narratives, essays, and reports. They provide explicit instruction on genre conventions, rhetorical structures, and language features, enabling students to effectively communicate in specific writing contexts.

Task-Based Approaches: Task-based approaches involve engaging students in authentic writing tasks that simulate real-world communication situations. These approaches emphasize meaningful communication, problem-solving, and task accomplishment, encouraging learners to apply language skills in practical contexts.

Feedback and Correction Strategies: Feedback and correction strategies play a crucial role in improving EFL learners' writing competence. They include providing constructive feedback on content, organization, language use, and mechanics, as well as teaching effective self-editing and revision techniques.

Technology-Enhanced Approaches: Technology-enhanced approaches leverage digital tools and resources to support EFL writing instruction and assessment. These may include online writing platforms, writing software, interactive tutorials, and multimedia resources, offering opportunities for personalized learning and immediate feedback.

Assessment Practices: Assessment practices in EFL writing focus on evaluating students' writing proficiency and providing targeted feedback for improvement. They may include holistic scoring, analytic rubrics, portfolio assessment, and self-assessment, aiming to measure various aspects of writing competence and track learners' progress over time.

Theoretical Frameworks: Theoretical frameworks underpinning approaches to EFL writing competence encompass theories of language acquisition, writing process theory, genre theory, sociocultural theory, and cognitive psychology. These frameworks inform instructional practices and guide educators in designing effective writing pedagogy.

LITERATURE REVIEW. This literature review examines various approaches utilized in enhancing English as a Foreign Language (EFL) learners' writing competence. It explores theoretical frameworks, pedagogical strategies, and empirical studies aimed at improving EFL learners' writing skills.

1. Process Approach: The process approach emphasizes the recursive nature of writing, focusing on pre-writing, drafting, revising, and editing stages to develop EFL learners' writing competence [1]. Raimes discusses practical techniques for implementing the process approach in EFL writing classrooms, including brainstorming, outlining, peer feedback, and teacher conferences [2].

2. Genre-Based Approach: Hyland explores the role of genre awareness in EFL writing instruction, highlighting the importance of understanding rhetorical structures and linguistic features of different text types [3]. Paltridge and Starfield provide guidance on supporting EFL learners in academic writing, emphasizing genre-based approaches to thesis and dissertation writing [4].

3. Product Approach: Johns discusses the product approach, focusing on teaching specific writing forms and structures to EFL learners to produce accurate and coherent texts [5]. Swales presents genre analysis as a tool for teaching EFL learners how to produce texts appropriate for academic and professional contexts, emphasizing rhetorical moves and linguistic patterns [6].

4. Process-Product Approach: Raimes discusses the integration of process and product approaches in EFL writing instruction, advocating for a balanced approach that combines writing process strategies with attention to linguistic accuracy and textual coherence [2]. Reid provides practical techniques for implementing a process-product approach in EFL writing classrooms, including collaborative writing activities, error correction strategies, and portfolio assessment [7].

Thus, the approaches discussed in this literature review offer valuable insights and strategies for enhancing EFL learners' writing competence. Whether focusing on the writing process, genre awareness, product-oriented instruction, or a combination thereof, these approaches provide EFL educators with theoretical frameworks and pedagogical tools to effectively support learners in developing their writing skills. As EFL contexts continue to evolve, further research and innovation in writing instruction will be essential for meeting the diverse needs of EFL learners worldwide.

METHODOLOGY. The approach to teaching English as a Foreign Language (EFL) learners' writing competence holds significant importance in language education. Here are key reasons why this approach matters:

1. Foundation for Communication Skills: Developing writing competence is essential for EFL learners as it lays the foundation for effective communication in English. Writing serves as a means for learners to express their thoughts, ideas, and opinions coherently and accurately, both in academic and real-life contexts.

2. Enhancement of Language Proficiency: Engaging EFL learners in writing activities helps them enhance their overall language proficiency. Through writing, learners practice grammar, vocabulary, sentence structure, and spelling, thereby reinforcing their understanding of the English language.

3. Critical Thinking and Creativity: The approach to EFL writing competence encourages critical thinking and creativity among learners. Writing tasks often require learners to analyze information, synthesize ideas, and generate original content, fostering intellectual growth and cognitive skills development.

4. Cultural Awareness and Expression: Writing allows EFL learners to explore different cultural perspectives and express their own cultural identities. By engaging with various topics and genres, learners develop cultural awareness and sensitivity, contributing to their intercultural competence.

5. Academic Success: Proficiency in writing is crucial for academic success, especially in higher education contexts where English is the medium of instruction. A strong writing competence enables EFL learners to effectively communicate their ideas in academic essays, research papers, and other scholarly writings.

6. Career Advancement and Professional Development: In today's globalized world, proficiency in written English is highly valued in various professional fields. EFL learners with strong writing skills have a competitive edge in the job market and can pursue opportunities in fields such as business, journalism, academia, and international relations.

7. Personal Empowerment and Self-Expression: Mastering writing competence empowers EFL learners to articulate their thoughts and emotions with confidence. Writing serves as a tool for self-expression, allowing learners to convey their experiences, aspirations, and perspectives, thereby fostering personal growth and self-awareness.

Thus, the approach to EFL learners' writing competence is essential for fostering effective communication skills, enhancing language proficiency, promoting critical thinking and creativity, fostering cultural awareness, facilitating academic success, advancing career opportunities, and empowering learners to express themselves confidently and authentically. Therefore, educators should adopt holistic and learner-centered approaches to teaching writing that cater to the diverse needs and goals of EFL learners.

DISCUSSION. Enhancing writing competence among English as a Foreign Language (EFL) learners is a multifaceted endeavor that involves various approaches aimed at developing learners' linguistic proficiency, communicative skills, and critical thinking abilities. This discussion explores several approaches utilized to improve EFL learners' writing competence, highlighting their theoretical underpinnings, practical implications, and effectiveness in language learning contexts.

1. Process-Based Approach: The process-based approach emphasizes the recursive nature of writing, focusing on multiple stages such as prewriting, drafting, revising, and editing [1]. This approach encourages EFL learners to engage in brainstorming, outlining, and peer feedback to develop their ideas, organize their thoughts, and refine their written expression [9].

2. Genre-Based Approach: The genre-based approach focuses on teaching writing through the analysis and production of different text types or genres, such as narratives, essays, reports, and argumentative texts [10]. By familiarizing EFL learners with the characteristics and conventions of specific genres, this approach aims to enhance their genre awareness and ability to produce texts appropriate for different communicative contexts [6].

3. Task-Based Approach: The task-based approach integrates writing tasks into meaningful, real-world activities that require learners to use language to achieve specific goals or solve authentic problems [11]. This approach promotes language acquisition through experiential learning, task engagement, and language use in context, fostering EFL learners' writing skills while promoting communicative competence [12].

4. Process-Genre Approach: The process-genre approach combines elements of process-oriented and genre-based approaches, emphasizing both the recursive nature of writing and the rhetorical conventions of specific genres [3]. By guiding EFL learners through the stages of writing while focusing on genre-specific features and communicative purposes, this approach provides a comprehensive framework for developing writing competence in diverse academic and professional contexts [8].

In conclusion, approaches to enhancing EFL learners' writing competence are varied and multifaceted, drawing from theoretical insights in writing pedagogy, discourse analysis, and second language acquisition. By adopting a combination of process-based, genre-based, task-based, and process-genre approaches, educators can provide EFL learners with rich learning experiences that foster linguistic development, critical thinking skills, and communicative competence in writing. As the field of EFL writing instruction continues to evolve, further research and exploration of effective pedagogical approaches will contribute to the ongoing improvement of writing instruction and student learning outcomes in EFL contexts.

CONCLUSION. To sum up, the diverse approaches employed to enhance English as a Foreign Language (EFL) learners' writing competence underscore the complexity and importance of developing proficiency in written communication. Through a comprehensive examination of various pedagogical strategies and methodologies, educators endeavor to cultivate learners' writing skills, fostering their ability to express ideas, convey information, and engage in critical discourse effectively. The process-oriented approach emphasizes the iterative nature of writing, encouraging learners to engage in multiple stages of prewriting, drafting, revising, and editing to refine their compositions. By providing ample opportunities for practice, feedback, and reflection, this approach nurtures learners' writing fluency, accuracy, and self-efficacy empowering them to become more proficient and confident writers over time. The genre-based approach focuses on teaching writing within specific rhetorical contexts and discourse communities, equipping learners with the genre awareness and linguistic resources necessary to produce texts appropriate for various communicative purposes and audiences. By deconstructing and analyzing exemplar texts, learners develop an understanding of genre conventions, organizational patterns, and language features, enabling them to effectively navigate diverse writing tasks and genres with competence and versatility. The process-genre approach synthesizes elements of both process-oriented and genre-based approaches, offering a holistic framework for teaching writing that integrates the recursive nature of the writing process with the situational awareness of genre conventions. By scaffolding instruction and providing explicit guidance on both process and genre aspects of writing, educators can support learners in developing a repertoire of writing strategies and skills that can be flexibly applied across different contexts and genres.

Incorporating technology-enhanced approaches, such as computer-assisted writing instruction and online collaborative writing platforms, further expands the possibilities for engaging EFL learners in meaningful writing experiences and fostering their digital literacy skills. By leveraging technology tools and resources, educators can create interactive, multimedia-rich learning environments that cater to diverse learning styles and preferences, promoting active engagement, collaboration, and creativity in the writing process.

In conclusion, the multifaceted approaches employed to cultivate EFL learners' writing competence reflect a commitment to fostering communicative competence and literacy in an increasingly interconnected and multilingual world. By embracing a variety of pedagogical strategies and methodologies, educators can empower learners to become proficient, confident, and effective writers who are capable of engaging with and contributing to a global community of writers and communicators.

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Rezyume: Maqolada ingliz tilini chet tili sifatida (EFL) o'rganuvchilarning yozish kompetensiyasini oshirishga qaratilgan turli yondashuvlar ko'rib chiqiladi. Maqolada ingliz tilini o'rganuvchilar orasida yozish ko'nikmalarini o'rgatish va baholashda qo'llaniladigan asosiy strategiyalar, metodologiyalar va nazariy asoslar haqida umumiy ma'lumot beriladi. Umuman olganda, ushbu maqolada ingliz tilini o'rganuvchilarning yozish malakasini oshirishning turli yondashuvlarini o'rganishga qiziqqan o'qituvchilar, tadqiqotchilar va amaliyotchilar uchun keng qamrovli manba tasvirlangan. Nazariy tushunchalarni amaliy strategiyalar bilan birlashtirib, o'qituvchilar chet tilini o'rganuvchilariga ingliz tilida ishonchli va malakali muloqot qilish imkoniyatini beruvchi qiziqarli va samarali yozish ko'rsatkimlarini yaratishi mumkin.

Резюме: В статье рассматриваются различные подходы, направленные на повышение письменной компетенции изучающих английский как иностранный язык (EFL). В аннотации представлен обзор ключевых стратегий, методологий и теоретических основ, используемых в обучении и оценке навыков письма среди учащихся EFL. В целом, эта статья описывает комплексный ресурс для преподавателей, исследователей и практиков, заинтересованных в изучении различных подходов к повышению письменной компетентности учащихся EFL. Объединив теоретические знания с практическими стратегиями, преподаватели могут создать увлекательные и эффективные инструкции по письму, которые дадут учащимся EFL возможность уверенно и профессионально общаться на английском языке.

Kalit so'zlar: yozish, kompetentsiya, yondashuvlar, ingliz tili chet tili sifatida (EFL), yozish ko'nikmalari, tamoyillari.

Ключевые слова: письмо, компетентность, подходы, английский как иностранный (EFL), навыки письма, принципы.

CHESS PLAYING AS A VARIANT OF COGNITIVE PSYCHOTHERAPY AND AS A MEANS OF RELAXATION

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Summary: *Modern life is unthinkable without stress and situations that make it difficult and sometimes impossible to do without a psychologist or psychotherapist. Sometimes the nervous system of a person ceases to function properly, which leads to serious problems for his health. Psychosis is one of the most difficult problems to solve in modern life, as it concerns quite a large number of people living on Earth. Sometimes the situation is so serious that you can not do without the use of drug therapy. However, there are known alternatives that help reduce the impact of psychosis on a person, one of these methods is cognitive therapy, during which a person learns to logically analyze the internal state and learns to deal with the symptoms that logically bother them. The points given in this article are explained*

Keywords: *Psychosis, prevention of psychosis, cognitive psychotherapy, cognitive abilities, brain activity, thinking process, organization of classes, chess lessons, mental illness, rehabilitation.*

Introduction. This article proves the assumption that properly organized chess classes can be an option for cognitive therapy and psychosis prevention. The analysis of various studies on the positive impact of chess classes in the field of psychology and psychotherapy is made, the definition of psychosis is analyzed, and a clear idea is given of how professional or amateur chess classes can reduce the impact of psychosis and serve as its prevention. The article also examines how chess classes positively affect the development of cognitive functions of an individual. It is also important to note that it is not possible to completely replace taking medications with classes, but in some cases, it can be partially replaced, and it is also possible to use chess classes in combination with taking medications.

Modern life is unthinkable without stress and situations, because of which it is difficult and sometimes impossible to do without a psychologist or psychotherapist. Sometimes the human nervous system stops functioning properly, which leads to serious health problems. Psychosis is one of the most difficult to solve problems of modern life, as it concerns a large number of people living on Earth. Sometimes the situation is so serious that it is impossible to do without the use of drug therapy. However, there are alternative options that help reduce the effect of psychosis on a person, one such method is cognitive therapy, during which a person learns to logically analyze his internal state and learns to deal with the symptoms that logically bother him. This article proves the assumption that properly organized chess lessons can be a variant of cognitive therapy and prevention of psychosis. The analysis of various studies on the positive influence of chess in the field of psychology and psychotherapy is carried out, the definition of psychosis is analyzed, and a clear idea is given of how professional or amateur chess lessons can reduce the influence of psychosis and serve as its prevention. The article also examines how chess lessons have a positive.

The term "psychosis" was first used in 1845 by a representative of the Romantic school, Baron Ernst von Feuchtersleben, to describe the manifestations of mental illness.

At the same time, there was a concept of "neurosis", which was used exclusively to determine the lesions of the central nervous system, although they could in some cases cause the same manifestations. In the 20th century, the meaning of the term "neurosis" changed dramatically and it began to be applied to psychopathological conditions without organic damage to the nervous system. There is an aphorism: "Any psychosis is at the same time a neurosis since any interference

with high nervous activity is manifested by a change in the psyche, but any neurosis is not equally a psychosis."

Table 1

Technology of the formative stage of forming logical thinking

<i>T/r №</i>	<i>Job type name</i>	<i>Teacher activity</i>	<i>Student Activity</i>	<i>Result</i>
1	Discuss the learning outcomes of the previous stage	Problem formulation to improve analysis of results and logical thinking	Comparison of planned results with actual results	To improve the skills of self-evaluation and self-analysis of the results of solving educational and educational problems, to improve mental activity in depth.
2	Identifying ways to improve the organization of the formation process of logical thinking	Submission of theoretical material on the organization of the self-education process	Planning a weekly program for the formation of logical thinking, daily self-assessment of the implementation of planning self-analysis of the formation of logical thinking according to criteria.	Mastering problem-solving and problem-solving skills, identifying strengths and areas for improvement in solving professional learning challenges
3	Development of programs for individual selection of educational tasks	Lectures on the organization of biomedical, psycho-pedagogical, physical, and special training of chess players.	Choosing and solving educational and educational tasks, self-evaluation of results. Identify strengths and areas to improve logical thinking	To improve the skills of self-evaluation and self-analysis of the results of solving educational and educational problems, to improve mental activity in depth.
4	Self-assessment in solving educational and professional problems	Presentation of materials on the organization of coaching activities	Solving problems in the mode of personal mental activity and brainstorming, evaluating one's own activity to get out of problematic situations. TAS internship, participation in jury work	Self-organization of education and training activities. Forming a logical opinion to determine the areas of more qualified improvement of the level
5	Research directions of chess activity	Analysis of scientific research directions activities related to professional training of chess players	Choosing a research topic, writing theses, independent works, the final qualification work of a bachelor	Mastering the methodologies of scientific activity, increasing professional knowledge in the field of chess
6	Completing the process of self-organization and self-improvement in education and professional activities	Analysis of student self-assessment results and their reports. Focus on the process of reflection, self-evaluation and self-analysis	Self-organization and self-evaluation of the work done. Report and self-report on the level of formation of logical thinking. Analysis, synthesis, discussion, comparison, prediction	Organization of education and training activities. Determining directions for further improvement of professional qualifications is the level of logical thought formation

With psychosis, there is a violation of the thinking process, the entire chain of races of judgments becomes unproductive, chaotic, and purposeless. For psychosis, the pace and harmony of

speech change, and it becomes completely incomprehensible and meaningless. As a consequence, psychosis leads to pathological judgments (delusions, super-valuable ideas), which lead the individual to isolation from society. According to the World Health Organization, about 2 % of the world's population suffers from some type of psychosis, however, it is not possible to provide accurate data, since the diagnosis and classification of the disease have significant discrepancies in different sources.

Goals of using chess training as a cognitive therapy option Chess classes make it possible to establish psychotherapeutic contact with a person experiencing psychosis on an intellectual level that is understandable to them, taking into account developmental features, basic and related diagnoses, and emotional and behavioral pathologies.

— The main purpose of using chess classic classes in the key as a variant of cognitive psychotherapy and prevention of psychosis prevention is to:

- positive self-perception;
- increasing the self-esteem of the individual;
- develop and maintain an interest in conscious activities during free time; and maintaining interest in conscious activities in your free time;
- development of concentration abilities;
- improvements to various aspects of memory.
- Mastering new configurations of the currents kills.
- Develop communication and collaborative skills;
- Developing the ability to achieve your goals;
- Formation of the ability to foresee possible ways of developing events when performing specific operations.

A chess player with extensive experience will always be distinguished by significant endurance, efficiency, perseverance, and the ability to concentrate on the task in difficult conditions. However, over time, they become more diligent and purposeful. As practice shows, without these skills, it can be extremely difficult to succeed in competitions. Regardless of how the game changes priorities, you must save them. No matter how events unfold on the board, you must remain balanced and play the game to the end. Long-term training in chess develops a sense of time, you have to think about more than one hundred possible moves in one game. In some cases, when the game is played in the form of a "blitz", the game lasts only a few minutes.

The ability to make decisions in short-term situations can be useful both when passing an exam, at the Olympiad, and in everyday life. for a limited time, it will be useful for exams, Olympiads, and in real life. In the chess training class, students acquire the skills to draw analogies, assess the conditions and circumstances of the game, and also the consequences of each move and action.

Conclusion

Thus, to effectively strengthen and develop logical thinking when practicing chess, it is necessary to:

- Have in tasting elligence.
- Develop an interest in the game.
- Practice for 2 hours at least 3 times a week.
- Practice for at least one year under the guidance of an experienced coach.
- Achieve a professional rating and continuously improve it.

If this algorithm is followed, chess practice can be a variant of cognitive therapy, since the correction of thinking defects will occur automatically. The person himself will be able to understand the problems that bother him and learn to solve them in a logical way, which will naturally affect both his physical and mental health.

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Rezyume: Zamonaviy hayotni stresssiz va psixolog yoki psixoterapevtsiz amalga oshirishni qiyinlashtiradigan vaziyatlarsiz tasavvur qilib bo'lmaydi. Ba'zida odamning asab tizimi to'g'ri ishlashni to'xtatadi, bu uning sog'lig'i uchun jiddiy muammolarga olib keladi. Psixoz zamonaviy hayotda hal qilish qiyin bo'lgan muammolardan biridir, chunki u er yuzida yashovchi juda ko'p odamlarga tegishli. Ba'zida vaziyat juda og'ir bo'lib, siz dori-darmonlarni ishlatmasdan qilolmaysiz. Biroq, odamning psixoz ta'sirini kamaytirishga yordam beradigan ma'lum alternativalar mavjud, bu usullardan biri kognitiv terapiya bo'lib, u davomida odam o'zining ichki holatini mantiqiy tahlil qilishni va ularni bezovta qiladigan alomatlar bilan mantiqiy tarzda kurashishni o'rganadi. Ushbu maqolada keltirilgan fikrlar izohlab berilgan.

Резюме: Современная жизнь немыслима без стрессов и ситуаций, в которых сложно, а иногда и невозможно обойтись без психолога или психотерапевта. Иногда нервная система человека перестает правильно функционировать, что приводит к серьезным проблемам для его здоровья. Психоз – одна из самых сложных для решения проблем в современной жизни, поскольку касается довольно большого количества людей, живущих на земле. Иногда ситуация настолько серьезна, что без применения медикаментозной терапии не обойтись. Однако известны альтернативы, помогающие снизить воздействие психоза на человека, одним из таких методов является когнитивная терапия, в ходе которой человек учится логически анализировать свое внутреннее состояние и учится логическим путем справляться с беспокоящими его симптомами. Пункты, приведенные в этой статье, объяснены

Kalit so'zlar: Psixoz, psixozning oldini olish, kognitiv psixoterapiya, kognitiv qobiliyatlar, miya faoliyati, fikrlash jarayoni, darslarni tashkil etish, shaxmat darslari, ruhiy kasalliklar, reabilitatsiya.

Ключевые слова: Психоз, профилактика психозов, когнитивная психотерапия, познавательные способности, мозговая деятельность, мыслительный процесс, организация занятий, уроки шахмат, психические заболевания, реабилитация.

UDC: 37.013

THE USE OF INNOVATIVE TECHNOLOGIES IN ORGANIZING PRACTICAL TRAINING IN THE HIGHER EDUCATION SYSTEM

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Summary: *This article describes the theoretical and methodological bases of production practice in higher education and the existing problems. It also provides practical recommendations for the organization and conduct of internships based on an innovative approach based on modular technology, as well as the examination and evaluation of internship results based on Keys study technology*

Key words: *vocational activity, practical preparation, qualification practice, production practice, professional qualification, technological approach, innovative technology, module technology, module structure, module program, module unity, education activity element.*

The training of specialists in the higher education system consists mainly of two important links: scientific-theoretical and practical training. Practical training consists of the continuity of applying theoretical knowledge and skills, many aspects of which depend on the effectiveness of the qualitative production practice organized in the learning process.

Qualification practice provides students with a deep understanding of the content, purpose and methods of professional activity, which in turn creates the basis for their integration into the environment of the production process, adaptation and the formation of engineering qualities.

The results of pedagogical observations show that there are several weak points in the organization and conduct of qualifying practice in the higher education system.

Incompatibility of internship software with modern requirements; insufficient use of effective methods of innovative technologies in the organization of practice; problems such as the system of evaluating the results of the practice are not sufficiently developed, which requires an innovative approach to its organization and conduct.

One of the current pedagogical problems is to update the content of practical and professional training of students in the context of innovative technologies, to develop ways to use innovative technologies in the organization of qualifying practices.

It is known that innovative educational technologies are forms, methods and technologies that can be used to solve a problem in the field of education or the learning process on the basis of a new approach and guarantee a more effective result than before. These technologies create an environment for independent work and two-way communication in the formation of students' professional knowledge and skills, help to develop the cognitive abilities and creative abilities of each student[1.11].

In the works of such a scientists as Russian pedagogues NV Kuzmina, MB Klarin, VA Slastenin and Uzbek scientists' BA Abdullaev, B. Ziyomukhamedov, M. Tojiev, A. Alimov, N. Muslimov, innovative approaches to pedagogical activities, substantiation of innovative ideas and their effective implementation in practice have been.

The main part.

One of the main issues of internship is the optimization of the management system of practical professional activity of the intern and the development of independence and creative abilities within the organizational structure of professional training. In solving these problems, modular educational technologies, which create great opportunities for independent, systematic

acquisition of knowledge and self-development of the student as a subject of educational activities, aimed at demonstrating his cognitive abilities and developing creative abilities are important.

Modular education technology provides opportunities to comprehensively solve the following modern issues of vocational education:

- individualization of teaching;
- to teach students to effectively and actively use theoretical knowledge in practice;
- control the effectiveness of training at the level of practical training and assessment of observed actions;
- the teaching process, based on professional motivation activation, independence and full realization of learning opportunities, and so on[2.91].

Important aspects of modular education are reflected in the fact that students can study the module independently and control their own knowledge, as well as identify weak points in a short time and re-learn and correct their mistakes. Strengthening and improving knowledge, skills and abilities, opportunities for self-assessment - builds in students a culture of work, a responsible attitude to practice, develops thinking, problem-solving skills.

In our opinion, these same features of modular training ensure high efficiency of production practice. Below we present some recommendations for the organization of 72-hour production practice on the basis of modular training for 2nd year students of the direction 60721200- Work and technology of construction of light industrial goods (technology of sewing goods).

Typically, on the first day of the internship, each student is given the documents needed for the internship: an internship plan, a diary, and an individual assignment paper. According to the daily practice plan, students are divided into groups and study the activities of designated workshops or departments. The internship supervisors will brief the student group on the content, equipment, and problems of the work to be performed at the designated facility on a daily basis for 1-2 hours. The rest of the time, students are required to independently study the planned processes, technological process, types of equipment, monitor their performance and keep a diary of the work done on a daily basis.

At this stage, a pre-designed module program for each module is very effective in organizing the independent activities of the practitioner. The module program is designed separately for each module and includes elements of learning activities, sub-modules and the purpose of each learning element and tasks related to the training material to be mastered by the practitioner and instructions for their implementation, the grade for each task. takes. In this case, a module program is distributed to each practitioner, who, after a general introduction by the practice manager at the designated facility, performs the assigned tasks independently and in some complex, problematic situations, learns from supervisors and leading specialists in the enterprise.

The modular program of production practice allows the practitioner to systematically master the knowledge of the sequence of production processes in the enterprise, ensuring the continuity of the study of knowledge of production processes in the time allotted for the study of the module. It also limits interns from being absent, leaving practice early, or engaging in unnecessary work as a result of engaging in specific 6-hour assignments each day.

Below we recommend a rough draft of the module program for the study of the module "Tasks of the experimental workshop and stages of the technological process"[3] (table 1)

Table 1.

"Tasks of the experimental workshop and technological process stages" module program

Element of educational activity	Assignments related to the training material that practitioners should master	Instructions for completing assignments	Grade
1- EEA	Purpose: Introduction and analysis of the functions of the experimental workshop. Complete the assignments:	1. Carefully observe the work done in the experimental workshop. 2. Learn the sequence of work	

	1. Get acquainted with the groups in the experimental workshop and their activities. 2. Get acquainted with the sequence of technological processes.	done. Analyze what you learn, write down your thoughts.	
2- EEA	Purpose: To study the process of preparation of a new model construction. Complete the assignments: 1. Get acquainted with the requirements for model selection. 2. Observe and study the method and process of construction.	1. Carefully observe how the requirements for model selection are taken into account. 2. Write information about the methods of construction, content, stages.	
3- EEA	Purpose: To study the process of making templates. Complete the assignments: 1. Learn the types of templates and their uses. 2. Get acquainted with the process of making templates.	1. Get acquainted with the types of templates available in the enterprise. 2. Carefully observe the process of preparation of templates, write down the necessary information	
4- EEA	Purpose: To learn to determine the consumption of fabric and auxiliary materials for the model. Complete the assignment: 1. Get acquainted with the method of determining the consumption of fabric in the enterprise, compare it with modern methods. 2. Get acquainted with the work of the moderator.	1. Observe the process of determining the fabric consumption of the model in the enterprise and compare it with the theoretical knowledge. 2. Monitor the activity of the calibrator, the normalization process and record the necessary information.	
5- EEA	Purpose: To complete the module program. 1. Read the purpose of the module program again and evaluate your self-awareness activities. 2. Start to complete the Test and Keys assignments. 3. Do what you are not satisfied with again.	Analyze your own activities to learn and complete the "Learning Activity Element" defined in the module. Complete the Test and Keys assignments and evaluate your result using the test key. 1 point for each correct answer, 2 points for Keys	

It is known that according to the Regulations of the internship, the evaluation of its results is the final stage, which is carried out in the form of receiving a student report with the participation of the dean of the department, the head of the department, a representative of the educational and methodical department. to that end each trainee reports on the knowledge they have acquired during the internship and the impressions they have received.

In our opinion, it is impossible to fully assess the knowledge acquired by the practitioner during 1 month on the basis of a 15-20 minute report. A practitioner who actively participated in the internship during the reporting period, who completed all assignments correctly on time, may not be able to fully describe the knowledge he or she has acquired, or may not show good results due to excitement and other reasons. His low assessment during the reporting period reduces his enthusiasm for learning and creates a sense of dissatisfaction with his work, the commission's conclusion.

In the context of modern education, the monitoring and evaluation of the knowledge, skills and abilities of practitioners should also acquire new content. It is advisable to organize the assessment of the practitioner's mastery during the study of each module. In determining the results of the practitioner's mastery in practice, control tasks at the end of each module can be developed in different variants, for example, on the basis of 6 tests and 2 Keys tasks.

It is known that pedagogical tests can be a tool for determining the level of knowledge of the student and an objective assessment[4.61]. Test assignments are important

in increasing learners' cognitive activity, developing choice, and self-assessment. However, the use of Keys assignments in the assessment of the practitioner's practical professional knowledge, independent activity in solving production problems during the internship period also gives good results.

Keys assignments teach practitioners to approach certain production problems that arise in technological processes as engineers, to analyze the problem comprehensively and to find the most rational solution, to make decisions and to give an analytical basis for their opinion.

At the end of each module, the practitioner, who evaluates the results of his knowledge, strives not to get low grades in the group, to complete assignments on time, to get good grades, that is, to create a competitive environment in the group. This condition ensures high mastery and practice results.

Recommended case studies for the module "Tasks of the experimental workshop and stages of the technological process"[3]:

1-Keys.

Keys statement. The head of the sewing company summoned the head of the experimental workshop and said that he had received an order to sew 5,000 men's shirts. Customers informed that they bring the fabric themselves and asked to ensure that the cost of the fabric is an average of 1.3 m² per shirt, as well as to ensure that the new model meets the requirements of the customer. The head of the experimental workshop was assigned a task and assigned 1 week to complete the tasks.

Keys assignment. How should the head of the experimental workshop divide the work into groups to ensure that the order is fulfilled at the required level and on time?

Instructions for students on the topic:

As you explore the problem situation, try to find answers to the following questions.

1. What are the consumer requirements for a clothing model and who should consider it in the work process?
2. Which group is responsible for determining the consumption of fabric for clothing and how is it done?
3. What technical preparation is needed to give a new model to sew within 1 week and who should be responsible for it?
4. Justify the proposed ideas, solution, and expected results for the case solution

2-Keys.

Keys statement. A new model of men's shirt was given to production in the sewing shop of the sewing enterprise. A number of technological shortcomings were identified during the processing of garments:

1. The anterior and posterior shoulder shears are not the same;
2. The width of the pocket cover is 1 cm smaller than the width of the pocket;
3. The symmetrical arrangement of the pockets on the two front pieces.

When the head of the quality control department took the half-finished drafts to the sewing shop and told them about the identified defects, the quality control of the sewing shop said that the half-finished draft were made according to the templates provided by the experimental shop and that they were not faulty. After that, half-finished drafts were brought to the experimental workshop and problems were reported.

Keys assignment. Identify the causes of existing problems with newly sewn shirts. How would you solve the 3 problems shown in this situation?

Instructions for students on the topic:

1. Familiarize yourself with the case.
2. Evaluate the urgency of the problem.
3. Investigate and analyze all the cases to solve the problem.
4. Formulate hypotheses that guarantee an effective solution of the case

5. Prepare the results of working with cases in the form of a presentation or written information.

We recommend that the evaluation of the results of control tasks for each module be based on the following criteria: (Table 2)

Table 2

Criteria for assessing the knowledge of practitioners on each module

№	Type of activity	Control number	Evaluation criteria	Maximum score
1.	Test assignments	6	For the correct answer	From 1 ball, total: 6 ball
2.	Keys assignment	2		From 2 ball, total: 4 ball
			Able to analyze the problem	1.0 ball
			Was able to express and justify his or her opinion independently	1.0 ball
	Total:			10 ball

Note: For 5 grades - 8-10 points
For 4 grades - 6-7 points
For 3 grades - 4-5 points

In the final evaluation of the internship, it is advisable to take into account the average value of points earned on the modules, as well as the activity of the practitioner during the reporting period, which can reflect the professional qualities.

In conclusion, the organization of internships and evaluations in vocational education on the basis of innovative technologies not only ensures the effectiveness of internship results, but also lays the foundation for the training of highly qualified specialists who can compete in the labor market.

The results of our pedagogical observations and activities allowed us to formulate the following **conclusions and recommendations**:

1. Organization of production practice on the basis of modular technology ensures proper planning of the practitioner's activities. Therefore, the program designed for each module should be simple and understandable to the practitioner, allowing to study the technology, equipment and problems of the object and process being studied;

2. On the basis of the module program helps to develop skills such as independent study and performance of specific tasks in each module, independent work in the practitioner, learning, asking what he does not know, interacting with others in the production environment. Therefore, when appointing supervisors from the enterprise to practitioners, their professionalism, mentoring qualities should be taken into account.

3. Through the assessment of the knowledge learned in each module on the basis of case assignments related to production problems, the groundwork is laid for the formation of engineering qualities of practitioners, adaptation to the process of professionalization, interest in the field and positive motivation. Therefore, in compiling case assignments, attention should be paid to its relevance to the module content, its coverage of production problems, and the intellectual abilities of the students.

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Rezyume: Mazkur maqolada oliy ta'lim tizimida o'tkaziladigan ishlab chiqarish amaliyotining nazariy va uslubiy asoslari va mavjud muammolar yoritilgan. Shuningdek, ishlab chiqarish amaliyotini modulli texnologiyaga asoslangan innovatsion yondashuv asosida tashkil etish va o'tkazish hamda amaliyot natijalarini Keys-stadi texnologiyasi asosida tekshirish va baholash bo'yicha amaliy tavsiyalar ishlab chiqilgan.

Резюме: В данной статье освещены теоретические и методические основы проведения производственной практики в высшем образовании. Также предложены практические методические рекомендации инновационного подхода для организации и проведения производственной практики согласно модульной технологии, также определения знаний практикантов по технологии Кейс-стади.

Kalit so'zlar: kasbiy faoliyat, amaliy tayyorgarlik, malakaviy amaliyot, ishlab chiqarish amaliyoti, kasbiy malaka, ko'nikma, texnologik yondashuv, innovatsion texnologiya, modulli texnologiya, modulli tuzilma, modul dasturi, modul birlik, o'quv faoliyati elementi, Keys-stadi

Ключевые слова: профессиональная деятельность, практическая подготовка, квалификационная практика, производственная практика, профессиональные навыки, технологический подход, инновационная технология, модульная технология, модульная система, модульная программа, модульная единица, элемент учебной деятельности, Кейс-стади.

MODERN METHODS OF TEACHING PHYSICAL EDUCATION IN EDUCATIONAL INSTITUTIONS

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Summary: *This article discusses modern methods of teaching physical education in educational institutions. The authors emphasize the role of individual-oriented approach, use of technology, game and project-oriented teaching methods to create a motivating learning environment. The importance of integrating elements of culture and nature into the learning process to stimulate students' interest and enrich their learning is explored in depth. The article also emphasizes the significance of imparting knowledge about healthy lifestyles and substantiates the importance of an active and deliberate approach to teaching physical education in educational institutions.*

Key words: *modern teaching methods, physical education, educational institutions, individual-oriented learning, technologies in education, game-based teaching methods, project-oriented learning, cultural elements in learning, healthy lifestyle, active learning, physical activity, motivation in learning.*

INTRODUCTION. Teaching physical education in modern educational institutions is going through a period of significant change. In the context of a constantly evolving world and the increasing influence of technology on the life of modern man, approaches to teaching are also evolving. The search for new, more effective and progressive teaching methods becomes an integral part of the educational process. Nowadays, the main requirements for teaching methods are active involvement of students in the learning process, development of their creative and critical thinking, ability to work in a team and adapt to constantly changing circumstances. This article is focused on the study of modern methods of teaching physical education that meet these requirements and on analyzing the applicability of these methods in the educational environment.

In an innovative era, it is obvious that we must approach issues of learning and development in an unconventional way. This also applies to the teaching of physical education in educational institutions. The methods of teaching this subject have evolved over the past decades, adapting to the modern requirements and physical needs of students.

First of all, students need motivation to successfully master knowledge and skills in physical education. According to a study by Ntoumanis, Pensgaard and Martin (2015), poorly motivated students often find themselves in a state of "passive resistance" and will miss out on many benefits from active physical education activities[1]. Modern teaching methods try to solve this problem by making lessons interactive, attractive and enjoyable.

One of the approaches that is used in educational institutions today is individualized learning. According to Haerens, Kirk, et al. (2017), learning should be customized to the individual needs and interests of each student [2]. This will allow students to set their own goals and work towards achieving them.

Technology now plays a big role in teaching physical education. With the help of mobile apps, fitness trackers and video lessons, teachers can make lessons more interactive and interesting, which significantly increases the level of student engagement and motivation.

The tactical-strategic learning model, which uses games and activities to develop students, plays an important role in modern education. This helps students to develop problem-solving skills, teamwork skills and learn by doing.

An important role in modern education is played by the tactical-strategic learning model, which uses games and activities to develop students. This helps students to develop problem solving skills, teamwork skills and learn by doing.

Another interesting approach to teaching physical education in educational institutions is to incorporate aspects of culture and globalization into the curriculum. A variety of sports games and dances from around the world can be integrated into lessons to expose students to new movement skills and cultures (Ennis, 2017)[3]. This will help students look at physical activity from a new perspective, recognizing its global significance.

Integrating healthy lifestyles into physical education lessons is also an important part of modern teaching methods. This includes teaching topics such as healthy eating, the importance of regular exercise and psychological wellbeing. This is seen in the work of Martin and Markula (2016) where they explore the impact of sport on mental health and wellbeing [4].

Of course, physical education in educational settings is not just a matter of teaching new skills and developing physical activity. It is also a great way to develop communication, teamwork and leadership skills in students, as proven in a study by Kambur and colleagues (2017)[5].

It is worth mentioning the inclusion of active learning and project-oriented approach in teaching physical education. This approach involves students in various research projects and activities related to physical activity, which stimulates their creative thinking and active participation. A study by Parish and Kolb (2018) notes that this approach fosters problem-solving skills, promotes teamwork, and instills a love of continuous learning [6].

The use of outdoor exercise is also becoming more common. Environmental education programs and courses to teach outdoor exercise can provide students with new experiences and improve their mental health. Conducting outdoor activities has additional benefits such as improving cognitive abilities and overall well-being.

Social aspects also play a key role in teaching physical education. Developing communication, teamwork and leadership skills in students is an important part of teaching physical education.

In a global context, physical education teachers face the challenging task of energizing students and making lessons receptive and motivating. And it is excellent that there are many modern methods and approaches to address this challenge.

Thus, modern methods of teaching physical education in educational institutions are complex and diverse, but they all aim to make the learning process useful, interesting and engaging for each student.

IN CONCLUSION, it should be said that modern methods of teaching physical education in educational institutions are constantly evolving to adapt to the ever-changing needs and interests of students.

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Rezyume: Ushbu maqolada ta'lim muassasalarida jismoniy tarbiya o'qitishning zamonaviy usullari haqida so'z boradi. Mualliflar rag'batlantiruvchi ta'lim muhitini yaratishda individual yo'naltirilgan yondashuv, texnologiya, o'yin va loyiha asosidagi o'qitish usullaridan foydalanish rolini ta'kidlaydilar. O'quvchilarning qiziqishini uyg'otish va bilimni boyitish uchun madaniyat va tabiat elementlarini o'quv jarayoniga integratsiyalashning ahamiyati chuqur o'rganiladi. Maqolada, shuningdek, sog'lom turmush tarzi to'g'risidagi bilimlarning ahamiyatiga e'tibor qaratilgan va ta'lim muassasalarida jismoniy tarbiya o'qitishga faol va ongli yondashishning ahamiyati asoslanadi.

Резюме: В данной статье рассматриваются современные методики преподавания физической культуры в образовательных учреждениях. Авторы подчеркивают роль индивидуально-ориентированного подхода, использования технологий, игровых и проектно-ориентированных методов обучения для создания мотивирующей обучающей среды. Глубоко изучается важность интеграции элементов культуры и природы в процесс обучения для стимулирования интереса учащихся и обогащения процесса их обучения. Статья также акцентирует внимание на значимости передачи знаний о здоровом образе жизни и обосновывает важность активного и обдуманного подхода к преподаванию физической культуры в образовательных учреждениях.

Kalit so'zlar: zamonaviy o'qitish usullari, jismoniy tarbiya, ta'lim muassasalari, individual yo'naltirilgan ta'lim, ta'limdagi texnologiyalar, o'yinga asoslangan o'qitish usullari, loyiha asosida o'qitish, ta'limdagi madaniy elementlar, sog'lom turmush tarzi, faol ta'lim, jismoniy faollik, o'quv motivatsiyasi.

Ключевые слова: современные методы преподавания, физическая культура, образовательные учреждения, индивидуально-ориентированное обучение, технологии в образовании, игровые методики обучения, проектно-ориентированное обучение, культурные элементы в обучении, здоровый образ жизни, активное обучение, физическая активность, мотивация в обучении.

**THE MAIN DIRECTIONS OF THE DEVELOPMENT OF DOCUMENTARY FILMS OF
THE NEW ERA**

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Summary: *This article provides information about the types and genres of documentary films, their characteristics, based on scientific sources. Based on the analysis of films, scientifically confirmed opinions of European and Uzbek film critics and scientists on this matter are presented.*

Keywords: *documentary drama, monologue, popular science film, educational film, biographical sketch.*

Introduction: “Genre is changeable, yesterday’s genre may be different today and may change even more by tomorrow” [1.302]. “Working on each new film means creating a new genre” [2.37]. In fact, the internal structure of documentary films does not all come out of the same genre mold. Film critic R. Yurenev writes about the division into types: “Genre comes from style, and style is necessary for the viewer to notice the character of the genre” [3.42].

Unprecedented changes took place in Uzbekistan in the 90s of the last century. Radio, television and press reported about this every day. The cinematographers had the task of mastering these new life materials and learning them. This was very difficult for artists in the early days. It was necessary to understand the new event, to transfer it from one’s own artistic thinking and identity. During this period, experienced directors D. Salimov, V. Pogosyan, Sh. Gurbanboev, S. Davlatov, created films during this period, reflected the real progress of the reforms being carried out in our country. At the same time, new topics appeared based on the demand of the time. Sh. Mahbubov made the films “Motabar Komus” about the establishment of the Uzbek army, M. Kimsanova about the women actively participating in historical processes at that time, “Entrepreneurial Women”, N. Mahmudov about entrepreneurs “Quva Ishbilarmani”.

The films of B. Muzaffarov, Sh. Mahmudov, and D. Salimov, who worked in the 90s, were fundamentally different from those of others. This difference can be seen in the approach to the solution of the portrait of screen art, and in the attitude to dramaturgy and pictorial interpretation of the subject, and the use of figurative tools. The late director B. Muzaffarov has a special place among such inquisitive authors. It is worth noting that he entered the documentary film from the feature film. However, in this short period of time, he left a big mark in the film industry. The films “Ruh” about the famous writer Abdulla Qadiri and “Nadira” about the Uzbek poetess are pictures that clearly show the unique style of the director.

Through this film, we can see Nadira not only as a defiant woman who fought against the tyrannical politics of that time, but also the circumstances that connect her destiny with today’s principles that determine the place of a woman in society.

Also, the director U. Nazarov shot the film “Abdullah Qahhor” after studying his biography and character very well, knowing very well the various aspects of his life. On the one hand, a good film has been created about a wonderful person, the author of many true and relevant novels, and on the other hand, it is like a story about a real person who has won the love and recognition of the people.

In this sense, R. Sharifjonov’s biographical essay “Mashrab” is distinguished by its essence and attention. Despite the fact that there is almost no accurate information and reliable proof documents, the director manages to show in the footage the characteristics of the image of the great poet, whose life is known through legends and stories passed down from generation to generation. In the film, all screen options are used to bring the image to life. These are: image, text, music and poems of the poet. The authors were able to combine the main goal in the image

of Mashrab - the spiritual strength of a devoted person and the unbending of the truth achieved through suffering.

In 1989, the documentary film "Two Feelings, Two Verses" created by the director A. Akbarkhojaev based on the script of V. Belyakov reveals the first creative layers, tireless searches, and first moments of the young poets Yulduz Mukhtarova and Gulandom Togoeva in elegant colors and philosophical lines.

"Yulduzkhan, the daughter of the poet Amon Mukhtar, studies in one of the schools in Tashkent city. She strives to study like her friends of the same age. While watching the film, the incomparable inner world and pure feelings of the bird's soul become clear. In the eyes of a contemporary poetess, the surrounding world takes on a different color, the things and situations ignored by many people are brought to life with her creative thoughts and feelings, and universal pains, pure and unbiased thoughts about nature and time are analyzed in strange poetic verses. Yulduz Khan reads her poems with great excitement. because his creativity exposes indifference, cruelty and selfishness.[4.12].

The environment surrounding the poets is perfectly revealed in the documentary film based on the script of V. Belyakov. The professional skill of the cameraman Q. Hasanov is that every shot, every pictorial means and scenery in the film can be combined with the poems that sound behind the frame, images and emotions, lyrical digressions complement each other. The creative styles of the characters in this film-portrait of the director are completely different from each other. But the only feeling, if it exists, is the thirst for life, for higher goals, for the best, most perfect, purest feelings.

"Among the productions of the scientific-popular and documentary film studio, the films "A.Cholpon" and "They studied in Germany" created by the director-cameraman Sh. Mahmudov in the 90s stand out for their simplicity and sincerity. Along with the film "A.Cholpon", such films as "A.Ikromov", "A.Fitrat", "F.Khojaev", and M.Behbudi were also created during this period. The events of the film "They studied in Germany" were approached in a different way, that is, more dramatic. The work is about young people who were sent to educational institutions in distant Germany in the 20s of the last work.

Only some of these early swallows remained abroad and survived the persecution. "Most of those who returned to their homeland were victims of repression. Each frame of the film is imbued with deep sympathy for the tragedies of the heroes of the work. This can be felt in the text full of emotions, in conversations with their relatives and friends, and in the memories of the participants of the tragedy"[5.34].

The main part. "The genre has an evolutionary character, cinematography and television products have become complicated in the process of genre synthesis over the years, the genres in them evolve, the styles, artistic elements, and means of expression used by one of them are returned by the other, so today it is very difficult to classify both industries based on specific patterns"[6].

Nevertheless, it is possible to characterize each genre with its features, trends and aspects different from other genres with an analytical method and consider the chronological stages of their formation.

In the field of cinematography, the term "documentary film" is used in relation to all non-artistic films, and it refers to a type of film made by chronicling shots, interviews, conversations, footage taken by a hidden camera, that is, by sealing the reality of the activity of a creator without changing it. Documentary films are divided into the following types based on the method of production, scope of topics, means of expression.

Newsreel. It is the first form of cinematography, which is filmed by the creator as the event takes place, and the film is recorded in history and becomes a document. Since the most important events in the state and society are recorded in the chronicle, in modern thematic documentaries,

chronicle footage can be used as iconographic material. In 1895, the film “Arrival of the Train at the La Sota Station” shot and shown by Auguste and Louis Leumer was actually the first documentary reportage film, and the footage of Khudoibergan Devonov’s social and household life of the Khiva Khanate was the first pre-documentary footage of Uzbek cinematography. In practice, the continuity of the events of the entire period was restored through the complex montage of the chronicle footage itself, and documentary films were created that attracted the attention of many viewers. 1965 “Ordinary Fascism” by Mikhail Romm; 1969-1972 “Освобождение” cinematography made by cinematographers of the USSR, Yugoslavia, Italy, Poland and the German Democratic Republic, or “Apocalypse” made by Daniel Costel in 2009. epic is one of them.

Agitation (propaganda) films. Political struggles at the beginning of the 20th century, the First World War, the internal political situation in various countries, revolutions, World War II, etc., with the help of montage, the influence of the historical footage is increased, music is added, and the interpretation of the shown footage leads to the formation of new thematic films called Public Information Films. caused. They were the equivalent of today’s news programs and were used as a means of agitation and propaganda, political advertising, at the behest of the British and American governments. Campaign films would give audiences a brief glimpse of world and local news before the main session began in cinemas. Agitation films are important because they find ways to strongly influence the mind of the audience by enriching the chronicle footage through various means of expression.[7]. The emergence of television led to the disappearance of agitational films, but their experience in compositional construction, use of expressive means was reflected in many television genres, including television commercials.

Visual (widow) film. Travel to different geographical points of the earth, mainly in nature, natural scenery, flora and fauna; a film consisting of climactic, ethnographic images. Such films allow the viewer to travel to “unexplored lands”, to see different countries, landscapes, cities in the interpretation of the filmmaker. 2006 “Planet Earth” by the BBC; 2011 “Samsara”, the author’s work of cinematographer-director Ron Fricke, belongs to visual documentaries. Since the visual (widovoy) film is considered to have scientific value in a number of fields, the footage captured by the cameraman without interfering with the reality, and by the observation method, made a great contribution to the development of natural sciences.

Filming of laboratory experiments and practical production processes within a certain field led to the formation of educational films. Modern examples of educational films fall into the ranks of popular scientific films, consisting of complex plots and montages. However, in the 1950s and 1960s, the film consisted of relatively simple visual elements consisting of footage from real experiments and the author's commentary.

Popular science films. These are documentaries aimed at increasing the intellectual level of the population, announcing science news and “popularizing” the scientific field among young people, showing science, industry, agriculture, and natural phenomena based on a premeditated literary scenario. . Such films promote a scientific approach to the environment and various natural processes.

From the 1960s, various scientific societies, organizations, and NASA announced news in their field on US television, and later, artists and scientists collaborated on the Andy Griffith Show (CBS-1960), Lost in Space (SCI 1965-1968).) to the appearance of the first TV shows; Scientific and popular documentaries of the “National Geographic” society have started working.

In the dissemination of science to the public, astrophysicist Carl Sagan’s popular scientific programs in the series “Cosmos: A personal Voyage” aired on the RVS (Public Broadcasting Channel) channel from the 1980s combined various fields of science with the theme of space, scientific hypotheses, caused a great stir with the analysis of theoretical and practical examples and the artistic and compositional solutions developed by the creative team. By 2014, the show was

remade into a science fiction film called *Cosmos: A Spacetime Odyssey* starring astrophysicist and TV host Neil deGrasse Tyson and aired on National Geographic. In 2016, this popular scientific film was shown in Uzbek on MTRK TV channel “Around the World”. This popular scientific film is important because it brings out current and global issues of today.

Conversation (Interview) genre. From today's point of view, in the form of the films reminiscent of the form of a talk show (in English “talk” conversation, “show” show), a conversation is organized between representatives of various fields, famous people and the host, and in some cases, there are chronicle shots, various plots, performances, and film clips. the topic is revealed through the reproduction demonstration. In the interview genre, unlike the television “talk show”, there is no open discussion, in terms of form, the interview in the television information genre is similar to the broadcasts. In the interview genre, information will have a journalistic nature rather than an informative character.

The film “Interviews with Putin” released in 2017 by filmmaker Oliver Stone is a documentary film in the interview genre, the interview with the President of the Russian Federation is edited with clips commenting on the geopolitical situation in the world. In this genre, the director or journalist prepares the questions in advance and does not control the answer of the respondent, when the interview is conducted naturally and the answers of the interviewer are transmitted as they are, the film fulfills the condition of documentary.

The presenter was experimentally removed from interview documentaries on television, and a monologue genre, which is widely used on Uzbek television, appeared. In the monologue (telemonologue) genre, the chronicles are dubbed, and the voice behind the frame (the author) speaks from the first person about an important historical event, the achievements of the individual, the state and society; patriotic speech, philosophical thoughts or biographical information; It is a genre of art-journalistic film that is built by reading poetic works in the style of a poem, ode or dirge, and is often used as a means of expression to complement TV shows, documentary-biographical (film-portrait) or social films. Telemonologue on Uzbek television, 2002 Anvar Obidjon’s “Every moment of life is beautiful, every moment of life is a treasure”. The film based on the poem, or the poem “Father of the Country” dedicated to the memory of the first president Islam Karimov by the national poet Iqbal Mirza at the state event broadcast on Uzbekistan TV on December 7, 2016 in connection with the 24th anniversary of the Constitution of the Republic of Uzbekistan, was later broadcast in the form of a telemonologue on central channels.

Conclusion. According to the theory of film critic and literary critic V. Shklovsky, the genre in documentary cinema is an agreement between the director and the viewer. It is said that from the beginning of the film, the viewer should know what kind of film he is watching, otherwise he may not accept the author's opinion correctly.[8.4].In fact, as soon as the viewer starts watching the movie, he starts to guess what the movie is about and what genre it belongs to. Attunement and agreement appear in the viewer.S. Drobashenko writes: “Confusion can still be found in the genre classification of documentary film and television. The scientific research of some of our film critics in this regard is commendable, but it is not enough”[9.301]. Drobashenko divides documentary films into two main groups: informative and descriptive and problem-image. It is further divided into other typologies of internal genres, for example, agitfilm, film-poster, reportage, film-portrait, scientific, historical, etc. According to the teaching of R. Yurenov, if we consider a certain genre as the core of the film, its division into different characters is its types. should be seen. So, if a film portrait or a film-portrait is a separate genre of documentary film, then we should consider it as a variety of biographical, historical, scientific, group, travel, problematic, memoir, monologue, anniversary, memory, etc.

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Rezyume: *Ushbu maqolada hujjatli filmlarning turlari va janrlari, xususiyatlari haqida ilmiy manbalarga asoslanib ma'lumotlar keltirilgan. Jahon va o'zbek kinoshunoslari va olimlarning bu haqdagi ilmiy tasdiqlangan fikrlari filmlar tahlili asosida ko'rsatilgan.*

Резюме: *В данной статье представлена информация о видах и жанрах документального кино, их характеристиках, основанная на научных источниках. На основе анализа фильмов представлены научно подтвержденные мнения Европы и узбекских кинокритиков и ученых на этот счет.*

Kalit so'zlar: *respondent, dokudrama, monolog, ilmiy-ommabop film, educational film, biografik ocherk.*

Ключевые слова: *ответчик, документальная драма, монолог, научно-популярный фильм, учебный фильм, биографический очерк.*

PSYCHOLOGICAL PECULIARITIES OF ADAPTATION PROCESS IN STUDENTS OF HIGHER EDUCATION SYSTEM

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Summary: *The article highlights the important issue of psychological adaptation of students in the system of higher education. The authors consider aspects of the adaptation process, including difficulties and stresses in the transition from high school to university. It is noted that successful adaptation to the new educational environment plays a significant role in achieving academic success and successful socialization of students in the new environment. The article also considers the development of self-presentation skills, the formation of a positive attitude to learning and the creation of a favorable psychological climate as key psychological aspects that facilitate the adaptation process.*

Key words: *Adaptation process, higher education, psychological preparation, stress, successful adaptation, psychological climate, self-presentation, students, socialization, learning, psychological support, university, academic success, positive attitude towards learning.*

Introduction.

Psychological adaptation of students to the conditions of learning in higher education is an important professional task of psychologists and teachers. On the success of adaptation in new conditions, the formation of a new society, in many respects depends not only on the quality level of education of students, but also their further life activity.

The modern stage of social development is characterized by a significant increase in the number of people receiving higher education. Not an easy period for most students of higher education is the process of adaptation to learning, it requires adequate mechanisms of psychological preparation (Aruseni V.B., 2012) [1].

The peculiarity of higher education is the requirement for independence and activity of students, which distinguishes it from secondary education. This leads to the need to adapt to a new environment, to form new skills of learning activity, as well as to a new social environment, including interaction with teachers and other students.

It should also be noted that in the process of adaptation to higher education students face various psychological difficulties, including a sense of uncertainty, stress due to unpleasant feedback, anxiety due to complex learning tasks, etc.

Chapkin S.A. (2013) outlined in his study that for successful adaptation to the conditions of a higher education institution, it is critical for students to form a predominantly positive attitude to the learning process [2].

Psychological adaptation of students includes a wide range of factors and features. They include physiological variables, emotional states, attitudes and behavioral reactions to the new learning environment. All of these factors influence the success of adaptation.

Some of the key psychological features of adaptation include:

1. Cognitive adaptation - forming and changing perceptions of the new learning environment and learning requirements.
2. Emotional adaptation - the ability to regulate emotions in response to the stress and uncertainty of the new environment.
3. Behavioral adaptation - the formation of new skills and behavioral strategies to cope with the new environment and tasks.
4. Social adaptation - the ability to socially integrate, form and participate in group dynamics and relationships.

The relationship between adaptation and academic performance. Students' adaptation to higher education is directly related to their academic performance. Successful adaptation to a new learning environment often leads to higher academic achievement and satisfaction with learning. It is not hard to see why: students who have adapted to a new environment are more likely to feel more confident and relaxed, which promotes concentration and improved academic productivity.

Sociocultural factors in adaptation. Students' social and cultural environment also plays a significant role in their adaptation to higher education. Students transferring to institutions in other cities, regions, or even countries may encounter additional difficulties. Such students must adapt not only to a new learning environment, but also to a new social and cultural environment. This may require considerable effort and time, but successful adaptation can lead to profound cultural and social enrichment.

Psychological support in the process of adaptation. Psychological support plays a key role in the process of students' adjustment to higher education. Support from faculty, family, friends, and psychologists can make this transition process much easier. In addition, individualized work with students who are struggling can help them adjust to new circumstances more quickly and easily. It is important to create an understanding and safe environment for students so that they can freely discuss any issues and problems they are facing.

Age and gender differences in adaptation processes. Often adaptation to higher education differs depending on the age of the student. The transition to higher education often occurs during late adolescence or early adulthood, when young people already have a certain set of life skills and competencies that help them through the process. However, with older students, they may have other challenges, such as more complex commitments outside of studies (family, work).

Gender differences can also have an impact on the adaptation process. Men and women may experience different difficulties during the adjustment period and have different needs. For example, women may experience more anxiety and stress related to learning, while men may face pressure for dignity and acceptance from peers. This observation emphasizes the importance of a gender-sensitive approach in psychological and pedagogical support for students.

Students' adaptation strategies. Students employ a wide variety of strategies to adapt to higher education. Some find help in group and individualized learning, while others prefer independent study. Some seek support from faculty, while others rely on friends and classmates. Some students encourage collaboration and group work, while others tune out competition. It is important that institutions are able to offer different options and models of learning so that each student can choose the strategy that best suits them.

The importance of early detection of adaptation problems. Identifying problems at an early stage can help in solving them in time and preventing their aggravation. It is important to pay attention to signs of nervous tension, depression, prolonged stress, anxiety, and professional burnout in students. Training teachers and psychologists in methods of early detection of problems will help to prevent more serious difficulties in the process of adaptation of students.

Considering all of the above, we can emphasize the importance of psychological support for students in the process of adaptation to the higher education system. It will not only improve their academic performance, but also contribute to the development of personality, formation of sustainable psychological health and the ability to successfully overcome life difficulties.

Conclusion

Adaptation to the higher education system requires a lot of effort and time from students. However, understanding the psychological peculiarities of this process and appropriate support from educators and psychologists can make this transition smoother and more successful.

It is important to provide students with the necessary support and tools to help them cope with the psychological difficulties of this period. Open and constant feedback, assistance in regulating emotional state, development of self-efficacy and conflict resolution skills are important

on this path. All this will greatly improve students' adaptation process and their further academic success.

In general, acceptance and successful adaptation to a new learning environment is an important stage in every student's life. This process is complex and multifaceted, but with the right support and careful interaction from faculty and psychologists, it can go more smoothly and contribute to students' academic success. Ultimately, this is not only beneficial for academic success, but also for the overall personal development of each student.

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Rezyume: Maqolada talabalarning oliy ta'lim tizimiga psixologik moslashuvining muhim masalasi yoritilgan. Mualliflar moslashish jarayonining jihatlarini, shu jumladan o'rta maktabdan universitetga o'tishda yuzaga keladigan qiyinchiliklar va stresslarni ko'rib chiqadilar. Ta'kidlanishicha, yangi ta'lim muhitiga muvaffaqiyatli moslashish akademik muvaffaqiyatga erishish va talabalarni yangi sharoitlarda muvaffaqiyatli ijtimoiylashtirishda muhim rol o'ynaydi. Maqolada, shuningdek, o'z-o'zini taqdim etish ko'nikmalarini rivojlantirish, o'rganishga ijobiy munosabatni shakllantirish va moslashish jarayonini osonlashtiradigan asosiy psixologik jihatlar sifatida qulay psixologik muhitni yaratish ko'rib chiqiladi.

Резюме: Статья освещает важный вопрос психологической адаптации студентов в системе высшего образования. Авторы рассматривают аспекты адаптационного процесса, включая возникающие трудности и стрессы при переходе из средней школы в университет. Отмечается, что успешная адаптация к новой образовательной среде играет значимую роль в достижении академического успеха и успешной социализации студентов в новых условиях. В статье также рассматриваются развитие навыков самопрезентации, формирование позитивного отношения к обучению и создание благоприятного психологического климата как ключевых психологических аспектов, облегчающих процесс адаптации.

Kalit so'zlar: moslashish jarayoni, oliy ma'lumot, psixologik tayyorgarlik, stress, muvaffaqiyatli moslashish, psixologik iqlim, o'z-o'zini taqdim etish, talabalar, o'qitish, psixologik yordam, universitet, akademik muvaffaqiyat, o'rganishga ijobiy munosabat.

Ключевые слова: Адаптационный процесс, высшее образование, психологическая подготовка, стресс, успешная адаптация, психологический климат, самопрезентация, студенты, социализация, обучение, психологическая поддержка, университет, академический успех, положительное отношение к обучению.

OPTIMIZATION OF THE COOPERATION OF PRESCHOOL EDUCATIONAL ORGANIZATIONS AND FAMILIES IN THE FORMATION OF A HEALTHY LIFESTYLE IN PRESCHOOL CHILDREN

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Summary: *The problem of maintaining and strengthening the health of preschool children is one of the urgent issues today. This article describes information about the cooperation of school educational organizations and families in the formation of a healthy lifestyle for preschool children.*

Keywords: *development, family education, children's health, healthy lifestyle family and kindergarten, motor activity*

Introduction. The state of children's health is affected by many negative factors: a generally deteriorating environmental situation, a decline in the standard of living in the country as a whole, a decrease in the level of social guarantees for children in the areas of spiritual and physical development, a lack of time and money for parents to fully meet the needs of children, an increase in the number of single-parent families, the technology of the educational process, the personality of teachers as well as the state and orientation of family education.

In these conditions, the problem of preserving and strengthening the health of preschool children becomes especially urgent. Today's children are the future of the state. Within the framework of the state concept of preserving children's health, much attention is paid to strengthening children's health, and, above all, to the formation of a healthy lifestyle for children.

The health-saving nature of education and upbringing is especially important in preschool educational institutions, where the child receives basic knowledge from many sciences, including about his body. At this stage, the child understands and accepts the value of a healthy lifestyle.

Review of literature Simultaneously with the use of innovative technologies, the most important factor in influencing the child's personality is the atmosphere of kinship emotional ties. Parental love provides children with emotional protection and psychological comfort, provides life support, and the child's love and boundless trust make him especially susceptible to their influence. Special psychological, pedagogical and sociological studies have shown that families are in dire need of specialist help at all stages of preschool childhood. It is obvious that the family and kindergarten, having their own special functions, cannot replace each other and must interact in the name of the full development of a preschool child.

Today, by recognizing the priority of family education over public education, by placing the responsibility for raising children on parents, we understand that this requires a new relationship between the family and preschool institutions.

Methods of research. These relations are defined by the concepts of "cooperation" and "interaction".

Cooperation is communication on an "equal footing", where no one has the privilege to specify, control, or evaluate.

Cooperation is a dialogue that constantly enriches all partners and all participants. Both sides need to master the art of dialogue: both parents and teachers, who should look for positive ways and forms of communication.

Interaction is a way of organizing joint activities, which is carried out on the basis of social perception and through communication.

The result of interaction is certain relationships, which, being the internal personal basis of interaction, depend on the relationships of people, on the position of the interacting ones. If the

interaction is carried out in conditions of openness of both parties, when no one's freedom is infringed, it serves as a manifestation of true relations.

Interaction between teachers and parents of preschool children can be carried out through:

- involvement of parents in the teaching process;
- expanding the scope of parents' participation in the organization of the educational institution's life;
- stay of parents in the classroom at a convenient time for them;
- creating conditions for creative self-realization of teachers, parents, and children;
- informational and pedagogical materials;
- various programs of joint activities of children and parents;
- combining the efforts of the teacher and the parent in joint activities for the upbringing and development of the child;
- showing understanding, tolerance and tact in the upbringing and training of the child, striving to take into account his interests, not ignoring feelings and emotions;
- a respectful relationship between the family and the educational institution.

Consequently, the kindergarten should become an open educational system, i.e., on the one hand, make the pedagogical process more free, flexible, differentiated, humane on the part of the teaching staff, and on the other, involve parents in the educational process of preschool institutions.

The tasks and content of raising older preschool children are multifaceted. A special place among them is occupied by the problems of protecting children's health and their physical education, since the full development of the child depends on the effectiveness of solving these problems.

Older preschool children have all the prerequisites for a stable formation of ideas about a healthy lifestyle:

- mental processes are actively developing, self-esteem and a sense of responsibility are growing;
- "positive changes in physical and functional development are noticeable; children are able to maintain and demonstrate correct posture;
- children are able to independently perform household tasks, have self-service skills, make strong-willed efforts to achieve their goals in the game, in the manifestation of physical activity."

The physiological state of older preschool children is greatly influenced by their psycho-emotional state, which depends, in turn, on mental attitudes. Therefore, scientists distinguish the following aspects of a healthy lifestyle for older preschoolers:

- emotional well-being: psychohygienic, ability to cope with your own emotions;
- intellectual well-being: the ability of a person to learn and use new information for optimal actions in new circumstances;
- spiritual well-being: the ability to set truly meaningful, constructive life goals and strive for them; optimism.

Analysis and results. Analysis of all programs of education and development of older preschool children shows that physical education plays a leading role in the educational process, in contrast to the formation of older preschoolers' ideas about a healthy lifestyle.

Such attention of preschool institutions to the physical development of an older preschool child is due to the peculiarities of the child's body: the child grows, his height increases, body weight increases, motor activity develops, etc.

To form the ideas of older preschoolers about a healthy lifestyle, special exercises that strengthen children's health and a system of physical education are necessary. To do this, every day in the kindergarten group, morning exercises are held, the purpose of which is to create a cheerful, cheerful mood in children, strengthen their health, develop dexterity, and physical strength. Morning gymnastics and special physical education classes in the gym are accompanied by music

,which " favorably affects the emotional sphere of the older preschooler, contributes to the good mood of children, forms their ideas about a healthy lifestyle."

Outdoor games are of great importance for the formation of older preschoolers ' ideas about a healthy lifestyle. They are held in a group, in special classes, during walks and in the intermediate intervals between classes. Outdoor games must also be included in music classes. Games for older preschoolers are organized by the teacher, but most often by the children themselves. "As a rule, children play in small groups. The feeling of joy and independence in the game encourages older preschoolers to strive for even greater physical activity and to organize a healthy lifestyle."

The process of forming the ideas of older preschoolers about a healthy lifestyle is closely related to educating them to love cleanliness, neatness, and order.

The authors of comprehensive parenting programs pay considerable attention to the formation of older preschoolers ' ideas about a healthy lifestyle: the need for cleanliness and neatness, a culture of behavior and independent motor activity, etc.

Effective formation of ideas of older preschool children about a healthy lifestyle can only be carried out if the regime points of kindergarten are strictly observed.

The regime is a firmly established, pedagogically and physiologically grounded routine of children's lives, aimed at the full physical and mental development of each child.

For older children, a special regime is established that corresponds to children of this age category. The daily routine is "not just a regulated transfer time, but a specially organized life of children, which has a health and educational value."

Regime moments contribute to the education of children, first of all, cultural and hygienic habits. They develop communication skills with peers and adults, discipline students, and help them be active and independent.

Walks and naps have a positive impact on the formation of older preschoolers ' ideas about a healthy lifestyle. In addition to their health-improving value, they contribute to the development of the child's movements and physical activity; create recreation and relaxation areas; strengthen the nervous system of children.

In order to attract parents to cooperate in the development of a health culture among children, we tried to use various forms of work that gave positive results. The active participation of parents in the work of preschool institutions has increased, and they have become irreplaceable assistants to teachers in raising children.

At the pedagogical council of the Preschool educational Institution, participants of work in this direction were identified: teachers, pupils, parents, as well as the main tasks were set:

1. Improving the level of theoretical knowledge and practical skills of the preschool staff and parents in matters of health culture.
2. Formation of children's conscious attitude to health and health-saving behavior.
3. Involving parents in the educational process.

Work on interaction with the family is based on unity, when the purpose and objectives of raising a child are well understood not only by the teacher, but also by parents, when the family is familiar with the methods and techniques of physical culture and recreation work in kindergarten, and teachers use the best experience of family education. When working with your family, it is very important to apply an individual approach based on your health, interests, and needs.

Joint work with the family was based on the principles of volunteerism, cooperation, systematic and consistent work, as well as an individual approach to each family. Especially effective were individual forms of interaction with parents who, in the process of learning, were able to

tests showed a low level of consciousness and competence in health issues.

As a result of the work carried out, a system of relations with the family was built in the preschool educational institution. Its effectiveness can be traced to the increased level of

competence of parents and preschoolers in matters of health culture. This ultimately had a positive impact on the development of motor activity, physical fitness of preschoolers.

Thus, the work I have studied and done confirms the importance and necessity of its implementation in preschool institutions. Having built a system of work based on an integrated approach in interaction with parents to form a culture of children's health, positive changes were achieved:

The tasks of a healthy lifestyle for older preschoolers are to foster a culture of health and healthy lifestyle habits, to form a system of concepts aimed at the child's awareness of his "I", the capabilities of his body, and the dependence of his health on actions, deeds, and habits. These tasks are implemented during classes, conversations, outdoor games, and research work based on calm, friendly relationships.

The forms of working with C vary: quizzes are held, nature excursions are conducted, parents are involved in the work, and much attention is paid to the individual interests of children. Consequently, the main task of health-saving pedagogy is such a regime of work and rest for preschoolers, in which children maintain high performance throughout the entire period of classes.

As a result of the theoretical and experimental study, we clarified the content of the concept of "healthy lifestyle" in modern research.

A healthy lifestyle in our study is an active form of behavior of children, ensuring the preservation of mental and physical health, increasing the adaptive capabilities of the body, and its maximum capacity. This is a favorable emotional climate in the family, a friendly, friendly attitude of parents to each other and the child; this is a properly organized diet, the use of physical exercises in the air and sufficient activity of the individual, and of course the correct exemplary behavior of adults, their negative attitude to bad habits. By the formation of a healthy lifestyle, we mean a specially organized pedagogical process that contributes to the harmonization of the individual's personality from the standpoint of health conservation.

Analyzing modern approaches to the problem of forming a healthy lifestyle, we also tried to consider the essence of interaction between the family and preschool institutions in the formation of a healthy lifestyle, which consists in providing the child with an individual style of healthy behavior through the creation and implementation of pedagogical conditions, as a set of prerequisites that organize pedagogical activity in preschool.

Considering the state of theory and practice on the problem under study, positive experience was gained in organizing the process of hygienic education of older preschoolers. The correlation between the materials of theoretical analysis and the conclusions obtained as a result of studying the positive experience in organizing the process of forming a healthy lifestyle in older groups made it possible to develop a program of experimental work.

In the course of the experimental work, ascertaining forming and control experiments were carried out.

Comparing the results of the control experiment with the results of the ascertaining experiment, we can note a tendency to increase valeological knowledge in older preschoolers.

The model of interrelation of elements of the lifestyle of older preschoolers reflects the interaction of various components of the environment: work, school, household, as well as personal components: peers, caregivers and parents.

Conclusion. Revealing the content of the components of healthy lifestyle, it should be noted that all spheres of life of children of this age-labor, social, family, leisure-are interconnected through communication with peers, educators, parents, and those whom we have called subjects of education. This model, in our opinion, reflects the socio-pedagogical aspect of the process of forming a healthy lifestyle for older preschoolers. Thus, our research has shown that the formation of the foundations of a healthy lifestyle is possible through a special organized interaction between the family and preschool institutions.

Effective interaction between the family and preschool institutions in the formation of a healthy lifestyle for older preschool children is ensured by joint activities of teachers, parents and children aimed at preserving and strengthening children's health.

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Резюме. Проблема сохранения и укрепления здоровья детей дошкольного возраста является сегодня одной из актуальных проблем. В данной статье изложена информация о сотрудничестве школьных образовательных организаций и семьи в формировании здорового образа жизни детей дошкольного возраста.

Rezyume: Maktabgacha yoshdagi bolalar salomatligini saqlash va mustahkamlash muammosi bugungi kundagi dolzarb masalalardan biridir. Mazkur maqolada maktabgacha bolalarda sog'lom turmush tarzini shakllantirishda maktaba ta'lim tashkilotlari va oilalarning hamkorligi haqidagi ma'lumotlar bayon etilgan.

Kalit so'zlar: rivojlanish, oilaviy tarbiya, bolalar salomatligi, oila va bolalar bog'chasining sog'lom turmush tarzi, jismoniy faollik.

Ключевые слова: развитие, семейное воспитание, здоровье детей, здоровый образ жизни семьи и детского сада, двигательная активность.

UDK: 5527

INNOVATIVE METHODS AND TECHNOLOGIES IN SPORTS PEDAGOGY

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Summary: The article touches upon the important topic of application of innovative methods and technologies in the sphere of sports pedagogy. It discusses in detail modern teaching and training methods, as well as the role of technology in improving athletic performance and increasing the level of physical fitness of students. The most progressive, effective and non-traditional approaches in training are analyzed, and the contribution of modern technology to improving the quality of sports education is described.

Key words: innovation, methods, technologies, sports pedagogy, teaching, training, physical development, sports education, new methods, sports science, pedagogical approaches, sports didactics, physical activity, physical culture, healthy lifestyle, progressive methods, modern technologies, application of technologies in sports, teaching efficiency.

One of the essential features of modern society is the rapid development of technology, which has affected all aspects of life, including education and upbringing. Sports pedagogy has not become an exception. Currently, the relevance of innovative techniques and technologies for teaching and learning in the context of physical education and sport is evident.

One of the brightest examples of innovations in sports pedagogy is the use of online technologies. The use of interactive applications and programs can be found more and more often in physical education classes. Various teaching materials, video lessons are available in digital libraries that can be used as a supplement to traditional teaching. This helps to create a more democratic learning environment in which students can actively participate and manage their own learning process.

Online technology opens up new possibilities for sports pedagogy and can markedly improve the effectiveness of the training process.

Online training: In a pandemic, training in halls and studios can be replaced by online training. Using video conferencing, a trainer can conduct real-time training, teach, monitor exercise performance, and correct student movements.

Training materials: Online technologies allow to create a variety of training materials - digital textbooks, video lessons, webinars, which students can study at any convenient time.

Monitoring and analyzing: Various applications and sensors allow you to monitor the athlete's health, performance (heart rate, blood pressure), and training efficiency.

Individual approach: With the help of online technologies it is possible to personalize the training process, taking into account individual characteristics, capabilities and preferences of students.

Feedback: Through online platforms, coaches can communicate with their students quickly, answer their questions, give feedback, motivate and support them.

Convenience and accessibility: Online training and coaching is available anywhere there is an internet connection. This makes it possible to involve more people in sports activities, including those who for various reasons cannot attend traditional sports classes.

One of the important innovative approaches in sports pedagogy is the use of digital platforms [1]. This allows making the education process more accessible, versatile and interesting. For example, within the framework of online physical education programs, it is possible to organize

classes for teaching children in a distance format, taking into account their individual capabilities and needs [2].

Digital platforms have revolutionized sports pedagogy and have made training and learning more interactive and flexible. Here's how they are being used:

Online Training Platforms: These platforms offer interactive training sessions where players can learn and practice anytime and anywhere. These include drill training, game strategy sessions, fitness workouts etc., that can be accessed on-demand.

Performance Tracking: Digital platforms are now equipped with performance tracking and analytics features. These provide statistical data that helps in analyzing a sportsperson's performance, identifying areas of strength and improvement. This allows for personalized training plans and progress tracking.

Virtual Reality (VR) and Augmented Reality (AR): These technologies provide an immersive learning experience. They enable simulation of real-life scenarios for practice without the physical risks associated with training.

E-learning Platforms: These are used to deliver theoretical knowledge about the sport, rules, strategies, player roles, etc. They often include quizzes, interactive content, and discussion forums for a comprehensive learning experience.

Collaborative Platforms: Here coaches, players, and even parents can communicate, share insights, practice schedules, game recordings, etc. These platforms foster a collaborative learning environment.

Fitness and Health Apps: These apps provide features like diet plan, workout routine, sleep tracking etc, promoting a holistic approach towards sports training.

Video Analysis Software: This allows for recording and analysis of training sessions and games which in turn aids in improving technique and performance.

Fan Engagement Platforms: These are used to engage fans, conduct polls, and even deliver merchandise, bringing them closer to the sport and the team.

Overall, digital platforms in sports pedagogy offer a blended learning experience, merging traditional methods with innovative technological solutions. They make sports training more accessible, personalized, data-driven, and collaborative.

In addition, the principle of game-based learning, which is based on the use of different game forms and teaching techniques, is becoming increasingly popular. Game-based methods allow making classes more interesting, so students keep high activity and motivation for classes. The game approach promotes the development of such important qualities as interaction, cooperation, teamwork and others.

Within these programs, interactive aids and applications play a special role. They allow children to engage in physical activities and sports using only mobile devices and multimedia software [3].

Another important innovation in sports pedagogy is modern methods of assessment and control. Formative assessment, for example, allows coaches and students to receive real-time feedback and provide personalized learning, leading to a deeper understanding and improvement of the material covered [4].

In modern conditions, more and more attention is paid to qualitative assessment, which is aimed at the recorded progress of the student. Not only speed, strength, endurance tests are used, but also numerous diagnostic tests aimed at measuring the level of development of coordination abilities, balance system, strength, etc.

Another modern approach is the use of virtual reality in sports pedagogy. Thus, the research of South Korean scientists proved the effectiveness of using VR-technologies in Taekwondo martial arts, which allowed to significantly improve the quality of training [5].

The use of virtual reality in sports pedagogy is already quite actively used and is constantly developing. This technology allows to create unique conditions for the training process, to correct the technique of exercises, to increase the motivation of athletes. Virtual reality provides an opportunity to reproduce a variety of sports situations, which contributes to the improvement of tactical training. In addition, it provides a safe environment for practicing complex elements and reducing the risk of injury.

Additionally, the use of virtual reality in sports pedagogy has also touched the field of rehabilitation of athletes after injuries. With the help of VR technologies, work is being done to restore motor skills and psychological state. The ability to visualize goals and virtualize progress facilitates quick and effective recovery.

However, along with a number of advantages, the use of virtual reality in sports pedagogy entails some challenges. In particular, there is a need for additional training of specialists, adaptation and development of appropriate equipment and software. It is also worth considering the possible negative effects of prolonged use of virtual reality technologies, such as headaches, dizziness, disorientation.

Nevertheless, the opportunities offered by virtual reality justify investments in this area, opening new horizons in the field of training and education of athletes.

Thus, innovations in sports pedagogy open new opportunities for improving the quality of education and training, as they allow using new options of interaction between participants of the educational process, organizing more effective monitoring and evaluation, creating a more motivating learning environment.

The general trend in the use of innovative methods and technologies in sports pedagogy is the transition from one-way application of information and skills to active involvement of students in the educational process, while online platforms, VR, gamification and modern assessment methods are the tools that provide this involvement and personalization of learning.

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Rezyume: Maqolada sport pedagogikasi sohasida innovatsion usullar va texnologiyalarni qo'llashning muhim mavzusi ko'rib chiqiladi. Unda o'qitish va tarbiyalashning zamonaviy usullari, shuningdek, o'quvchilarning jismoniy tayyorgarligi darajasini oshirish va sport ko'rsatkichlarini oshirishda texnologiyaning ahamiyati atroflicha muhokama qilinadi. Mashg'ulotlarda eng ilg'or, samarali va noan'anaviy yondashuvlar tahlil qilinib, zamonaviy texnologiyalarning sport ta'limi sifatini oshirishga qo'shgan hissasi bayon etilgan.

Резюме: В статье затронута важная тема применения инновационных методов и технологий в сфере спортивной педагогики. Подробно рассматриваются современные методы обучения и тренировки, а также роль технологий в улучшении спортивных результатов и повышении уровня физической подготовленности студентов. Проанализированы наиболее прогрессивные, эффективные и нетрадиционные подходы в тренировках, а также описан вклад современных технологий в повышение качества спортивного образования.

Kalit soʻzlar: innovatsiyalar, uslublar, texnologiyalar, sport pedagogikasi, oʻqitish, tayyorlash, jismoniy rivojlanish, sport taʼlimi, yangi usullar, sport fani, pedagogik yondashuvlar, sport didaktikasi, jismoniy faoliyat, jismoniy tarbiya, sogʻlom turmush tarzi, progressiv usullar, zamonaviy texnologiyalar, qoʻllash sportdagi texnologiyalar, oʻqitish samaradorligi.

Ключевые слова: инновации, методы, технологии, спортивная педагогика, обучение, тренировка, физическое развитие, спортивное воспитание, новые методы, спортивная наука, педагогические подходы, спортивная дидактика, двигательная активность, физическая культура, здоровый образ жизни, прогрессивные методы, современные технологии, применение. технологии в спорте, эффективность обучения.

UDK: 3054

THE SCIENCE OF MATHEMATICAL ANALYSIS AND ITS TASKS

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Pure mathematics have one peculiar advantage, that they occasion no disputes among wrangling disputants, as in other branches of knowledge; and the reason is, because the definitions of the terms are premised, and everybody that reads a proposition has the same idea of every part of it. Hence it is easy to put an end to all mathematical controversies by shewing, either that our adversary has not stuck to his definitions, or has not laid down true premises, or else that he has drawn false conclusions from true principles; and in case we are able to do neither of these, we must acknowledge the truth of what he has proved ..- Isaac Barrow

Summary: *This article explores the realm of mathematical analysis, a fundamental branch of mathematics concerned with rigorously studying and understanding the properties and behavior of functions, sequences, and series. Delving into the historical context, the article elucidates the core tasks of mathematical analysis, including the study of limits, continuity, differentiation, integration, and convergence. Aimed at both mathematicians and enthusiasts seeking a deeper understanding, it provides insights into the significance of mathematical analysis in various fields and its role as a cornerstone for advanced mathematical concepts.*

Key words: *Mathematical Analysis, Limits, Continuity, Differentiation, Integration, Convergence, Real Analysis, Complex Analysis, Functional Analysis, Applications of Mathematical Analysis.*

Introduction: A rigorous framework for comprehending the characteristics and actions of mathematical entities is provided by mathematical analysis, which is a fundamental component of mathematical thinking. The goal of this article is to clarify the complexities of mathematical analysis by examining its fundamental tasks, historical background, and applications in various academic domains. Although mathematical analysis has ancient roots, the 17th and 18th centuries saw a significant increase in its formalization and development. Relying from the work of mathematicians such as Leibniz and Newton, the article offers a historical view of the development of mathematical analysis.

Science and mathematics have a long and intimate relationship that is vital and becoming more so for both. Mathematics is an integral part of science, its structure, its universal language, and a vital source of knowledge. In turn, science encourages and stimulates mathematics by raising fresh issues, stimulating novel ideas, and ultimately influencing the mathematical value system. Even more mathematical concepts are being used in fields that have always involved numbers, like electrical engineering and physics. The sciences that have not historically relied heavily on mathematical concepts, such as biology, physiology, and medicine, are shifting from taxonomy and description to analysis and explanation; many of their issues involve systems that are inherently uncertain and only partially understood, necessitating the utilization of new methods in mathematics to explore them. Mathematics has been applied to analyze and solve a growing range of problems in the fields of business, manufacturing, finance, and communication, outside of the traditional domains of science and engineering. New science and new mathematics go hand in hand, and scientific advancement in all of its branches necessitates a close engagement with and strengthening of the mathematical enterprise. This paper cannot be a comprehensive analysis of the relationships between science and mathematics. The aim of the text is to showcase

instances of scientific progress enabled by the intimate relationship between science and mathematics, and derive inferences that the ought to outlive the instances. We could have used mathematical categories and arrived at the same results if we had instead labeled the examples with terms that accurately described their scientific content. The roles of partial differential equations in combustion, cosmology, finance, hybrid system theory, Internet analysis, materials science, mixing, physiology, iterative control, and moving boundaries would have been explained in a section on the subject of partial differential equations; the contributions of statistics to the analysis of huge quantities of data connected to functional MRI, cosmology, finance, and the Internet would have been discussed in a section on statistics; and the crucial role of computation in all fields of science would have been illustrated in a section on computation. The approach we have taken highlights the ubiquity and centrality of mathematics from the point of view of science; this alternative would have demonstrated the mathematical virtues of generality and abstraction.

Modeling. The process of putting scientific phenomena into a mathematical framework is known as mathematical modeling. It applies the potent tools of mathematics—its capacity for generalization, the extraction of commonalities across an extensive spectrum of issues, and the development of efficient algorithms—to the characterization, analysis, and prediction of scientific problems. The use of mathematical models eliminates the need for costly, risky, or even impractical "virtual experiments" the fact that replicate the creation of the universe, crash an airplane, or spread a deadly virus. The relationships between and relative importance of the various components of a system are made clearer by mathematical models. Hypotheses regarding a system are given a form through modeling, which enables them to be investigated both qualitatively and quantitatively from a variety of perspectives; modeling, in particular, makes it possible to identify discrepancies between theory and reality.

Complexity and Size. There's always a need for more complex models because reality is rarely simple. But larger and more complex models don't always translate into fundamentally different problems; sometimes they do so right away. The same tools that are ideal for well-behaved systems cannot be used to characterize disordered systems. Because significantly larger models rarely behave like larger versions of smaller models—that is, large chaotic systems cannot be described in the same terms as small dimensional chaotic systems—size can be thought of as a manifestation of complexity.

Uncertainty . Uncertainty is inevitable, but when researching discrete, small-scale, well-understood physical processes, it can be justified by disregarding it. This isn't the case for complex, large-scale systems like the atmosphere and oceans, chemical interactions where precise reaction pathways can't be determined, biological and medical applications, or systems that depend on human interaction. Ad hoc rules of thumb are inadequate for handling uncertainty; instead, in-depth mathematical analysis is needed. Further investigation is necessary into the following issues: accurately categorizing the different ways that uncertainty impacts mathematical models; the models' and the analysis techniques' susceptibilities to uncertainty; the impact of uncertainty on computing techniques; and the interplay between the models' inherent uncertainty and the additional uncertainty brought on by computer constraints. There isn't always a direct correlation between uncertainty in the system or the model and outcome uncertainty. Reliable outcomes can arise from very noisy systems, and in such scenarios, it is desirable to understand how these outcomes arise and how to predict them. Strongly chaotic systems can also lead to another extreme: even if an individual solution is identified, there may be no chance that it will be observed in practice, necessitating the prediction of the average computation result.

Finance. While not a science in the conventional sense, modern finance and mathematics are closely related. This relationship goes beyond theory, as mathematics plays a crucial role in the daily operations of the global financial markets. Risk management and derivative securities are two areas at which mathematics and finance are closely related.

We wonder how to better understand the cognitive dimension of mathematical work, and we explore this issue through common analysis of actions with some cognitive approaches. Within the theory of Mathematical Working Space (ThMWS), the understanding of mathematical work is primarily supported by the analysis of the actions, which students and teachers perform in the school context. First, we provide evidence for the use of actions as a central topic of discussion between ThMWS and cognitive theories. After giving some of the key-constructs of the ThMWS used in the paper, we provide an example to introduce the methodology we have implemented to account for the mathematical work of individuals performing mathematical tasks. We then consider how research using both ThMWS and Abstraction in Context (AiC), or APOS theory, has opened up other avenues to describe and characterize the articulations between actions of individuals and their knowledge. It is thus possible to better understand subjects' mathematical work and mathematical thinking. Expressing mathematical ideas and work through the analysis of subjects' actions In the field of mathematics education research, applying the idea of mathematical work to teaching and learning problems is a relatively new approach. As the themes of the working groups on mathematical contents at CERME conferences show, the vast majority of research on teaching and learning actually makes reference to the concept of mathematical thinking. For a very long time, these subjects have been articulated through particular ways of thinking, like probabilistic, geometric, and algebraic thinking. The emphasis on "mathematical thinking" pushes people to pay attention to "thinking," which carries the real risk of erasing mathematical specificity across all domains that deal with thinking. As the study of thinking does, in fact, assume a variety of methodologies, which are often far apart from mathematical concerns. The aim of cognitive sciences is to become "the science of thinking" by approaching thinking through cognition in a new way. The current of cognitivist inquiry is comprised of various fields, including artificial intelligence, neuroscience, and the phenomenology of perception. The collapse of the mental representations' primacy for action's benefit in mathematics education is most likely the result of this current. In accordance to this perspective, which is supported by neurobiologist Berthoz action comes before mental representation, and thinking and consciousness are completely linked to perception and action. This viewpoint is not new in the field and was already pointed out in his genetic epistemology by Piaget who considered that mathematical thinking is not "pre-formed but a creation constantly pursued by actual and new actions which open a new set of possibilities hitherto inconceivable"

This approach gains new visibility thanks to the support of cognitive sciences. From the perspective of ThMWS and, more broadly, of studies that support an entry through mathematical work, this shift in perspective on mathematical thinking is valued. In this instance, action is a crucial theoretical and methodological tool in the study of mathematics teaching and learning in educational contexts because of the focus on work. To explain the complexity of school mathematics, it appears necessary to view mathematical thinking and work as complementary. Specifically, some cognitive theories-like AiC and APOS-concentrate on the creation of abstract mathematical knowledge and can be advantageous to and complementary to methods of approaching mathematical problems that place more emphasis on the results and procedures of work. Describing and characterizing mathematical work: the ThMWS approach The theory of MWS: motivations and issues In the theory of MWS, mathematical work is considered as intellectual work that involves significant cognitive activity of which the orientation and purpose are defined and supported by mathematics. In this framework, mathematics is envisaged as a specific human work and therefore, mathematical work is seen in both its cognitive and epistemological dimensions.

To grasp the specific activity of students solving problems in mathematics, the two epistemological and cognitive facets of mathematics are present and articulated in two planes: one of an epistemological nature in close relation to the mathematical content; the other of a cognitive

nature, related to the visible action of the individual solving problems. Three components in interaction are introduced for the purpose of describing the work in its epistemological dimension: a set of concrete and tangible signs (R), a set of artefacts (A), and a theoretical system of reference (T). The second level is centred in the subject; three cognitive components are introduced as follows: visualisation (V) related to deciphering and interpreting signs; construction (C) depending on the used artefacts and the associated techniques; proving (P) conveyed through discourses producing validations, and based on the theoretical system of reference. Analysing mathematical work through ThMWS aims at tracking down the process of bridging the epistemological plane and the cognitive plane in accordance with three different geneses: An instrumental genesis (Ins) related to the use of artefacts, a discursive genesis (Dis) related to theoretical part of work, and finally a semiotic genesis (Sem) that expresses the importance of signs for mathematical work. The elaboration of mathematical work is perceived as the harmonious networking and intertwining of these geneses within the vertical planes of the diagram (Figure 1, right). To achieve the description and characterization of mathematical work, studies performed within ThMWS theory are based on the analysis of the subject's various actions. Thus, the methodology of studying subjects' actions is central in the approach and is developed in the next section

Core Tasks of Mathematical Analysis: Limits: The concept of limits lies at the heart of analysis, defining the behavior of functions as the input approaches a specific value. The article elucidates the role of limits in establishing continuity and understanding the fundamental nature of mathematical functions.

Continuity: A function is considered continuous if it has no abrupt jumps or discontinuities. The article explores the significance of continuity and its implications for the behavior of functions.

Differentiation: The process of differentiation involves finding the rate at which a function changes, captured by its derivative. The article delves into the principles of differentiation and its applications in modeling real-world phenomena.

Integration: The reverse process of differentiation, integration calculates the accumulated effect of a function over a given interval. The article explores the concept of integration and its importance in calculating areas, volumes, and other quantities.

Convergence: Analyzing the behavior of sequences or series, convergence examines how these mathematical entities approach specific values. The article sheds light on the principles of convergence and its role in understanding the behavior of infinite processes.

Specialized Branches of Mathematical Analysis: The article introduces readers to specialized branches of mathematical analysis, including real analysis, complex analysis, and functional analysis. Each branch extends the principles of analysis to specific types of mathematical entities, offering a deeper and more nuanced understanding of mathematical structures.

Applications Across Disciplines: Mathematical analysis finds application in various scientific and engineering disciplines. Whether it's modeling physical phenomena, optimizing processes, or understanding complex systems, the article explores how the principles of mathematical analysis are employed in diverse fields.

Conclusion: By unraveling the core tasks and historical context of mathematical analysis, this article aims to provide both mathematicians and enthusiasts with a deeper appreciation for this fundamental branch of mathematics. From the foundational principles of limits and continuity to the advanced realms of real and complex analysis, mathematical analysis remains a powerful tool for understanding the intricate structures that govern our mathematical universe.

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Rezyume: Ushbu maqola funksiyalar, ketma-ketliklar va qatorlarning xususiyatlari va xatti-harakatlarini sinchkovlik bilan o'rganish va tushunish bilan bog'liq bo'lgan matematikaning asosiy bo'limi bo'lgan matematik tahlil sohasini o'rganadi. Tarixiy kontekstni o'rganib chiqib, maqolada matematik tahlilning asosiy vazifalari, jumladan chegaralar, uzluksizlik, differentsiatsiya, integratsiya va konvergensiyani o'rganish yoritilgan. Matematiklarga ham, chuqurroq tushunishga intilayotgan ishqibozlarga ham qaratilgan bo'lib, u turli sohalarida matematik tahlilning ahamiyati va ilg'or matematik tushunchalar uchun poydevor sifatidagi roli haqida tushuncha beradi.

Резюме: В этой статье исследуется область математического анализа - основной отрасли математики, занимающейся тщательным изучением и пониманием свойств и поведения функций, последовательностей и рядов. После изучения исторического контекста в статье освещаются основные задачи математического анализа, включая исследование пределов, непрерывности, дифференцирования, интегрирования и сходимости. Предназначенный как для математиков, так и для энтузиастов, стремящихся к более глубокому пониманию, он дает представление о важности математического анализа в различных областях и его роли как основы для передовых математических концепций.

Kalit so'zlar: Matematik tahlil, limitlar, uzluksizlik, differentsial integrasiya, konvergensiya, haqiqiy tahlil, kompleks tahlil, funksional analiz, matematik analizning qo'llanilishi.

Ключевые слова: Математический анализ, пределы, непрерывность, дифференциальное интегрирование, сходимость, реальный анализ, комплексный анализ, функциональный анализ, применение математического анализа.

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ENSURING INTERDISCIPLINARY CONNECTION TO INCREASE THE EFFICIENCY OF TEACHING GEOGRAPHY

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Summary: *This article describes in detail the organization of lessons with interdisciplinary connections, the advantages of integrated education and the methodology of its interaction with mathematics, physics, chemistry, biology, language and literature in the teaching of geography and its effectiveness. Also, the issues of communication in science, that is, information about the internal linkage of the subject in geography education, are shown in detail.*

Keywords: *Interdisciplinary connection, integrated education, education, geography, mathematics, physics, chemistry, biology, language and literature, drawing, efficiency.*

Introduction. Major reforms are taking place in all spheres of the world community, including education, science and industry. Of particular importance are the scientific results of research centers on integrated education. According to international experience, the combination of theoretical and practical training in geography education, increasing interdisciplinary relevance requires the formation of professional competencies of future professionals. In our country, interdisciplinary communication is one of the main issues of modern pedagogy. Today, the natural sciences in secondary schools are inextricably linked. Therefore, it is necessary to achieve the integrity of the content of education through integrated education - that is, the establishment of interdisciplinary links, the interaction between different educational programs. One of the most pressing issues today is the ability to identify hidden connections and links in the formation of the scientific worldview, interdisciplinary links, that is, to ensure continuity. This is because a teacher who is able to organize a lesson with interdisciplinary connections not only increases the interest of students in their subject, but also helps them to master the subject. As a result of the systematic implementation of interdisciplinary connections, the relevance of the educational process will increase significantly. At the same time, it is an important condition for the development of knowledge and interest in academic subjects. By analyzing the study material by topic which topics of different subjects are superficially related to each other, through structural analysis, the relationship between the concepts, arguments, laws, judgments, conclusions, assumptions that make up the educational material is established. The form in which the interdisciplinary connection is recorded depends on the capabilities of the user.

The main part. Learning activities that focus on interdisciplinary learning can be challenging for students. Emphasis is placed on initial homework in other subjects, minutes of repetition based on one textbook in the classroom, and the use of schematic visuals. Achieving mastery of teaching materials based on interdisciplinary connection allows ensuring interdisciplinary communication in a purposeful way. Interdisciplinary connection - activation of educational activity is a didactic condition and means of deeper and more comprehensive mastering of the basics of science [4]. In didactics, interdisciplinary interdependence is considered as a didactic condition in enhancing the role of students in the development of the quality of knowledge and dialectical thinking, in the formation of students' scientific worldview.

Interdisciplinary connection is understood as the interpretation of general education sciences on the basis of the interdependence of objective laws [2].

Interdisciplinary connection is one of the important factors not only in achieving the full development of the student's personality in the study of sciences on the basis of common social

goals, but also in the formation of specific pedagogical tasks, defining science systems based on knowledge, skills and attitudes [1].

One of the conceptual ideas of the modern school today is the idea of integrative education.

The benefits of integrated learning for the student include:

- it develops a comprehensive knowledge of geography, worldview and intellectual creativity;
- it has a deep understanding of the content of information based on the interest in scientific knowledge through interdisciplinary connections;
- it applies more actively their knowledge in practice, based on the disclosure of its practical nature;
- overload is eliminated during the training process.

The benefits of integrated education for the teacher are:

- Conformity of scientific ideas about geography to modern requirements;
- The ability to convey the science to students perfectly, that is, to reveal all aspects in a broad interdisciplinary context;
- Expanding the "horizons" in the teaching of geography and the implementation of new prospects;
- The teacher sees and reveals his subject in a new way, more clearly understands its relationship with other disciplines;
- Combining the efforts of different specialists in solving common problems;
- Formation, development and upbringing of students as professionals, taking into account their abilities and capabilities;
- Formation of students' natural-scientific thinking.

Interdisciplinary integration is divided into the following components [3]:

object-oriented integration - the representation of an object in different disciplines is included in a single topic, section, or course;

- Conceptual integration includes topics or courses that reveal general concepts;
- in theoretical integration - theories of sciences are studied in general;
- in methodological integration - the integration of specific methods of scientific knowledge;
- Problem-based integration covers interdisciplinary problems and develops solutions;
- Integration of activities includes discussion of problem solving, work in small groups, development of interdisciplinary action plans, project preparation;
- creation of technical products based on the processes that are important in practical integration.

Raising the teaching of geography to the level of modern requirements requires its consistent integration with other disciplines. In addition to teaching the subject materials, the teacher should rely on the knowledge and skills acquired by the students in the other subjects, show the students that there is an interrelationship between all the subjects, and teach them the information obtained in other subjects. It is necessary to teach them to use, to deepen their thinking skills, knowledge.

In order to integrate geography into other disciplines, the teacher must be familiar with other curricula and work with other teachers.

Geography is more about mathematics in practice. In Grade 5, geography students collect average daily, monthly, and annual weather data. In that class, the average temperature is calculated based on monthly weather calendars from mathematics. This means that the results of weather observations in geography are the basis for creating a dominant diagram of cloudless, clear, changeable, rainy, cold days in mathematics lessons.

In 6th grade geometry classes, you can draw pie charts in geography based on your observations of the weather throughout the year. And when passing the "numerical scale", which is

studied in mathematics, it is possible to draw up a certain, exact distance on the surface of the earth using maps of different scales.

Working with barometers and thermometers to observe the weather in geography will help students in 5th grade to easily understand the knowledge and skills they have acquired and the information they will be given in physics to measure the weather in the upper grades. If you look closely at the drawing and painting curriculum and course materials, you will see that there is a connection to geography. Grade 7 students draw a pie chart on topic 1. You can draw this based on the weather observations of your country. It is also possible to draw on the example of wind flowers. This does not mean that the teacher is out of the program. Since the goal of the lesson is to draw a pie chart, he will definitely do it. Students learned how to use drawing tools and how to draw. This means that the teacher not only achieved his goal, but also made inter-class communication.

The continuous connection of geography with botany and zoology is achieved through the observation of weather and wildlife. Students' work on the school's experimental site will also be based on meteorological observations.

This close connection is achieved through complex nature excursions led by teachers of geography and biology. During these excursions, observations and practical work in botany and geography will be carried out.

In the 5th grade program, a special hour is allocated for an autumn excursion in geography and botany. Therefore, it is mandatory to take a tour of the curriculum. Therefore, it is important to co-organize an autumn excursion with botany and geography.

One of the prerequisites for a clear and effective study of new material in a systematic way, linking it to previous lessons, is the issue of interdisciplinary communication in geography education. However, some teachers rarely pay attention to this issue, that is, the internal connection of the subject. Young, inexperienced teachers, in particular, have many shortcomings in this area. They simply tell the material in the textbook dry and superficial. In-class communication in the classroom - activates the lesson, makes it fun.

In studying each topic, the teacher should pay attention to the following links in the lesson:

1. Link to the studied topic to the previously studied topic.
2. Link to the main topic.
3. Link to the following topics.
4. Links to previous courses (lower grade materials).
5. Link to the next lesson (higher grade materials).

In-class interactions should not be construed as comparisons. For example, when studying the shores of a continent, it is compared to the previous continents. The coastal landscape of the Americas is comparable to that of Africa. This is a true comparison, but not a complete link to the previous study. When asked "Which parts of the ocean surround the shores of the African mainland?" or "What Island and Peninsula are on the shores of the American mainland?", it will be linked to the information that the students receive from the "ocean of the world and its parts" in the 5th grade. It will be much more understandable if this issue is covered by the example of some lessons.

We describe the connection within the subject in the process of studying the subject of the 6th class, the so - called "internal waters of the Eurasian mainland". Given the general definition of "rivers of Eurasia", it is worthwhile to start the lesson from practical work.

Because the major rivers are only partially covered in the lower grades (grades 4-5).

Teacher: - Find the largest rivers in Asia in the atlas.

Students look at the Yangtze, Huanghe, Ganges, Amudarya, Syrdarya, Volga Ob, Yenisei, Lena, and Amur rivers, which stand out in the atlas. One student shows these rivers on a map. Others review the atlas again.

Teacher: Which major rivers flow through the plains of Eastern Europe?

Students - the Volga, Dnieper, Don, Pechora rivers and their tributaries.

Teacher: What about the Western Siberian Plain?

Students: - Ob, Yenesei, Lena rivers and others flow.

Teacher: - Why do these rivers (in Western Siberia) flow from south to north?

The students answer, "Because it slopes into the Arctic Ocean in the Western Siberian Plain, the rivers flow in that direction."

Here the teacher connects the topic to one of the previous topics - relief.

The teacher also has the opportunity to link to the materials of the region on the example of the Amudarya and Syrdarya.

Therefore, when planning a topic, the teacher should pay special attention to the above-mentioned connection, and think about what part of the lesson can be connected, and how to connect it.

The source of river saturation depends on the climate. Textbook materials also require this in their own way.

To make the lesson more interesting and meaningful, you need to relate it to everyday life and the materials of your country.

Connecting the lesson to daily life consists mainly of using information from the daily press, newspapers, magazines, radio and television. For example, if we are talking about the "inland waters" and "rivers" of Central Asia, it would be good to say that the construction of a new hydropower plant on any river in Central Asia has begun, or that any part of the hydropower plant under construction has been launched. In addition, if the above information is displayed on a map hanging in the school hallway, students will be able to read and be informed.

If there is any news on the subject in the country where the students live, it should be included in the lesson.

In the study of each subject, the use of examples from one's own place of residence is directly related to the subject matter of one's own country.

All of the topics covered in the classroom can be explored in the same way.

If the lesson is based on the above-mentioned internal connections, the lesson will be meaningful and long-lasting.

Using the method of interdisciplinary communication in geography and mathematics.

Knowledge of the degree to be taken in a mathematics course, such as measuring angles with protractors, positive and negative numbers, and percentages, can be very helpful in mastering geography materials. At the end of the school year, students will study the following topics: "Creating a geometric figure", "Parallelism", "Symmetry", "Making triangles". It is a necessary material for determining the length of rivers from geography, measuring the distance between different points on the earth's surface, and calculating the surface of lakes and seas.

Experience has shown that based on their knowledge of mathematics, students can easily master concepts such as absolute altitude, calculating the results of weather observations, and the saturation of air with water vapor. When a geography teacher covers topics related to mathematical geography, students should be able to do arithmetic, have an understanding of the Earth, and be able to use a variety of tools used to measure area and plan. There are some challenges involved in making a visual plan at first. This is due to the lack of communication between math and geography teachers.

Using the method of interdisciplinary communication in geography and biology. The biology class taught at the school is very close to the subject of geography in some areas of study. The subject of biology is closely related to natural geography and economic geography. These closely related sciences use their own characteristics to study the same phenomena and objects in nature.

The subject of biology studies the vital properties of the plant and animal organism by connecting them with the environment surrounding it. Geography is the study of the distribution of plants and animals.

In the course of school geography, including the study of plant zones (including animals), determine the laws of distribution depending on their climate and soil conditions. For example, in a zoology class, students learn about the structure of an organism that depends on how individual animals live and eat. Geography is a study of where and under what conditions this animal lives. As you know, the topic of "Natural Zones" in the course of 5th grade natural geography includes information about the dependence of plants on the climate, and the animal world on the climate and plants. Based on this, students will be given an overview of natural areas.

Using the method of interdisciplinary communication in geography and chemistry. Today, teachers have a responsible task to rapidly implement the material and technical base of the country, such as the chemicalization of all sectors of the economy, the development of the chemical industry, the importance of party and state plans in the minds of every student.

Even in the 4th and 5th grades, it is possible to introduce students to the achievements of chemistry in geography classes and show them how the chemical industry in our country benefits the national economy. In particular, during the acquaintance of students with the rocks, it should be noted that our country has a wide range of minerals. The CIS countries have one of the largest reserves of chemical raw materials in the world. At this point, it is best for the teacher to show examples of minerals that are needed as raw materials for the production of artificial fertilizers. When talking about the composition of seawater, the teacher can say that it contains almost all the substances known on earth. Scientists have already studied how to extract salt from seawater, which we use for food, many valuable products, and even gold. In the process of studying the chemical industry, it is necessary to teach the rapid growth of the mineral fertilizer industry, which is the most important raw material for agriculture in our country. Grain yields will increase in the coming years due to the widespread use of mineral fertilizers in our country.

Potassium phosphorite is one of the world's largest reserves of sulfur and natural gas. Students will be informed about the importance of chemistry in the national economy in a number of topics in the chemistry textbook for grades 8-9, its leading role in the national economy of the country, the fact that the national economy has no industry that does not use chemical products or chemical processing of substances, chemical production of acids, alkalis and salts for the national economy, the fact that these substances are widely used in ferrous and non-ferrous metallurgy, such as oil and coal, in fertilizer production, as well as in many other fields of technology and agriculture. There are many different types of natural resources in our country, and natural maps are used to explain these resources to students. Therefore, every chemistry lesson has to be based on a map. When chemistry teachers teach their lessons using a geographic map, they not only explain the chemistry material in detail, but also reinforce students' knowledge of geography.

Using the method of interdisciplinary connection in geography and physics. A review of the school's geography and physics curricula and existing textbooks suggests that a number of topics in both classes need to be linked.

As you know, elementary physics is taught in school. One of the goals of this course is to provide students with the necessary training skills to work with measuring instruments and physics laboratory equipment.

This requires linking physics and geography at school. The content of the school physics course allows the teacher to give students an idea of the materiality of the world and the interdependence of the phenomena in it, to know the laws of these phenomena and to apply these laws in our practice.

Understanding the nature of these laws in physics, including the study of electrical phenomena in the atmosphere, solar and lunar eclipses, can be a material for showing students films about the flight of rockets, to educate students in the scientific worldview.

The use of nuclear energy for peaceful purposes in physics lessons, acquaintance with the achievements in space exploration, informing students about the latest developments in science and technology of Uzbekistan and its development as an independent state will allow students to cultivate a patriotic spirit.

From the above, it is clear that many of the topics covered in physics have to be linked to students' knowledge of geography.

Use of interdisciplinary methods of communication in geography and language and literature. A geography teacher's communication with native Russian and literature teachers can help students read anything on the topic in the lesson, how to increase the effectiveness of the lesson, and choose literary books that are artistic depictions of certain events. creates an opportunity. It is common for high school graduates, especially those from rural schools, to have a low level of education. Many of them find it very difficult to express their opinions in writing or even orally. One of the reasons for this is that language and literature materials are taught separately from other materials. It is also a result of the misconception of some teachers and most students that the development of written and oral speech can only be done in a language class. Even some teachers (students of physics, mathematics, chemistry, biology, geography and other subjects) pay less attention to the quality of writing than to the spelling errors in the written work done by students in their classes, they are only limited to focusing only on the content of the case.

When using a blank map, students can find and write the names of cities and rivers, lakes, oceans, seas, and more. But there are times when writing is ugly and misspelled. The teacher should check the students' mistakes in detail and warn them. Students in other subjects must work in a single spelling mode.

When other teachers pay attention to spelling errors in students' work when they receive written assignments, students' literacy increases. The stability of a single pronunciation and orthographic regime is achieved at school.

The geography teacher is strong with native Russian and foreign language teachers in the correct pronunciation and spelling of geographical terms - cities, mountains, rivers, lakes, etc.

Conclusion. The implementation of the process of integration in the educational process will create conditions for the development of students as mature professionals. This requires teachers to understand the essence of the integration process, to develop skills for their effective use in the implementation of pedagogical activities. Students begin their independent study of geography based on what they have learned in other subjects. The lessons in this lesson are lively and increase the students' responsibility for learning other lessons. Using interdisciplinary communication to link certain issues together can help make school learning easier. Linking students' knowledge from different disciplines into a whole complex helps to apply this knowledge in real life and stimulates interest in the lessons being studied. Interdisciplinary communication is one of the important factors in improving the quality of education. Interdisciplinary communication provides a comprehensive and in-depth study of the topics studied.

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Rezyume: Ushbu maqolada darslarni fanlararo aloqadorlikda tashkil etish, integral ta'limning afzalliklari va geografiya o'qitishda matematika, fizika, kimyo, biologiya, til va adabiyot fanlari bilan o'zaro aloqadorligi metodologiyasi va uning samaradorligi atroflicha yoritilgan. Shuningdek, fandagi aloqa masalalari, ya'ni geografiya ta'limidagi o'quv predmetining ichki bog'liqligi haqidagi ma'lumotlar atroflicha yoritib berilgan.

Резюме: В данной статье подробно описана организация уроков с межпредметными связями, преимущества интегрированного образования и методика его взаимодействия с математикой, физикой, химией, биологией, языком и литературой в преподавании географии и ее эффективность. Также подробно показаны вопросы коммуникации в науке, то есть информация о внутренней связи предмета в географическом образовании.

Kalit so'zlar: Fanlararo aloqadorlik, yaxlit ta'lim, ta'lim, geografiya, matematika, fizika, kimyo, biologiya, til va adabiyot, chizmachilik, samaradorlik.

Ключевые слова: Межпредметная связь, интегрированное образование, образование, география, математика, физика, химия, биология, язык и литература, рисование, продуктивность.

FEATURES OF ASSESSING THE EFFECTIVENESS OF LIVESTOCK DEVELOPMENT

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Summary: *The article analyzes the main factors and directions for increasing the efficiency of cattle breeding. The state and factors influencing the economic efficiency of cattle breeding are also considered.*

Key words: *economic efficiency, livestock, assessment, technological efficiency, development.*

The current socio-economic environment based on the increasing disparity in rising prices for agricultural and industrial products, the discrepancy between the economic interests of various spheres (production, processing, trade) negatively affected the development of cattle breeding, deformed the system of views on the essence of the efficiency of the industry, which complicates the objectivity of its assessment. The study of the efficiency of livestock farming was carried out using the same types and forms as agricultural production as a whole. However, its criteria, indicators and factors are somewhat different. Thus, the main criterion of technological efficiency in dairy cattle breeding is the level of milk yield per 1 cow in 305 days, in meat cattle breeding it is the increase in live weight per 1 head of cattle during growing and fattening or per cattle place. The growth of dairy and meat productivity of animals predetermines the solution of the main task - to increase the gross production of the industry and saturate the market with domestic food.

To study technological efficiency, the following basic natural indicators are used:

- milk yield from 1 cow, kg;
- mass fraction of fat in milk, %;
- mass fraction of protein in milk, %;
- milk production per 100 hectares of agricultural land, centners;
- standard for servicing livestock by 1 worker, heads;
- increase in live weight per 1 head of livestock or 1 cattle place, centners;
- average daily increase in live weight of livestock, g;
- feed consumption per 1 centner of products, 1 head of livestock, centners of feed units.

The higher the level of livestock productivity, the higher the indicators of technological efficiency, that is, the more rationally used is the labor of livestock breeders, feed resources, selection and breeding base and other industry resources. The results of the technological efficiency of livestock development depend on many factors, and the selection of the most important of them to create a rational combination is of exceptional importance for the industry.

According to M. Buckett, English farmers believe that success in milk production depends 20% on selection and breeding work and 80% on feeding conditions and business organization [12]. If we take into account that the average milk productivity of cows in England is at a fairly high level - about 7000 kg, then the 20% influence of selection in dairy cattle breeding seems significant.

The Hungarian breeding scientist L. Antal cited the following arguments as the main reasons for the decline in productivity:

- use as sires of bulls that are not assessed or incorrectly assessed for the quality of their offspring;
- lack of consistent and reliable accounting, making it impossible to obtain objective data on productivity;
- lack of an organized system for collecting and testing milk samples;
- the technology of housing, milking, and feeding does not ensure the identification of the true genetic potential of the herd.

This article pays somewhat more attention to the issues of technological efficiency of cattle herd reproduction. The justification can be the firm conviction that it is technological efficiency that

predetermines the level of economic efficiency of livestock development. The technological efficiency of livestock development is largely determined by the rational use of its factors and the mechanisms of their functioning. Thus, breeding animals of highly specialized dairy and meat breeds helps to increase gross production compared to animals of combined breeds; the use of high-performance machinery and equipment leads to improved quality of products, their safety and labor productivity of livestock breeders; the creation of a feed base based on the procurement of many types of feed complicates the system of production, storage and use of feed resources, reduces the quality of feed, since most agricultural producers are deprived of the opportunity to use the active ventilation method when harvesting hay and organize the work of feed shops. Ultimately, the practice of organizing a traditional multi-component feed base and feeding livestock leads to a decrease in the quality and overconsumption of feed per unit of livestock production and an increase in its cost, since many machine systems are used here.

It should be noted that, contrary to the assertions of some scientists, the problems of studying the mechanisms of action of such effect-providing factors as feed and feeding, which form 50-60% of the production costs of livestock products, in our opinion, cannot but be the tasks of economists. It is no coincidence that the feed supply is associated with the implementation of such tasks as the economic assessment of feed crops and diets, economic payment for feed, optimization of feed production, etc., which make it possible to make a decision to reduce the production of a particular feed due to its high cost, traditionally low quality and large losses in the process of snoring (hay, silage) with their corresponding replacement with more technologically advanced, high-quality and cheaper haylage, the transition to the creation of a low-component type of feed production based on the use of concentrated feed, haylage and green mass and the organization of the same type of livestock feeding. The latter can be of great importance for a high-producing herd, providing stability in livestock feeding, regardless of weather conditions, and smoothing out seasonal lactation and production curves.

The level of natural indicators of technological efficiency indicates the volume of production and consumption of livestock products per capita.

It should be noted that high indicators of technological efficiency predetermine, but do not guarantee, high economic efficiency of industry development.

According to a number of authors, the criterion of economic efficiency should ensure expanded reproduction in the industry. This criterion recognizes the amount of profit received from the sale of milk and livestock for meat in agricultural organizations.

When assessing the economic efficiency of livestock farming, in addition to indicators of technological efficiency, the following indicators are used: cost of 1 centner of feed units; economic payment for feed; production and commercial cost of 1 quintal of milk and live weight gain; unit sales price; profit from product sales for 1 rub. costs, per 1 cow, per 1 cattle place; level of profitability. Using these indicators, it is possible to express the quantitative content of the main criterion for the development of livestock breeding, taking into account the peculiarities of accounting for parts of gross output at actual sales prices at the end of the year and those going for further production, which is estimated at cost.

To determine indicators of economic efficiency of livestock production, two approaches are used: resource-based and cost-based. They make it possible to evaluate, respectively, the efficiency of using the resource potential involved in the reproduction process and the current production costs consumed in a certain process. In the first case, the following indicators are used: capital productivity, resource productivity, labor productivity, profit margin; in the second - cost, material consumption, labor intensity, level of profitability, etc. In the areas of the agro-industrial complex, there are various profit indicators: gross profit, net profit (economic profit), profit on non-operating operations; profit from sales, etc. It is necessary to agree that profit, as an economic category, is the most important source of economic growth of an industry and an organization. However, the

existence of taxable and non-taxable profits makes it, in our opinion, detrimental as a general indicator of economic efficiency. Perhaps for this reason, some organizations reduce the taxable portion of their profits to nothing and have higher wages compared to organizations that have a larger mass of profits. Consequently, gross income is more suitable as a general indicator of efficiency than profit, since it allows you to simultaneously assess the level of both profit and compensation. One of the main indicators of the economic efficiency of livestock development is the level of profitability, which is most often used in practice and is defined as the ratio of profit to the cost of goods sold, expressed as a percentage, or as the ratio of profit to the sales price, or as the ratio of profit to the cost of fixed assets. All types of efficiency in the development of livestock breeding are formed under the influence of factors of the same name with elements: technological, organizational, economic, social and environmental. Factors of technological efficiency are industry workers, livestock breeds, herd reproduction system, livestock feeding, livestock premises and equipment; organizational - specialization and concentration of production; economic - prices, loans, budget allocations, subsidies, compensation, taxes and insurance; social - demographic situation, personnel, conditions and material incentives for work, employment, state of life and infrastructure; ecological - ecological situation in rural areas, ecological means of production, preservation and reproduction of soil fertility, production and processing of organic food. All factors for the effectiveness of livestock development develop and complement each other, and in a normal political and socio-economic environment they can and should ensure the achievement of the main criterion for the functioning of the industry.

Thus, it seems to us that efficiency is an economic category that indicates the level of feasibility of producing and selling products or providing services. In theoretical terms, this interpretation of the essence of efficiency, in our opinion, is applicable to all forms of reproduction, where the main criteria in accordance with the goals may be: obtaining gross income; Receiving a profit; loss reduction; elimination of losses; preservation of the breeding stock of the herd; capturing the market for the sale of livestock products. The presence of such target criteria for the effectiveness of livestock development will allow agricultural producers to effectively predict and manage the processes of forming business policies on the products of the industry.

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Rezyume: Maqolada chorvachilik samaradorligini oshirishning asosiy omillari va yo'nalishlari tahlil qilingan. Chorvachilikning holati va iqtisodiy samaradorligiga ta'sir etuvchi omillar ham ko'rib chiqiladi.

Резюме: В статье анализируются основные факторы и направления повышения эффективности животноводства. Также рассмотрены состояние и факторы, влияющие на экономическую эффективность животноводства.

Kalit so'zlar: iqtisodiy samaradorlik, chorvachilik, baholash, texnologik samaradorlik, rivojlanish.

Ключевые слова: экономическая эффективность, животноводство, оценка, технологическая эффективность, развитие.

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.*

Key words: *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 so'zlar: *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.*

UDK 51-74

EFFECTIVENESS OF MATHEMATICAL OBSERVATION IN CHEMICAL CALCULATIONS

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Summary: *The article provides easy ways to solve problems by using mathematical observation in solving chemical problems in the school chemistry course. Also, the situations in which it is necessary to pay attention when solving chemical problems, what sequence should be followed when solving chemical problems, and the problems used in mathematical observation examples are given.*

Key words: *chemical calculations, experimental problems, proportion, making equations.*

In the educational sphere of our country, measures are being consistently implemented aimed at improving the professional competence of teachers in secondary schools. Thus, educational institutions are gradually being equipped with the necessary material and technical base, modern software and teaching aids, introducing a wide range of pedagogical and information technologies into the educational process, implementing practical applications, and organizing students' cognitive activities based on independent and creative search. Institutes for retraining and advanced training of natural science teachers and "Schools of Professional Excellence" have been created.

In these conditions, the practical implementation of all professional competencies, skills and abilities is required, as well as the use of a competent approach to organizing the educational process, including through the use of innovative methods and techniques. If theoretical knowledge, as a rule, is acquired through the use of various slides, handouts and teaching aids, then in classes on solving chemical problems, methods for solving them are used, set out in the textbook or additional literature.

In this context, a special place is given to the mathematical approach, which, when solving problems in chemistry, allows for a deeper understanding of the practical component of chemical concepts, theories and laws. As you know, the main goal of solving chemical problems is to teach students chemical laws and rules and their application in composing chemical formulas.

Before you begin solving problems, you should familiarize yourself with the necessary theoretical and tactical material.

There are different methods for solving chemical problems, and the choice of a particular method depends on the conditions and formulation of the problem. To solve a problem, as a rule, a clear action plan (algorithm) is drawn up. In this case, they are guided by the following:

1. Identify a problem that needs to be solved through the same task;
2. Determine which substance, which element is involved in the condition of the question;
3. Determine the molar mass, relative molar mass, molar volume, atomic number of the element, relative atomic mass and other quantities of the substances involved in the problem;
4. Find out which branch of chemistry the problem belongs to;
5. When solving problems related to solutions, determine their percentage, mass fraction, molar, normal, equivalent concentration and, if the percentage concentration is given, its density from the table (if the density is given, determine the percentage concentration or mass fraction);
6. When solving problems related to redox reactions, the change in the oxidation states of the elements participating in the reaction is determined, and equations of the chemical reaction are drawn up. The oxidizing element (atom) or reducing element (atom or ions) is identified;

7. It is necessary to check the correctness of the formula or reaction equations and their coefficients;

8. Proportion, ratio, formulas are used in solving calculation problems;

9. The coordinate system is used to solve problems graphically;

10. When writing structural formulas of substances, the valences of the elements included in this substance are determined;

11. When studying the structure of matter, the nuclear composition of simple substances, the state of electrons in atoms and the properties of simple substances, you should learn to use the periodic system of chemical elements by D.Ya. Mendeleev;

12. When solving experimental problems, it is necessary to follow the rules of work in chemical laboratories.

The main reasons for mistakes made by students are:

1. Students in grades 5-6 pay insufficient attention to proportions, equations and related problems and examples.

2. Little attention is paid to calculations with fractions, one-sidedness in solving problems is manifested;

4. 7th grade students do not pay enough attention to solving problems in physics;

5. Chemistry teachers should pay more attention to highlighting the interdisciplinary connection between their core discipline and mathematics and physics.

To eliminate the above shortcomings and fill the gap in students' knowledge, it is necessary to pay attention to the following.

1. Ways to help students quickly memorize the relative atomic masses of chemical elements. To do this, you can resort to fun mathematics, that is, students are tasked with constructing an expression corresponding to relative atomic masses using rational exponential levels, for example:

$$2^2 = \text{Ne}$$

$$3^3 = \text{Al}$$

$$3^4 - 1 = \text{Br}$$

$$2^5 = \text{S}$$

$$2^6 = \text{Cu}$$

$$2^6 - 2^3 = \text{Fe}$$

$$2^4 = \text{O}$$

$$8^2 = \text{Cu}$$

$$10^2 + 2^3 - 1 = \text{Ag}$$

$$4^3 - 2^3 = \text{Fe}$$

This method helps to quickly memorize the relative atomic masses of chemical elements, makes the lesson interesting and meaningful, and helps to understand the relationship between chemistry and mathematics.

2. Correctly drawing up the formula of a substance and calculating its molecular weight. During the lesson, it is convenient to explain to students using the following table:

	OH-17	Cl-35.5	Br-80	S-32	SO₃-80	SO₄-96	CO₃-60	NO₃-62
H-1	H ₂ O 18	HCl 35,5	HBr 81	H ₂ S 32	H ₂ SO ₃ 84	H ₂ SO ₄ 98	H ₂ CO ₃ 62	HNO ₃ 63
K-39	KOH 56	KCl 74.5	KBr 110	K ₂ S	K ₂ SO ₃	K ₂ SO ₄	K ₂ CO ₃	KNO ₃
Na-23	NaOH 40	NaCl 58.5	NaBr	Na ₂ S	Na ₂ SO ₃	Na ₂ SO ₄	Na ₂ CO ₃	NaNO ₃
Cu-64								
Mg-24								
Ca-40								
Fe-56								
Al-27								

By completing this worksheet, students will be able to correctly write the formula and find the molecular weight.

3. Determination of quantity (mol) by mass of a substance. To solve such problems, students must be able to calculate elemental atoms, relative atomic masses, molecular weights, and in many cases, divide numbers as decimals. In this regard, you should pay attention to the mathematical solution of decimal fractions like 6.02; 22.4; 35.5; 63.5; 1.12; 0.224.

Also, students can be given the following tables as a task to find the quantity and volume of a substance:

Formula	K ₂ SO ₄	Na ₂ SO ₄	H ₂ O	NaCl	Mg(OH) ₂	CuO	CaCO ₃
Molecule, g, mass	174	142	18	58,5	58	80	100
0,2 mol							
0,5 mol							
1,25 mol							
1,5 mol							
2,5 mol							
3 mol							
0,25 mol							

Determining the amount of a substance from its given mass

Formula	Al ₂ (SO ₄) ₃	NH ₄ OH	K ₂ CO ₃	BaSO ₄	Fe ₃ O ₄	NaNO ₃	Sn(OH) ₄
Molecular mass	342	35	138	233	232	85	186
mass	3,42 g	10,5 g	6,9 g	9,32 g	13,9 g	5,1 g	7,44 g
quantity							
mass	6 g						
quantity							
mass	6,4 g						
quantity							
mass	24,4 g						
quantity							

Finding the mass of a gas from its given volume

Title/ volume	Carbon dioxide	Nitrogen	Air	Phosphine	Fox's tail	Methane	Phosgene
mass	44	28	29	34	46	16	99
2,24 l		2,8					
1,12 l			2,45				
3,36 l				5,1			
4,48 l					9,2		
5,6 l						4	
11,2 l							49,5

Methods for solving chemical problems are considered an important basis for teaching chemistry in secondary schools, academic lyceums and vocational schools. As a consequence, without the help of a problem-solving methodology, chemistry cannot be expressed as a whole. Lessons organized using this method increase students' interest in chemistry, mathematics and physics. Therefore, students must understand that these subjects are inextricably linked and, without mastering one of them, they should not try to master the other. The teacher, in turn, monitors the process of mastering the subject by each student and throughout the year organizes additional classes with the weakest of them.

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Rezyume: Maqolada maktab kimyo kursida kimyoviy masalalarni yechishda matematik mushohada yuritish orqali masalalar yechishning oson yo'llari berilgan. Shuningdek kimyoviy masalalarni yechishda e'tiborni qaratish zarur bo'lgan holatlar, kimyoviy masalalarni yechishda ganday ketma-ketlikka rioya qilish kerakligi hamda matematik mushohada yuritiladigan masalalardan namunalar keltirilgan.

Резюме: В статье приведены простые способы решения химических задач с использованием математического наблюдения в рамках школьного курса химии. Также указаны ситуации, в ходе которых обращается внимание на порядок решения таких задач, отмечается последовательность их решения, приводятся примеры задач, используемых в математических наблюдениях.

Kalit so'zlar: kimyoviy hisoblashlar, eksperimental masalalar, proportsiya, tenglamalar tuzish.

Ключевые слова: химические расчеты, экспериментальные задачи, пропорция, составление уравнений.

**EFFECTIVENESS OF USING MODERN EDUCATIONAL METHODS IN TEACHING
THE SUBJECT OF BROADCASTS**

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Summary: *In this article, thoughts on the effective use of interactive methods, ICT, virtual laboratories, practical training, one-hour lesson development and the effectiveness of the lesson in teaching the subject of "Ethers" in chemistry in general secondary education, professional education schools are presented.*

Keywords: *education, interactive methods, comparison class, broadcasts, simple broadcasts, complex broadcasts, method, interactive, "Working in small groups", "Knowledge pool", "Blitz survey", "Glossary method", absorption efficiency.*

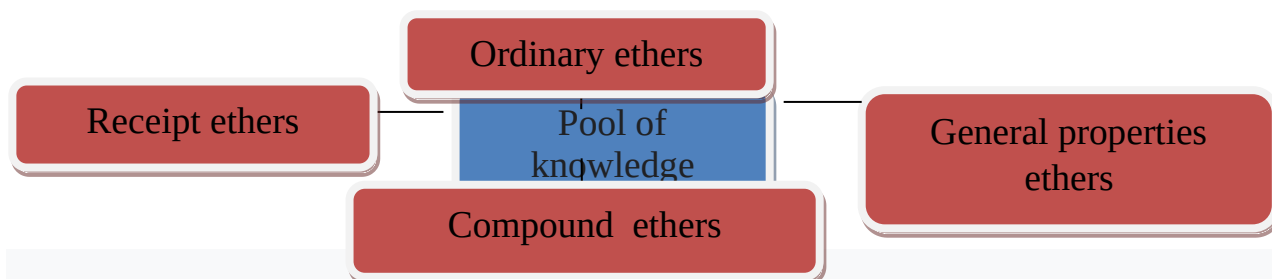
Reforming the continuous education system of our country on the path of independent development and raising it to a new level of quality, introducing advanced pedagogical technologies to it, and increasing the effectiveness of education have been raised to the level of state policy. With the adoption of the "National Program of Personnel Training" and the Law "On Education", the basis of training of personnel corresponding to the requirements of the time was created. On October 8, 2019, the President of our Republic signed the Decree "On approval of the concept of development of the higher education system of the Republic of Uzbekistan until 2030" was an important step in this regard [1]. The use of continuity and coherence in the education system increases the intellectual and spiritual potential of the society, improves the scientific and technical development of the state, and ensures the stable development of production. In the course of the development of pedagogical technologies, the rapid improvement of information technologies, an opportunity to strengthen the teacher's skills is created. The educational process consists of a perfect combination of various methods, tools and directions of education and training of specialists.

Today, conducting lessons using modern educational technologies is more useful than the traditional method. In the traditional method, students receive ready-made information, the processes of not searching, not working on oneself were more observed. Another disadvantage of the traditional method is that the student could not study the subject deeply because he was not interested in the lesson. In the course of the lesson, video slides, short-process videos from various methods will be more powerful for students to imagine and remember. In the lessons conducted using modern pedagogical technologies, students are focused on strengthening, analyzing and drawing conclusions from the knowledge they have acquired.

When teaching the topic "Ethers" in the school chemistry course, the teacher first informs the students about the production of ethers, their chemical and physical properties, and the fields of use [2]. Then, in order to strengthen the new topic, using several of the new modern innovative methods in the lesson, for example: "Knowledge pool" and "Blitz inquiry" methods, will increase the quality of the lesson and increase the students' interest and activity in the lesson. In "Working in small groups" and "Glossary method", students acquire new knowledge and skills by arguing and debating the topic with each other.

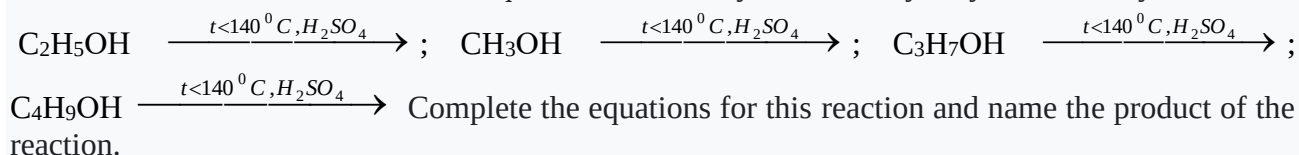
"Pool of knowledge" method. With the help of this method, it is possible to solve a certain task or issue by involving 30 students in a certain activity at the same time, as well as to determine the capabilities of each member of the group, to learn their views. This method can be used in general lessons or in order to strengthen 2-3 topics. To use this method, we place a large poster equally (width 30 cm, height 50 cm) into 7 pockets, 1 pocket is in the middle and 4 are evenly distributed on 4 sides. 20 cards are placed inside the middle pocket in the form of an envelope. If you use the exhibition to reinforce the topic of "Ethereals", on the 4 pockets, 1 "Simple Ethers", 2

"Complex Ethers", 3 "General Properties of Ethers", 4 "Retrieval of Ethers" is written, and in the envelope in the middle, the formulas or rules related to these topics are mixed, and the word "Knowledge Pool" is written on it. (It is more interesting to use this method in groups.) Then the students in the group are told to take the cards from the envelope and place each one according to the topic. 5 cards in each pocket are evaluated according to the correct placement. [3] The reason for the name of the exhibition is that the envelope in the middle is considered to be a "pond" in a symbolic sense, and it is explained in the sense that the students "must place the fish from the pond into buckets according to their species". In this case, students look at the lesson with more interest.

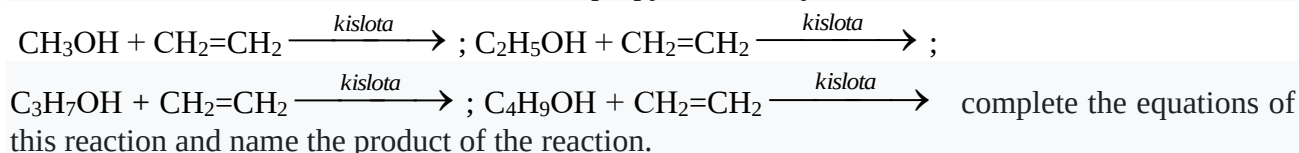


A set of questions for the pool of knowledge:

1. Write down the reaction equations of dimethylether, methylethylether, diethylether.



2. Write and name the isomers of dipropyl and diethyl ethers.



3. Write reaction equations of aqueous hydrolysis of ethylacetate, methylacetate, methylpropionate.

4. Write the reaction equations of the alkaline hydrolysis of ethylacetate, methylacetate, methylpropionate.

5. Name these complex ethers whose formulas are given.



In the "Blitz survey" method, quick, short, clear questions and answers are conducted on the topic of broadcasts to reinforce the topic.

"Glossary method" increases the students' attention to the lesson, encourages them to listen carefully to the lesson explained by the teacher. The teacher distributes to the teachers a sheet of questions written in the following order. Students fill out the questionnaire during the lesson.

1. Organic compounds with the general formula are called simple ethers.
2. Ethers usually have a smell, low molecular weight ones are usually used as substances.
3. Name simple ethers according to systematic (international) nomenclature.
4. $\text{CH}_3\text{-O-CH}_2\text{-CH}_3$
5. $\text{C}_2\text{H}_5\text{-O-C}_4\text{H}_9$ [5]
6. Simple ethers are called mostly in accordance with rational nomenclature, adding the word to the name of radicals.

7. It is the same as the empirical formula of simple ethers and monoatomic saturated alcohols, so isomerism is observed in them.
8. Diethyl ether is obtained by heating in sulfuric acid.
9. Physical properties. Dimethyl and ethylmethyl ethers.....,
1. medium representatives are, high molecules are substances.

In conclusion, we can say that teaching students based on new pedagogical methods provides the young generation with quality education and increases their interest in science. The head of our state is currently paying great attention and opportunities to teachers and the educational process. Therefore, the teacher should use all his skills and teach using new modern innovative methods. In the process of using interactive educational methods such as "Division into small groups", "Knowledge pool", "Blitz inquiry" and "Glossary method" in the teaching of "Ethers" topic in general education schools, it increases the mental speed of students. It allows students to work more on themselves, to increase their knowledge by independent research, to come to an independent opinion faster and to fully study the subject.

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Rezyume: Ushbu maqolada umumta'lim maktablarida kimyo fanidan "Efirlar" fanini o'qitishda interfaol usullar, AKT, virtual laboratoriyalar, amaliy mashg'ulotlardan samarali foydalanish, bir soatlik dars ishlanmasi va dars samaradorligi haqida fikr-mulohazalar bildirilgan.

Резюме: В данной статье рассмотрены мысли об эффективном использовании интерактивных методов, ИКТ, виртуальных лабораторий, практических занятий, разработке часового урока и эффективности урока при преподавании предмета «Эфиры» по химии в общеобразовательных средних школах, школах профессионального образования. представлены.

Kalit so'zlar: ta'lim, interfaol metodlar, taqqoslash sinfi, eshittirishlar, oddiy eshittirishlar, murakkab eshittirishlar, metod, interaktiv, "Kichik guruhlarda ishlash", "Bilimlar jamg'armasi", "Blits so'rovi", "Lug'at usuli", singdirish samaradorligi.

Ключевые слова: обучение, интерактивные методы, класс сравнения, трансляции, простые передачи, сложные передачи, метод, интерактив, «Работа в малых группах», «Бассейн знаний», «Блиц-опрос», «Глоссарный метод», эффективность усвоения.

UDK 528.48

THE PROCESS OF DESERTIFICATION IN THE KASHKADARYA OASIS NATURAL AND ECOLOGICAL CONSEQUENCES

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Summary: *the article describes the processes of desertification in the Kashkadarya oasis. Natural and artificial factors causing desertification are described. The impact of desertification on the socio-economic development of the oasis and the geographical and ecological problems of land use in the process of secondary salinization are considered.*

Key words: *Desertification, arid, degradation, salinization, landscape, irrigated agriculture.*

Introduction and relevance. One of the most serious ecological and socio-economic problems facing humanity today is the problem of desertification. Desertification is a combination of the interaction of natural-geographic and anthropogenic processes, which means the degradation of ecosystems in arid regions, the degradation of organic life forms, and the reduction of the natural-economic potential of these regions. As a result of the strong impact of human economic activity, the process of desertification is deepening and expanding in the territory of Uzbekistan. According to studies, more than 60% of the territory of Uzbekistan is undergoing desertification at various levels [2; 10-168 pp.]. The rapid progress of the desertification process leads to many socio-economic and ecological consequences. Deterioration of the ecological situation due to the process of desertification is typical for the regions of Uzbekistan, including the Kashkadarya oasis. Therefore, studying the geographical aspects of the desertification processes taking place in the Kashkadarya oasis is one of the urgent problems today.

Desertification is the degradation of land, water, vegetation and other resources, the drying of the climate with the decrease of rainfall, and the destruction of natural ecosystems caused by the expansion of the area of desert areas. The sharp expansion of the desert area in the arid climate region since the 1960s is primarily due to the continuous increase in the number of people in the countries, the expansion of the arable land for the purpose of providing the population with food, the development of agriculture, and in a certain sense, the frequent occurrence of droughts.

The purpose and objectives of the research. It is to study as much as possible the process of desertification taking place in the Kashkadarya oasis. To achieve the goal, the following tasks were taken: collecting and analyzing information on the topic; study and analysis of natural geographical conditions of the region; assessment of desertification in different ecosystems in the region.

The Kashkadarya oasis was taken as the object of the study. Studying the effects of desertification on ecosystems (landscapes) is a research subject.

Methods and level of study. Among the important scientific approaches and principles in the study of the topic, the ecological-landscape principle, the systematic complex approach forms the basis of the research, and the use of landscape indication, in which aerospace, cartographic, paleogeographic, geographic-comparative, statistical, geo-informational modeling (GIS modeling) and other methods allow to achieve the main result. gives Many scientific researches have been carried out about the Kashkadarya region and its nature in the fields of natural geography, landscape science, reclamation geography. On the geological structure and climate of the Kashkadarya oasis, L.M. Rasulov (1964-76), O. Yu. Poslavskaya (1966), L.N. Babushkin (1959), I.A. Khasanov (1976-

1981), A.M. Mamatov (1990-1992), S.I. Abdullaev (1994), F.M. Scientists such as Khushmurodov (2017-2023) conducted scientific research.

The main part. The concept of sustainable development recognized and implemented in all countries of the world, including Uzbekistan, is based on equal rights of nature, economy and social spheres. In all regions, including the Kashkadarya oasis, rational use of natural resources, their protection, and finding solutions to existing environmental problems are the basis of sustainable development. From this point of view, the use of nature and its protection is an important means of sustainable development.

The Kashkadarya oasis is located in the south of Uzbekistan and includes the Karshi steppe, the Kitab-Shahrisabz basin, Hisar and Zarafshan mountains, and sub-mountain slopes. Kashkadarya oasis is separated by the southwestern branches of the Hisar mountain range located in the southeast of Kashkadarya, and in the north by the northwestern branches of the Zarafshan ridge located in the Zarafshan valley. The land surface rises from west to east and north-east and mainly consists of delta plains, foothills, medium and high mountains. The territory is crossed by the Kashkadarya river from the northeast to the southwest. The climatic conditions of the Kashkadarya Valley are unique, with significant variations in annual and daily temperatures, uneven distribution of precipitation throughout the year and low rainfall, high air and soil temperatures in summer, and low temperatures in winter, resulting in dry air and excess moisture from the soil differs by evaporation.

Especially in the conditions of climate change, there is a problem of water shortage and drought, which has long been a threat to the population and agricultural activities of the region, is characteristic of arid climate regions, but today threatens the future activities of all mankind. In recent years, the periodicity and scale of drought risk situations have also become more complex. Drought, in its general sense, is a state of prolonged lack of atmospheric precipitation, surface or ground water. Jumaboev R. and Matchanov M., depending on its occurrence and nature, researchers (Alam et al., 2014; Panagoulia, 2015) divided into meteorological drought, hydrological drought, agricultural drought and socio-economic drought [3; pp. 150-154]. Meteorological drought is caused by a decrease in the amount of rain from a constant amount. Since the Kashkadarya oasis is located in an arid climate region, the average amount of atmospheric precipitation is around 75-100 mm, and evaporation is very large. A hydrologic drought is a consequence of water scarcity in a river or catchment. High yields of agricultural crops in dry and hot climates are directly related to artificial irrigation. In such conditions, only irrigation is the most important and necessary method of increasing the productivity of land resources, as well as a necessary condition of agricultural management. In terms of moisture supply during the growing season of Kashkadarya region, the Karshi and Nishan steppes (the western plain in the lower part of the region) are less humid. Here, the influence of the Sandikli desert is felt from the southwest, with an annual rainfall of 146-190 mm. As a result of the long duration of the summer season, the evaporation reaches 1700 mm as a result of the annual temperature in the region, which in turn creates a moisture deficit. According to the thermal resources of the flat part of the oasis (the amount of active temperatures above 10°C is 5000-5300°C), it belongs to the very hot zone. G. T. Selyaninov's hydrothermal coefficient is 0.11 - 0.17. Since the hydrothermal coefficient of the agroclimatic region is 0.10, this region can be included in the very dry zone according to the moisture conditions. After all, based on the above, the plain part of the oasis is located in an arid region, and the agriculture was formed on the basis of irrigation farming.

According to experts, 23 hectares of land around the world are becoming desert every second. If this trend continues, by 2050, 95 percent of the Earth's surface could be desertified, leaving more than 3 billion people in need of food. Every minute, 9 square meters of territory of Uzbekistan is becoming desert. Desert scientist prof. According to L. Alibekov, the total area of arid climate lands is about 40 million. km², which is about 25% of the land area, where 20% of the

earth's population (800 million people) live [2; pp. 60-148]. Desertification is mainly influenced by natural and anthropogenic factors. According to N.F. Reimers (1990), anthropogenic deserts cover 10 million square meters of land surface. km² area or 6.7%. According to some researchers, most of the deserts are the product of human activity. Currently, desertification of different levels of the land area of our planet is developing in an area of 25 million km². Anthropogenic factors include improper irrigation of land and land pollution of agricultural land, unreasonable use of natural resources, ie industrial waste, mining of stone, sand and minerals. V.A. Rafikov [4; p. 200] states that currently the following forms of desertification processes are being observed in the South Aral Bay area: - land salinization; - drying up of lakes and reservoirs; -land degradation; - salinity of surface and underground waters; - flooding of irrigated lands; - migration of soil and salts, etc.

The problem of combating desertification was first adopted at the global level at the 1977 United Nations conference in Nairobi with the Plan of Action to Combat Desertification. The International Convention to Combat Desertification (1994) defines desertification as follows: "Desertification refers to land degradation in arid regions due to a variety of factors, including climate change and human activity." Especially in the Kashkadarya oasis, which is located in the center of Central Asia, the process of desertification is mainly formed due to the irrational use of land resources, the increase in the number of livestock, the cutting of bushy plants in the deserts as firewood, the development of the mining industry, that is, under the influence of natural and anthropogenic factors. Due to the fact that more than 70% of the territory of Uzbekistan is located in the desert and semi-desert regions, events such as salinization of irrigated lands, wind and water erosion, and the rise of ground water level in pastures are taking place in large areas. As a result of this, the productivity of the land used in agriculture is gradually decreasing, the production of food, fodder and industrial raw materials is becoming more complicated, and the quantity and quality of landscapes are being degraded, such as the impoverishment of natural landscapes.

Just as all the early civilizations of the world arose and developed in areas of irrigated agriculture, agriculture in Central Asia probably arose mainly on the basis of artificial irrigation. As a result, irrigated agriculture causes a number of negative environmental consequences and leads to desertification. L. According to Alibekov (2010), these are mainly irrigation erosion; accumulation of agroirrigated cultural layer of the soil; secondary soil salinity; pollution of ground and soil (waterlogging); pollution of surface and underground water; shallowing of rivers; is manifested by the subsidence of the terrain.

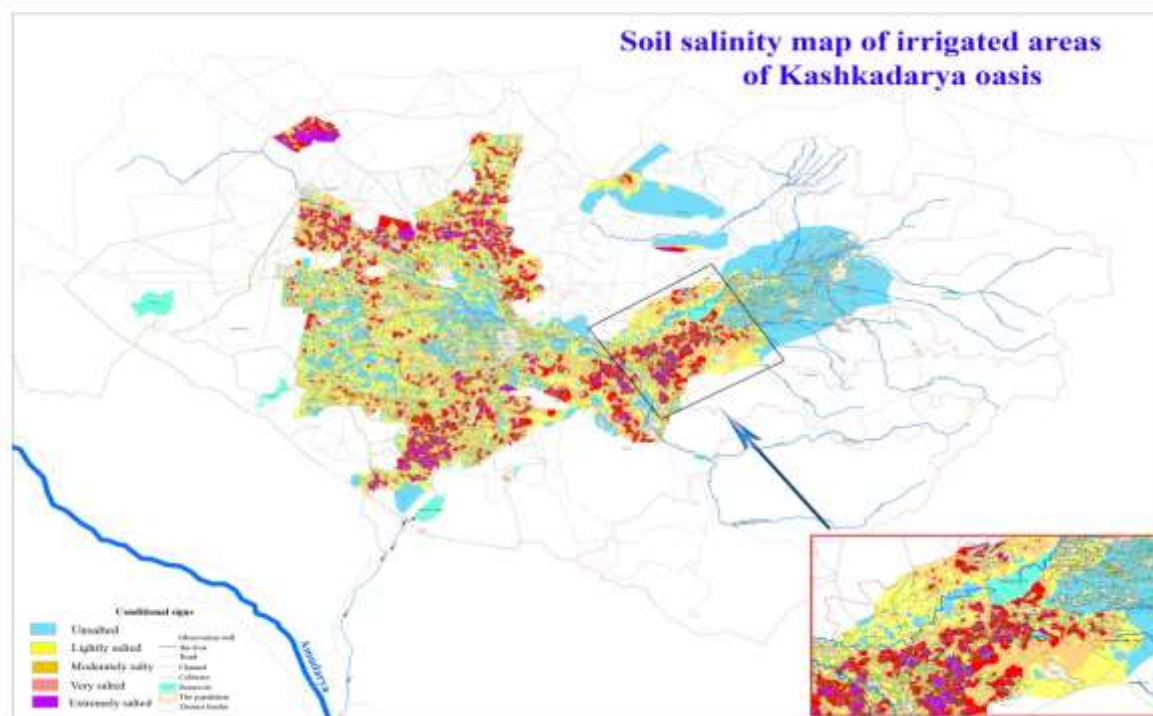
The Kashkadarya oasis has been irrigated since ancient times, and irrigated agriculture has developed. It is easy to observe that natural geographical processes such as water erosion, wind erosion, gravity processes, floods, silting, swamping, salinization, and siltation have the most negative effects on agriculture in the irrigated agricultural zones of the oasis. The area of irrigated land in the region has expanded due to the construction of many water structures during long historical periods. There are more than 5157 km of canals in the Kashkadarya oasis, which serve agricultural crops and households. But most of these canals were built in the last quarter of the last century, and currently do not fully meet agrotechnical requirements. Because a certain part of these canals was not concreted, and as a result of the water seeping from them into the ground water, the ground water level of the area rose. To prevent this, there is a shortage of drains. 50 pog.m per hectare of irrigated area in the Karshi desert. the ditch should be right, but this indicator is almost 23 pog.m. does not exceed [5; p. 98-101].

Their largest massifs correspond to the middle and lower reaches of the Kashkadarya basin. In the following years, the expansion of the irrigated land area in the region also led to the expansion of the land area requiring land reclamation improvement.

Irrigated land area of Kashkadarya region

№	Years	Area of irrigated land (in thousand)
1.	1915	63,4
2.	1950	120
3.	1970	171,5
4.	2000	453,6
5.	2015	515,4
6.	2019	417,3
7.	2020	417,2

Due to the fact that Kasbi and Mubarak regions are located in the most arid region of the oasis, phenomena such as salinization, wind and water erosion, and groundwater level rise in the irrigated lands of these regions are taking place in large areas. Currently, the mineralization of soil and ground water has increased in these regions, as a result of which re-salinization is occurring. Statistics Department of Kashkadarya Region [6;] According to January 2020 data, the salinized area in the region is 232,309 thousand, 45.2% of the total area to the field compared to 35.9% and the average saline area is 38129 thousand compared to 7.4% of the total area. Currently, about 8 percent of irrigated lands or 325 thousand hectares are considered to be poor lands.



Soil salinity map of the irrigated lands of the Kashkadarya oasis

According to the data of Kashkadarya branch LLC (agrochemical laboratory), provision of humus (humus) of the land area in the region is defined as 11394 low, 6583 average, and 3798 high indicators of the total inspected area of 25320.2. Supply of land areas with mobile phosphorus is defined as 9115 low, 3544 average, and 1012 high indicators of the 25320.2 total inspected area. The supply of land areas with variable potash is defined as 12913 as low, 7596 as average, and 4051 as high. Phosphorous fertilizers allocated for grain in the region in 2021 will be 44 ha/kg, potash fertilizers will be 16 ha/kg. But even this amount is insufficient to increase the fertility of the land due to the poor soil humus. According to M.A. Pankov (1969), the amount of salt in the 10-meter layer of each hectare in the Karshi desert ranges from 680 to 3786 t per hectare. At the moment, the

level of salinity of the soil and water is increasing as a result of unreasonable agrotechnical activities, that is, the excessive use of mineral fertilizers and the use of toxic chemicals to protect against pests. In particular, in the arid plains of the oasis, very little precipitation, high evaporation of moisture from the soil, increases the salinity of the soil. Sudden changes in the daily and annual amplitude of air temperature increase weathering. The soils scattered in Karshi, Koson, and Nishon districts are very prone to salinity, and they are always in need of irrigation and drainage reclamation. In the center of the Karshi desert, groundwater is of the non-flowing or low-flowing type, and the concentration of salts in these waters is higher than in mountainous areas. In addition, due to the occurrence of Harmseel and Afghan winds, which are unique in these districts, the small particles of the soil are blown away, resulting in a decrease in soil fertility, air pollution due to dust rising in the atmosphere, and dusty days lasting for weeks.

Degradation processes of desert landscapes in some regions are directly related to activities related to mining and oil and gas extraction [1; 89]. The development of desertification processes is caused not only by the above-mentioned problems, but also by mining operations in some regions. Changes in natural processes can be observed in the vicinity of oil and gas pipelines or wells. Degraded lands created in Kashkadarya region cause great damage to agricultural fields, pastures and ecosystems. Also, the intensity of anthropogenic impact on the nature of the area causes landscape-ecological problems and causes disturbances in the exchange of substances and energy and the balance of ecosystems.

In conclusion, strategic planning of nature use and protection of Kashkadarya region is an important tool for sustainable development. To optimize the use of agrolandscapes in Kashkadarya region, it is desirable to implement the following measures: formation and preservation of land structure and activity at an optimal level, ensuring the necessary diversity and stability of agricultural landscapes; implementation of drip irrigation in irrigated farming; keeping the amount of plant growth in the area in moderation by rationally organizing the feeding of livestock in the pastures; prevention of cutting of bushes and trees by residents; regulating the movement of equipment used in the extraction of underground resources; implementation of efficient use of ditches and drains; provides restoration and preservation of natural coenoses in landscapes. After all, as a result of crop rotation, melioration and agrotechnical measures in agriculture, soil quality improves and desertification is prevented. In order to prevent soil salinization and increase soil fertility and crop yields, i.e. to prevent desertification, it is desirable to change people's attitude towards nature and increase their ecological knowledge.

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Rezyume: Ushbu maqolada qishloq xo'jaligini rivojlantirish maqsadida hududlarda shakllanadigan agrolanshaftlarda tabiiy va antropogen resurslaridan foydalanilinishni optimallashtirish tamoyillarini landshaftlarni tahlil qilishda tutgan o'rni qarab chiqilgan.

Резюме: В данной статье рассмотрена роль принципов оптимизации использования природных ресурсов в агроландшафтах, формируемых в регионах с целью развития сельского хозяйства при анализе ландшафтов.

Kalit so'zlar: GIS, agrolanshaft, kosmik sur'atlar, qishloq xo'jaligi, yer fondi, geotextizimlar, agroiklim resursi, barqarorlik, landshaft indikatsiya, ekologik landshaft

Ключевые слова: ГИС, агроландшафт, космические рисунки, сельскохозяйственные фонды Земли, геотехсистемы, ресурсы агроклимата и идентификации ландшафта, экологический ландшафт.

FORMATION OF PROFESSIONAL COMPETENCE OF STUDENTS IN PERSONNEL TRAINING

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Summary: *In this article, the formation of professional competence of students in the training of personnel in the field of mining, the analysis of the term "Competence", the organization of an educational process based on competence, ways of applying the technology of development of professional competence in determining the qualifications of a future specialist in higher educational institutions justified.*

Keywords: *education, knowledge, skill, competence, professional competence.*

In the decree of the President of the Republic of Uzbekistan dated January 28, 2022 "On the development strategy of New Uzbekistan for 2022-2026" No. PF-60 the formation of professional knowledge, qualifications and skills of future specialists in the training of highly qualified personnel in the implementation of the specified tasks, and the formation of professional competences in the development of abilities is of great importance [1].

Today, concepts such as "competency" and "competence" are widely used in all educational systems. In solving problems related to the study and use of the concepts of "competency" and "competence" - from CIS and foreign research scientists: T. Olsson, J. Raven, A.V. Khutorsky, I.A. Zimnyaya, E.F. Zeer, V.D. Shadrikov, as well as Among scientists from Uzbekistan: B.S. Abdullaeva, Sh.A. Abdullaeva, A.J. Abilova, N.A. Muslimov and others contributed greatly.

I.A. Zimnyaya defines competence as a potential, hidden psychological type that appears as an ability in the manifestation of a person's activity [2].

A.V. Khutorsky competence is a set of interrelated personal qualities (knowledge, abilities, skills, methods of activity) formed within any objects (processes) and necessary for high-quality production activities. Competence is defined as a person having appropriate competence, including his personal attitude to him and the subject of activity [3].

J. Raven defines competence as the specific ability necessary to effectively perform a certain action in a certain subject area and includes highly specialized knowledge, a special type of subject abilities, ways of thinking, as well as taking responsibility for one's actions [Ошибка! Источник ссылки не найден.,26].**Ошибка! Источник ссылки не найден.**

T. Olsson: Determining the qualifications of a future specialist in higher education institutions is a crucial issue. The role of the specialist in the educational process is directly related to the skills which are indispensable in the future [5,212]. 5

Changes in the modern education system of Uzbekistan focus on the need for professional skills of personnel. The main goal of modern education is the interrelationship between the current and future needs of the individual, society and the country, training of personnel capable of social adaptation, employment, and self-development in society. Currently, in the rapidly changing modern world, the need for qualified, creative, competitive personnel has increased dramatically.

Competency-based education is - the education which is given from the point of view of the learner's ability to apply the knowledge, skills and qualifications acquired in the educational process in his personal, professional and social activities [6].

Competence is a Latin word that means "suitable", "acceptable" or "flexible" in Uzbek. It can be understood as a person who is able to solve simple and complex problems using his knowledge, skills and practical experience. In many cases, the term "professional competence" is used. This word can be understood as the ability to successfully apply one's practical experience, knowledge and skills in the performance of one's professional duties [6].

N.A Muslimov and others defined competence as follows: "...effective use of theoretical knowledge in activity, ability to demonstrate high-level professional competence, skill and talent"

[8]. Sh.A. Abdullayeva considers that, in the competence approach, it is necessary to analyze the traditional three elements (triad) of education - "Knowledge - Skill - Qualification" in the form of six units - "Knowledge - Skill - Qualification - Practical experience - Competency - Competence" [8]. A competent approach to education requires the orientation of teaching technologies to independent research, the development of creative qualities in students, which, in turn, requires an innovative methodological restructuring of the assessment of the quality of acquired knowledge, skills and abilities. [10].

In our opinion, competence is an educational resource expressed in the professional training of a student. Competence, a form of harmonization of knowledge and skills in the actual acquisition of methods and means of activity, allows students to set and achieving goals for the future. The concept of competence in the training of personnel in the field of mining has become especially relevant due to the constant change and development of modern technologies. Together with technical knowledge and skills, competencies include aspects such as problem solving, creativity, communication and collaboration that reflect the modern requirements for technical professionals [11].

In the analysis of the term "competency", we conducted scientific research on the formation of professional competences of students based on the training of "Information technologies in technical systems" in the training of personnel in the field of mining, depending on knowledge, skills, and quality of teaching. Competencies in the training of qualified specialists in the higher education system are defined in the framework of scientific and professional activities and social relations. A person's competitiveness in the modern labor market depends on how he acquires and develops skills, abilities and qualifications that can be used in practical activities. In modern conditions, the level of education is determined not by the amount of knowledge, but by the ability to solve problems of various complexity based on existing knowledge. Accordingly, attention to education in the pedagogical environment is focused on a competency-based approach, the final result of which is the preparation of a specialist, that is, a specialist with mature skills in various fields of activity. As can be seen from the above definitions, professional competency is a broad concept. In our opinion, professional competence consists of knowledge, certain personal qualities, etc., in addition to the specific professional skills necessary for the activity. Thus, the readiness of a graduate of an educational institution for professional competence can be considered as the acquisition of professional competency.

A review of scientific literature shows that core competencies are very diverse, multifaceted, multidisciplinary and can be used in various areas of professional activity: educational, scientific and future professional activities. That is, the main competencies are formed in the process of implementation of the competency-based approach, the essence of which is that the student should be able to react adequately in different situations, use the acquired knowledge, skills and abilities. A specialist should have not only certain professional qualities, but also certain personal qualities.

So, a qualified specialist is a specialist who has a set of competencies aimed at achieving high results in professional activity. The main qualities of a qualified specialist are the willingness and ability to independently solve professional problems, pay attention to personal development and self-realization, and the ability to independently search for information.

The professional qualification of future experts in the mining industry is determined by his personal qualities, including professional competences. The presence of professional skills of specialists helps in effective and sufficient activity in various areas of production. Today, the scientific analysis of the training of specialists, the forecasting of the results of educational activities and the selection of the most effective methods, meet the requirements of the training of qualified personnel. Competency-based educational process in training personnel in the field of mining plays the role of the main means of purposeful preparation of students for self-education and development. As a result, the student learns to design independently and goes on to realize his life

and professional tasks. Therefore, the modern high-quality result of education is a pre-selected composition of certain competencies reflected in the educational model based on competence, corresponding to the consumer order, social order. Accordingly, the model of specialization in personnel training in the mining sector is not only the main indicator of the quality and result of education, but also the main factor for determining the quality characteristics of the composition of the competence-based education system. Thus, a certain set of knowledge, abilities and skills, called competencies, should be specifically defined in programs and curricula as expected results to be mastered by the student.

In conclusion, it should be asserted that highly qualified specialists are being trained in Uzbekistan today, with special attention being paid to issues of professional competence. In the training of future personnel in the higher education of Uzbekistan, is taken into account not only the world experience in modernization of content, teaching and educational methods, but also the way for their solution is carried out.

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Rezyume: *Ushbu maqolada kadrlar tayyorlashda talabalarining kasbiy kompetensiyasini shakllantirish, "Kompetensiya" atamasini tahlil qilish, konchilik sohasida kompetensiyaga asoslangan o'quv jarayoni tashkil etish, Oliy ta'lim muassasalarida bo'lajak mutaxassisning malakasini aniqlashda kasbiy kompetensiyani rivojlantirish texnologiyasini qo'llash yo'llari asoslab berilgan.*

Резюме: *В данной статье рассматривается формирование профессиональной компетентности студентов при подготовке кадров, анализ термина «Компетенция», организация образовательного процесса в сфере горного дела на основе компетентности, обосновано способы применения технологии развития профессиональной компетентности при определении квалификации будущего специалиста в высших учебных заведениях.*

Tayanch soʻzlar: *ta'lim, bilim, ko'nikma, kompetensiya, kasbiy kompetensiya.*

Ключевые слова: *образование, знания, умение, компетенция, профессиональная компетентность.*

STUDYING WORKS OF UZBEK COMPOSERS FOR THE ENSEMBLE

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Summary: *The folk song creativity of Uzbek composers has a tradition of making this genre closer and richer in its development. Many generations of young people of Uzbekistan were brought up on the basis of excellent examples of the song creativity of the three composers. Every period, every stage of the path of Uzbek composers was filled with feelings of love and care for the generation. The skill and talent of these authors, the selfless and thankless work of the document support the cultural wealth called children's songs, it passes the production of invaluable musical material for music pedagogy.*

Key words: *composer, children's choral groups, choir studios, folk art, music, art, artistic creation.*

Introduction.

The art of music is an integral part of our centuries-old culture and universal human values. Music is especially important as a means of forming a person's moral and aesthetic taste, developing his emotional feelings, and stimulating his creative abilities. Music embodies different moods, for example, joy, happiness, elation, depression, sadness and other situations. Music also reflects the qualities of humanity, such as determination, aspiration, restraint, cheerfulness. Every piece of music can be heard and enjoyed by the listener only if it is properly performed by the performer.

Folk music art is one of the oldest roots of music art, and it is a priceless treasure that reflects the past, history, culture and traditions of every nation. The musical culture of the Uzbek people has a very long history. In the course of historical development, forms of performance close to each other in form and style, such as folk oral creativity, folk classical music, traditional professional music, folk compositional ways, complement each other[1].

Uzbek music has been formed in two major directions since ancient times and has developed over centuries.

1. Folk music.
2. Classical music.

Folk music is music related to people's daily life and work.

The main criteria of folklore music are related to rituals and events and consist of four directions. These are:

1. Children's music.
2. Labor songs.
3. Ceremonial songs.
4. Religious, magical songs.

In order to study the heritage of traditional music in a modern way, the ensemble "Omnibus" (translated from Latin means "Everything") has been working at the State Conservatory of Uzbekistan. This ensemble was founded in Tashkent in 2004 by talented musicians. The main goals of the young team were to promote modern world music in Uzbekistan and present the works of modern Uzbek composers abroad. The talented musician, conductor and composer Artyom Kim, who led the group and team, considered the main thing for the "multidirectional" development and promotion of modern music to be "serving everyone. Most of the works performed by the musicians have never been organized in Central Asia before, and the "Omnibus" ensemble, which has world premieres, has left a worthy mark in the world of Uzbek modern music with its enthusiasm and

diligence. gained the attention of the audience and musicians with their active participation in contests and festivals[2].

Teachers and students of the Department of "Composition and Instrumentation" of the State Conservatory of Uzbekistan conduct direct creative cooperation with the "Omnibus" ensemble. The ensemble has performed modern works of a number of Uzbek composers, and this is also known to students. is a school.

In the laboratory, in addition to all kinds of foreign modern music, the modern notation of Uzbek traditional music is explained. Writing a piece based on national melodies requires deep knowledge, understanding of nationality and theoretical knowledge from the artist. It is through the ensemble that students learn they are getting answers to their questions and they are writing their own works referring to statuses and folklore from our traditional music. It is worth mentioning here several works of student composers. In particular, Asad Turgunov wrote in 2021 Uzbek national folk song based on the theme "Boychechak", modern instrumental song "Qalb Sadosi" written based on the status of Dugoh by Naila Abdurahmanova, besides J. Akhrorov's "Dugoh "Husayniy". A. Turgunov's " In the works "Body Maqom", "Forward" by G'.Muhammadov and several student composers, one can clearly feel the modern aspects of traditional music, which is the root of music.

The "Omnibus" ensemble has been actively working and creating at the State Conservatory of Uzbekistan. In addition, several competitions have been organized and students are actively performing regularly. We are sure that in the years to come, more such works will be written after studying and studying our traditional music heritage[3].

In addition to its nationalism, idealism, and fun, folklore music can vividly demonstrate people's tenacity, indomitable will, faith in the future, joy, justice, and peace. The creation of Uzbek folk music also appeared in ancient times on the basis of folklore. Talented hafiz and artists who have grown up among the people have performed the people's lifestyles, dreams and inner feelings in their music. At the folk fairs, thermals, sayings, lapars, and various songs were performed. Samples of folk music live as a product of the artistic consciousness of the people (masses) and are performed individually by amateur singers (guyanda, khalfa, etc.), musicians (drummer, dutorchi), as well as in an ensemble or group. Folk music is the basis of the national musical style, the work of composers and composers, an important source of popular music. Musical folklore, in turn, develops in close interaction with professional music art. Nowadays, there are ancient and modified examples of folk music, as well as new ones based on them.

These two directions of Uzbek music have been developing as a result of the demands of the times, complementing each other for years and centuries. The art of Uzbek music has been enriched with various genres over the years. By the 20th century, compositional creativity, which is typical of the compositional traditions and conforms to the examples of world music creativity, has entered. And this, of course, is connected with its new genres, the laws of their creation and performance. Along with compositional creativity, a number of genres such as opera, ballet, symphony, chamber music, instrumental music, which exist in European musical traditions, entered Uzbek music. Over the years, this tradition has gained its place and status in Uzbek musical life. The Uzbek school of composers was formed, where mature composers developed and created works of universal importance.

The symphonic orchestra and symphonic music, which were formed in Western and Eastern countries and had their own style and direction, began to develop widely in Uzbekistan by the 20th century. Initially, "in the 20s and 40s of the 20th century, symphonic music was created and developed mainly in the creative activities of Russian composers in Uzbekistan. They studied the characteristics of the traditional musical heritage of the local people, creatively sought to create symphonic works in the national spirit, and for the first time created works of symphonic music in various forms and genres. Composers such as V. Uspensky, A. Kozlovsky, G. Mushel and R. M.

Glier opened a new page in the history of Uzbek music of the 20th century with bright symphonic works[4].

The traditions of Uzbek music have been preserved, refined and developed among our people for many years. In particular, in the beginning of the 20th century, the songs performed by hafiz, musicians, who grew up among the people, were popular among the people, despite the fact that the author is unknown. For example, songs such as "Factory", "Yor-yor", "Oman yor" sing about the lifestyle, work and hopes of Uzbek women. Famous hafiz of our nation, such as Mulla Toychi Tashmuhammedov, Yunus Rajabi, Mamurjon Uzokov, Arif Hotamov, Komiljon Otaniyozov, Tavakkal Kadirov, made their significant contribution to the development of Uzbek music. They created a unique school of singing styles and taught their students their creativity. It is the main task of each of us to study examples of their fruitful creativity.

Regarding the development of Uzbek music art and expansion of its opportunities, a number of decisions and orders have been issued by our Honorable President, and wide opportunities are being created. International and republican competitions such as "Sharq taronalari", "Shashmaqom", "Players of folk instruments", "Yosh maqom performers" named after Yunus Rajabi and the discovery of new talented young people are being held in them. is a sign that it is progressing further[5].

It is clear to everyone that acting is a process that develops and improves day by day, regardless of whether it is in the field of theater or cinema, whether it is in the field of music or singing. In particular, the improvement of performance in the field of field performance requires regular implementation through specific goal-oriented exercises. We mentioned in previous topics that the Kashkar rubob sholgu is a musical instrument with the wide range of performance and technical capabilities, unique timbre and sound characteristics, and the ability to perform any world-class works. The skill of performing is not only the technique of performance, but also the ability to fully perform a work, to fully enhance its artistic features. In fact, it is the demand of today to develop performance skills and improve them regularly. Students today have certain educational literature, relevant performance repertoires, developed exercises, etudes. A student of a higher educational institution regularly works on himself. Nevertheless, factors such as the widespread use of new innovative and information technologies in the educational system, the increasing quality and efficiency of education, the widening of the sphere of interaction of world music performances and the fact that they are approaching each other from the point of view of performance. new demands and tasks are placed before the students and teachers of music universities. The role of exercises in developing performance skills is incomparable. It is known that performing gammas along with various exercises before working out has a good effect. That's why gamma and exercises can be used in different forms, oriented towards the goal[6].

Conclusion

In this way, the culture of composition develops. We talk about the content of the songs of Uzbek composers to the students and talk about the motherland, about the future, about various crafts, about nature, and of course about the dreams of Uzbek composers. through songs, we educate children to protect the homeland and the reputation of the homeland.

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Rezyume: *O'zbek bastakorlarining xalq qo'shiq ijodida bu janrni o'z taraqqiyotida yanada yaqinlashtirish va boy qilish an'analari mavjud. O'zbekiston yoshlarining ko'plab avlodlari uch kompozitor qo'shiq ijodining ajoyib namunalari asosida tarbiyalangan. O'zbek bastakorlari yo'lining har bir davri, har bir bosqichi avlodga mehr va g'amxo'rlik tuyg'ulari bilan to'lib-toshgan. Bu mualliflarning mahorati va iste'dodi, fidokorona va beminnat mehnati hujjatning bolalar qo'shiqlari deb ataluvchi madaniy boylikni qo'llab-quvvatlab, musiqa pedagogikasi uchun bebaho musiqiy material yaratish imkonini bermoqda.*

Резюме: *Народное песенное творчество узбекских композиторов имеет традицию сближения и обогащения этого жанра в своем развитии. Многие поколения молодежи Узбекистана были воспитаны на прекрасных образцах песенного творчества трех композиторов. Каждый период, каждый этап пути узбекских композиторов был наполнен чувствами любви и заботы о поколении. Мастерство и талант этих авторов, самоотверженный и неблагодарный документальный труд поддерживают культурное богатство под названием детские песни, создают бесценный музыкальный материал для музыкальной педагогики.*

Kalit so'zlar: *bastakor, bolalar xor jamoalari, xor studiyalari, xalq amaliy san'ati, musiqa, san'at, badiiy ijod.*

Ключевые слова: *композитор, детские хоровые коллективы, хоровые студии, народное творчество, музыка, искусство, художественное творчество.*

**DEVELOPING TEACHERS' DIGITAL COMPETENCES IN THE SYSTEM OF
CONTINUOUS PROFESSIONAL DEVELOPMENT**

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Summary: *In the system of continuous professional development, the priority task of professional development centers for pedagogical personnel is to develop the professional training of students in the process of professional development at the level of modern requirements, to organize the necessary knowledge, skills and competencies in them with the effective use of modern pedagogical and digital technologies. The article describes the periodic stages of development of digital competence of teaching staff of higher education institutions in the system of continuous professional development.*

Key words: *skill development, information literacy, ICT competence, digital literacy, digital educational technologies, digital educational environment, digital competence.*

Introduction. In the concept of the development of the higher education system of the Republic of Uzbekistan until 2030, priority tasks such as ‘introduction of digital technologies and modern methods into the educational process’ [1] envisage the individualization of educational processes based on digital technologies, the improvement of distance education services, and the widespread introduction of modern digital educational technologies into practice.

In the digital educational environment, the impact of the globalization process in the scientific and technical sphere, as well as the rapid implementation of modern information and communication technologies in practice, motivates the further improvement of the quality of the system of retraining and improving the qualifications of pedagogues in our country. This means that scientifically methodical approaches to modern teaching technologies rapidly form the professional skills and worldview of the students, and create a foundation for their rapid and solid assimilation of modern knowledge [9].

The modern digital educational environment requires pedagogues to apply modern digital educational technologies to their activities. However, the digital skills of pedagogical personnel are manifested at different levels.

Formation of knowledge and skills on the basis of modern digital technologies in the process of continuous professional development of pedagogic personnel in the process of digitalization of the educational process is one of the urgent issues of today. In this regard, the periodical stages of development of digital competence of pedagogic personnel of higher education institutions are highlighted in the system of continuous professional development.

Literature review Digital competence ensures high motivation of learners, orientation towards achieving the goal set before them, communicative ability, constant work on oneself, striving for self-development, ability to choose information [5]. In turn, this serves to further improve the system of professional development of pedagogic personnel.

G. Ayupova [6], A. Stokov [10], R. Khamitov [11], L. Amhag [3] and other scientists analyzed the process of digitalization of education. In the conditions of digitization, increasing the digital competence of pedagogues is one of the urgent issues. It is the creation of such an environment that serves to implement clear criteria for pedagogical and didactic principles that describe the listener's compliance with the requirements for professional development [8].

One of the important tasks of the digital transformation of the educational process is to determine the periodic stages of raising pedagogic personnel from information literacy to the level of information competence, from digital literacy to the level of digital competence.

Research Methodology. In the system of continuous professional development, the periodic stages of developing the literacy of pedagogues in information and communication technologies to the level of digital competence are determined by defining the principles of systematicity, adaptability, and continuity. Methods such as analysis, synthesis, generalization, conversation, observation, and questionnaire were also used.

In the process of research, these stages were determined by defining the principles of systematicity, adaptability, and continuity.

The principle of systematicity is based on the technical and software support of digital technologies, the creation and evaluation of a curriculum based on digital technologies, the organization of pedagogical activities, the management of the educational process, and digital competence in self-development.

The principle of adaptability makes it possible to choose and use digital technologies based on one's needs to obtain the necessary knowledge and skills in a convenient form and form, as well as to solve problems in professional activities.

The principle of continuity is a principle related to the need to continuously improve the level of digital competence for pedagogical personnel to work effectively in a rapidly changing digital environment [2]. This principle is intended to be achieved by organizing various trainings, webinars, online courses and other forms of education that allow teaching staff to improve their digital skills anytime and anywhere.

The principle of continuity means that it is necessary to integrate the educational process with practice in order for pedagogues to apply and improve their digital competence in practice.

According to N. Terekhina, "the principle of continuity in the digital educational environment creates the following opportunities for pedagogues: to follow new methods and trends of modern digital technologies; develop their skills and knowledge in accordance with the requirements of modern digital society; increase the effectiveness of education through the use of new digital technologies in the educational process; participating in social networks from news related to professional activities and sharing experience with colleagues; adapting to the changing demands of the labor market and society" [7].

Analysis and results. In the process of continuous professional development, the periodic stages of raising pedagogical personnel from information and communication technology competence to the level of digital competence can be divided into 4 periods:

1st period. 2013-2015 - development of information and communication technologies literacy of pedagogues.

2nd period. 2016-2020 - development of competence of teaching staff in information and communication technologies.

3rd period. 2021-2022 - development of digital literacy of teaching staff.

4th period. 2023 - development of digital competence of pedagogical personnel.

1st period. In 2013, in order to increase the level of knowledge of teaching staff of higher educational institutions on information and communication technologies, by the joint decision of the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan, the State Committee for Communication, Information and Telecommunication Technologies, and the State Test Center on information and communication technologies of teaching staff of higher educational institutions minimum requirements for knowledge, skills and qualifications are developed and approved.

Within the framework of these requirements, the programs of the "Information and Communication Technologies in Education" course were developed, and a training course for improving the qualifications of pedagogues was organized. This course is aimed at developing the literacy of pedagogues on information and communication technologies. The program was

implemented through discussion and analysis of learning situations, acquaintance with the experience of colleagues, lectures and practical exercises involving work in small groups.

The total length of study for this course is 72 hours, of which 52 hours are allocated for classroom training and 20 hours for independent work. As a defense of qualified work, trainees formed a portfolio presentation based on previously prepared materials as part of project assignments during independent work.

In 2013-2015, to introduce students to modern information technologies, technical tools and software necessary for life and information society in all directions of training courses for pedagogic personnel of the higher education system, a 14-hour module "Basics of Electronic Pedagogy" was introduced in order to prepare for the use of information technologies in the educational process and solving practical problems.

Electronic pedagogy is a new direction of pedagogy that deals with revealing the methods and forms of education and upbringing, studying, describing and predicting educational processes in a high-tech information educational environment [4]. Therefore, the task of this module is to teach students the basis of information technologies, to ensure that they acquire practical skills for applying them in teaching subjects, and formed the skills of presenting educational materials in the form of models based on software tools of information technologies.

2nd period. Improving the use of modern information and communication technology tools and opportunities in the educational process in 2016-2020 and 'Designing electronic pedagogy and the personal, professional information space of the pedagogue' to the educational programs of professional development courses in order to improve the competence of pedagogic personnel in information and communication technologies and modules such as 'Multimedia systems in education and distance learning methods' were introduced.

The concept of 'electronic information-educational environment' is a set of software, information-technical, educational-methodical systems that provide a specific goal-oriented educational process. The integrity of the electronic information-educational environment is synonymous with the concept of achieving systematicity, meaning their harmony, and embodies the educational goals of realizing the personal and professional model of learners.

'Fundamentals of electronic pedagogy and improvement of the personal and professional information space of the pedagogue' module to develop an idea about the methods and means of improving the information space in the personal and professional activity of the pedagogue; Improvement of the information space in the personal and professional activity of the pedagogue based on Scorus, ScienceDirect systems; creation of multimedia electronic learning resources, Placement in LMS systems and effective use of them; introduce the possibilities of organizing the educational process using cloud services, Web 2.0 and Web 3.0 technologies in the educational process; includes tasks such as revealing the possibilities of electronic learning technologies that affect the quality of higher education.

The tasks of the module 'Multimedia systems and distance learning methods in education' include 'the concept of multimedia, multimedia tools, multimedia software and resources, information technologies, computer equipment and its devices; electronic educational resources and their types; methods of distance education and its organization; steps of creating a distance education process; conceptual basis for creating distance courses; technology for creating electronic educational resources for the distance education system; concept of open education, analysis of LMS systems; is to reveal the possibilities of the Moodle platform in organizing the educational process.

3rd period. At the end of 2020, educational plans for retraining and their professional development were analyzed. A survey was conducted among the audience on the use of digital technologies in the educational process. Recommendations for improving the content of educational programs were developed, paying special attention to the

formation of competencies in the use of modern digital technologies in the educational process.

As a result of the research, the content of the 'Introduction of digital technologies into the educational process' module, aimed at forming the digital literacy of teaching staff of higher educational institutions, was developed and included in the training courses.

The purpose of this module is digital technologies, distance learning technologies, multimedia and infographic technologies and their didactic possibilities; digital technology, Forming theoretical and practical knowledge, skills and competences about methods of using 'electronic university', distance education, 'cloud technologies', webinar, online lecture, 'blended learning', 'flipped classroom' technologies in higher education practice.

Electronic university is a remote form of management and organization of educational processes in higher education institutions. Electronic university can be conducted on the basis of LMS (Learning Management Systems) systems. LMS systems include the main functions of e-learning organization.

The use of cloud technologies in the educational process provides an opportunity to exchange information between educators and learners. Cloud technologies enable data storage and processing, as well as access to educational materials and resources via the Internet. Examples of cloud technologies in the educational process include systems that manage the educational process, electronic portfolios and personal offices of teaching staff, digital reception, thematic forums, information search, etc.

Webinar (the English word "webinar" is an abbreviated version of the phrase "Web-based seminar" and means web-based seminar, training) - organization of online seminars, lectures, presentations in live mode using web technologies. Each participant participates through their own internet network, regardless of their geographical location.

4th period. As part of the research work, the use of digital educational resources by pedagogues in the context of digitization of the educational process, the design of the educational process based on distance education technologies and digital educational resources. In order to familiarize with modern forms of teaching, the content of the short-term distance training course 'Digital Competencies in Pedagogical Activity' was developed and put into practice.

The task of this course is to reveal the possibilities of digital educational resources of pedagogues, distance learning technologies and digital educational resources in the design of the educational process in the context of digitization of the educational process. The content of the course has been improved by defining the characteristics of digital footprint (Digital Footprint), digital skills (Digital Skills), digital ethics (Digital Ethics).

Conclusion/Recommendations. Today, the development of digital literacy of pedagogues is one of the urgent problems, which increases the need to master the competencies necessary for using digital educational content and technologies. Digital literacy is based on digital competencies related to the ability to solve various problems in the field of digital technologies.

Digital competence is the effective and safe use of digital educational technologies, information retrieval, analysis and sorting, includes knowledge, skills and competencies to create and edit content, solve problems, improve professional performance and develop professional skills.

In recent years, the terms 'ICT competence', 'ICT literacy', 'digital literacy' and 'digital skills' are often used interchangeably, such as 'digital competence' and 'digital literacy'. The concept of 'digital literacy' began to be used earlier. This term refers to a person's ability to effectively solve problems in a digital environment.

ICT competence and digital competence are closely related concepts. However, there is a difference between these concepts. An important difference between digital competence and ICT competence is creativity, that is, the ability and skill to create new information objects using digital resources (text, visual, audio and video).

The development of digital competence of teaching staff allows them to process digital educational resources and various information in all aspects of educational activities, and thus creates new conditions for professional development and self-improvement.

In the course of our research, the analysis of the level of study of the problem of many foreign researchers on the formation of digital competence of pedagogic personnel shows that the rapid development of the digital educational environment requires continuous improvement of the digital competence of pedagogic personnel. In this field, it is desirable to constantly improve the content of the educational plan for the professional development of pedagogic personnel in the system of continuous professional development.

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Rezyume: *Uzluksiz malaka oshirish tizimida pedagogik kadrlar malakasini oshirish markazlarining ustuvor vazifasi kasbiy malaka oshirish jarayonida talabalarning kasbiy tayyorgarligini zamon talablari darajasida rivojlantirish, zarur bilim, ko'nikma va malakalarni tashkil etishdan iborat. ularda zamonaviy pedagogik va raqamli texnologiyalardan samarali foydalangan holda. Maqolada uzluksiz malaka oshirish tizimida oliy ta'lim muassasalari professor-o'qituvchilarining raqamli kompetensiyasini rivojlantirishning davriy bosqichlari bayon etilgan.*

Резюме: *В системе непрерывного повышения квалификации приоритетной задачей центров повышения квалификации педагогических кадров является развитие профессиональной подготовки студентов в процессе профессионального развития на уровне*

современных требований, организация формирования необходимых знаний, умений и компетенций. в них с эффективным использованием современных педагогических и цифровых технологий. В статье описаны периодические этапы развития цифровой компетентности профессорско-преподавательского состава высших учебных заведений в системе непрерывного профессионального развития.

Kalit so'zlar: *malaka oshirish, axborot savodxonligi, AKT kompetensiyasi, raqamli savodxonlik, raqamli ta'lim texnologiyalari, raqamli ta'lim muhiti, raqamli kompetentsiya.*

Ключевые слова: *развитие навыков, информационная грамотность, ИКТ-компетентность, цифровая грамотность, цифровые образовательные технологии, цифровая образовательная среда, цифровая компетентность.*

**ECONOMIC ANALYSIS OF THE PLACE OF LIVESTOCK BREEDING IN THE
REPUBLIC OF KARAKALPAKSTAN AND ITS CURRENT CONDITION**

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Summary: In the article, comparative indicators of the value of production of agricultural products in the Republic of Karakalpakstan, the dynamics of the number of existing livestock and the economic analysis of the products grown in livestock breeding are given, and a number of suggestions and recommendations for the development of livestock breeding are given.

Key words: livestock breeding, agricultural products, economic analysis, cooperation, market, marketing, investment, financial support.

Introduction. In the development strategy of the new Uzbekistan for 2022-2026, it is emphasized that the introduction of science and high technologies in agriculture cannot be implemented without innovations and smart technologies. According to this, through the intensive development of agriculture on a scientific basis, it is set to increase the income of peasant and farmers by at least 2 times, to bring the annual growth of agriculture to at least 5%; implementation of a separate state program on water conservation and radical reform of the water resources management system; expansion of livestock fodder base and increase of production volume by 1.5-2 times; increase regional economy by 1.4-1.6 times through proportional development of regions; to increase the export potential of the country by 1 billion dollars [6].

As the Honorable President noted that if there is no innovation, there will be no competition and development in any field [1]. In order for Uzbekistan to achieve the goals set in the strategy, it will be necessary to stimulate the introduction of innovations in all areas.

Livestock breeding is an important part of agriculture in Karakalpakstan. Providing people with food and clothing depends to a large extent on livestock breeding. Livestock production includes the process of selection, breeding, feeding, care and sale of animals [2,3].

Success in livestock breeding depends on many factors. The cattle breeder must have knowledge, skill and patience, the livestock must be well-bred, and have a solid feed base. Livestock breeders should use the results of livestock breeding research correctly and effectively.

Changes in the lifestyle and food culture of people in Karakalpakstan continue to have a significant impact on the production, processing and marketing of meat, poultry and dairy products in the 21st century.

When the value of production of agricultural products in the Republic of Karakalpakstan was studied at current prices during the years 2000-2022, it was found that the indicator changed in the amount of 36.8 - 13389.0 billion sums [8]. This number increased by 363.8 times during the studied period (Fig. 1).

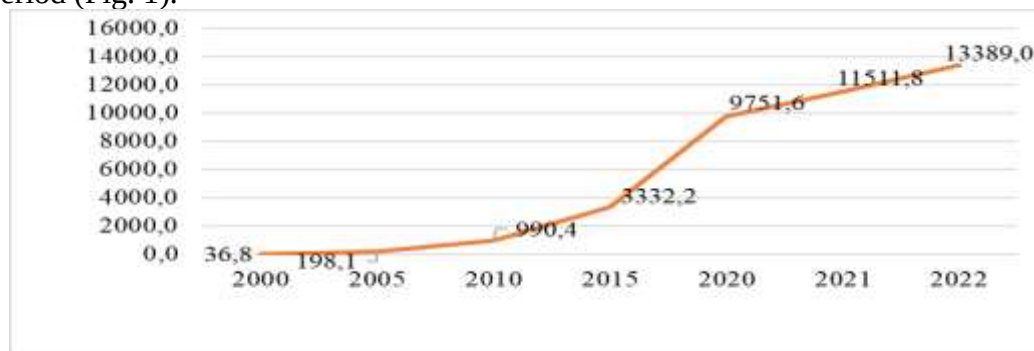


Figure 1. Analysis of comparative indicators of agricultural production value in the Republic of Karakalpakstan

As can be seen from the data of Figure 1, we witnessed a sharp change in the value of agricultural production in the Republic of Karakalpakstan.

In the agricultural production of the Republic of Karakalpakstan, it is necessary to take into account the characteristics of each district based on agriculture. Taking into account the natural and climatic conditions of the Republic of Karakalpakstan, Takhtakupir, Kungirat, Karauzak, Kanlikul districts are the main grain-growing districts; Kegeyli, Chimbai, Chumanai, Beruni, Khojeyli districts as the leading districts in cotton cultivation; Kegeyli, Chimbai, Beruni, Chumanai, Kungirat, Karauzak districts can be listed as districts favorable for livestock breeding.

During the research, the number of livestock bred and cared in the vast pastures and deserts of the Republic of Karakalpakstan and in various agricultural enterprises was studied (Fig. 2).



Figure 2. Dynamics of the number of livestock in the Republic of Karakalpakstan

During the research period 2000-2022 in the Republic of Karakalpakstan, there was an increase in the number of livestock of all types, including the number of cattle during this period, in increased condition from 382.6 to 1189.3 thousand heads increased to 806.7 thousand or 3.0 times. It was observed that the number of cows in the composition of cattle was 161.3 thousand heads in 2000, and in the condition of 353.0 thousand heads in 2022 it increased by 191.7 thousand heads or 2.1 times. The number of sheep and goats was 437,400 in 2000 and reached 1,199,200 by 2022, resulting in an increase of 761,800 or 2.7 times. In 2000-2022, the number of head of horses increased from 16,700 to 27,700, as a result, their number increased by 11,000 or 1.6 times. Poultry is currently considered the most fed and rapidly growing species of creatures and their number was about 718.6-4909.4 million during the years 2000-2022., during the research period increased by 4190.8 mln heads or 6.6 times.

In the course of our research, the state of production of livestock products in agriculture of the Republic of Karakalpakstan was studied (Table 1).

	Product Type	Unit of measurement	Years					Change in 2022 compared to 2010, %
			2010	2015	2020	2021	2022	
1.	Meat (in	Tons	58	88	111	116	120 504,0	More

	live weight)		881,0	402,0	069,0	386,0		than 2,0m
	Including:							
-	bighorn black cattle, live weight	Tons	50 500,0	73 667,0	88 269,0	92640,0	x	X
-	sheep and goats, live weight	Tons	5 914,0	8 578,0	17 849,0	18482,0	x	X
-	pigs, live weight	Tons	119,0	100,0	17,0	20,0	x	X
-	poultry, live weight	Tons	1 282,0	5 114,0	4 196,0	4567,0	x	X
-	other types of cattle (horses, camels, rabbits, etc.)	Tons	1 066,0	943,0	738,0	677,0	x	X
2.	Milk	Tons	183 554,0	322 130,0	404 778,0	418 801,0	434 002,0	More than 2,4 m.
-	Among them: cow's milk	Tons	181 147,0	320 312,0	399 032,0	414936,0	x	X
	Weight	%	98,7	99,4	98,6	99,1	x	X
-	milk of other livestock animals	Tons	2 407,0	1 818,0	5 746,0	3 865,0	x	X
3.	Egg	A thousand pieces	45 998,0	206 722,0	341 296,0	379 731,0	386 951,0	More than 8,4 th.
-	Among them: chicken egg	A thousand pieces	45 568,0	205 094,0	327 447,0	368347,0	x	X
	Weight	%	99,07	99,21	95,94	97,0	x	X
-	other poultry eggs	A thousand pieces	430,0	1 628,0	13 849,0	11 384,0	x	X
4.	Honey	Tons	95,0	364,0	753,0	799,3	835,9	More than 8,8 th.
5.	Sheared wool	Tons	861,0	1 175,0	1 358,0	1 473,0	1 502,0	174,4%
6.	Obtained	Piece	68	80	83	88 539,0	93 033,0	135,8%

	karakul sheep skin		503,0	300,0	497,0			
7.	Cocoon	Tons	814,4	852,5	704,4	752,4	802,1	98,5%
8.	Caught fish	Tons	584,0	3 410,0	14 441,9	12 637,3	11 148,6	More than 19,1 th.

Table 1. Analysis of products produced in livestock in the Republic of Karakalpakstan

It was observed that there was increase in the amount of products produced in livestock breeding of the Republic of Karakalpakstan in almost all products during 2010-2022. During the studied period, meat production (in live weight) increased from 58,881.0 tons in 2010 to 120,504.0 tons in 2022, or increased by 2.0 times. The amount of cattle, sheep, and goat and poultry meat in meat production has increased sharply. In particular, it can be observed that the production of sheep and goat meat production in the vast pastures and boundless deserts of Karakalpakstan has increased by almost 3 times, and the production of poultry meat has increased by 4 times. It was observed that the meat production of pigs and other types of livestock (horses, camels, rabbits, etc.) decreased during the analyzed period. Because of this, it can be seen that in the Republic, where 95% are Muslims, the production of pig, which is not suitable for their own consumption and is low relative to demand, is increasingly being abandoned. The production of other types of beef is gradually decreasing. It is certain that the demand for such meat products will not decrease.

It can be shown that the reason of the decline in production can be the more factors of production. In the future, it is important to find opportunities to further increase the production of this type of meat, to introduce innovations in the field of agribusiness, and for this, to use investments on a large scale.

The amount of milk production during this period varied from 183.5 to 434.0 thousand tons and increased by 2.4 times during the studied period. Although the amount of cow's milk production is considered to be large in milk production (181.1-414.9 thousand tons), the amount of milk production of other types of livestock (eats, camels, sheep-goats, etc.) is about 2.4-3.9 00 tons and we observe that their quantity is also increasing. Nevertheless, it was observed that the production of cow's milk increased from 98.7% to 99.1% during the analyzed period. This situation occurred due to the increasing amount of milk production in the Republic of Karakalpakstan.

Suggestions and conclusions. The following series of suggestions and recommendations were prepared during the research for the development of livestock breeding in Karakalpakstan:

1. Water resources and their efficient use: Karakalpakstan's water resources are very limited. For the development of livestock breeding, it is necessary to use water resources efficiently. Timely control of water resources and use of effective water-saving technologies.

2. Growing the fodder and fodder crops. It is necessary to create favorable conditions for growing fodder and fodder crops. Implementation of growing the fodder and fodder crops for livestock with the help of households and small farms. At the same time, learning how to use technical tools and products.

3. Use of technical and technological innovations. It is very important to use new technical tools and innovations in the livestock sector. Accelerating the introduction of automated, smart irrigation systems, integrated equipment and other innovations. Quality production of livestock products, creation of additional jobs and other ways of growth are important.

4. Training and retraining of personnel. Training and retraining of personnel is very important for livestock development. International seminars and textbooks on agro-techniques, foreign experiences and new methods should be used. Investing in education and training to improve the prospects of workers and livestock. Use of new scientific research, news, and the services of higher education institutions is important.

5. Interactions and cooperation. It is important to establish co-working and cooperation with local and international organizations, because it is natural that cooperation is more effective than having all the production in one farm. Making relations is important to take news, projects and financial support in livestock breeding branch.

6. Market and marketing. It is necessary to define marketing strategies to sell products and develop markets. Reform product marketing and sales channels.

7. Ecology and certification. It is also necessary to pay attention to the development of ecological livestock breeding. To take into account the issues of obtaining a product quality certificate, protecting the environment and producing your food products in ecological conditions.

8. Investments and financial support. It is important to attract investments for the development of the livestock breeding sector. Obtaining financial support and additional benefits from the state always supports production.[7]

Undoubtedly, it is natural that the above recommendations create specific conditions for the centralized development of livestock breeding. Regional economy, economic policy, etc. are also important in the process of livestock development. Therefore, additional research and planning is necessary to achieve the best results in livestock breeding.

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Rezyume: Maqolada Qoraqalpogʻiston Respublikasida qishloq xoʻjaligi mahsuloti ishlab chiqarish qiymatining solishtirma koʻrsatkichlari, mavjud chorva hayvonlari bosh soni dinamikasi va chorvachilikda yetishtirilgan mahsulotlar iqtisodiy tahlil qilingan va chorvachilikni rivojlantirish uchun bir qator taklif va tavsiyalar berilgan.

Резюме: В статье приведены сравнительные показатели стоимости производства сельскохозяйственной продукции в Республике Каракалпакстан, динамика поголовья существующего поголовья и экономический анализ продукции, выращиваемой в животноводстве, а также ряд предложений и рекомендаций по развитию животноводства.

Kalit soʻzlar: chorvachilik, qishloq xoʻjaligi mahsulotlari, iqtisodiy tahlil, kooperatsiya, bozor, marketing, investitsiya, moliyaviy koʻmak.

Ключевые слова: животноводство, сельскохозяйственная продукция, экономический анализ, кооперация, рынок, маркетинг, инвестиции, финансовая поддержка.

HUMANITIES SCIENCES

ATTITUDES OF YOUNG MEN AND GIRLS TOWARDS THE SUBJECT OF PHYSICAL EDUCATION AT SCHOOL

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Summary: The article considers the attitude of boys and girls to the subject of physical education at school. The structure of senior students' interest in the subject, the prestige of a physical education teacher and interdisciplinary aspects of school physical education are considered.

Keywords: physical culture, motivation, profession, physiological need, motor activity, athletic figure, physical qualities, will, responsibility.

Introduction. Global processes in the modern world accompanied by digitalisation have seriously changed the way people live - on the one hand it is good that the world is rapidly changing, on the other hand there is a negative side of progress. The widespread penetration of digital technologies into our lives is accompanied by a decrease in people's physical activity. And this affects absolutely any category of people - children spend more and more time on gadgets, adults prefer activities to watching news on social networks.

In our country, measures for the development of physical education and sport are defined in the Strategy for the Development of New Uzbekistan for 2022-2026. The goal of this strategy is to increase the number of citizens regularly engaged in physical education and sport. [1]

At present, relations in this area are regulated by the Physical Culture and Sport Act, the recently signed Presidential "Decree On measures for the further improvement and popularisation of physical culture and sport in Uzbekistan and the Concept for the development of physical culture and sport until 2025".

It is obvious that the solution of this task is impossible without forming motivations, conscious needs and motives for professional physical education activity in the younger generation, increasing the number of future applicants to pedagogical physical educational institutions.

Earlier we have considered the structure of senior schoolchildren's interest in the subject of physical education, the prestige of a physical education teacher and interdisciplinary aspects of school physical education. It has been established that the predominant need of schoolchildren in physical education is physiological needs in motor activity, which compensate for its deficit. It is assumed that the presence and satisfaction of such needs does not lead to a conscious interest in the subject of physical education. [2]

Three motivations are tentatively identified in the structure of schoolchildren's attitudes towards physical education: the motivation of immediate pleasure, manifested in the frequency of attendance; the motivation of pleasure, determined by the content of classes and the personality of the teacher; and professional motivation, associated with the desire to become a physical education teacher.

The prestige of the profession of a physical education teacher is estimated by schoolchildren above the prestige of the professions of a driver, a labourer and a yard-keeper. At the same time, the profession of physical education teacher is positioned in the minds of senior schoolchildren as a profession with ambiguous prestige. This means that schoolchildren's public opinion regarding these professions has not been formed yet, and, therefore, there are opportunities for its regulation.

It is also established that a physical education teacher falls into the cluster of professions that do not require obvious manifestations of intensive intellectual activity and creativity. This fact

determines another way to increase the prestige of the profession of physical education teacher: increasing the intellectual information component of his/her activity, increasing the level of his/her theoretical training. [3-4]

However, gender differences in attitudes towards the subject of physical education have not been addressed. This issue is one of the most important, since there are approximately equal numbers of boys and girls in high school, and physical education classes are conducted according to the same programme, which does not take into account their gender characteristics. [5]

It is obvious that pupils' interests in physical education lessons are quite diverse: pupils seek to improve their health, form an athletic figure, increase the level of development of physical and mental qualities (will, responsibility, etc.), get a good mark, pass normative tests "Alpamysh and Barchinoy", etc. At the same time, the interests of girls and boys when attending physical education lessons are different. Girls more often want to form a beautiful figure, develop flexibility, improve the elegance of movements, gait, etc. Boys, as a rule, want to develop strength, endurance, speed and agility.

Objective of the study. To determine the differences in the attitude of boys and girls to the subject of physical education in high school.

Materials and methods. To solve the above task, a survey questionnaire was developed, which contained nine questions:

1. Do you often attend physical education lessons?
2. Are you satisfied with the content of lessons?
3. Are you satisfied with the personality of the teacher?
4. Is the content of the lessons good for your health?
5. Does physical education interfere with other subjects?
6. Would you like to become a physical education teacher in the future?
7. Do you know what the salary of a physical education teacher is?
8. Do you attend classes with pleasure?
9. Is the profession of a physical education teacher prestigious?

A questionnaire survey was conducted among 45 girls and 55 boys aged 16-18 years old, senior school students of secondary school No. 33 and secondary school No. 34 in Nukus city. Respondents provided responses as ratings on a 5-point interval scale. The rating "1" was given to the variables with the least influence, and the rating "5" - to the most influential ones.

Differences in estimates were established by testing statistical hypotheses at a statistical significance level of $p=0.05$. Licensed statistical programs Microsoft Excel and Stadia 8.0 were used for this purpose.

Results and Discussion. Table 1 below shows the mean scores and their mean square deviations obtained from the statistical processing of the conducted survey data.

Table 1 - Sample mean and standard deviation of estimates

	Attendance	Lesson content	Teacher's personality	Health	Other subjects	Become a teacher	Salary	Pleasure	Prestige
Girls	4,12± 1,04	4,32± 0,85	4,60± 0,89	4,03± 0,99	1,37± 0,90	1,33± 1,00	2,00± 1,43	3,67± 1,14	3,12± 1,03
Boys	4,47± 0,81	4,48± 0,83	4,85± 0,40	4,41± 1,02	1,47± 1,05	1,52± 1,04	2,03± 1,51	4,39± 0,87	3,27± 1,16

As follows from the obtained results, boys gave higher scores for all questions with approximately the same dispersion of opinions with girls. This means that girls' opinion about the subject of physical education is more negative than that of boys.

In this regard, it can be assumed that the low evaluation of girls' enjoyment of physical training is primary in relation to many other evaluations. The reasons for this low evaluation may be some dissatisfaction with the content of physical education lessons and the personality of the teacher. This, in turn, leads to girls' doubts about the positive impact of physical education classes on health, determines lower attendance and reduces their desire to become a physical educator.

Conclusions. Thus, unlike boys, girls attend classes less often, are more critical of the teacher's personality, believe that physical training is not always useful for their health. Apparently, for these reasons, girls enjoy physical training less and consider this profession less prestigious than boys.

It also becomes clear that the leading motive for physical education classes in girls is to get pleasure from classes. This desire, unlike boys, is not fully satisfied. The reasons for this include the discrepancy between the real content of the lessons and the desired one, dissatisfaction with the personality of the teacher, and doubts about the usefulness of physical education for health.

In this regard, it seems necessary to conduct further research into girls' interest in school physical education, to find out the reasons for their lower motivation than boys, and to adjust the physical education program accordingly, taking into account the peculiarities of girls' desires.

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Rezyume: *Maqolada o'g'il va qizlarning maktabdagi jismoniy tarbiya faniga munosabati, katta maktab o'quvchilarining fanga qiziqishi tarkibi, jismoniy tarbiya o'qituvchisining obro'si va maktab jismoniy tarbiyasining fanlararo jihatlari xaqida so'z etilgan.*

Резюме: В статье рассмотрено отношение юношей и девушек к предмету физической культуры в школе. Рассмотрена структура интереса старших школьников к предмету, престиж педагога физической культуры и межпредметные аспекты школьного физического воспитания.

Kalit so'zlar: *jismoniy madaniyat, motivatsiya, kasb, fiziologik ehtiyoj, harakat faolligi, sport figurasi, jismoniy sifatlar, iroda, mas'uliyat.*

Ключевые слова: физическая культура, мотивация, профессия, физиологическая потребность, двигательная активность, атлетическая фигура, физические качества, воля, ответственность.

PEDAGOGICAL AND INNOVATIVE TECHNOLOGIES IN PHYSICAL EDUCATION LESSONS

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Summary: *The article describes the use of innovative teaching methods in physical education lessons, pedagogical technologies, the use of interactive methods by teachers and trainers on the lessons.*

Key words: *innovative interactive methods, coaching, pedagogical innovation, technologies, physical education, computer programs, process, training, sports.*

At the present stage of education development, the problem of improving its quality comes to the fore today. This problem affects all levels of education and is reflected in the formation of new educational functions, with the central link being the quality of a person. The issues of ensuring the quality of education entail addressing the problems of innovation. In a crisis situation, new priorities in the professional activity of a teacher were brought to the fore, namely his ability to adapt to new, changing conditions, although the education system has historically been considered the most conservative. Teachers had to master new psychological and pedagogical methods, be ready to retrain, improve their professional level, strive for success, etc. Of course, society is not a constant quantity, but constantly changing, transforming. However, if in the recent past these changes occurred rather slowly, today their speed and number are increasing. All these changes related to the transition to market relations are somehow found in the education system. In pedagogy, terms that are more understandable and familiar to the economic sphere began to appear, such as indicative management, indicative planning, pedagogical audit, grading, coaching. It is very difficult to adapt economic terminology to pedagogical practice. The first thing you encounter is a misunderstanding: "Why is this necessary?". But as market processes penetrate into the educational process, teachers are increasingly convinced that economic methods can enrich and improve pedagogical technologies.

Coaching is an innovative pedagogical technology or a time-tested sports technique

If you try to look at the list of innovative pedagogical technologies today, you can see something like the following: projective and activity technologies, creative technologies, game technologies, technologies of personality-oriented education, ethno-pedagogical, trainings, coaching. It is coaching, as a technology, that has the greatest relationship with pedagogy. After all, the term "coaching" was introduced by the English businessman and consultant Sir John Whitmore and literally translated into Russian it can be translated as "to mentor, prepare, train" (from English to coach – to train, mentor, inspire). Coaching has its roots in sports (approximately in the 80s of the last century), where the issues of development and training of athletes were in the first place. The usual training of athletes consisted in repeating the sports element seen earlier. "Watch how to do it right and repeat after me. Train regularly and you will definitely master it," the coaches told their athletes. That is, it was reduced to mechanical physiological repetition. As time has shown, this way of developing and training an athlete ran into his internal obstacles and contradictions. Usually the athlete would say: "I understand everything, but I can't do it right" or "I can't figure out how to do it right" or "I can't do anything, even though I'm doing everything right." The athletes' lack of the necessary results (success and victory in competitions) made the coaches think about the reasons. Why does the "do as I do" rule and the demonstration of examples of "how to do it right" not lead athletes to growth and victories? Gradually, the coaches began to change their approaches in training athletes.

They began to add new tools and techniques to their training. One of these techniques used nowadays is to create a new experience.

The creation of a new experience occurs initially in the athlete's brain by visualizing the chain of events necessary for him to achieve success and win competitions. That is, it does not exclude all mechanical repetition at the initial stage of training. But in fact, the concept of "coaching" includes something more and essential. This is a teaching that arose at the junction of psychology, sports, philosophy, logic and life experience. The demand for coaching services in developed countries (USA, Canada, Great Britain, France) is constantly growing. This is due to its high efficiency and absolute versatility. Today, this teaching is successfully applied in all spheres of life and business. The main task is not to teach anything, but to stimulate self-learning so that in the process of activity a person can find and receive the necessary knowledge himself.

The essence of the approach lies in uncovering the dormant inner potential, and activating the motivation system of each individual person. People become more efficient, perfect, and achieve what they really want much faster and easier when they have a coach who accompanies and can professionally help them. This teaching gives results for several reasons. The mutual reinforcement (synergy) of the coach and the client creates a powerful impulse to awareness of goals and effective actions. Such significant and necessary goals are set for the client, which naturally "attract" the client to the result, as opposed to when the client has to be "pushed" to the goals. The client develops new skills and abilities, and they lead to great success.

Coaching does not offer solutions and does not say what to do - this is the main difference between coaching and consulting. After consulting, the client receives results with a "short shelf life", however, in the case of coaching, the client receives results and a unique development system created by himself. He will use his system, after many years, after the coaching session. The most important changes after applying coaching technology are: you behave more consciously, you immediately take more effective and focused actions, without postponing them "for later", you stop tolerating what pulls you down, you have an impulse for action, you achieve results more easily, you determine your priorities goals that could not be set without a coach. If we talk about how coaching works in the education system, it should be noted that today a teacher simply needs to master this technology to improve his professionalism. The ability to show their professional abilities and capabilities is necessary for a teacher in the certification process. This is one of the "weakest" professional qualities, because self-presentation needs to be learned.

Coaching is a synthesis of training technologies. This is not only a method of management and interaction with people, a way of thinking or a style of behavior, it is a kind of philosophy that assumes effectiveness in various types of activities. It is a paradox, but it is a fact that a huge number of successfully working teachers cannot name the methodology by which they have been working for many years, I mean their own methodology. It is so natural that, based on the latest achievements, the teacher creates his own system. But it is difficult to name what it is called and what components it consists of.

The coaching methodology allows you not only to learn self-presentation, but also contributes to the creation of your own pedagogical methodology. Times are changing much faster than we imagine. There are new requirements for the level of competence of teachers. The time has passed when the requirements for the educational process were dictated from above, the structure of the market and technology are changing much more often today than in the past. Time dictates the need for continuous training immediately at the workplace through coaching. A new generation of students, just by itself, requires a fundamentally new approach to their education. The status of the educational institution also depends on how satisfied the students and their parents are with the educational process. If some of them are engaged in the selection of students, then a considerable proportion of modern educational institutions are engaged in recruiting students with varying degrees of learning ability, just to survive in modern conditions. Coaching also works in the

direction of improving the status of an educational institution, there are many examples of how, after using coaching technologies, the problem of filling the institution was not even discussed. Using successful European examples, coaching in St. Petersburg has gradually become a priority in the technological system of schools. In Russia, the technology of coaching in education is only gaining momentum, but already now it is safe to say that taking its origins in the sports field, having passed the business area, coaching has been introduced into the educational sphere and has become one of the innovative technologies that effectively work to improve the quality of Russian education.

Thus, it can be concluded that sports and physical education, in general, and water sports in particular, can not only be active users of pedagogical technologies, but also stand at their origins. Of course, it is impossible to apply all currently existing pedagogical technologies in classes in the pool, especially within the framework of one lesson, but it is possible to identify the most priority, accessible, giving the greatest result and systematically apply them in pedagogical practice.

Modern concepts of physical education from the point of view of the technological process

To date, a characteristic feature of the modern concept of physical education is a shift in emphasis towards increasing educational orientation, as a determining condition for the successful formation of physical culture of a student's personality. Pedagogical activity is aimed at an integrated approach to teaching physical culture, as this is its most important and effective means of not only physical, but also intellectual, moral, and aesthetic development. When solving the tasks of physical education, it is important to focus your activities on such important components as the education of value orientations for the physical and spiritual improvement of the individual, the formation of needs and motives for systematic physical exercise, the education of moral and volitional qualities, the formation of humanistic relationships, the acquisition of communication experience. To teach students how to creatively apply the acquired knowledge, skills and abilities to maintain a high level of physical and mental performance, health, and independent study. Of course, traditional technologies alone can no longer fully help me achieve my goals and objectives as much as possible. The use of a wide range of modern pedagogical technologies makes it possible to productively use both academic and extracurricular time and achieve high learning outcomes for students.

The most important requirement of modern classes is to ensure a differentiated and individual approach to students, taking into account their state of health, gender, physical development, motor readiness, and the peculiarities of the development of mental properties. Differentiated and individual approaches are important for students with both low and high results in the field of physical education. A low level of motor skills development is often one of the main reasons for a student's failure in physical education.

And a student with a high level is not interested in a class designed for an average student. In addition, students of physical education are divided into basic, preparatory and special groups. Therefore, it is necessary to differentiate the tasks, the content, the pace of mastering the program material, and the assessment of achievements.

Differentiated physical education refers to the purposeful physical formation of a person through development his individual abilities. TDFD is a way to implement the content of differentiated physical education through a system of means, methods and organizational forms, ensuring the effective achievement of the educational goal. The content of the TDFD is a set of pedagogical technologies for differentiated training in motor actions, the development of physical qualities, the formation of knowledge, methodological skills, and educational process management technologies that ensure the achievement of physical perfection.

Application of differentiation technology in the classroom.

This section presents a specific technique for using modern technology in the behavior of classes in a swimming pool.

In the conditions of the department of additional education, you come across students with different physical fitness, different degrees of development of the ability to swim. In this regard, I believe that a differentiated approach in such classes is the key to their maximum success. In the lessons, you can identify individual components where the application of the above approach will be most effective.

Motor activity training:

I conduct training using a holistic method with subsequent differentiation (I highlight the details of the technique and divide them by complexity) and then integrate these parts in different ways, depending on the level of technical preparedness of the students, in order to perform the exercise better. Motor action training provides for the possibility of choosing operations to solve certain motor tasks. In this case, each student can master the motor action in the preferred composition of operations, which will become the basis for the formation of his individual, most effective, style of activity. So, for example, when fixing educational material, I conditionally divide children into groups, depending on their preparedness. I give preparatory or summing exercises to one group in light conditions, to another – complicated summing exercises, to others – the action as a whole, but in a light version, etc.

Students of strong groups master the educational material on average two classes faster than average and weak students, therefore, motor action training ends for them by performing the studied exercise in competitive conditions, and students of weak and medium groups continue to perform the exercise in parts or repeat it many times in standard conditions. It also happens that for students who are most poorly prepared, there is no improvement stage at all, since they have not mastered the material well enough. For example, students cannot master the ball transfer when playing water polo, and therefore they cannot fully express themselves in the educational game, and while the whole class is playing, these guys practice these exercises in pairs. In aqua gymnastics classes, I allow well-prepared children to add their own elements to combinations, change the distance in distance swimming, while less prepared children work in standard conditions. I definitely do individual work with students who are unable to perform a particular motor action. These children receive individual assignments, both in the classroom and for homework.

Development of physical qualities

I carry out the differentiated development of physical qualities in groups of different preparedness using both the same and different means and methods, but the amount of load is always planned to be different. As a result, the level of physical fitness of students significantly improves compared to the initial level. In weaker groups, children finish tasks earlier, they have more time to rest and recover. For students with an insufficient level of physical fitness, I use cards with individual tasks (indicating exercises, their sequence, dosage).

In the final part of the lesson, the group unites, all students perform the same exercises and play.

Formation of knowledge and methodological skills of schoolchildren on the organization of independent physical exercises.

The technology of differentiated formation of knowledge and methodological skills involves: identification of the levels of education of schoolchildren using diagnostic tests (serves as the basis for dividing students into groups of different preparedness) dividing the tasks of studying the topic by the levels of education of schoolchildren and groups of different preparedness dividing the content of the program.

I offer students tasks of different complexity, content, and volume. These can be: small messages, more detailed reports, abstracts, project activities (presentations), preparation of a warm-up complex, etc.

During the exercises, I introduce students to what a particular physical exercise affects (posture, strength, dexterity, etc.), pay attention to the technique and safety when performing exercises, give a general analysis of the exercise and pay attention to technical errors. Every lesson, before going to the pool bowl, I give instructions on safety rules in the classroom and on the rules of conduct.

When assessing physical fitness, I take into account both the maximum result and the increase in the result. Moreover, individual achievements are of priority importance. When making a mark on physical culture, I take into account both theoretical knowledge, and the technique of performing motor actions, and diligence, and the ability to carry out physical culture and wellness activities. I widely use methods of encouragement, verbal approval. Some children need to be convinced of their own capabilities, reassured, encouraged; others need to be restrained from excessive zeal; others need to be interested. All this forms a positive attitude towards the fulfillment of tasks among schoolchildren, creates the basis for social activity.

Temporarily released children and students assigned to a special medical group for health reasons are present at classes if desired: they help in preparing equipment, judging, get acquainted with theoretical information, with the technique of performing motor actions. For students assigned to a special medical group for health reasons, classes are held separately, outside of school hours, they perform exercises recommended by a doctor. I also appreciate this work.

I constantly orient strong children to the fact that they should help the weak, I offer them patronage over a weaker friend. A comprehensive study of the student, a comparison of various data allows me to identify the causes of lagging children, identify the main causes of these causes and carry out a pedagogical impact based on the methodology of differentiated learning.

Ensuring a differentiated approach to students, taking into account their physical development and motor readiness; achieving high motor density, dynamism, emotionality, educational and instructional orientation of lessons; formation of students' skills and abilities of independent physical exercises – all these are the most important features of my modern classes in a swimming pool.

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Rezyume: *Maqolada jismoniy tarbiya darslarida o'qitishning innovatsion usullari, pedagogik texnologiyalar, o'qituvchi va murabbiylar tomonidan dars jarayonida interfaol usullardan foydalanish yo'lga qo'yilgan.*

Резюме: *В статье описано использование инновационных методов обучения на уроках физического воспитания, педагогических технологий, использование педагогами и тренерами на уроках интерактивных методов.*

Kalit so'zlar: *innovatsion interfaol usullar, kouching, pedagogik innovatsiya, texnologiya, jismoniy tarbiya, kompyuter dasturlari, jarayon, mashg'ulot, sport.*

Ключевые слова: *инновационные интерактивные методы, коучинг, педагогические инновации, технологии, физическое воспитание, компьютерные программы, процесс, тренировка, спорт.*

METHODS AND MEANS OF AESTHETIC EDUCATION OF STUDENTS IN PHYSICAL EDUCATION LESSONS

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Summary: *This article is about methods and means of aesthetic education of students in physical education lessons, it discusses the methods used in the aesthetic education of students in physical education lessons and the means of practical training.*

Key words: *physical education, education, upbringing, aesthetics, method, process, tool, student, lesson, emotion, sport, game.*

In fulfilling the tasks in the field of educating a perfect person, the ideological knowledge, theoretical and practical concepts, and sports training provided in schools, lyceums, colleges, institutes and universities are of great importance. In this process, young people are taught the concepts of love for the Motherland, loyalty to the country, and attitude to work. In short, preparing sound-minded, energetic, physically ready young men and women for society in the future is an important task facing everyone.

In this process, special importance should be given to national folk games, which are considered the oldest of sports. Through the national games of the Uzbek people, young people become agile, dexterous, alert and sensitive. Of course, these games were invented by the people, and according to the data, there are more than a thousand types. According to the ethnic characteristics of each place, there are folk games suitable for that place. The most common type is action games. Folk games serve to raise healthy, energetic, mentally strong, cheerful children, which are necessary for our independent country.

Without denying the importance of the psychological-pedagogical foundations of the learning process in the educational system and the role and essence of the learning process in other areas of education, it is permissible to recognize the importance of physical culture lessons and extracurricular activities. Because in this process, firstly, the mobilization of the individual capabilities of the person is required for the activities to be performed (medical-physiological, spiritual-intellectual, practical indicators, skills, theoretical knowledge, etc.) and secondly, the component of the well-rounded personality education, in addition to the physical development stipulated in the requirements of the State Education Standards, is implemented. That is why these psychological aspects of aesthetic education were included, such as interest in the personality, its structure and aesthetic potential, and its importance in the personality structure.

What is necessary for youth's interest in physical culture is the feeling of youth characteristics, individual characteristics (knowledge, observation, upbringing, thinking) and the formation of interest in sports and physical culture.

Emotional interest in various sport types, including national-traditional ones, their aesthetics, these emotional experiences are the psychological processes of aesthetic education of youths in physical culture classes and extracurricular activities, and the results of the research are of great importance in the expected effect. In the processes of aesthetic upbringing of young people, the following work characteristics are taken into account:

- growing up and social recovery, activity, independence;
- aesthetic activities, impressions, feelings, experiences, aspirations, interests and needs of a new content;
- self-awareness, self-influence, self-knowledge, self-management;
- intellectual development;
- theoretical thoughts, creative awakening, aesthetic upbringing, thirst for new knowledge;

- interest in problems related to the human factor;
- striving to determine the stable scope of knowledge acquired by one's interests, consists in determining interest in the main type of sport.

Among the above-mentioned psychological characteristics of young people, the following were the focus of our special attention.

- independence;
- curiosity (interest in aesthetics, art, sports);
- activity towards knowledge;
- mental ability;
- striving for self-improvement.

Effective use of factors that have a strong psychological influence in the physical education of young people is also an important aspect of aesthetic education.

The following can be included in the pedagogical foundations of the formation of aesthetic interest and need in young people, characteristics of academic and extracurricular qualities, conceptual and pedagogical rules of their theoretical and practical character, the possibilities of forming this interest in young people and educating them aesthetically, the target directions, orientation, tasks of practical problem solving, the model of the process of pedagogical approach to solving it in practice, its structure, classification of content stages, the inevitability of the process, the material implements aesthetic education and finds content in it.

In the process of movement activity, the means of aesthetic education include, first of all, various types of physical education. In each of them, the teacher can show his students moments of beauty. Means of aesthetic education include holidays and performances, natural and hygienic conditions, as well as the classroom environment, special means of artistic education during the lesson (use of music and works of art), etc.

In the course of physical education classes, aesthetic education is described in the following ways:

- emotional expressive explanation of physical exercises, choice of figurative words;
- technically perfect and emotionally expressive performance of an exercise that can evoke a feeling of beauty;
- exemplary performance inspiring students with actions being performed;
- organize practical training on the creative manifestation of beauty in motor activity during physical exercises.

Aesthetic orientation in the use of means and methods of pedagogical influence is achieved through the skillful use of aesthetic properties objectively characteristic of physical culture phenomena. Thus, when using visual methods specific to physical education (natural demonstration of physical exercises being studied, etc.), it is important to ensure high expressiveness of movements. In addition, from the aesthetic point of view, the emotionality of the actions, the expression of the feelings of the performer of these actions is important. An example is the high movement culture of great sports masters. Showing such examples (when participating in competitions, using film materials, video recordings, etc.) guided by appropriate pedagogical comments is recognized as one of the effective methods of forming aesthetic ideas in students during physical education classes [1].

The aesthetic effectiveness of the speech effects methods used by the physical education specialist largely depends on the imagery, color and emotional expressiveness of the words. Of course, such means of speech should be used appropriately and moderately. Speech aesthetics is one of the important factors in developing students' conscious need for beauty by adding artificial beauty, living thought and similar verbal decorations [2].

In physical exercises, special factors of aesthetic education such as choreography, music, song can be used in the most natural way. Choreography, this school of expressive movement, can

probably be considered a means of aesthetic and physical education with equal grounds. It organically becomes a part of action games, gymnastics, sports and some other sports. The harmonious relationship between movements and music is a source of aesthetic satisfaction and also plays a role in the formation of perfect movements.

The environment and conditions in which physical exercises are performed have an important influence on the aesthetic ideas and feelings of those who do physical exercises. In this regard, the aesthetic characteristics of the natural environment, the aesthetically consistent forms of physical education and sports facilities, their equipment, artistic design, hygienic conditions, as well as equipment, clothes, etc. that meet the requirements of practical aesthetics are considered important. All this gives the physical education specialist the most favorable opportunities to use environmental factors for the purposes of aesthetic education [3].

Thus, the group of aesthetic education tools includes:

1. Means directly related to movement activity itself (main types of movements: walking, running, jumping, throwing; general developmental exercises with and without objects; special exercises; improvisational exercises; walking, sports games, movement games).
2. Specially introduced art tools (music, dance elements, examples of artistic creations).
3. Communicating with nature (hikes, excursions, training in natural conditions).
4. Aesthetic environment of lessons (aesthetic design of the interior of sports buildings, use of brightly colored equipment, sports equipment).
5. Sports holidays.

It should be noted that the above classification of aesthetic education tools is somewhat conditional. Because individual tools can be divided into several groups rather than one. Thus, the methods and tools used in the aesthetic education of students in physical education classes are the main process of manifesting the self-effect of objectively existing beauty in physical education.

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Rezyume: Ushbu maqolada jismoniy tarbiya darslarida o'quvchilarga estetik tarbiya berishning metod va vositalari haqida bo'lib, unda jismoniy tarbiya darslarida o'quvchilarga estetik tarbiya berishda qo'llaniladigan usullar va amaliy mashg'ulot vositalari haqida so'z boradi.

Резюме: В данной статье речь идет о методах и средствах эстетического воспитания учащихся на уроках физкультуры, в ней рассматриваются методы, используемые в эстетическом воспитании учащихся на уроках физкультуры, а также средства практического обучения.

Kalit so'zlar: jismoniy tarbiya, ta'lim, tarbiya, estetika, metod, jarayon, vosita, o'quvchi, dars, emotsiya, sport, o'yin.

Ключевые слова: физическое воспитание, образование, воспитание, эстетика, метод, процесс, средства, ученик, урок, эмоция, спорт, игра.

ENCOURAGE CHILDREN TO LEARN ENGLISH THROUGH FAIRY TALES

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Summary: *The article reveals educational value of English fairy tales in teaching. The English fairy tales develop sensitivity, ingenuity, intelligence skills in learners, as well as compares, thinking skills, increases vocabulary and the education system demands to bring up a free-thinking, well-rounded, mature person.*

Key words: *fairy -tale, value, purpose, creative problem solving, letter memory game, quiz cards.*

When teaching fairy tales in English, it is very important to be able to engage learners in the English language and bring them up well. It is advisable to use educational games for this purpose. Educational games are important for the development of children, mentally and spiritually, as well as for their interest and development as a spiritually mature person.

The use of educational games in the teaching of fairy tales in English:

- increases the interest of learners in learning;
- will be spiritually mature;
- learns to read sounds, syllables and words quickly;
- learns to be resourceful.

The game develops students' sensitivity, ingenuity, intelligence, as well as comparison, thinking skills, and increases vocabulary. Since school children are not familiar with many words, it is better to use tapes or pictures. In addition, it is necessary to consider the following when developing a child's English speech:

- always fully answer children's questions; when the child talks to you, listen carefully to his thoughts without interrupting;
- create conditions for the child to express his impressions;
- taking into account the age and characteristics of the child;
- encourage the child to think independently;
- to develop his speech by introducing him to fairy tales in English;
- enriching the child's speech with new words;
- speaking correctly and clearly when talking to the child and demanding the same from the child.

The game develops sensitivity, ingenuity, intelligence skills in learners, as well as compares, thinking skills, increases vocabulary. If learners face with some new words, it is best to use scripts or pictures. Additionally, when developing a child's English speech, it is important to keep in mind:

- always answering children's questions completely; when the child talks to you, listen carefully to his or her opinion, without;
- give chance for the child to share their impressions;
- take into account the age and characteristics of the child;
- encourage the child to think independently;
- Enhancing speech by introducing English fairy tales;
- Enrich the child's speech with new words;
- When speaking to a child, speak correctly and clearly, and make the child to do the same.

When the above mentioned is fulfilled, the child will be able to explain his or her point of view completely, clearly, and fluently to those around him or her.

The education system demands to bring up a free-thinking, well-rounded, mature person. For this reason, we must effectively use new methods. The experience of some developed countries

in the world is based on advanced pedagogical technologies to face the interests and needs of young people to learn. This interactive method is useful for English teachers in their classes and graduate learners during their internships. The use of interactive methods in English storytelling lessons not only increases learners' interest in science, but also helps to create a friendly atmosphere in the classroom and bring learners closer to each other.

Here are some ways to use educational games and techniques to engage children in English when learning fairy tales in English.

Letter Memory Game

The main purpose of this game is to teach learners to pronounce and remember sounds correctly. The teacher gives an idea of the game and distributes picture cards featuring English fairy tale characters learned in previous lessons and takes the capital letters (A, B, C, D, E...). He keeps cards with the letters A, B, C, D, E.... Learners will be given cards with pictures of cherries, apples, horses, pomegranates, bees, spruces, bears, dolphins, trees, elephants, and fountains. The learner places an O card on the table. Learners place a picture card next to the letter and say the name of the picture in chorus. The game goes on in this way. The game will be played in the next lessons with the initials of the words from the new fairy tales. The game takes seven to eight minutes. The game can be played in various other ways. Through the game, learners will be able to memorize the names of English fairy tale characters.

Another version of the game

The teacher shows the learners any letter, for example, the letters A and O. Learners find the names of English fairy tale characters and make sentences. This can be done orally or in writing. For example:

Quick word reading game

This game develops learners' speed reading skills. The teacher hands out word cards. Each participant takes a set of cards, finds a word from an English fairy tale, and reads the sentence in which the word is involved. If a learner can't find the word on the card in an English fairy tale, they won't get another card. The learner who finds the word correctly and quickly is the winner of the game. For example, if there are 24 learners in a class, 12 of them will participate on the first day, which means that the teacher will prepare at least 24 cards for 12 learners.

For example: The learner who can find the words correctly and quickly in an English fairy tale is encouraged. You will be given 6-8 minutes to read the sentences. This means that the use of fun games about sounds and letters during English storytelling will be an important tool for learners to learn sound letters, syllables, and words easily and with interest. Here are brief examples of lessons aimed at developing learners' speech during the period of engaging children in English by teaching fairy tales in English. Printable and written forms of the letter "L l" are shown to learners. They say the difference between a letter and a sound. (We say sounds, hear sounds, see letters, write.) They compare the uppercase and lowercase, printed and written forms of letters.

They should determine whether a sound is a consonant. The children then observe the articulation of the 'L' sound, say the conjugation of the palate, lips and teeth, and bring the speech organs into this state. Once learners have determined that they can pronounce the "L" sound correctly, they are asked to find words in an English fairy tale that contain the "L" sound. Say the names, the names of the animals, the names of the food so that they do not have difficulty finding the words. The teacher reads the English fairy tale written on the board. Then the chorus and the learners read. Dictionary work is carried out. Every word is explained. A short question-and-answer session will be held after the fairy tale learners on the board are taught. Vocabulary work will be conducted on newly learned words. Fairy tales in English are taught to learners independently. Based on the picture, the story is retold. A proverb or riddle is told according to the story. Appropriate use of a variety of proverbs and riddles in English storytelling lessons will develop children's speaking skills. It is recommended that you use games to reinforce the lesson.

Teach children to think independently.

Teaching children to think independently in English classes is an important task. We know that in the current educational process, the learner must be a subject. One of the most important requirements for lessons is to teach learners to think independently. To achieve this goal, you can complete the following tasks: "Problem Solving". "Creative Problem Solving". To use this method, the beginning of the story is read and the learners are asked to decide how it will end. For example

Many years ago a merchant found himself in debt to a money lender, a cruel and unpleasant man. The merchant had only one child, a daughter, whom he loved dearly.

One day the moneylender came to the merchant with an ultimatum – either the merchant should pay his debts, go to debtors prison, or permit the moneylender to marry his daughter.

Realizing that the merchant and his daughter were horrified at the idea, the moneylender invited them both to walk with him along a gravel path and to discuss the idea a little further. Here he proposed that fate should decide the issue.

"I shall take two pebbles from this path, one black and one white", he said, bending down to pick up two stones. "I shall drop them in this bag. And then, if your daughter agrees, she will pick one of the stones from the bag without looking. If she picks out the white one, I shall forgive all of your debts, and you and your daughter will never see me again. However, if she picks out the black stone, your daughter is mine."

The merchant's daughter was distraught. She did not trust the moneylender. She was almost sure that he had put two black stones in the bag. Her position seemed impossible. What should she do? (At this point we can have a small group discussion on what the merchant's daughter should do.)

The correct answer is that the daughter put her hand in the bag, withdrew a stone, and dropped it "accidentally" on the gravel path. "I'm sorry", she cried, "but you can tell the color of the one remaining in the bag".

In order to develop creative thinking, we need to use problem-based learning in English lessons. For this purpose, children are asked to read the following story.

One day father sent his son out to sell a sheepskin. "Bring me back the skin", he said "and the money for it". The young man tried sell the skin but in vain because nobody wanted to buy it on those terms. So he decided not to go home at all because he was afraid of his father. When he came to a bridge over the river he met a girl. Seeing that Jack was very sad, she asked him: "May I ask you why you are so sad?"

"My father has given me the skin", said Jack, "and I must bring back both the skin and the money for it".

We have to stop the story here and ask the children how to solve the problem of the girl. Children solve the situation differently, express their opinions. If the event is solved as follows, it is considered correct

"The girl carried the skin to the river and after washing it in the water took the wool from it. She paid Jack for the wool and gave him back the skin to carry it home."

Another solution for the process is given below:

One day old Gobborn told his son to follow him because he wanted to build a fine castle. While they were walking the old man said to his son: "Can you shorten the way for me?" His son answered in the negative and his father ordered him to go back home.

When he told his wife why he had come home alone, his wife solved his problem, but how?.

The learners, who listened the fairytale attentively, may solve as following:

His wife told him a story and he repeated it to his father. When he finished his story they would come to the end of their journey. The story Could Shorten the longest road.

Values clarification

The importance of this method is that every learner will be able to express their thoughts freely for the tasks given according to the fairy tale. If they agree the statement absolutely, they should point +2, otherwise, if they disagree, they should put -2.

- Do you agree or disagree with each of the statements below? Put a check under the number that indicates how you feel.

+2 = Strongly agree: +1 = Agree: 0 = No opinion: - 1 = Disagree: - 2 = Strongly disagree
+2 +1 0 -1 -2.

Merry Riddles

It is important to teach riddles made up from the new words used in the fairy tale, so that the learners could learn new words and increase their creative thinking. The riddles can be made up in a joke to focus the learners. For example:

1. Which animals are big/small in the fairy tale?
2. Which animals have got a tail/ears in the fairy tale?
3. Which animals eat other animals in the fairy tale?
4. Which animals have got two/four legs/haven't got legs in the fairy tale?

Solutions to the riddles

1. A bear / a frog. 2. A deer. 3. A lion. 4. A bird / a crocodile / a snake.

Quiz cards

Quizzes are control questions that take place after an English story is told. In this case, the preparation questions are not given at home. The questions are written on the cards. Team 1 asks a question and Team 2 answers. The purpose of these exercises is to develop children's hearing and listening skills. We also learn to ask grammatically correct questions in this way. We can also use quiz cards by word definition. Cards with word definitions are distributed. The child must find the correct definition. The advantage of this method is that cards are distributed according to the number of children and allow all children to attend the lesson at the same time. This saves time. For example, a 6th grade textbook tells a story about a swallow and a snake.

Once upon a time the snake was king over all the animals. One day he was very hungry, but he did not want to eat his usual food. He decided that he would like to eat the sweetest meat in the world. So he told his servant, the mosquito, to bite all the animals and find which was the most delicious of all.

The mosquito wanted to please the king. He went to the forests and jungles, and bit the bears and the monkeys, the foxes and the tigers. He went to the grasslands and tasted the gazelles and zebras. He tasted the lions and wolves and rabbits. He tasted all the animals, but could not find the meat to please his king. Then he saw a human baby was sleeping in the shade of a tree and his mother was cooking food nearby*. The mosquito flew, down, sat on the baby's arm and took a small bite. 'How delicious!' cried the mosquito, 'this is what the king wants!' And he flew away quickly to take the good news to the snake. He did not see that a swallow was flying after him. After some time the mosquito came to the large tree where the snake made his home. 'Oh, my King,' he said, 'I tasted all the animals in the world. I know which is the sweetest meat of all. It's the meat of ... Why Mosquitoes Cannot Speak The Snake because of the Swallow about The Human's Baby and the Animals .*

Just then, the swallow flew down and bit the mosquito's tongue. "... bzzz, bzzz," continued the mosquito because now he could not speak. This made the snake very angry. How did he know the most delicious meat? The mosquito could not say it. The snake wanted to catch the i swallow, but the bird was very quick. The snake could only bite a piece 1 out of his tail before he flew away.

From that time on the mosquito can only say 'bzzz', and the snake and the swallow hate each other.

When a swallow flies, we can see the V in its tail made by the snake. And we remember the day when the swallow saved the human babies. When a swallow makes a nest in your home, you are very lucky indeed.

You can ask questions about this fairy tale. These cards can be created in the form of True-False.

Card №1 The snake ate the baby. (Answer: False. Mosquito's tongue.)

Card №2 The swallow flew down and bit the (Answer: True.)

Card №3 The swallow saved the human babies. (Answer: True.)

So, "Technology to teach children to listen and tell stories in English" is achieved in the process of teaching children to listen and tell stories in English, by developing the skills and abilities to learn English in the minds of children as a result of life experiences. Through English fairy tales, children become interested in English, learn to speak English, and are educated through fairy tales. By teaching children to listen and tell stories in English, their worldview will grow. The content and quality of English lessons will increase. The story teaches children to think independently about the story. Being able to use technology to teach children to listen to and tell stories in English correctly and appropriately can go a long way in making children's English speech meaningful and effective. We sought to illustrate the invaluable power of technology to teach children to listen and tell stories in English, the sole purpose of our research, and to uncover its unique character. We are convinced that the topic of technology for teaching children to listen and tell stories in English consists of small components. In this qualifying work, we have tried to draw theoretical conclusions by analyzing factual examples taken from fairy tales about the structure of English fairy tales.

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Rezyume: Maqolada ingliz ertaklarining o'qitishdagi tarbiyaviy ahamiyati ochib berilgan. Ingliz ertaklari o'quvchilarda sezgirlik, topqirlik, zukkolik ko'nikmalarini rivojlantiradi, shuningdek, qiyoslash, fikrlash ko'nikmalarini rivojlantiradi, so'z boyligini oshiradi va ta'lim tizimi erkin fikrlaydigan, barkamol, yetuk shaxsni tarbiyalashni talab qiladi.

Резюме: В статье раскрывается воспитательное значение английских сказок в обучении. Английские сказки развивают у учащихся чувствительность, изобретательность, сообразительность, а также навыки сравнения, мышления, увеличивают словарный запас, и система образования требует воспитать свободно мыслящего, всесторонне развитого, зрелого человека.

Ключевые слова: сказка, ценность, цель, творческое решение задач, игра на запоминание букв, карточки-викторины.

Kalit so'zlar: ertak, qadriyat, maqsad, ijodiy masalalar yechish, harf xotirasi o'yini, viktorina kartalari.

**FROM THE HISTORY OF TEACHING ARABIC IN THE TERRITORY OF
KARAKALPAKSTAN**

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Summary: *The article deals with evolution of the language culture of learning in the conditions of our region has a great history, which is closely related to the history of educational institutions. In the conditions of Karakalpakstan of the late 19th century, each village, village or village had its own mektebs, if in villages and villages they opened at mosques, and sometimes in private houses, then in nomadic villages mektebs could be placed in yurts and roam with the population.*

Key words: *Teaching, evolution, education, village, elementary, history, primary, memorization.*

The evolution of the language culture of learning in the conditions of our region has a great history, which is closely related to the history of educational institutions. Domestic research scholars indicate that the first educational institutions in Central Asia were mektebs ("mekteb" from the Arabic verb "kataba" - to write, that is, letters, "place where they write") and associate it with the sacred religion of Islam. The word "mekteb," according to academician V.V. Bartold, is a translation of the Persian word "dabiristan" (from the word "dabir" - official) was a secular elementary school for training officials .[1.111]

In the last quarter of the 19th century - the beginning of the 20th century, among the peoples of Central Asia, and the Karakalpaks, among other things, there were several types of schools: mektebs, karykhan, madrasah.[2.13] Mektebs served as a primary education school, where students acquired the skills of elementary literacy - the ability to read and write. According to historians of Karakalpakstan, until the beginning of the 20th century, mainly religious subjects in Arabic were taught in mektebs, and the letter was based on the Arabic alphabet.[3.137]

That is, referring to historical scholars, we can argue that the first mektebs in the territory of Karakalpakstan were foreign-speaking. Researcher M. Karlybaev writes that "the emergence of Mektebs as a Muslim school of primary education dates back to the 8th century, when Arab conquerors began to spread their religion - Islam, and with it writing." [4.5] The famous scientist J. Urumbaev also pointed out that "learning in mektebs was purely religious-scholastic in nature and boiled down to mechanical memorization of Koran texts and prayers in Arabic." [5.39]

Researcher Yu. Abdullaev in his essays on the method of teaching literacy in an Uzbek school wrote: "The native Uzbek language was in the madrasah only in everyday spoken language, its grammar was not studied, as in the maktab." [6.33] In such mektebs, neither curricula nor curricula existed, there was a simple memorization of Arabic words. By the way, it should be pointed out that Muslim schools existed on the territory of Karakalpakstan until the 1930s. [7.14]

The teacher could be any educated person elected for this by the inhabitants of this aul. These people usually completed local madrasahs or had a primary Muslim education. It could be or the imam of the mosque himself, usually from among the locals. In addition, in many cases, children learned from the mullah of the same clan and tribe. No funds were released from the khan's treasury or from the budget of the tsarist government (after 1873) for the maintenance of mektebs. If the mosque at which the mekteb was opened had waqf property that brought in a certain income, then the teacher could receive his small share of the income. But, usually, the teacher was content with the offerings of children, or their parents for various reasons: the student's transition to the next level of education, "piishembilik" (in some cases "zhumalyk") - offerings on Thursdays or Fridays, etc.

Judging by the sources of 1915, the imam of the mosque, who opened the mekteb, divided the students into two groups: senior and junior and began classes for both groups in early October. A break was taken twice a week - on Thursday, classes were held until noon, and on Friday they did not study at all, since Friday was considered a day off. The imam was given about 4 pounds of wheat and jugars from the family, for teaching they paid 40 kopecks per student before the start of the teachings, in the middle of the study they paid 2 times also 40 kopecks and before sending to Khiva, to continue their education in the madrasah, they gave another 40 kopecks.

According to the famous scientist-teacher Zh.Urumbayev, spiritual dignitaries of the local level - yishans also opened the mektebs on the territory of Karakalpakstan. These mektebs were also kept at the expense of the population and those in the vicinity of the mosque, in rare cases at the expense of religious communities. In 1873, on the territory that departed from the Khiva Khanate to Russia, only on the right bank of the Amu Darya, with a population of 130 thousand, there were more than 600 mosques with mektebs, according to J. Urumbaev, for every 216 inhabitants there was an average of one mosque with mekteb. In the mektebs of other peoples of Central Asia, boys and girls studied separately, while in the Karakalpak mektebs - together.

The main goal of learning in mektebs was to teach children to read the Koran and pray in Arabic, and learning came down to memorizing the texts of religious books. "In most peoples of Central Asia, the alphabet consisted of 32 letters (28 Arabic and 4 Persian)," wrote J. Urumbaev, "in the Karakalpak alphabet there were only 28 Arabic letters." [8.8-9]

In the conditions of Karakalpakstan of the late 19th century, each village, village or village had its own mektebs, if in villages and villages they opened at mosques, and sometimes in private houses, then in nomadic villages mektebs could be placed in yurts and roam with the population. There have been cases when children studied in mektebs-half-dummies. "Real nomads had fewer schools, but this does not mean at all that they did not want to educate their children, but this is explained by the known inconvenience of nomadic life.

But even with such inconveniences, nomads found it possible to have schools, some mobile, wandering along with the aul, some temporary, opened in winter camps, and some permanent, that is, operating all year round. In each of them, at least 10-15 children studied, and it happened when the number of students exceeded 30.

Historian M. Karlybaev writes that "teaching a child literacy skills was one of the main tasks of parents. Every Muslim had to be able to read the sacred texts of the Quran.[9.6] " M. Karlybaev also claims that a program of primary education in Muslim mektebs was drawn up. In fact, the training was carried out by memorizing Arabic letters, then the Suras from the Qur'an began to read using the letter-compound method.

Usually, it took two or three years to memorize the alphabet, another year was required to memorize the digital designations of numbers. Gradually, they switched to memorizing syllables and individual words in order to acquire reading skills. Only at the third stage did they start reading Haftiyak, a collection of several short suras from the Koran.

As we pointed out above, in Karakalpaks, teaching a child literacy skills was one of the main tasks of parents. Every Muslim had to be able to read the sacred texts of the Quran. For this, the initial program of initial training of the Muslim mekteb was drawn up, according to which a child who entered the mekteb studied ABC with a plaque brought by him, or prepared by the mullah himself.

On it, the mullah teacher wrote down the letters of the Arabic alphabet, which the student had to learn by heart. This method of memorization was popularly called "every year" (for example: alip ustun = a, alip astyn = and, alip utur = y, etc.).[10.7] The next stage of learning was "abjad" - one of the elements of arithmetic, which was taught in mekteb. The essence of the "abjad" was the digital designation of numbers (mainly for encrypting historical dates). After him, they moved on to reading the book "Haftiyak," a collection of several short suras from the Koran.

With the transition to "Haftiyak," the students were called "kitaphan," that is, reading a book - this meant that by this time the student had mastered the first reading skills of the text. At the end of the reading of the "Haftiyak," the student taught the Suru from the Koran "Alam nashrakh." This transition meant that the student by this time had mastered the original letter and from that moment he was not considered ignorant. This day, usually, was solemnly celebrated in the student's house. Most of the students did this and finished their studies at school. Experts explain this for various reasons: family, financial, etc. difficulties.

Having learned "Haftiyak," the student moved on to reading the Koran - "Kalami Sharif" or "Kalamullah." This transition was considered a big step taken by the student in mastering the letter. In mektebs, in the first place was the task of teaching children reading skills. After the Quran, students moved on to study the book "Char-kitab," a religious-didactic collection of four books in Persian. The "char kitab" was composed several centuries ago in Persian-Tajik in separate parts at different times. In the first part of "Nami Haqq" (fair name, title) compiled by Sharafuddin Buhari, questions of religious rites (ablution, prayers, fasting, etc.) are presented in poetic form, the second part contained excerpts from the book of Kazn Azmuddin "Bidan" (know), where the same questions were stated (in the form of questions and answers) as in the first part, but in more detail.

The third part of the "Char Kitab" (important issues of Muslims), authored by Jamaladdin Kuhi, introduced the basic dogmas of Sharia - Muslim law. The fourth part was called "Panda-nama" (Book of Edification), written in the 13th century, where the rules of courtesy and other issues of morality and etiquette taken from the Koran were also presented in poetic form. "Char Kitab" took place with the teacher's explanations for one and a half to two years, depending on the student's academic performance and abilities. With the study of "Char-kitab" in some mektebs, students began to learn writing.

After the "Char Kitab," a new stage of primary school education began, which was marked by the reading of literary works by poets of the East. If the first stage of mekteb training was marked by reading Koranic books in Arabic, then in the second stage of training, students read the works of poets Sufi Allayar, Alisher Navoi, Fuzuli and Khoja Hafiz. In some mektebs, the works of the poet Bedil were read additionally. All these works were based on Arabic graphics and reading these books ended the full course of the mekteb. This article considers the history of teaching foreign languages in the conditions of Karakalpakstan, chronologically covering the period from the end of the XIX to the end of the XX centuries. Teaching arabic, then opening Russian-native schools and introducing the Russian language into the program, forming a new education system and teaching German, English and French in schools in Karakalpakstan - here is a list of issues that are addressed in this material.[11.72]

As you know, reading can also act as a means of forming and adjacent speech skills and language skills. First, the use of reading allows students to simplify the assimilation of language and speech material, in this case Qur'an suras. Secondly, primitive teaching methods aimed at memorizing a certain text without understanding the essence of the sentence, in the old school, assumed the ability to read written texts. Thirdly, the experience of traditional schools shows that exercises for the formation and development of all language and speech skills and skills are also built based on text.

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Rezyume: *Maqola mintaqamiz sharoitida ta'lim til madaniyati evolyutsiyasiga bag'ishlangan bo'lib, o'quv muassasalari tarixi bilan yaqin bog'liq. 19-asr oxirlarida Qoraqalpog'iston sharoitida har bir qishloq o'z maktablariga ega bo'ldi, agar qishloq va qishloqlarda masjidlar qoshida, ba'zan xususiy uylarda ochilgan bo'lsa, ko'chmanchi qishloqlarda maktablarni yurtlarga joylashtirish va aholi bilan yurish mumkin edi.*

Резюме: *Статья посвящена эволюции языковой культуры обучения в условиях нашего региона имеет большую историю, которая тесно связана с историей учебных заведений. В условиях Каракалпакстана конца XIX века каждое село, селение или селение имело свои мектебы, если в селах и селениях открывались при мечетях, а иногда и в частных домах, то в кочевых селениях мектебы можно было размещать в юртах и бродить с населением.*

Kalit so'zlar: *O'qitish, evolyutsiya, ta'lim, qishloq, boshlang'ich, tarix, boshlang'ich, eslash.*

Ключевые слова: *Преподавание, эволюция, образование, деревня, начальная, история, начальная, запоминание.*

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CRITERIA FOR DETERMINING THE GENRE ORIGINALITY OF NON-FAIRYTALE PROSE

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Summary: *In the article, is scientifically analysed the principles and criteria to determine the genre boundary between the sub-genres of non-fairytale prose such as myth, legend, narrative, fairy tale. In this, special attention is paid to defining the genre Karakalpak folk prose.*

Keywords: *folklore, prose, genre, criteria, principle, myth, fairy tale, legend, narrative.*

Genre characteristics of any folkloric and written literary work must be clearly defined, and the principles and criteria of defining the boundaries of the genre should be clearly defined. Such well-chosen criteria lead to correct decisions regarding myths, fairy tales, narrative, legend in folk prose as genres.

In addition to the number, we singled out the principle and criteria, such as the definition of the genre features of non-fairytale prose, the genre boundaries among genres: the truthfulness of the events described in the work, the descriptive techniques used in the work. the veracity of the statement (in it the functional role of magic), differences in the use of actions of transverse space-time categories, beautiful structural structure, manner of performance (manner).

In the article were used methods such as: comparative-historical, comparative-typological methods, as well as artistic-aesthetic analysis.

Based on these criteria, we believe that the genres of oral folk prose be clearly defined.

1. Genres of oral folk prose differ from each other regarding the history and reality of the events mentioned. The events mentioned in them are of historical significance and tell us about the past life of our people. However, it does not mean that these legends gives generation to generation fact based events. The historical truth in these works is interpreted as “the true beauty of the people”, which has been processed for centuries by special people who love the “truth of the people” and talented performers. The root of historical events is stored in legends about historical events and historical figures.

In legends, imaginary weaves are more beautiful than real events.

Semantic content and meaning are associated with mental fantasy, telling stories that do not correspond to the mind, and the strengthening of the impact of the story and the event in question in this context is guided by the concept of raising the status of the hero to heaven. These characteristics are like myths. However, in the case of myths, the relationship between man and nature is the most important, and objects and objects are revealed in the image of a master who directs all the elements of nature. And the purpose of depicting legends is to create a moral and ethical image of a person based on his behavior and actions. Although the events are depicted in the shell of fiction, traces of real history are visible to a certain extent. For example, the plot of the legend “Nuh paygambar hám topan suwı (Prophet Noah and the Flood)” is based on the core of old historical stories about the flood that swept a certain part of the world in early times.. In fact, in the distant past, a certain part of the world was flooded. It builds the main idea of the epic, interpreting such natural disasters and spontaneity as “God's punishment for sinful creatures.”

There are several reasons for accepting the events described in fairy tales as true, firstly, in fairy tales it is impossible to prove that a person turns into stone, and in fairy tales, a place associated with a stone (rock stone) like a human limb is confirmed by the existence of a place in our real life. life. In other words, the rock itself, similar to the human body, is reflected in our real

life as a witness (guagueri) of the event. Secondly, the story of the legend is that a person turns into stone and remains in this stone form. And one of the reasons is that the most accurate concepts and beliefs that are associated with them are still preserved in the memory, customs and traditions of the people. In fairy tales, stories are built on the principle of the victory of good over evil, and the resurrection of the hero, or his return to his former position, and his return to the struggle are mentioned.

The main characteristic of the legends is that they tell the story of marriage with the help of not very picturesque depiction techniques. Legends differ from stories in their closeness to reality. The thematic coverage of the legends is wide, and the ideological content is very colorful. They tell about historical events, events related to the names of famous and famous people, about the origin of the names of lands, waters, places, about the construction or destruction of cities and palaces, moral virtues such as wisdom, science and civility are praised, while such vices are sharply condemned as cruelty, injustice and robbery.

The courage and heroism of the children of the country, who tirelessly fought for the freedom of the country (Tumaris, Shirak, Amir Temir, Aidos biy, Ernazar biy, Erejeb biy, Amanbay batir), their work for the good of the people, was shown as an example to young people. If stories are told that could not be in legends, then the stories often tell about well-known events that occurred in the life of historical figures, famous figures, statesmen. When we hear about some events, we fully believe that this happened clearly, and we may not believe in some stories, even if they are far from fantastic descriptions. That is why it is difficult to single out a sharp point between legends and stories. Based on many years of experience, as well as the opinions expressed by scientists, we can say that a story whose historical roots have been preserved to a certain extent and which is reliable to a certain extent has signs of testimonies, and a legend is an event that has moved away from its historical roots and has become into a fictional phenomenon. The story may have roots in historical evidence. This is due to the fact that events in legends are often recorded by participants, witnesses, or passed from mouth to mouth and are preserved from generation to generation as a cultural heritage. According to G. A. Levinton, "the legends are connected with religious themes, and in their context all the wonderful stories are told, and the myth tells the typical domestic marital events of the people[5]." According to A.P. Lipatova, "if the legends mention events that could happen, then the stories also mention real events"[6].

2. The genres of myth, legend, narrative, and fairy tales differ in the functional tasks they perform in public life, as well as in the purposes of speech. The social and vital tasks of the legend are very broad. Some of them, the patriotic and heroic ideals of the people, are passed on to the grown-up youth, and some of them awaken the spiritual consciousness of the people and inspire them to fight against oppression, persecution, aggression, injustice, the third type is distinguished by the emission of pedagogical, educational ideas and attitudes.

The purpose of story is to report a time or historical event and convey the information to the listener. Telling about a miraculous event that happened a long time ago in legends, moral and ethical education, religious discipline and exhortations based on informing listeners, the reporting and cognitive task will intensify. The task of the myth is causality, i.e. the creation of the world, heaven and earth, the appearance of man, the origin of birds and the causes of differences in behavior. Creation legends carry more weight and significance than myths. Legends, along with an explanation (message) of the reason for the appearance of something, impose an additional duty on him. For example, in the legend "Tasqrman":

A rich man does not pay his workers who plant crops at his doorstep. Once a man with a gray beard, holding a stick and a pious face, approached a rich man and said: "If you didn't have these farmers, would you have collected so much threshing floor?" Don't forget that you get rich thanks to them! When the old man asked the rich man to pay for the work, but the rich man says

that they are cursed by God and did not pay. Then the old man got angry and said: - Do you know God?! The old man hit the stick on the ground and said: Look at this power, let all your crops turn to stone. The crops standing in a row, at this moment turned to stone [7].

The purpose of this legend is to give moral and religious education, based on the fact that not appreciating a person's life and not giving him what he has earned is a grave sin. The person who performs the task of telling a tale, regardless of the topic and direction of his story, wants the reader to fully believe in the events being told. If the difference in the message is clear information, it confirms, it is not necessary to require evidence and description. One of the main characteristics of the genre legend is the criteria of genre creation. It should be said in legend:

Hakim ata and his son Ubbi-Sultan quarreled and his son disappeared overnight. When he was looking for his son in mourning, a bird's rumor reached him: - you will find your son among the forty missing. It says that if you look for him with iron spikes on his feet and an iron rod in his hand, you will find him among them. Ata Hakim makes spikes and a rod from iron. "I will look for my child until my spikes become a penny and the rod becomes a needle," he vowed.. A few years later, he approached the mountainside and saw that a yurt had been built. Entering the yurt his son together with forty spirits were having a party. Úbbi to his grandfather: - Who are you, he says. - "It's me, my son", - he says, Hákim ata.- "Ata you are still proud, now I'm not with you. Sultan Ubbi had eighty two children, but you will not have eighty two children" – said the son turning into a bird and flying away [7].

The episode of Hakim Ata removed from the reality of his life, made iron spikes, iron rod, walking with Ubbi's forty spirits, and flying away as a bird makes it possible to consider this story as a myth.

The ideological content of the legend is that pride is the quality of life, and humanity and openness are the best qualities that ensure the spiritual beauty of a person.

3. One of the features of non-fiction prose genres is the participation in the work, along with real persons, of otherworldly characters or unearthly spirits (or the transfer of their attributes to real persons. Legends differ from other genres of folk prose by the originality of the system of images, the variety of tasks that they solve in their work. In them, realistic images included heroes of different styles, in other words, fictional mythical images created by the people, historical figures. It is said in the legend about King Sulayman:

Before the demons and fairies were covered the earth. They invaded the earth, rebelled against God, deceived the people and did a lot of evil for two thousand years. After that, God sent Azazel to them. He went to that place and destroyed the realm of the jinn. Finally, the magnificent shield of Azazel was handed over to King Suleiman. They said that Suleiman have defeated demons with this magical shield.

Otherworldly characters (demon, fairy, Azazel) were involved in this legend, but their power was transferred to a real person (Suleiman). Despite the fact that the heroes of the legends are real people, they are not ordinary people, but are depicted as noble kings and saints who ruled the earth.

They act to solve the problem in difficult situations, help those who fight for a just life and defeat the enemy, protect from all kinds of troubles, teach science, religion, serve religious purposes and educate people in the right spirit, fight against sin, cruelty in the human heart. Their actions are interpreted as separate magic, given above. Through the idealization of the described heroes, calls to be an example, convinces them of the truth of their deeds and heroism.

4. Small genres of folk oral prose are distinguished by the use of special magical and magical elements. In the above legends, events develop and the plot is built through the magical and theurgy deeds of the hero, and the work serves to reveal the poetic content of the work. So, in legends, magic and theurgy are one of the main elements that have plot-forming and genre-forming qualities. About this M.C. Malzurova confirmed: « In the legends, the plot was built around such magical, theurgy events, therefore, in such cases, magic and theurgy serve to create a genre"[2]. In stories, magical, theurgy, miraculous phenomena are not the main focus of work, they are used in character details, for example, in describing the character, behavior, appearance of the hero, as well as in explaining the origin of tribes and the origin of settlement terms, enhances the pictorial content of the work, enriches the past truth and increases the power of emotional impact. However, in the stories, elements of magic and theurgy act not as a plot point, but as an auxiliary element.

5. Small genres of folk oral prose are distinguished by differences in the use of spatial categories of space and time. It is somewhat close to the genres of myths and fairy tales. The events described in the stories take place together with the hero, the actions that occur as a result of his actions: he competes with other heroes and goes in search, bows down to many places with his zeal and puts up, makes friends with the city dweller. a certain place, fights with him and wins, goes out and establishes friendly relations with him, and continues on his way in search of a worthy opponent.

Legends often use fairy-tale, mythical-sacred time indicators such as “many times ago”, “before”, “in the old days” “in the old time”[3]. According to prof. K. Imomova, she says: “Time in myths and legends flows in the form of “when the world appeared”, “in the distant past”, “when God first created the earth and sky”, in narratives time flows in a specific time, in fairy tales, anecdotes, stories, praises, in troubled times, in epic space [1]. So, genres of folklore prose change one by one from the point of view of identifying time and space categories. The time of action in the stories is clearly indicated in most cases. Especially in the stories about historical figures, the time and location of the events told in the stories about heroes, snipers, commanders, and military leaders are clearly indicated, or it is estimated by the context.

The storyteller pays special attention to the actions of a specific character in the work, during his reign, or real events are emphasized in such stories, often the name of the moving person and the time of the events are the same. connected with each other, it is described in accordance with historical events.

Legends are distinguished from stories by features of the antiquity of time, its continuity, connection with the present time, definition of a broad (space, place) concept through the context. In the legends, the event, the time at which the events took place, is presented as if it happened in the past, but it seems to continue in the future, in the present. For example, At the end of the legend about “the prophet Noah and the flood water”, he makes an agreement with Noah (as well as with future mankind): “From now on, I will not punish my servants with the flood, whenever a rainbow appears in the clouds, I will remember the agreement I made when I see it.

Today, the rainbow that appears in the sky after rain is a sign of God's agreement with mankind at this time. As we can see, the time of the events of the legend is not clear, it was considered in the past history. And again, we can see that this past event is projected into the future, continuing in our present day, as evidenced by the rainbow that appears after every rain.

Even in the above-analyzed legend about “Prophet Noah and the Flood”, the space of action is not clearly named, but religious historians believe that the places where Prophet Noah lived were ancient Egypt, Mesopotamia, and Palestine.

6. Small genres of folk oral prose differ from each other in artistic and structural structure. The plot of legends and stories does not have a large-scale, structured narrative like fairy tales, and has few episodes, usually one or two episodes. Stable program beginning (zachin) and program conclusions do not meet. Conclusions of legends (koncovki-konstatatsiya) are not

consistent, they do not have a stable quality, they differ from the conclusions that end with good, as in fairy tales. If a fairy tale is a genre with a specific structure in a stable form, then all other genres have a free form. However, in comparison with other genres, the free narrative form of legends and stories does not invalidate the regularity of their compositional structure: these works have an internal structure, and rely on the principles of ideological-artistic structure. In its structural structure, there are programming formulas, conclusions and plans, plot elements that give instructions.

The word formulas found in the legends, such as “so it is said...”, “the elders say...”, “according to the words of the elders...” have a special meaning in each concrete case. As usual, word formulas at the beginning of the story create a clear emotional, psychological, and aesthetic background. Statutory confirmation, these formulas at the very beginning of the story give the opportunity to build trust in the audience and establish a connection with them.

In the legend of “Seven robbers” such conclusions-constitutions are found: Seven young robbers commit a heist, wrongly accuse a blacksmith, and become a star due to the blacksmith's curse. At the end of the legend, constant conclusions are used that “the blacksmiths have a supporter spirit named Hazrat Dawit, and therefore they cannot be angry.”

Another legend begins with the formula: “the elders say...”, “according to the elders...” and tells about a person who brought something from the grave and was cursed, and at the end of the legend it ends with summary-constants “it is not enough to bring something back from the cemetery”.

Legends don't feature many plot lines. Usually, one plot line is observed in it: the beginning of the story, the birth of the fact, its development, completion. The main feature of fairy tales and legends is that the hero's life path, work, and struggles are not described in a wide plan, in which a specific moment in the life of the hero is taken as a plot of the work and is distinguished by its brevity and accuracy. The plot of the stories is retrospective, that is, looking at the events of the past, it evaluates them from the position of the present.

7. Small genres of folk oral prose differ in the method and manner of execution.

Stories and legends, compared to other prose works (fairy tales, epics), are collective genres that are often subject to improvisation of action and performances. For their performance, it is not required special training and skill as in epics-tales. Anyone can do it. Therefore, their form usually depends on concrete circumstances, for example, the creative possibilities of the performer, the wishes and demands of the listeners can change. Sometimes plots are given in very short form. However, the storyteller (narrator) tries to give the listener the most significant part without changing the main content of the work, no matter what form it takes, whether it is short or long. That's why, S.Yu. Neklyudov: “to perform stories and legends, it is not necessary to be a master of performance art. Stories and legends do not have a strictly unchangeable form, as in fairy tales and epics. However, these qualities do not prevent them from revealing their unique literary level”[4] – he said. As long as the storyteller fulfills all his improvisational possibilities, the compositional structure of the program of the fairytale does not change, he performs it while keeping the main motives, the core of the plot, but the performers of the legends freely participate in the material being told. If fairy tales have a changeless form, mandatory programs, norms, legends and stories have the qualities of shifting, compatibility as a result of a lively lifestyle. According to Professor K.Imomov, “The variety of listeners is the reason why it is said in different forms. If the audience is composed of children, it is told in the form of a legend or proverb, and if it is composed of adults, it is told as a story from the past. This event caused the appearance of fairy-tale genre characters in the formal structure of legends[1]. So, the age of the listener is taken into account in the presentation of legends, and this situation caused the legend to become a fairy tale. The level of narrating the artistic and meaningful of the plot of legends also depends on the speaker's (informant's) delivery of information. The attentive performers explained the fairy-tale elements flowing in the process of

performing the legends. As a result, the text of the legend will be artistically rich, beautiful and figurative. Nevertheless, the power and function of legends is didactic, explanatory, informative, this genre is not an aesthetic genre, more precisely, there are no artistic goals in them.

In conclusion, narratives, legends and tales are not fairy tales, but a unique genre form of non-fairytale prose. They are distinguished by the truthfulness of the spoken events, the methods of representation, functional tasks, the features of the use of actions of wide space and time categories, the artistic-structural structure, the method of manifestation. Also, the genres of non- fairytale prose represent a special type of folklore, which to a certain extent differs from some of the features of its origin, formation and development.

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Rezyume: *Maqolada ertak va ertak bo'lmagan nasrning mif, afsona, rivoyat, hikoya kabi kichik janrlari o'rtasidagi janr chegarasini aniqlash tamoyillari va mezonlari ilmiy tahlil qilingan. Bunda qoraqalpoq xalq nasrining janrini belgilashga alohida e'tibor beriladi.*

Резюме: *В статье научно анализируются принципы и критерии определения жанровой границы сказка между поджанрами несказочной прозы, такими как миф, легенда, предание, рассказ. При этом особое внимание уделяется определению жанра каракалпакской народной прозы.*

Kalit so'zlar: *folklor, nasr, janr, mezon, tamoyil, mif, ertak, rivoyat, afsona.*

Ключевые слова: *фольклор, проза, жанр, критерии, принцип, миф, сказка, предание, легенда.*

IMPLEMENTING DIGITAL TECHNOLOGIES IN THE SPHERE OF TEACHING FOREIGN LANGUAGES

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Summary: *This article informs about the importance of implementing modern ways of teaching in the process of education. It introduces about the effective points of using digital technologies and platforms in language teaching process. Moreover, it includes information about useful platforms that can be used as language learning tools.*

Keywords: *digital technology, foreign languages, Kahoot, Quizlet, Educandy, multimedia, combination, games.*

Learning foreign languages is considered as an important part of modern life. This could be because it is the key factor of making communication with other countries and improve people's outlook to the world. For improving the process of learning foreign languages, there has been doing many works in our country. There has been implementing various effective ways of teaching foreign languages and the era of communication technologies require the use of modern technologies in this process. Mainly, it is essential to use digital technologies almost in every sphere, as well as, in teaching and learning process. This could be because today there are plenty of methods that can help teachers to make their lessons more interesting and make their students more engaged to the lesson and give motivation. Of course, for implementing these methods, teachers have to use various digital technologies. 21st century is the century of digital technologies and youths of this century addicted to technologies and gadgets so that teachers have to find ways and methods to teach their theories of their subjects via digital technologies and give tasks that can be completed with the help of digital technologies.

To implement the multimedia to teach new concept: There are plenty of ways of teaching new topic to the students. Modern teachers use various ways to do it. One of them is to use the forms of multimedia. This is one of the most effective ways of transferring the new concept to the students. Today it is the era of computer technologies and it is essential to use it to make the process of teaching and learning better. There are plenty types of multimedia but one of the most effective one to transfer the new data is through Power Point Presentation (PPT).

To use the PPT to transfer the new concept. One of the ways of using transferring the new concept in the classroom is through the use of computers, projectors to show the slides. The importance of this way of teaching is irreplaceable. This could be because it is the productive way of introducing new topic to the audience. It is said that majority number of learners are visual learners that is why explaining the topic with the help of visuals, slides and presentations is beneficial and productive way of transferring. Moreover, there is a big opportunity to show pictures and other graphics while explaining new topic or structure via slides. Students may understand well and can be interested in learning by visual aids.

How to create PPT: In power point presentation, teachers do not include all the information that they have to introduce to the students. Nevertheless, they only locate key information that can be saved in learners mind forever and introduce other details orally. This means that the information in the slide emphasizes the most important and key materials. One of the famous people in this sphere Peciner said that "To use the power point presentation to introduce the main concept is essential". It can be counted to locate many information in slide as a negative point. Jones (2003) presented his advice about this point that not to include more than 5-6 lines in each slide. It can be boring for students to read just only a text or to teach them by only textbooks. So that it can be the real need of mixing visuals to the content. The way of using in combination the two things; text and

graphical information could be more interesting for students (Mayer 2009). It is also important to use the power point presentation in online lessons because if a teacher only dictates or reads the information it cannot be understandable for the learner that is way, the use of visuals can improve the process of teaching and student understanding. Just sending the presentation to the online learner can be beneficial in learning the topic by his/her own. Another effective side of power point presentation is that the background of the information or the words written as information or the pictures on it can be colorful and it may result in improving the process of memorizing the information by students. As (Chang & Xu, 2019) said the colors have positive effects on memorizing better and improve the productivity of the learning process. Mostly, when we teach younger students, we have to include more colors and colorful pictures in our information set because children are keen on pictures and colors. Not only children but also adults learn better by visual materials because most people are visual learners and the information that learnt by visual aids can be kept for longer time compared to the other forms of transferring the information. The combination of colors in the presentations as essential as the information on it. This is due to the fact that colors effect the process of learning and acquiring information. Colors are one of the effective ways of attracting people attention and attracting attention of viewers is the most important thing in teaching and learning process (Chang & Xu, 2019; Dzulkifli & Mustafar, 2013). When the information given in the colorful way it means that students remember the information for a long period.

Games in education: There is a strong connection between transferring the information to the auditory of students and motivate students to practice it during the lesson and at home. Games are the best way of practicing it. It is said that according to researchers during forty years, it is known that games are excellent way of learning and it can be more effective rather than other forms of learning (Boller, 2012). It is essential to choose the game or the right platform to the lesson in order to make the process successful as it needs meaningful context and challenges, cognitive activities and feedback from the students (Kapp (2012)). Educational platforms also let to create a competition among students and encourage them to be more active during the lesson. As Burguillo (2010) stated that students active participation increased to the lesson when there is a competition in the process. So that it is important to make the class competition-based and motivate students to participate in it actively.

Digital games: There are several reasons of including digital games in English classes. As Mawer and Stanley (2011) said when digital games are included in the process of teaching it can help to improve the concentration of students and their behavior of efforts to certain goal again and again till reach the aim. This is the behavior of 21st centuries youths that when they play a game they want to continue till reach the certain aim so that it is important to transfer this character to the learning process by including such kind of educational games to the lesson process. Moreover, another scientist Frasca (2018) said about the importance of the games because they improve learners deal and do not stop when make a mistake but analyze them and learn from mistakes and try again. This process also can help to improve the collaboration process as Lion and Perosi said (2018), by playing these games the learners work together and discuss the problems and share ideas and give advice to each other to find a solution to the problem. As seen here it can help to improve life skills of students as problem solving and collaboration. Furthermore, as Prensky stated they can improve more skills as planning strategies or making quick decisions because these factors are included in the game. The aspects mentioned above make obvious that games can be counted as great source of teaching life skills and knowledge. The important thing is to combinate the games and teaching process. For this reason, we include the term “gamification” in this context. The meaning of this term is to make a kind of process as a game in order to make it enjoyable and motivational (Dogson, 2014). Gamification in English classes can make the process challenging and motivational. There are examples of educational apps. One of them is Kahoot, it transforms quizzes

into competitive games and learners participate in these games and awarded with points for their right answers and fast responses. Another one is Quizlet, it as a kind of matching game, Educandy- it helps to list the vocabulary items into interactive game,

To use games through digital technologies to check students' understanding of new concept: In modern world, every sphere is developing rapidly and there is availability of digital technologies in these spheres. Of course, the sphere of teaching foreign languages is also one of them. Nowadays, youths are really keen on using modern technologies as smartphones and laptops, also they are interested in various platforms and sites. That is why it is vital to use the modern technologies and platforms in education system. This could be because the way of traditional teaching has already been useless and youths are not interested in them. For this reason, teachers have to search new ways of teaching and modern platforms that can help them to make the lesson. There are plenty of platforms that can be used in teaching foreign languages or testing it. One of them is **Kahoot**. This platform can help teachers to test their students after the lesson and it can be used in any languages which make the process easier. In Kahoot – it is possible to create tests to check learners' knowledge and the tests can be not only in the form of text but also it is possible to use various pictures, moreover, uploading audio and videos is also possible. After conducting tests, the results are saved in the platform and the teacher can analyze the strong and weak points of students and work on them and improve learners' knowledge. It is also possible to use this platform as checking students' self-study tasks. For example, after giving a topic for self-study and time then teacher uses this platform to check their individual work and how they worked on the given topic. Moreover, it is possible to let students to do the tasks in distance just the teacher gives the code of the test and students enter the platform and check their knowledge.

Quizlet – this software program created by 15-year old Andrew Sutherland in 2005. It has become absolutely beneficial tool for language learners. This is a type of digital learning tool and it can ask dynamic questions and can figure out the material that is being challenging to the student and just focus on that material. It helps to improve the weak points of learners. It automatically stops when you acquire the current knowledge.

Educandy – this is another tool that can create interactive games and just students have to download the Educandy app and do the activity which is created by the teacher. The teacher only gives a code of the game and learners can play it on their own mobile phones.

As a final note it is obvious that teachers' role is vital in the process of organizing the lesson and self-study of students so that modern teachers have to implement various multimedia and digital technologies; useful platforms to encourage students to learn better. We live in the era of digital technologies. That is why the teaching process should include these technologies if we try to develop this sphere. If teachers still use traditional methods and do not let students to use modern technologies during the lesson it can result in demotivation of students to the lesson and the process of learning can see as a boring process for learners. Because people live in the atmosphere of digital technologies and when they are at university and if education process tries to ban the use of these technologies, billions of students may choose not to sit in such boring classes. For these reasons we have to combine the process of teaching with the modern digital technologies.

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Rezyume: Ushbu maqolada ta'lim jarayoniga o'qitishning zamonaviy usullarini joriy etishning ahamiyati haqida ma'lumot berilgan. U til o'rgatish jarayonida raqamli texnologiyalar va platformalardan foydalanishning samarali jihatlari bilan tanishtiradi. Bundan tashqari, u til o'rganish vositalari sifatida ishlatilishi mumkin bo'lgan foydali platformalar haqida ma'lumotni o'z ichiga oladi.

Резюме: В данной статье сообщается о важности внедрения современных способов обучения в процесс образования. В нем рассказывается об эффективных моментах использования цифровых технологий и платформ в процессе обучения языку. Кроме этого, он включает информацию о полезных платформах, которые можно использовать в качестве инструментов изучения языка.

Kalit so'zlar: raqamli texnologiya, Kahoot, Quizlet, Educandy, multimedia, kombinatsiya, o'yinlar.

Ключевые слова: цифровые технологии, Kahoot, Quizlet, Educandy, мультимедиа, комбинации, игры.

METHODOLOGY FOR THE DEVELOPMENT OF FIELD VISION OF YOUNG FOOTBALL PLAYERS

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Summary: *Field vision is a crucial skill for young football players to develop. It involves the ability to assess the field, anticipate movements, and make quick decisions. This article presents a comprehensive methodology for enhancing field vision among young football players.*

Key words: *skills, gamers, visualization, scale, approaches, navigation*

Enter. Competing at an excessive stage in crew sports, such as affiliation football, requires nicely developed perceptual skills. Players' choices on the pitch are mediated by using their capability to engage with the surrounding surroundings to unfold goal-directed behaviours. For that, gamers pass their body, head and eyes to discover the surrounding surroundings to suitable information their actions.

Under this perspective, possibilities for motion (i.e., affordances) will emerge as gamers pass inside the aggressive environment. This standpoint highlights how essential it is for gamers to visually discover the surroundings in the search for the high-quality sport options. Previous lookup has proven that the gamers who visually discover greater the surroundings prior to receiving the ball are extra in all likelihood to function frontal passes and with a greater share of success.

Considering the key function of the surroundings in guiding players' actions, one most important goal for coaches is to layout education duties that help them to discover the surrounding and become aware of the applicable recreation information.

Improving the players' capacity to scan the surroundings requires coaching duties that may also replicate the dynamic and unpredictable nature of aggressive performance, such as the small-sided video games (SSG), whereas they enable gamers to couple their moves to the environmental information. Besides, SSG permits manipulating the guidelines (i.e., venture constraints) to improve gamers precise behaviours[1,3].

This view is grounded on the constraint-led strategy (CLA) that emphasize the essential function of manipulating project constraints to make bigger the players' attunement to environmental information. Underpinned in this approach, there has been a developing activity in grasp how gamers alter their motion behaviour due to one of a kind constraints manipulation in formative years players. For instance, a find out about explored how gamers bodily overall performance and technical moves had been affected as a end result of growing the pitch dimension throughout a 4vs4 ball possession SSG in exclusive age agencies (under-11, U11; under-15, U15; and under-23, U23).

In general, authors discovered greater bodily needs in large enjoying areas. Furthermore, the U11 carried out extra passes with each the dominant and non-dominant foot in large taking part in areas, whilst the U23 elevated their passing moves in smaller enjoying spaces[2,4].

These consequences might also endorse that one of a kind possibilities for motion emerge as the end result of gamers perceptual and motor skills. This proof has been persistently recognized in distinctive sports, such as volleyball, the place girl players from a higher stage (i.e., regional) confirmed higher ratings in the technical and physical, as nicely in the cognitive characteristic (measured with the Flanker task) in contrast to lower-level athletes (i.e., provincial).

In addition, a latest find out about exploring the outcomes of enjoying with one of a kind sorts of balls (handball and rugby) in contrast to a football ball at some point of a Gk+4vs4+Gk determined greater bodily needs and greater photographs carried out with the handball ball, whilst shorter and extra steady distances between teammates when taking part in with the rugby ball. In

this regard, the one of a kind bodily facets of the corresponding balls appear to fluctuate the players' possibilities for action[1,4].

The aforementioned research highlighted how adjustments in the environmental statistics as a end result of constraints manipulation afforded the gamers toward awesome motion patterns.

Overall, it can be depicted that the soccer overall performance is notably based on the visible perceptual machine to grant statistics for perceiving and acting. The visible machine offers a complicated range of records and perception its function might also add dependable facts to aid players' recreation behaviour. Under this scope, preceding lookup exploring the position of visible occlusion (OCL), thinking about a greater analytical approach, observed awesome motion patterns as end result of casting off integral records at some point of the action.

For example, one learn about supposed to discover how early life soccer gamers dribbling time overall performance was once affected by means of visible conditioning promoted with the aid of the Nike Vapor Strobe stroboscopic glasses (Nike Inc., Beaverton, Oregon, USA). In general, the consequences printed an amplify in the time wished to whole the project when performing beneath visible conditioning.

These findings recommend that when players' visual remarks is quickly occluded, they ought to gradual down the motion due to casting off integral information. Further, this learn about furnished key data related to how soccer gamers alter their conduct as end result of transient OCL, however, distinctive outcomes may also emerge when thinking about extra dynamic and variable exercise scenarios, such as the SSG situation.

While thinking about a greater practical coaching situation (i.e., passing assignment below specific degrees of difficulty), Dunton et al.explored how players' response accuracy and time in a passing project was once affected via a coaching intervention the place one team of gamers skilled with googles and different carried out the equal intervention barring it[3].

The authors observed upgrades for the gamers the usage of googles in all phases of the intervention. In this vein, it may additionally be feasible that designing coaching interventions embodied in OCL would decorate players' capacity to be fine-tuned with the environmental information.

However, earlier than this step, similarly lookup is required to recognize how OCL can also acutely have an impact on players' overall performance in game-based scenarios. This appears in particular essential if it is regarded the decrease ranges of perceived motor competence by means of non-experienced players. In fact, the use of perceptual-motor things to do may additionally make contributions to enhance the perceived motor competence, and consequently, contributing closer to a higher fantastic of lifestyles.

Research methodology. We have proven that the ability to see the field is very important for young players. The presented technique provides an integrated approach to improving the field of vision.

Research results.

Enhanced Vision Skills for Football:

It takes way extra than power and velocity to play at the top. The abilities required through an elite soccer player - the abilities that make the difference between suitable and great - all rely on vision competencies which can be perfected. These abilities include:

Hand-eye coordination

Peripheral vision

Reaction time

Visual memory

Depth-perception

All these core imaginative and prescient competencies that make or destroy an athlete can be improved, so you can dramatically up your game.

Before the play, the Quarterback goes up to the line and desires to take in the entire field, motion of gamers from each facets as nicely as path and speed. He wants to react to the protection primarily based on that visible reminiscence and what he preferences up on visible cues—to predict what opposing players, as properly as teammates, are about to do earlier than the play.

During the play, he has about 3 seconds to drawback, determine 3-5 achievable receivers in time and space, and predict who has the high-quality hazard of being open and making the catch. He then desires to entire the pass by all whilst keep away from getting tackled himself.

Acute peripheral imaginative and prescient and outstanding response time are pivotal to quarterback's success.

The running-back is standing at the back of the quarterback and depends on visible reminiscence as to who is where, and the place the gap is. Does he need to reduce to the proper or left? When the ball snaps and he receives the ball, he has to see the gamers past the first yard and make snap choices in motion. Right, left or ahead?

This requires gorgeous peripheral imaginative and prescient and focus of all players, the place they are, and their course and speed. Most importantly, he has to precisely interpret all that visible facts and swiftly make a decision.

Summary. Field vision is a critical skill for young football players to develop. The presented methodology provides a comprehensive approach to foster field vision enhancement. By utilizing spatial awareness exercises, increasing perceptual processing speed, developing tactical awareness, promoting visual scanning, and encouraging decision-making skills, coaches can empower young players to excel on the field. With dedication and practice, these techniques will contribute to the holistic development of young football players, setting them on a path towards success.

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Rezyume: *Maydonda ko'rish - bu yosh futbolchilar rivojlantirishi kerak bo'lgan eng muhim mahorat. Bu maydonni baholash, harakatlarni oldindan bilish va tezda qaror qabul qilish qobiliyatini o'z ichiga oladi. Ushbu maqola yosh futbolchilarda maydonda ko'rishni yaxshilashning keng qamrovli metodologiyasini taqdim etadi.*

Резюме: *Зрение на поле - важнейший навык, который необходимо развивать юным футболистам. Оно включает в себя способность оценивать поле, предвидеть движения и быстро принимать решения. В этой статье представлена комплексная методология улучшения зрения на поле у юных футболистов.*

Kalit so'zlar: *ko'nikmalar, geymerlar, vizualizatsiya, o'lchov, yondashuvlar, navigatsiya*

Ключевые слова: *навыки, геймеры, визуализация, масштаб, подходы, навигация*

MOTOR SKILLS OF SCHOOLCHILDREN AS A SUBJECT OF STUDY IN PHYSICAL EDUCATION

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Summary: This article examines the motor skills of schoolchildren as an object of studying the subject of physical education and analyzing the process of gradual transition of motor skills into a skill.

Keywords: physical education, motor skill, motor skill, actions, movements, dynamic stereotype, physical qualities

Introduction. In the theory of physical education, motor skill is defined as the degree of mastery of an action technique, which is characterized by an increased concentration of attention on component operations and unstable methods of solving a motor task. The basis of motor skills is creative search, comparison, evaluation of methods of performing movements, combining them into a holistic motor action. Motor skill gradually turns into skill.

Motor skill is the degree of proficiency in the technique of action, in which movement control is carried out automatically and actions are highly reliable. The formation of a motor skill is the process of formation of a *dynamic stereotype*⁷ through the interaction of the first and second signaling systems with the predominant value of the second signaling system. The characteristic features of a motor skill are; the automated nature of both some operations and the entire action; high speed of action; stability of action results; reliability and durability - the skill does not disappear even with long breaks.

Relevance. Along with the formation of motor skills, the development of physical qualities is one of the aspects of physical education. Physical qualities are associated with the morph functional, psychophysical and biological characteristics of the child's body. Nurturing physical qualities in unity with teaching children motor skills has an impact on their improvement, the improvement of the whole body; children quickly learn new things and show creative independence. The development of basic physical qualities (speed, agility, endurance, strength, flexibility) occurs in close connection with the formation of motor skills. It determines the relevance of the topic under study.

The object of the study is the motor skills of schoolchildren.

The subject of study is the characteristics and patterns of development of motor skills.

The purpose of the study is to give a pedagogical description of the motor skill and identify the patterns of its development.

Research objectives:

- . characterize a motor skill;
- . determine the main patterns of motor skill development based on an analysis of literary sources;
- . conduct an experimental study of the degree of development of motor skills in schoolchildren;
- . analyze the research results.

The theoretical significance of the study lies in the fact that, based on the analysis of scientific and methodological literature, data characterizing and defining the characteristics of motor skills have been summarized and systematized.

⁷ A dynamic stereotype is a complex conditioned reflex reaction developed through repeated repetitions (presentation of positive and negative stimuli)

The practical significance of the study lies in the attempt made to identify the features of the development of motor skills in schoolchildren.

Research methods: theoretical analysis and synthesis of literary sources, survey of physical education teachers, pedagogical testing, expert assessment method.

A variety of motor actions are formed during a person's life under the influence of many factors, and the process of their formation can take on a different character. Optimization of this process is achieved in conditions of rationally structured training. The internal logic of the process of education and improvement of motor action in such conditions is usually schematically represented as a consistent transition from knowledge and ideas about an action to the ability to perform it, and then from ability to skill.

Skill and skill differ from each other mainly in the degree of their mastery, i.e. ways of control by human consciousness.

The ability to perform a new motor action arises on the basis of the following prerequisites: a minimum of basic knowledge about the technique of action; presence of motor experience; sufficient level of physical fitness; with creative thinking in the process of building a new system of movements.

The theoretical significance of the study lies in the fact that, based on the analysis of scientific and methodological literature, data characterizing and defining the characteristics of motor skills have been summarized and systematized.

The practical significance of the study lies in the attempt made to identify the features of the development of motor skills in schoolchildren.

Motor skills are characterized by constant improvement of the method of performing an action with a meaningful approach in the process of controlling movements. This is the essence of motor skill.

The role of motor skills in physical education can be different. In some cases, skills are brought to skills if it is necessary to achieve perfect mastery of the technique of motor action. In other cases, motor skills are developed without subsequently translating them into skills. In this case, they are kind of auxiliary. So, for example, in a number of cases, the material of the school curriculum in physical education must be mastered precisely at the level of skill. Motor skills have great educational value, since the main thing in them is active creative thinking aimed at analyzing and synthesizing movements.

As a result of the formation of a motor action, the initial motor skill arises. The concept of "motor skill," like the concept of "motor skill," refers primarily to the technical side of the ability to perform motor actions and at the same time reflects a certain degree of their formation and mastery. Motor skill is one of the typical forms of realization of human motor capabilities, which is expressed in the ability to carry out motor action on the basis of non-automated (or not brought to a significant degree of automation) purposeful operations.[2] The hallmarks of initial motor skills include:

- constant concentration of attention in the process of action on its constituent private operations, minimal or relatively low degree of participation of motor automatisms in movement control;
- relative non-standardization of the parameters and result of the action when it is reproduced, excessive (not specified by the action program) variability of movement technique (up to its violation), especially under the influence of confusing factors;
- dismemberment or poorly expressed unity of operations, resulting in excessive prolongation of action over time.

This characteristic of motor skill emphasizes, among other things, its differences from motor skill. But these differences are relative. Motor skill and motor skill are like successive steps (stages) on the path to the formation of motor action. [1]

Further improvement of a motor action with repeated repetition leads to its automated execution, i.e. skill turns into skill. This is achieved by constant refinement and correction of movement. The result is unity, stability of movement, and most importantly, the automated nature of movement control.

A motor skill is a form of realization of motor capabilities that arises on the basis of automation of a motor skill.[3]

These, in contrast to signs of motor skills, include:

- increased degree of participation of motor automatisms in the implementation of private operations that make up the action and connections between them; the focus of consciousness during the action is not so much on its details, but on the realization of the general goal;
- pronounced stereo typicality of particular operations and action parameters (if there are no objective conditions requiring their variation), increased stability of movement technique in relation to confusing factors;
- pronounced unity of operations and reduction in execution time.

The organic relationship between motor skills and abilities lies, first of all, in the fact that skill serves as the main prerequisite for the formation of a skill in the process of learning a motor action. A skill in this regard is nothing more than a skill brought to a certain level of automation. [4]

Conclusion. Thus, motor skills and abilities, in a sense, mutually transform into each other. Therefore, it would be wrong to completely distinguish between them. At the same time, we must keep in mind their characteristics, their irreducibility to each other and their unequal significance, both in everyday life and in physical education. From the fact that at a certain stage of the formation and improvement of motor action, skill is naturally replaced by skill, it does not follow that the result of training in physical education should always be only a skill. Real, rather complex forms of motor activity cannot, in principle, be turned entirely into a skill; they are presented in the aggregate, both as skills and as abilities.

The effectiveness of the learning process and the duration of the transition from skill to skill level depend on:

- 1) motor talent (innate abilities) and motor experience of the student (the richer the motor experience, the faster new movements are formed);
- 2) the age of the student (children master movements faster than adults);
- 3) coordination complexity of motor action (the more complex the movement technique, the longer the learning process);
- 4) professional skills of the teacher;
- 5) the level of motivation, consciousness, activity of the student, etc.

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Rezyume: Ushbu maqolada, o'quvchilarning harakat ko'nnikmasi jismoniy tarbiya fanining o'rganish ob'ekti sifatida keltirilgan bo'lib, harakat kobilyatining kunikmaga oylanish jarayoni analiz qilingan.

Резюме: В данной статье рассматриваются двигательные навыки школьников как объект изучения предмета физического воспитания, анализируется процесс постепенного перехода двигательных умений в навык.

Kalit soʻzlar: jismoniy tarbiya, harakat qobiliyati, harakat kunikmasi, faoliyat, harakat, dinamik stereotip, jismoniy fazilatlar.

Ключевые слова: физического воспитания, двигательное умение, двигательный навык, действия, движения, динамический стереотип, физические качества.

THE LINGUISTIC FEATURES OF COMPUTER VOCABULARY IN ENGLISH AND KARAKALPAK LANGUAGES

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Summary: *The linguistic features of computer vocabulary in English and Karakalpak languages exhibit notable distinctions influenced by cultural and linguistic factors. The standardization and formalization of computer vocabulary in both languages vary, influenced by their standing in the global technological landscape. English often sets trends, while Karakalpak navigates a balance between integration and preserving its linguistic identity. Therefore, this article highlights the nuanced interplay between linguistic evolution and technological progress, illustrating how these languages uniquely navigate the landscape of computer vocabulary.*

Key words: *linguistic features, computer vocabulary, English language, Karakalpak language, loanwords, technical jargon, adaptation, localization, global technology, linguistic identity, cultural influences.*

Introduction. The linguistic features of computer vocabulary in English and Karakalpak languages offer a captivating lens through which to explore the intersection of language, technology, and cultural adaptation. As the digital era reshapes communication, understanding how these two languages evolve to accommodate and express technological concepts becomes common.

English, as the global lingua franca of technology, serves as a focal point for the integration of computer terms. Its extensive lexicon comprises loanwords, acronyms, and standardized terminology that reflect the rapid advancements in the tech landscape. The adaptability of English in absorbing and disseminating these terms has implications not only for native speakers but also for international communication in the digital realm [4].

In contrast, Karakalpak, a Turkic language spoken in Central Asia, presents a unique perspective on the assimilation of computer vocabulary. With a linguistic structure distinct from English, Karakalpak navigates the incorporation of technological terms through phonetic and morphological adaptations. This process not only reflects the language's adaptability but also underscores the importance of preserving its linguistic identity in the face of global influences.

This exploration aims to delve into the nuances of computer vocabulary in both languages, considering lexical, semantic, morphological, and syntactic aspects. By examining the linguistic features, we seek to unravel how each language grapples with the challenges posed by the ever-evolving world of technology. Additionally, the study will shed light on the sociolinguistic dynamics and historical evolution shaping the adoption and usage of computer-related terms in English and Karakalpak.

Through this analysis, we endeavor to contribute to the broader understanding of how languages respond to the demands of the digital age, and the intricate interplay between global technological trends and linguistic identity. The linguistic features uncovered in this exploration will offer insights into the dynamic relationship between language and technology, enriching our comprehension of the evolving lexicon in the multifaceted landscape of computer vocabulary.

Methods of the research. The research on the linguistic features of computer vocabulary in English and Karakalpak languages employs a comparative approach. This involves lexical analysis, semantic analysis, morphological analysis, syntactic analysis. This multi-faceted methodology aims to provide a comprehensive understanding of the linguistic features of computer vocabulary in English and Karakalpak languages, taking into account lexical, semantic, morphological and syntactic aspects.

Analysis and result. The research reveals intriguing findings regarding the linguistic features of computer vocabulary in English and Karakalpak languages:

The examples of computer vocabulary in English include:

Loanwords: Terms like "software," "hardware," and "email" are borrowed directly from English into the computer vocabulary.

Acronyms: Common usage of acronyms such as "CPU" (Central Processing Unit) and "RAM" (Random Access Memory) for efficiency in communication.

Phrasal Verbs: Usage of phrasal verbs like "log in," "log out," and "back up" for actions related to computer use.

Abbreviations: Common abbreviations like "URL" (Uniform Resource Locator) and "HTML" (Hypertext Markup Language) are prevalent.

Semantic Broadening: The term "mouse" has undergone semantic broadening, extending from its original meaning to include a computer peripheral [2].

While Karakalpak language include the following examples:

Adapted Terms: "kompyuter" and "kompakt disk", "blog" are adaptations of "computer" and "compact disc", "blog" to fit Karakalpak phonetics.

Neologisms: Creation of new terms like "internet" (internet), "vebsayt" (website) to express concepts that didn't exist traditionally in the language.

Incorporation of Suffixes: Adding native suffixes, such as " -shı" to form words like "programmashı" (programmer).

Phrase Construction: Using phrases like "elektron pochta" (electronic mail) for "email" to convey the meaning in a more descriptive manner [1].

These examples illustrate the diverse linguistic features in computer vocabulary between English and Karakalpak, showcasing how each language adapts and incorporates terms in its own distinct way.

Discussion. The analysis of the research on the linguistic features of computer vocabulary in English and Karakalpak languages reveals several noteworthy insights:

1. **Cross-Cultural Borrowing:** English demonstrates a tendency towards extensive borrowing, incorporating foreign terms directly into its computer vocabulary. In contrast, Karakalpak exhibits a more adaptive approach, often creating neologisms or modifying existing terms to align with its linguistic structure.

2. **Phonetic and Morphological Adaptations:** Karakalpak exhibits a flexibility in adapting computer terms phonetically and morphologically, introducing suffixes and modifying structures to integrate foreign concepts seamlessly. English, on the other hand, tends to retain the original phonetic and morphological forms.

3. **Semantic Nuances:** Both languages show semantic variations in computer vocabulary, reflecting cultural and contextual influences. The meanings of certain terms may carry nuanced connotations unique to each language, demonstrating the impact of cultural context on language use [5].

4. **Syntactic Diversity:** Differences in sentence structures involving computer terms highlight distinct syntactic preferences in English and Karakalpak. This reflects how each language incorporates these terms into its grammatical framework.

5. **Sociolinguistic Dynamics:** The research underscores the role of sociolinguistic factors in shaping computer vocabulary. Education levels, technological access, and sociocultural influences play pivotal roles in linguistic choices, impacting the adoption and adaptation of terms in both languages.

6. **Historical Evolution:** Examining the historical evolution of computer terminology reveals how languages evolve in response to technological advancements. English, being a dominant global

language in technology, often sets trends that influence the evolution of computer vocabulary in other languages [3].

Overall, the analysis highlights the dynamic interplay between linguistic adaptation, cultural influences, and the global technological landscape, contributing to the distinctive features of computer vocabulary in English and Karakalpak languages.

Conclusion. In conclusion, the examination of the linguistic features of computer vocabulary in English and Karakalpak languages highlights a fascinating interplay between global technological trends, cultural adaptation, and linguistic identity. English, as a dominant force in the global technology landscape, exhibits a penchant for loanwords, acronyms, and standardized terminology. Its adaptability and openness to linguistic influences contribute to a lexicon that shapes the discourse of the digital era worldwide. On the other hand, the Karakalpak language demonstrates a more adaptive approach, incorporating computer vocabulary through phonetic and morphological adjustments, and occasionally creating neologisms. This reflects a conscious effort to integrate technological concepts while maintaining linguistic authenticity and identity.

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Rezyume: *Ingliz va qoraqalpoq tillaridagi kompyuter lug'atining lingvistik xususiyatlari madaniy va lingvistik omillar ta'sirida sezilarli farqlarni ko'rsatadi. Ikkala tildagi kompyuter lug'atini standartlashtirish va rasmiylashtirish ularning global texnologik landshaftdagi mavqeiga ta'sir qiladi. Ingliz tili ko'pincha tendentsiyalarni belgilaydi, qoraqalpoq tili esa integratsiya va o'zining lingvistik o'ziga xosligini saqlab qolish o'rtasidagi muvozanatni boshqaradi. Shu sababli, ushbu maqola lingvistik evolyutsiya va texnologik taraqqiyot o'rtasidagi nozik o'zaro ta'sirni ta'kidlab, ushbu tillar kompyuter lug'ati landshaftida qanday noyob tarzda harakat qilishini ko'rsatadi.*

Резюме: *Лингвистические особенности компьютерной лексики английского и каракалпакского языков демонстрируют заметные различия под влиянием культурных и языковых факторов. Стандартизация и формализация компьютерной лексики в обоих языках различаются в зависимости от их положения в глобальном технологическом ландшафте. Английский часто задает тенденции, а каракалпакский язык пытается найти баланс между интеграцией и сохранением своей языковой идентичности. Таким образом, в этой статье освещаются нюансы взаимодействия между лингвистической эволюцией и технологическим прогрессом, иллюстрируя, как эти языки уникальным образом ориентируются в ландшафте компьютерной лексики.*

Kalit so'zlar: *lingvistik xususiyatlar, kompyuter lug'ati, ingliz tili, qoraqalpoq tili, o'zlashma so'zlar, texnik jargon, moslashuv, mahalliyashtirish, global texnologiya, til o'ziga xosligi, madaniy ta'sirlar.*

Ключевые слова: *лингвистические особенности, компьютерная лексика, английский язык, каракалпакский язык, заимствования, технический жаргон, адаптация, локализация, глобальные технологии, языковая идентичность, культурные влияния.*

**ANALYSIS OF NEW CHANGES IN THE LEXICAL LAYER OF UZBEK AND
KARAKALPAK LANGUAGES**

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Summary: *The article is about the vocabulary of the Uzbek and Karakalpak languages and its rich sources and methods. It is intended to reveal and explain the meanings of words that have been adopted into the Uzbek and Karakalpak languages, as well as new lexemes that appear based on the internal capabilities of these languages.*

Key words: *Dictionary, lexicography, social relations, new words, modern lexicon, language and culture, science and technology.*

The historical changes that began in the social life of the 19th and 20th centuries were the period of the acceleration of the process of assimilation of words and their withdrawal from use. In the 20th century, the establishment of schools, mass literacy, and the publication of newspapers and magazines accelerated this process. An important feature of this period is that not only Russian words, but also many English, Chinese, French, and Spanish words entered our language through the Russian language, while a large number of Persian-Arabic words in our lexicon became inactive words or went out of use.[1,12] At the same time, the 20th century was the century of growth for Uzbek and Karakalpak linguistics. The creation of native language textbooks, conducting research on the theory of linguistics, the publication of scientific journals, the creation of scientific articles, candidacy and doctoral theses, the publication of philological and encyclopedic dictionaries is a huge scientific heritage created by Uzbek and Karakalpak linguists. Over the last hundred years, the development of society has accelerated significantly. Accordingly, people's minds and worldviews have changed from simplicity to complexity. Also, the words used by people on a daily basis have also developed in speech, they have started to acquire multiple meanings.

Accordingly, the need for modern dictionaries also increased. The work done in our linguistics of the last century was directly related to Russian linguistics. If only the field of lexicography of linguistics is observed, almost the majority of existing dictionaries were created based on the model of Russian language dictionaries. Created dictionaries make a great contribution to the development of science. However, re-development of some of these dictionaries based on the uniqueness of our language and national folk culture remains a necessary issue even now.

We must admit that by the 80s of the last century, the work on Uzbek lexicography slowed down, scientific innovations, theoretical works in the field of lexicography were not put into practice, new types of modern dictionaries were not created, dictionaries existing in the language were not perfected and processed, world lexicography working based on achievements, putting the collected experiences into practice was not carried out.[2,124] As a result, the vocabulary of the Uzbek and Karakalpak languages fell behind not only the Russian dictionary, but also the world dictionary. To be more specific, the growth in lexicography slowed down, and later drastic changes in this area were hardly noticed. The process of language acquisition is mainly related to the expansion of international relations, the formation of market relations, the large-scale trade of goods, the need to express new concepts within the framework of ideological or social relations, the transition of society from a certain system to a new form. As a result of the rapid development of science and technology and the exchange of ideas between people speaking different languages on the basis of the Internet system, the internationalization of words and terms related to globalized modern technologies has increased since the last quarter of the 20th century. Also, this situation is related to changes in the political, spiritual, cultural and economic spheres of society. During this period, the introduction of new usages, first of all, units related to the political sphere, such as press

conference, briefing, speaker, increased, and in some of them, their use became more active. Also, new words related to science and technology, such as WiFi, trend, manager, IT, blockchain, freelancer, hub, economic marketing, marketer, bitcoin, car loan, microloan, open budget, cultural showman, gala concert, fashion week (The words "fashion week" are among them).

There is a direct and close connection between science and vocabulary. In fact, any science derives from the achievements of the language and speech of that people. The existing non-linguistic factors of the acquisition of new lexemes into the literary language are related to the importance and relevance of the used concept or event in social life. The main reason for using modern lexicon in artistic speech is to create and convey a situation suitable for the purpose of an artistic image. From this point of view, artistic wordsmiths use a new lexicon in their works. It depends on the artist's skill in using words. It should be noted that the modern lexicon performs many tasks in solving the problem of imagery in artistic speech. Comparative study of new lexemes is a complex task. Because it reflects not only the lexemes themselves, but also a number of information related to this field. Today, the use of "OK" from Slavic languages, which is increasingly used on the Internet and in informal conversations, in Uzbek [10:216] is "okay", "that's enough", "there are alternatives such as "good". In today's rapidly developing Uzbek and Karakalpak languages, along with the words in English and Russian, various regional terms in German, French, Korean, Chinese and other languages are added. One of them is the word "challenge" [10:51]. This adaptation is used by TV and radio, newspapers and magazines, and even in some official state organizations.

The Uzbek translation of this word means "initiative", "call". One of such appropriations is "competence" [10:60], in Russian this word in the form of "competence" originally means "skill", "ability", "ability" and is a new word related to the socio-political sphere. is considered The words "investor" and "investment" are new acquisitions in the field of economy. These units are translated into our language as "investor", "investment". Another word belonging to such a group is the word "creative" [10:69]. The word "creative" in English and "kreativnyy" in Russian means "creative" in both languages. There are many such words in our language. For example, "sauna" in English means "heated and covered winter house". Also, among the acquisitions related to the legal field, which are widely used in our oral speech, are the original Russian "dogovor" [14:258], "raport", "characteristic" [14:639], "act", "protocol", "norma". In our language, there are translations such as "contract-contract", "report-statement", "characteristic-description", "act-deed", "protocol-declaration", "norm-norm". It should be noted that finding and using alternatives to new lexemes does not fully reveal the meaning. Lexical alternative often does not create a correct idea of lexical unity, because mutually alternative terms in two languages express different concepts or concepts that are close to each other, but differ in the scope of meaning. [3,52] Therefore, the comparative analysis of new lexemes and it is necessary not only to describe the ways of translating them from one language to another, but to carry out a comprehensive study of modern lexemes related to all areas of this language. . For this, first of all, it is necessary to determine the status of new words in the lexical system of the language and the signs that distinguish them from non-new lexemes. So, the new (modern) lexicon has a significant impact on the vocabulary of our language. However, the use of such lexemes in the Uzbek and Karakalpak languages has shortcomings. In particular, the inappropriate use of new lexemes in TV programs and advertisements, and the fact that the name of the newly opened object is not suitable or written incorrectly is evidence of the lack of research on this topic. Such terms have a significant impact on the culture of the language when they become a universal lexicon after being assimilated into the language. Language is studied as a phenomenon of culture, a carrier of culture.

Although the modern lexicon is not directly considered as a linguo-cultural unit, it is used in a certain language, determining its place in the culture of the language, taking into account the aspect of its influence on the cultural level of the language owner, is one of the aspects of today's

language issue that must be resolved. The process of word acquisition is a regularity characteristic of every living language, and it is in constant motion based on socio-cultural and spiritual spheres among the languages of the world. English belongs to the Germanic group of the Indo-European language family. The acquisition of English words affected not only the Uzbek language, but also the Karakalpak language. However, since the Russian language, like the English language, belongs to the Indo-European language family, it can be observed that the influence of this language is more actively felt compared to our language. Uzbek and Karakalpak languages have different ways of acquiring English new words. If a number of new concepts and events do not have Uzbek or Karakalpak names, or if the borrowed word has a positive and effective effect in terms of expressing and naming different aspects of the concept (compared to its synonym), then the method of direct assimilation or exact assimilation is used. For example, chat (chat) - conversation, bifshteks - (beefsteaks) - a type of food in which fried beef is served in cabbage, mani (money) - money, boy-friend (boy-friend) - friend, comrade are also some advertisements, children reflected in clothes or items that attract the attention of the population. [4.56]

Although such words usually have their equivalent in English or other languages in terms of expressing a concept, they differ from them stylistically according to one or another characteristic of pictorial expression of meaning. Today, according to the opinions of the press and public experts, it was found that the opinions of people aged 40-50 are not satisfied with the speech of today's youth and have a negative attitude towards new words. In short, when a borrowed word has a synonym in the target language, there are various reasons for its use. That is, the word entered as a synonym lives in the language as a term, or it is a word expressing a stylistic meaning, or it expresses an abstract concept in relation to its opposite word, and sometimes it takes the form of a habit among young people.

We should also note that such use of modern terms has a negative impact on the culture of our language, including the culture of our speech. Preserving the charm, purity and status of our language should be the priority of each of us.

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Rezyume: O'zbek va qoraqalpoq tillariga o'zlashgan so'zlar hamda bu tillarning ichki imkoniyatlari asosida paydo bo'layotgan yangi leksemalarning ma'nolarini ochib berish.

Резюме: Выявить значения слов, заимствованных в узбекский и каракалпакский языки, и новых лексем, появляющихся исходя из внутренних возможностей этих языков.

Kalit so'zlar: Lug'atchilik, leksikografiya, ijtimoiy aloqalar, yangi so'zlar, zamonaviy leksika, til va madaniyat, fan-texnika.

Ключевые слова: Словарь, лексикография, общественные отношения, новые слова, современная лексика, язык и культура, наука и техника.

THE CONTENT OF FACTORS AFFECTING THE FORMATION OF A HEALTHY LIFESTYLE

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Summary: *This article presents a number of conclusions about the scientific and theoretical aspects of the formation of a healthy lifestyle.*

Key words: *formation of a healthy lifestyle, health, strength, special supportive training, competitive training*

The issues of raising the physical maturity of a harmonious generation in our independent state are one of the current issues of the present day. In the law "On physical education and sports", "The preservation and strengthening of the health of preschool children, students and students, the formation of the need for physical perfection in them means the dominant task of general secondary educational institutions and educational institutions." With the adoption of the law of the Republic of Uzbekistan on "Physical Education and sports", the concept of physical education and the development of the field of sports was developed. This takes into account the cultural and educational, socio-economic requirements of each single nation, relying on the multi-nationality of the population of the Republic in the system of non-interrupted education, which is associated with the concept of physical education of children and adolescents. In our country, serious attention is paid to the issues of improving the educational system, raising and bringing to life the younger generation, which will ensure the development of our motherland. One of the points of view is the adoption of the "National Training Program" and the law "on education". In the development of a person, the formation of a leading movement, especially physical movement, is one of the most necessary factors. But it is necessary to say from the experience and observations of a number of scientists, optimal movement provides an opportunity for an increase in the physical development and abilities of children. The second group of scientists claims that each person strives to develop, to achieve physical perfection and, most importantly, to strengthen their health in the practice of physical education, which is carried out during the pre-school period. According to scientists and practitioners of the educational group, the preschool period is considered the most favorable period for the comprehensive education of children, the formation of spiritual, moral qualities and physical qualities in them, the formation of high feelings. As a result of a scientific examination of the functional training of children raised in a preschool educational institution, it was confirmed that physical training plays a role in the development of the organism. The results of a study conducted by many scientists show that the dynamics of the physical formation and physical readiness of an individual depends on the ability of the student to work and the nature and size of the physical activities performed stably. If the speed is overextended, the positive effect of physical training is reduced, and this negatively affects the body, the excess of speed has a severe effect on those involved.

Currently, the positive conclusion of the cooperation of parents and the team of educators in the upbringing of children is covered in the work of several scientists.

Nevertheless, I.V. Plovtsseva shows that 55-60% of 75-90% of children who come to school (1st grade) do not know how to swim, 20-25% to skate, 10-15% do not know how to ride a two - wheeled bike, or even perform simple sports elements and movements, 20-25% do not know how to hit the ball to the ground, 30% of children do not know how to jump on a rump. This information in itself indicates that the physical development of children is at a low level. One of the reasons for the origin of such cases is the lack of physical education in young children, knowledge about physical training, insufficient opportunity to engage in physical training, lack of pedagogical knowledge of

parents, as well as the lack of physical education among the younger ones typical of the demand for the period. To solve these problems, the team of educators as well as each coach or teacher is required to have contact from the beginning of the learning process-with white parents. According to M.Ya. Studenkin, it is very necessary to follow the agenda in the family, and working with the family's stable, resting, eating creates conditions for the child's body, especially for the nervous system. He mentions that it prevents irritation during the day.

Professor S. S. Solihojaev said that in order to achieve the goals pursued in preschool institutions, it is necessary to properly organize in the routine of the day : rest, nutrition, etc. Since the child comes from the family to the kindergarten, it is necessary to develop the movement, scientific experiences of the child being brought up in the family. In this, it can be seen from many years of research work that each parent, especially young families, should pay more attention to the upbringing of a child, strengthening his health. It is the sacred duty of the parents at home, the team of educators in kindergarten and the staff of maintaining health to properly organize the upbringing of a healthy generation. The future generation is the state wealth. If the family is healthy and strong, peace and harmony are achieved in the neighborhood. Peace and stability prevail in the state if the neighborhood is solid.

Therefore, family well-being is a part of national welfare. Our ancestor Alisher Navoi said that " For a person to always be in motion - life is a work of art, inanimate beings - are considered obscene from the badge of livelihood. " He is right. Indeed, strength, health and movement form the basis of a person's life. The healthier the human member, the more serene, cheerful and cheerful the heart will be.

The life examples of the great Uzbek thinker Abu Ali Ibn Sino and the best thoughts that he left us to inherit are considered very useful if they are taken as a basis for us. It can be learned that his thoughts on family education have a thoughtful content and great approximate significance from the following words: "It is necessary to pay attention to keeping the child's behavior in uniformity. The child should have a good rest, good health, while his behavior is good. The great thinker Abu Rayhon Beruni also argued in his work that family upbringing should be treated with great attention. In his creative work on family education, Beruni reflected on the power of the authority of parents and mentors to influence the child. The more parents in the family have their reputation before the eyes of the child, the more results the upbringing gives. In our people there is such a wise saying: " Pure intelligence in a healthy body." It is clearly felt in children who are really involved in their physical and mental health. When all the physiological functions of the child's body are carried out in one norm, his health will be good. M. S. An analysis of data obtained in Studenkin's (46) research shows that for the proper formation of health, behavior, it is necessary to be strong-willed, talented and tabiously capable. Professor S. S. Solixojaev concluded in his research work that medical and pedagogical problems in kindergarten are closely connected with each other, only if the doctor worked in pedagogical cooperation with the doctor, he found that upbringing can be the correct implementation of work. Kindergartens for preschool children are a new public place. In order for children to get used to kindergartens quickly, it is necessary that their life and activities are properly organized. According to Professor S. S. Solixojaev (42), the transition to a children's organization in family conditions is impossible without affecting the child's organism. The child meets there a huge number of unfamiliar children, as well as older people, the environment changes, in which general new reactions are formed. The emotional condition of the child is disturbed, that is, he sometimes cries or, on the contrary, remains calm, speaks to adults and children without choking. The purpose of physical education is aimed at improving health, developing physical qualities, increasing physical fitness, raising youth the prestige of our labor and independent republic, making their fame known to the world. It is clear that after our people recognize their identity and gain independence, the continuation of national programs and historical sources in

physical education and sports, as in all areas, will increase. Guardians, Olympians raising the flag of Uzbekistan to the top in international competitions are trained.

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Rezyume: Ushbu maqolada sog'lom turmush tarzini shakllantirishning ilmiy-nazariy jihatları haqida bir qator xulosalar keltirilgan.

Резюме: В данной статье изложена ряд выводов о научно-теоретических аспектах формирования здорового образа жизни.

Kalit so'zlar: sog'lom turmush tarzini shakllantirish, salomatlik, kuch, maxsus yordamchi tayyorgarlik, raqobatbardosh mashg'ulotlar

Ключевые слова: формирование здорового образа жизни, здоровье, сила, специальная вспомогательная подготовка, соревновательная подготовка

A HEALTHY RELIGIOUS OUTLOOK IS AN IMPORTANT ASPECT OF HUMAN SPIRITUALITY

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Summary: *According to the article, religion and religious worldview are significant ways that people express their spirituality, and a person's spirituality increases with the health of their religious worldview and its distinct features are emphasized.*

Key words: *healthy religious outlook, Zoroastrian religion, Koran, religious tolerance, professional social maturity, spiritual faith, spiritual and educational education, honesty, truthfulness, generosity*

In modern Uzbekistan, scientists and religious leaders receive a lot of attention. Under Shavkat Mirziyoev's direction, Islamic spirituality, knowledge, and values awakened during the first and second Eastern Renaissances are rising to a stage of maturity. Every aspect of social, spiritual, and economic life is affected by this circumstance. The Islamic faith is receiving more prominence in keeping with these extraordinary developments. [1]

The formation of a healthy religious and spiritual perspective is becoming increasingly important in today's world. The education of the youth, who are regarded as the governments' driving forces, has a significant impact on the destiny and future of every society and the individuals that inhabit it. In our nation, tremendous efforts are being made to support young people's creative and intellectual potential and to get them more involved in the reforms that are being carried out. He is able to employ relevant and comprehensible religious notions and ideas. Thorough absorption of religious concepts and knowledge forms the foundation for the formation of coherent ideas about religion. The following is a description of religion found in the "Encyclopaedia of Islam.": Religion (Arabic - property, judgment, calculation, punishment, event, submission, obedience, prayer, diet, conduct, custom, belief) – belief in the presence of supernatural forces, such as gods. The word "religion" has many different meanings in Arabic. The word "religion" has been used more than a hundred times in the Qur'an, and it encompasses all of these meanings simultaneously. A person's religious worldview reflects his or her attitude toward religion. A person's worldview is their set of beliefs about the world and their place in it, as well as their attitude toward themselves and the world around them. In addition, people's ideals, views, and cognitive and behavioral principles are based on these perspectives. A person's age, life experience, expertise, and ideologies all influence their worldview. A person's worldview reflects their knowledge and opinions about philosophy, science, religion, politics, ethics, law, and the arts as well as their social perspectives. Social relationships and an individual's worldview are intimately related. Understanding a person's inner world, experiences, and beliefs—both their own and those of others around them—is aided by their religious worldview. That being said, having a religious worldview entails having events and events pertaining to taste reflected in one's consciousness. A person's unique perspective on religion is the foundation of their religious outlook. As a result, the religious perspective influenced the way that society's members thought and behaved. The extent to which an individual receives religious knowledge and perspectives determines how sound their religious worldview is. The four varieties of human worldview manifestation exist. 1. Mythological. 2. Religious. 3. Connected with household . 4. Philosophical.. According to religious interpretations, divine forces are involved in all events and their relationships. Religion can be demonstrated to have significant outward manifestations in the form of religious feelings, experiences, faith in religion, and worship of supernatural forces. As a result, religious beliefs and perspectives are seen as crucial components of human spirituality. A person's spirituality increases

with the health of their religious worldview. Spiritual behaviors and beliefs are embodied in religious worldviews. A sound religious perspective points the path to spiritual development. The decisions of the President of the Republic of Uzbekistan "On the establishment of the target fund for the support of spirituality and creativity" and "On the fundamental improvement of the system of spiritual and educational affairs" serve to advance our cultural life, foster the growth of creative and literary thought, and enhance the efficacy of the education of young people. Ahead of ideas like economic progress, scientific thinking, and educational maturity, spiritual education is crucial in the current globalized environment, also known as the acceleration of the picture of life. since the issues in this subject are related to the issues in other fields and their solutions.

It is impossible to solve socio-political, economic, geographical and ecological problems without spiritual education. Because the origin of these problems is related to the bossiness and carelessness that arose in the general education. [3- <https://yuz.uz/news/>]

As a result, by helping students develop a religious perspective, it hopes to inspire them to pursue spiritual development. For many centuries, our people have practiced one or more religions, which have served as an expression of their worldview. Studying the religious ideas of various peoples allowed our forebears to broaden their religious and spiritual imagination. The majority of our people's customs and values are thought to have originated from their religious perspective. As a result, it's important to teach pupils about the realities surrounding traditions and beliefs while also teaching them. All religions have concepts that help shape people's spiritual perspectives in a constructive way. For instance, the Zoroastrian religion places a strong emphasis on ecological concerns and goodness. It is underlined that not polluting the air, water, or land is a grave sin. Consequently, it is not advised to bury the dead. Praise is given to fire for its ability to resist evil and purify. The Zoroastrian faith vigorously opposes needless violence and supports the struggle against evil. Creativity was valued while vandalism was viewed as sinful and decried. The desire for morality and enlightenment is one of the concepts in Zoroastrianism that merits particular consideration. The purity of human lineage is encouraged in Zoroastrianism, which views the purity of man and nature as crucial issues. The spiritual and moral perspectives presented in Zoroastrianism help to broaden the perspectives of students and young people, even though there are no adherents in our nation. Consequently, it is beneficial to frequently introduce students to the tenets of Zoroastrian spirituality, morality, and cultural development. [4.699–p].

For a very long time, Central Asia has been a center of spirituality and culture. Its civilizations have evolved to become universal by assimilating the most progressive ideals from many different religions. Thus, Central Asia produced representatives of global culture as well. They developed strong religious perspectives. It is well known that Central Asia had great cultural, educational, and scientific advancement between the ninth and fifteenth centuries, with a religious worldview serving as the cornerstone of this progress. The formation of a person's religious worldview had an effect on the advancement of human understanding. The humanist viewpoint, in turn, laid the groundwork for the creation of works and concepts that can serve as a person's foundation for elevating their culture and spirituality. Our forebears stressed that a person's religious worldview offers him limitless possibilities and helps to shape his perceptions, intelligence, and intellectual capacity. Not just with regard to Islamic principles, but also with reference to the cultural heritage developed in antiquity, our ancestors enhanced their spirituality and culture. [5.672-p].

Our ancestors used symbolic symbols to spread their spiritual beliefs. Young people were therefore able to discriminate between good and evil with ease. For instance, the heroes in Yusuf Khos Khajib's "Kutadgu Bilig" are the governor Kuntugdi, who represents justice, the minister Ayto'ldi, who represents happiness, and the minister's son Ogdulmish, who represents intelligence, all within the context of Islamic beliefs and morality. The philosopher and poet Yusuf Khos Khajib maintains that human perfection is primarily ensured by labor, science, conflict, and interpersonal

relationships. It highlights how each individual contributes to and advances society. A person realizes he has attained perfection because of labor. He attempted to defend the idea that labor is based on knowledge. Yusuf Khos Khajib calls the ruler to be fair and follow the laws. This forms the basis of the religious worldview and is regarded as a special and significant call to all times. Everybody should practice justice and honesty, abstain from oppression, and show kindness to others, according to the Islamic faith. Whatever one's status, Yusuf Khos Khajib believed that one should never lose sight of one's humanity. The understanding that knowledge gain can contribute to the advancement of society is one of the major tenets of the Islamic worldview. Sufis frequently highlighted the idea that knowledge is a torch that illuminates the human road, while ignorance plunges humanity into darkness. Our benevolent forefathers gave the young people careful attention and encouraged them to talk.

They were asked to use language carefully. The Islamic education leaders underlined the importance of character unity and individual character, stressing the necessity for balance between a person's inner and outside worlds, and they urged the youth to follow suit. They exposed the detrimental effects of lying and hypocrisy on both the individual and society as a whole, and they denounced these vices. Promoting intellectual and spiritual development is a key component of teaching the Islamic worldview. Many of the poets, writers, and thinkers of that era gave this concept prominent place in their works. For instance, the epic "Hibbatul-haqayiq" by Ahmad Yugnaki, who lived and worked between the end of the 12th and the beginning of the 13th century, outlines the fundamental tenets of the Islamic worldview.

They should not pursue wealth at all costs, but rather be driven to do good deeds, to become knowledgeable and enlightened, to mature, to attain perfection via learning, to get esteem via goodness, to understand that knowledge is an endless resource, and to emphasize the value of language instruction.

These include the value of oneself, the notion that one's actions determine one's level of happiness or misery, the notion that humility is the path to greatness, the idea that goodness is the greatest deed, and the importance of honesty, truthfulness, and honesty as virtues. [6.344-p]. ***Education has a direct bearing on raising a mature, ideal person who is inspired to turn away from evil and toward good deeds. Children must be well-nurtured in order to be happy, and these concepts are still important today in fact, they are among the core concepts taught to the younger generation [7.32-p].***

In summary, our predecessors laid the endless foundations of spiritual education because of their religious perspective. All of humanity is benefiting from this information now and expanding their minds. Therefore, they might be encouraged to reach social and professional maturity because of the development of a sound religious outlook.

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Rezyume: *Maqolada din va diniy dunyoqarash inson manaviyatining muh'im ko'rinishlaridan biri ekanligi, shu bilan birgalikda ularda diniy dunyoqarash qanchalik sog'lom*

bo'lsa, shaxsning manaviyati h'am shu qadar yuksak bo'lishi nazarda tutilib, diniy dunyoqarashni shakllantirish yollari va o'ziga xos jih'atlari yoritilgan.

Rezyume: В статье рассматривается, религия и религиозное мировоззрение являются значимыми способами выражения человеком своей духовности, а духовность человека возрастает по мере здоровья его религиозного мировоззрения и подчеркиваются его отличительные особенности

Kalit so'zlar: sog'lom diniy dunyoqarash, zardushtiylik dini, quron, diniy bag'rikenglik, kasbiy ijtimoiy etuklik, manaviy etiqod, manaviy-marifiy tarbiya, xalollik, h'aqgo'ylik, sah'iyilik.

Ключевые слова: здоровое религиозное мировоззрение, зороастрийская религия, Коран, религиозная толерантность, профессиональная социальная зрелость, духовная вера, духовно-просветительское воспитание, честность, правдивость, щедрость.

**CURRENT PROBLEMS OF PHYSICAL EDUCATION
TABLE OF CONTENTS**

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Summary: *The article discusses issues of selection in modern sports. Sports selection is a set of measures to identify athletes with a high level of abilities that meet the specific requirements of the sport. Effective selection can be carried out on the basis of long-term comprehensive studies, which involve an analysis of the athlete's personality as a whole and his sports abilities based on pedagogical, medical-biological, psychological and anthropometric selection criteria.*

Key words: *The goal of physical education is the comprehensive development of a person's physical and spiritual abilities in the aspect of the formation of a person's physical culture - a person's self-realization in the development of his spiritual and physical abilities through physical education activities, his mastery of other values of physical culture.*

Introduction. There is nothing more unusual and strange than the transformation of the problems of modern physics education into a hot topic. Pedagogical concepts related to issues of physical education are extremely rare.

Despite the lack of a sufficiently effective dialogue between the pedagogy of sports and the pedagogy of physical education, the establishment of which is largely hampered by existing prejudices, the pedagogical aspects of physical education cannot be ignored.

Therefore, already now, in anticipation of the future, we can formulate the following thesis - the whole variety of problems of physical education is entirely within the sphere of competence of sports pedagogy. Our task, in particular, will be to show in general terms what pedagogical problems may arise in connection with the phenomenon of physical education. But before considering these issues from the point of view of pedagogical science, let's first find out what physical education itself is. Against this "background" one can quite clearly outline the contours of the pedagogical problems of modern physical education.

1. Current problems of modern physical education

An important factor in the modern world is the increasing awareness of physical culture as part of the general culture of the individual and society. However, along with the phenomenon of physical culture, the phenomenon of sports arises and develops, acquiring an independent status. This is a rather diverse and multifunctional phenomenon that hardly fits into a single concept. Suffice it to say that we include yachting, playing chess, aircraft modeling and much more as sports, where the core of activity is competition and achieving victory.

As the experience of socio-historical development shows, physical culture and sport developed almost simultaneously, complementing and enriching each other. However, initially each of them had distinctive features and gradually occupied its own niche in the social life of society.

The goal of physical education is the comprehensive development of a person's physical and spiritual abilities in the aspect of the formation of a person's physical culture - a person's self-realization in the development of his spiritual and physical abilities through physical education activities, his mastery of other values of physical culture.

The specificity of any type of education lies in the means and methods by which a person is educated. The science of physical education arose and developed as a system of knowledge about physical exercises, which went from promoting health and forming applied motor skills through the development of a person's motor capabilities and functions to the formation of his personality and behavior.

The development of science and advanced practice of physical education has significantly expanded the understanding of the role of motor activity, in particular physical exercise, in the development and strengthening of biological and mental processes occurring in the human body.

Physical culture is also the most important means of developing a person as an individual. Physical exercises allow you to have a multifaceted influence on the consciousness, will, moral character, and character traits of boys and girls. They cause not only significant biological changes in the body, but largely determine the development of moral beliefs, habits, tastes and other aspects of the personality that characterize the spiritual world of a person.

Scientific and technological progress, the rapid development of the media, increasing the educational level of parents, the perfection of teaching methods - all this, of course, determines the earlier and higher intellectual development of modern youth. Accelerated maturation of the body increases the mental and physical performance of boys and girls, which allows them to more successfully cope with the significantly increased demands of school programs.

However, intense mental work at school and at home, as well as other types of activities, cause significant overload of the body in students. At the same time, they spend most of their free time in computer clubs, near the TV. The teenager leads a sedentary lifestyle. And this negatively affects physical development, general health, and level of physical fitness. That is why physical culture and sports are vital, as they allow you to improve health, purposefully influence the entire body, improve motor activity and develop physical qualities.

I also want to give an idea of how individual scientific disciplines dealing with issues of physical education consider the problem of student sports achievements. In this case, two very noticeable circumstances come to the fore.

1. Research into the problem of sports achievements agrees that the concept of "achievement" does not have a clear definition and is interpreted differently by different researchers.

2. The vagueness and vagueness of the concept of "achievement" corresponds to insufficient study of the sports activity itself, aimed at achieving records and obtaining high sports results. No sport discipline can be said to have produced a solid theory related to the problem of performance. At best, there are the beginnings of such a theory or purely pragmatic programs.

Although our equally celebrated and cursed society, often described as a society striving for success at any cost, seems to have elevated the idea of achievement to the fundamental and guiding principle of social life, it would be a mistake to believe that achievement, success, is a typical feature of modern very complex societies in their structure. If we abstract somewhat from the rather problematic definition of a "society of achievements" and look into the past, we can be convinced that achievement is a phenomenon of a historical order.

Currently, it is necessary to classify the pedagogical problems associated with school physical education.

2. State and prospects for the development of school physical education education

The main form of use of physical culture by both the individual and society in the areas of family, preschool, general, professional, higher independent and special education, cultural leisure and others. It is carried out in accordance with the principles and requirements inherent in the pedagogical process and specific laws.

School physical education forms a system of individual value orientations towards a healthy lifestyle, provides motivational, functional and motor readiness for it. This is carried out in accordance with general and specific laws, principles and rules. Affects intellectual, mental, moral-volitional and other personality qualities.

Classes are the main form of physical education at school. During such training sessions, the academic discipline "Physical Education" is studied - a structural unit of the education system. It is

necessary to note that physical education is carried out in the process of family, out-of-school, special, additional education in the process of self-education.

Socially significant results of school physical education are physical fitness and physical development of those involved. Knowledge, motor and methodological abilities, skills and habits are necessary for physical self-education, the formation of a healthy lifestyle, and the cultural organization of free time. These also include physical and spiritual healing, increasing the body's resistance to diseases, physical rehabilitation and relaxation.

In modern physical education, physical education allows a diverse impact on the individual. At the same time, many socially significant results of physical education are currently only partially achieved. All this indicates the problem of students' physical training.

Physical fitness is only one of the socially significant results of physical education in school education. It is quickly lost after graduation if it is not independently maintained. At the same time, with age, the motivation to engage in physical exercise decreases. Therefore, one of the main tasks of compulsory physical education is the formation of sustainable motives for physical self-improvement. They must be supported by compulsory general physical education for everyone.

Currently, the educational tasks of physical education related to teaching knowledge, methodological skills and abilities are, as a rule, not solved effectively enough. This is a consequence of the historically established narrowly utilitarian "normative" approach to physical education as a means of physical training for young people. With this approach, the standard reflecting the level of physical fitness is the main criterion for the effectiveness of school physical education. The need for physical education is generally recognized, but students do not receive enough of it.

As a result, they find themselves unprepared for the independent use of physical education means for self-healing, self-development, and self-formation of moral behavior. "Physical culture" as an academic discipline "falls out" from the educational and educational space of secondary institutions. All this allows us to consider the problem for all physical education as one of the most pressing, and the orientation of physical education towards general physical education as a priority.

One of the problems that requires a consistent solution is the continuity of physical education in secondary schools. This is evidenced by the different names of the academic discipline, the lack of continuity of physical education targets, the insufficient continuity of the content of the practical and theoretical sections of the educational material, the inconsistency of indicators and standards for assessing physical fitness at school.

The implementation of these problems is significantly complicated by the shortcomings of personnel, logistics, information support, medical monitoring of children's health and the educational process in physical education, scientific support, and the development of a modern educational and methodological complex for school physical education.

The non-subjective development of physical culture that has developed over decades and its relative unwillingness to develop outside the prescribed physical education system have had a negative impact on the practice of school education. Here, physical culture and physical education are still considered as the essence of "one and the same thing," represented primarily by a purposeful process of developing physical qualities and teaching applied forms of physical exercise. Here, the still ongoing focus on improving health is identified with training schoolchildren to fulfill given regulatory requirements for physical training, which do not have personal meaning for most students.

This development of physical education and mass physical culture in general has resulted in many negative consequences for modern society, and for man himself. Among them:

- the decline in the level of health and physical fitness of the younger generation, the large-scale development of childhood crime, drug addiction and alcoholism are combined with the desolation and destruction of sports grounds and stadiums, the unwillingness of state systems to

develop forms and types of physical culture and sports activities that are becoming increasingly widespread in society;

- decreased interest in traditional forms and systems of physical education and insufficient education in the field of physical education limit the ability of students to move on to organizing amateur forms of physical education, actively and purposefully using them in strengthening their health, organizing a healthy lifestyle and culturally oriented leisure;

- insufficient development of the fundamentals of the content and forms of physical education classes, their focus on given patterns and standards of physical training are combined with the transformation of school lessons into training sessions, reducing the educational and technical-motor training of students, deteriorating the culture of their movements.

These and other negative phenomena reflect the objective need to revise the foundations of existing physical education for schoolchildren, the need to focus its content on the personality of students, endowing them with knowledge, skills and abilities to independently organize physical education activities. It is this orientation towards the formation of the physical culture of the individual, the active inclusion of students in the field of physical culture, in independent forms of health promotion activities and meeting the needs for individual bodily culture that becomes possible in the paradigm of modern school education on the basis of new pedagogical theories and concepts.

The current state of physical, mental and moral health of secondary school students raises serious concerns among specialists. Children and adolescents are experiencing an increase in chronic diseases, primarily those of the cardiovascular system and the musculoskeletal system. There has been an increase in the number of children with underweight and mental disorders.

CONCLUSION.

The problem of differentiation of school physical education constantly worries its researchers, since it deals with the health of the future nation and how to preserve this health and strengthen it through physical education.

In the process of physical education, one cannot lose the progressive, humanistic, personal orientation of physical education. Problems of physical education should take their rightful place in the State program for youth education. There must be an adjustment to the problems of physical education and ways of its implementation. This process must be permanent, leading to effective practical steps that help improve the quality of life and health of children, pupils and students.

General secondary education in the field of physical education is carried out not only in the classroom. In its target orientation and subjectivity, it appears in extracurricular and elective forms of physical exercise and sports, in the features of the organization and content of the daily routine and extracurricular amateur activities of students. Such a systematic organization of physical education makes it possible to ensure not only the consolidation of the educational material being mastered or a broader mastery of its basic principles, but also to create conditions and opportunities for students to demonstrate the results of their education, enhance their positive effect in developing interest in physical education, their health, and the organization of their cultural life. Leisure

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Rezyume: Maqolada zamonaviy sportda seleksiya masalalari muhokama qilinadi. Sport tanlovi - bu sport turining o'ziga xos talablariga javob beradigan, qobiliyatlari yuqori bo'lgan sportchilarni aniqlash bo'yicha chora-tadbirlar majmuidir. Samarali tanlov sportchining butun shaxsini va uning sport qobiliyatini pedagogik, tibbiy-biologik, psixologik va antropometrik tanlash mezonlari asosida tahlil qilishni o'z ichiga olgan uzoq muddatli kompleks tadqiqotlar asosida amalga oshirilishi mumkin.

Резюме: В статье рассматриваются вопросы селекции в современном спорте. Спортивный отбор представляет собой комплекс мероприятий по выявлению спортсменов, обладающих высоким уровнем способностей, отвечающих требованиям специфики вида спорта. Эффективный отбор может быть осуществлен на основе длительных комплексных исследований, которые предполагают анализ личности спортсмена в целом и его спортивных способностей на основе педагогических, медико-биологических, психологических и антропометрических критериев отбора.

Kalit so'zlar: Jismoniy tarbiyaning maqsadi - shaxsning jismoniy va ma'naviy qobiliyatlarini har tomonlama rivojlantirish, uning jismoniy madaniyatini shakllantirish - jismoniy tarbiya orqali shaxsning ma'naviy va jismoniy qobiliyatlarini rivojlantirishda o'zini o'zi anglashi, uning jismoniy madaniyatning boshqa qadriyatlarini o'zlashtirish.

Ключевые слова: Цель физкультурного образования – всестороннее развитие физических и духовных способностей человека в аспекте формирования физической культуры личности – самореализации человека в развитии своих духовных и физических способностей посредством физкультурной деятельности, освоения им других ценностей физической культуры.

IMPRESSIVE PECULIARITIES AND ETYMOLOGY OF THE COLOR “RED” AND ITS CONCEPTS

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Summary: *The article deals with the etymology of the hue red and its meanings and features in different cultures.*

Key words: *color terms, emotion, psychological influence, symbolism, meaning.*

Color affects every aspect of our lives every day because it is a ubiquitous perceptual stimulus that carries meaning and can influence the way we feel, think and act [1]. Color information is automatically processed to make inferences about the physical, and, increasingly, the digital environment. Color is an important visual component that plays a fundamental role in the construction of coherent percepts as well as the organization of memory [2].

According to Cherie Fehrman and Kenneth Fehrman, color has its own vocabulary. In order to effectively discuss color, it is necessary to understand at least the basic terminology. The terms color and hue are synonyms often used interchangeably. Hue is an attribute by which one color is distinguished from another. All colors are considered to be similar to one or a portion of two of the spectral hues: red, orange, yellow, green, blue, and violet. Thus, crimson, vermilion, and pink, although different colors, are close in hue. Black, white, and gray lack hue and are considered neutrals. It has more to do with language than with color [3].

Secondly, when it comes to vocabulary, it is obvious that not all languages are isomorphic. Lyons compared English basic color terms with French, with Hanunoo (the Malayo-Polynesian language of the Philippines), and with ancient Greek. He noted that many languages of the world do not have color-referring terms as such. They may, however, have words that are used to describe the appearance of things in terms of what people would identify as color. These words are often context-dependent, but they may be used, if required [4]. Due to the definition of ‘basic’ by Berlin, many of color terms would be excluded because of their context-dependence [5]. Thus, Lyons’s argument indicated the problem of transparent exchange of basic color terms throughout the languages. The issue can be extended to a multi-lingual context. Stanlaw demonstrated how differently bilinguals (Japanese-American) construct color perception depending on lingual context [6].

Red is one of the attractive colors that display variety of symbolisms, meanings, and associations. It is frequently related to our strong feelings like love, desire, and anger [7]. From red hair to the red carpet in events, a color is considered as a charmer because of its warm, bright hues.

Red is a predominant color. It represents passion, warmth, and desire, but it is also known as a color that symbolizes danger, violence, and aggression. Red is positioned between violet and orange on the color wheel*. Red is the first color that humans mastered, fabricated, reproduced, and broke down into different shades. It is also one of the earliest colors used by artists during the prehistoric period. According to Britannica, *red* was the first basic color term added to languages after black and white. The word *red* derives from Sanskrit *rudhira* and Proto-Germanic *rauthaz*. Throughout the Middle Ages, red had a religious significance. It was the color of the blood of Christ and the fires of Hell. In the Renaissance period, red colors were supposed to draw the viewer’s attention to the most influential figures in a painting.

In the 19th century, red became the color of a new political and social movement such as socialism. Therefore, it was also when the color red was used to create specific emotions in art and not just for imitating nature. Red is known to have both physiological and psychological impacts on people, thus producing positive and negative effects on us. Studies show that its warm and vibrant hue gives us more energy to take action. Below are some concepts that are connected to the color red.

Love. It is believed that red is the color of love, which involves passion, romance, and lust. If a person falls in love, or a heartbroken, immediately thinks of the color red. It communicates strong feelings of attraction that can energize and increase a person's heart rate. As far as, red is interrelated to romance, it is the adopted color for romantic gifts such as red roses, red balloons, and even chocolates paired with red ribbons.

Power. Compared to the rest of the colors, red provokes the most potent emotions, both healthy and unhealthy. It makes people feel dominant and powerful by boosting their self-esteem. In addition, red is a bold color, which makes one stand out from the crowd and influences the way others see them. For instance, the fastest and most luxurious cars in the world are most often painted in red; famous people are usually given the red carpet treatment, and women that wear red are considered more attractive. Therefore, owning a red car, receiving a red carpet treatment, and wearing red clothing give so much more power than everyone else that does not favor this shade.

Passion. Red gives us the motivation to do our best in doing the things we love. It involves the expression of intense interest and enthusiasm about something. Red excites our emotions, which is why we exert effort to finish a task or achieve a particular goal, especially if it is something that interests us.

Confidence. Red also conveys confidence, the state of believing in one's abilities and qualities. Wearing a red dress, red coat, or red lipstick shows that a person is ready to take on the world and make a big difference. Red is an essential color to show people what you are capable of doing.

Aggression. While red heightens passion, it also increases tendencies toward aggression and confrontational impulses. Red has a psychological relationship with anger and rage. Red can elicit unreasonable, heated reactions.

Dominance. Red has a psychological impact on perceptions of power, status, and dominance. Exposure to red makes people feel more influential and in control. Red signals authority figures and commands respect.

Persuasion. Red's psychological influence makes it effective for captivating audiences and persuasive messaging. Red backgrounds on ads and calls-to-action boost response rates.

Performance. Cognitively, red improves performance on detail-oriented tasks. Nevertheless, creatively, red can undermine higher-level thinking due to added anxiety and mental strain. Responses vary based on context.

Impulse Control. The stimulating color red is psychologically associated with impulsiveness and urgency. Red motivates rapid, reactive behavior rather than cautious consideration before acting.

Energy. Red psychologically energizes people and makes them feel more lively, active, and mobile. It counteracts feelings of passivity or sluggishness.

Risk-Taking. Red elicits sensations of thrill and adventure. It promotes risky, daring behavior psychologically by signaling excitement and danger.

Stress. While initially energizing, prolonged exposure to bright reds can increase anxiety, overstimulation, and feelings of stress. Red carries psychological weight.

Appetite. Red overwhelmingly stimulates appetite and hunger psychologically. Fast food chains leverage this psychological impact in their visual branding.

Attention. Red instinctually captures people's attention and focuses mental resources due to its arousing psychological properties. Red alerts and warns.

Impulsiveness. The hue red is psychologically tied to impulsive urges and stimulation seeking. Red promotes immediacy and instant gratification psychologically.

Competitiveness. Red triggers competitive attitudes and urgent desires to win or achieve success through its psychological links to power and dominance. Red has remarkable psychological influence and mind-body effects. Its innate ability to stimulate reactions, both positive and negative,

points to red's primal hold over the human psyche. Red's close ties to our deepest desires and drives shows the color's inextricable connection to the most fundamental aspects of human psychology. Whether it empowers or distresses, red's psychological potency is unmatched in sheer intensity and drama. Understanding red's psychological impact can help us wield its power responsibly.

To conclude, one particular thing that the color red is associated with demonstrating emotions. While some people correspond red color with love hence the reason why many roses are red, others affiliate it with war and therefore you find red color used to simplify the blood shed during times of war. It is for this reason that you find red color used in places like restaurants as it is perceived to motivate and add appetite to people. Red color is also associated with showing affection.

Colors have massive importance in the lives of numerous people. A particular color can be associated with certain things in different parts of the world. Based on knowing that life experiences have been different, individuals associate different experiences with the color red, although they do not show deficiency in viewing colors in general. If one says "red" and there are 50 people, listening it can be expected that each of those 50 people will think of a different shade of the color red. Colors that are similar to red are rose red and red-orange [8].

One color that has been well known is the color red. Although this color has different meanings to different people, one thing that attracts attention is that the color is implemented to depict positive emotions in life. Consequently, it has become one of the most magnificent colors in the world.

*color wheel, a diagram used in the visual arts to represent the colors of the visible spectrum and their relationships to one another. The colors are arranged systematically into a circle, with each hue usually falling into one of three categories: primary, secondary, or intermediate. In fields such as painting, fashion, film, and design, artists use the color wheel to assemble color schemes and visualize how colors appear beside one another [9].

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Rezyume: *Maqolada qizil rangning etimologiyasi, turli madaniyatlarda uning ma'nolari va xususiyatlari muhokama qilinadi.*

Резюме: *В статье рассматривается этимология красного цвета, его значения и особенности в разных культурах.*

Kalit so'zlar: *rang atamallari, hissiyot, psixologik ta'sir, ramziylik, ma'no.*

Ключевые слова: *цветовосприятие, эмоция, психологическое воздействие, символика, значение.*

ABOUT WORD AND MEANING IN NASIMI'S POETIC AND PHILOSOPHICAL THOUGHT

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Summary: *This article analyzes a scientific and philosophical concept of Nasimi's philosophical poetry in which the rules relating to words that have obvious and mystical aspects and the poet's setting out his didactic goals with quite rich content through a special poetic style, symbolic and figurative language, containing artistic qualities with a metaphorical and allegorical structure.*

Key words: *Nasimi, muslim philosophic, poetry, language, word, logos, metaphor, symbolic, mystical, external, zahir, internal, batin, metalanguage.*

The structure of the literary and artistic language of Eastern culture contains an important part of the composition of the philosophical text. In the Middle Ages, special literary laws were formed that strictly regulated literary texts, where among the basic of them were the rules relating to words that have obvious and mystical aspects. Arabic and Persian literature are based on the rules of expressing concepts, and the special relationship of semantic categories. Their unity is maintained through special words. Concepts that do not correspond to the original content of the thought being expressed are conveyed in a separate part according to these rules. According to this pattern, a tradition was established to express voluminous content in a few words. This problem is solved on the basis of a complex structure of connotation. In fact, every word of artistic language contains a broader context-oriented connotation that is completely understandable to thinkers well-informed on that culture. The text, constructed for this purpose, was widespread not only during the time of Nasimi, but it is also commonly used today in countries with this developed culture. Therefore, it is necessary to carefully select ideas of philosophical content that have become traditional in many areas from the semantic layers of the poet's works and track them by comparing thereof with corresponding thoughts. It is important to clarify the unity, structure and internal logic of the artistic language, which represents the medieval Muslim intellectual system, in order to justify the content of the terms that form the core of the relevant meaning. Accordingly, the external structure of a word requires analysis in harmony with its internal meaning. This makes it possible to reveal the genetic roots of symbolic concepts in the philosophical aspect of the poet's work and to sufficiently understand the teachings put forward in his poetry.

A scientific and philosophical concept can be identified at the basis of Nasimi's philosophical poetry. The poet harmoniously sets out his didactic goals with quite rich content through a special poetic style, symbolic and figurative language, containing artistic qualities with a metaphorical and allegorical structure. Accordingly, to study the poetry of the thinker, one should not oppose historical, philosophical, religious, cultural and literary studies, but rather use harmonious theoretical approaches and methods, since, although Muslim philosophy is basically similar, it has undergone a process of differentiation along the path of its development.

Ideas put forward in the works reflected in the poems by Nasimi, such as "Meccan Revelations" ("al-futukhat al-Makkiya"), "Gems of Wisdom" ("Futus al-hikam") by Ibn Arabi, "Gardens of Truth" ("Hadiqat" al-hakayik), "The Journey of Slaves to the Moments of Return" ("Seyr ul-ubad ila-l-Magad") by Sanai, "The Language of the Birds" ("Mantik a-tair"), "The Divine Book" ("Ylahynama") by Farid ud-Din Attar, "Poem on the Hidden Meaning" by Jalal ad-Din Rumi ("Mesnevi") and "Flower Garden of Secrets" ("Gulshan Razi") by Mahmoud Shabestari are generally accepted and used as classical sources by all religious and philosophical schools. They not only perform the functions of literary works, but also have the qualities of artistic guidance,

reflecting religious and philosophical teachings in layers of meaning. These works are the sources that inspired Nasimi to assimilate mysterious and mystical ideas into his poetry.

The ability to transform mystical ideas into beautiful poetic images is an integral feature of Nasimi's poetry. To make it clear that this is so, the problems persists to solve the problem of tracing the content of Sufi terms, mystical thoughts, shades and allusions in the essence of his artistic language. To trace this issue, it is necessary to take a more detailed approach to the meaning given by the poet to words and their meaning, as well as pay attention to their philosophical, theological, mystical, philological and poetic generality and activity. Nasimi is a poet who could use the relationship between the true word and meaning in the text very harmoniously and skillfully. Therefore, a certain mysterious meaning is constantly felt in his poems:

Bu magryfat sözüň syrryny beýan ederüz,

Eýa letyfy (gözel) zamana, eýa hulasaýy (gysgaça) zat.

Meaning: At this wonderful time, I briefly expound the secrets of divine knowledge.

Her katraýy bähr hakykat sözüni derj edejek,

Ki bir dakykada gösterdi dürlü helewat.

Meaning: I will list all the pleasures received at the moment of Divine Revelation.

Bu magryfet, bu tarykat, hakykat oldy kelam,

Şerigat emr üçindir, Muhammet salawat.

Meaning: With the blessing of Prophet Muhammad, he puts into words magrifet (knowledge), tariqat (path), haqiqat (truth) for Sharia.

Bu gün Nesimi sözünden bu magryfat erdi,

Hezar (müň) sejde kylur tuty bile, gandu nabat [3].

Meaning: Today Nasimi expounded the word magrifet (divine knowledge), and those who understand it will praise Allah a thousand times in the sweet language of birds.

As can be seen from the above lines, it is not difficult to see that the philosophical and mystical concept in the poet's work has to be studied in close interconnection with the internal structure of the artistic language, i.e., its lower layer. In this regard, it is necessary, first of all, to thoroughly approach the logical content of hidden and generally understandable concepts that reveal the true content of Sufi artistic philosophy. In his work "The Logic of Sense" [5] scientist A.V. Smirnov, specializing in this area, gives a comprehensive explanation that the concepts of generally understandable (*zahir*) and hidden (*batin*) are not opposite, but they are relevant concepts based on a certain logical notion. In search for new resources characteristic of poetry for the expressive conveyance of his philosophical ideas, Nasimi actively uses, along with symbols, Sufi terms containing the true meaning of generally understandable (*zahir*) and hidden (*batin*) concepts, national linguistic units with the same meaning. Therefore, from the point of view of literary research, identifying the internal content of the poet's language is an urgent problem for correctly assessing his work.

Nasimi's poetic language, saturated with medieval philosophical Sufism, reflects to some extent the metalanguage of Sufi doctrine. The theology characteristic of Sufism complicates to a certain degree the phenomenon of the formation of objective connotations, forcing one to constantly turn to the relevant dictionaries that explain the meanings of religious words. In most cases, only a certain level of education in the field of a given philosophy can fill such gaps between the semantic definition of the structure of a word and the content of the paradigmatic language. The poet himself suggests this. For example, in Nasimi's works the philosophical idea of creating the world from light is constantly put forward:

Röwşen oldy ýer-gök mehri ruhuň nurundan,

Bu jähetden ýüzüne mahy münewwer diýdiler [3].

Meaning: The earth and sky were illuminated with the light of spiritual warmth, and the Creator in this aspect was likened to the bright light of the moon.

He uses the doctrine of the pure existence of the world due to pure light - radiation, likening it to the light of the moon, as a means of expression. The beginning of everything is light - radiation. Light means both the mind and the pattern of the changing world, the creator, the will and the word (logos).

Nezmi Nesimi uş ýagyn alla nurunyň şerhidir,
Her kim bu nury görmedi bil kim nesibi nar imiş [3].

Meaning: Nasimi through verses explains the secrets of Divine Inspiration sent down by Almighty Allah, and that those who do not understand this light will suffer.

Adym Nesimidir bu gün, oldum kelamy natyk uş,
Hem aýatam, hem nury hak, hem fazly ýezdan olmuşam [3].

Meaning: Thanks to my oratory art, explaining the secrets of the Holy Book, today my name has become a wind (breath) of inspiration, and therefore I am a person who understands the word, knows the Divine Revelation and expresses the word of the Creator.

As can be seen from the above lines, Nasimi expresses his thoughts through metaphors consisting of mystical layers. The poet, constantly thinking about the structure and patterns of the world, pays much attention to the sacred meaning of “word” and “breath”. The essence of existence is in movement, force, constant transformation, phenomenon, flow: everything is in movement, flow. Accordingly, language is a self-flowing, creative force. The life cycle of a word includes three periods: arising in a myth, it preserves its spirit and lives as a metaphor; having lost connection with myth, it becomes a general abstract concept. But Nasimi’s language is revived in the figurative sense of the word in his inspired creativity. A poet who intuitively feels through his personal experience the beauty and harmony of the live Single in the Universe is able to understand the language of nature. This ability of his allows him to understand the Spirit of the Universe and Divine Inspiration.

Ähli magnynyň hemişe durru merjandyr sözi,
Ger özi kufr olsa olsun ger çi imandyr sözi.

Meaning: The whole meaning and value of existence is explained in the word (Quran), and even if the person involved in it is considered irreligious, there is a secret of hidden (batin) sciences in him.

İçine bakgyl sen anyň, ne bakar sen daşyna,
Daşyny daşgary taşla, göwheri kändir sözi.

Meaning: Pay attention to its inner and not its outer meaning, because all valuable contents are contained in its inner meaning.

Eý, Nesimi, kimse bilmez bu magnynyň syrryny,
Sözle kim ähli magny derde dermandyr sözi [4].

Meaning: O Nasimi, tell, without saying that no one knows the secret of this meaning; smart and capable people will use this word (as a solution to their problems).

Most of Nasimi’s poems require specialized knowledge in this area. To do this, one needs to be knowledgeable in the concepts of Muslim philosophy and the figurative and poetic language of mystical poetry. If a philosopher comprehends truth through reflection, then in poetic thought this is manifested in a beautiful form that reveals the subtlety of the sensation of artistic language. According to the definition given by the philosopher to this concept, the goal of poetry is to express the highest meaning of life through tangible images. That is why the poet, paying special attention to giving color to the inner content of the word and saying: “look at the inner meaning of the word, since its meaning is in the inner sense of the word”, hinted that it has a mystical content. According to the thought expressed in the line, the Word that teaches the foundations of the creation of the world is the Holy Quran. As Turkish literary scholars who study Nasimi’s work emphasize, there is not a single poem of his in which he did not mention or suggest the Quran.

Muslim philosophic scholars write that this book is presented in four different intellectual contexts. In Islamic Prophetology, diverse religious teachings based on the knowledge of the Imamate are developing. Thus, its main goal is to continue the esoteric aspect of religion - Divine Revelation. This marked the beginning of a careful and in-depth study of the Quran. From this point of view, A. Corbin believes that the spiritual life of Islam is conditioned by the preservation of its esotericism [1]. Such events are associated with the assimilation of the Holy Quran, Hadith and other religious books by Nasimi as an example of guidance for humanity. Faith in the hidden spiritual values sent down to man along with the rules revealed to him in the Quran led to the development and deepening of the divine sciences. Having divided religious sciences into generally understandable and hidden sciences, Sufis classify hadith, fiqh, and verbal expression as generally understandable sciences, and consider Sufism to be a hidden science. This is a science consisting in the mysterious meaning of the texts from the Quran, revealed by Prophet Muhammad to some of his companions, which was studied by the method of generally understandable science, and was brought to a hidden science through creation. Allah created the universe for man, showing his last miracle at the creation of man. Therefore, man by nature is capable of immersing himself in the supreme universe - the divine universe. It should be noted in this regard some situations that explain how Quran hermeneutics and philosophical thinking reflect (substantivize) each other in Shia imamic education. Based on the words of Ali Abu Talib, considered to be the first imam, who knows all the secrets of the Quran, and the leader of the saints: "There is not a single ayah (verse) in the Quran that does not possess four different contents: external (zahir); internal (batin); limited (hed); related to the divine content (musatal), the Holy Book is scrupulously studied. In this regard, Nasimi writes:

Şahymerdan, Şiriýezdan, pişiwaýy ähli din,
Käşifi syrry welaýat Haýdary kerrar mest [3].

Meaning: I knew Ali, the leader of all Muslims, an expert in the subtle and mysterious meanings of holiness.

Jafar Sadiq (148/765 AD), the sixth Imam also said, explaining the Quran: "The Divine Book contains four things: composition (statement of content), allusion (figurative meaning), mysterious contents associated with the highest universal perception (latayf), and truths that have great spiritual content [1]." According to the writings of the Imam, the literal meaning of the Quran is intended for ordinary people (awamm), allusions - for selected enlightened people (hawass), secret knowledge - for saints close to Allah, and the great spiritual content - for Prophets. Nasimi's inspiration by this teaching can be seen in the following lines:

Magryfet ähline ýüzün Käba, mihrab kirpigiň,
Kyblaýy jan gaşyň weli aýnyň, ymamy Jagferi.

Meaning: Your heart (soul) has turned in the direction of the qibla (mihrab) towards people who have divine knowledge (Kaaba), such as Imam Jafar (ayn) himself, who are interested in him and promote his knowledge.

Munda imana gelmeýen bulmady syrry Ahmady.
Munda Aly gerek weli, tä kim aç bu haýbary [4].

Meaning: Those who do not believe in this will not understand the secrets of Prophet Muhammad, since in order to open this mysterious "fortress" one must have the knowledge of Ali.

As is seen, the generally understandable meaning of the Quran is intended to be heard, the allusion - to achieve spiritual understanding, the hidden content - to comprehend the whole spirit of Islam. Consequently, the poet speaks of knowledge of the "word - logos" in the inner semantic layer of the line.

The word - Logos, on the one hand, is a shell that reveals a specific meaning, and on the other hand, it expresses the meaning related to the subject, clarified in speech without prejudice to other meanings of the word (homonyms, definitions with a figurative meaning). Poetry is the most

effective way of expressing such a thought. Therefore, not all thinkers have the ability to deal with poetic language. Only a thinker who can fully express a concept through aesthetic language can become a poet who is able to explain a philosophical concept. Nasimi, who expressed deeply meaningful thoughts in the national spirit, pays special attention to the exact meaning of the word:

Ruwhy Kudsydyr kim Nesiminiň hakykat sözleri,
Barlagyn ortaýa goýdy, çykdy kendu aradan [4]

Meaning: Nasimi's words are the truth. These are the words of Gabriel, but he himself is not there now.

The poet did not hesitate to reveal some of the hidden secrets of mystical teaching in order to convey the idea he promoted to all people. Saying “the word of truth is the spiritual Quds”, he refers to Archangel Gabriel. In mystical philosophy a special explanation is given for the service of Archangel Gabriel. In the 26th chapter of the book “Zubdat al-Hakayik” by Eziz Nesefi, which describes the rules of Sufism with philosophical content, and in the 64th chapter of the book “Mir’at al-Muhakkikin” by Mahmoud Shabestari the spiritual service of angels is set out in the following order: the word is Gabriel, writing is Azrael, mind is Michael, and thought is Israfil [2]. Nasimi narrates about them in the qasida as follows:

Tewahhum - Ezraýyl, fähmiň - Mikail,
Ki Esraýyldyr nutgy dahanyň.

Hyraddür (bilim) Jebraýyl, mursel (pygamber) - tilimiz,
Köňül içre tutarrazy nahanyň (gizlin syr) [4].

Meaning: Revealed in the language of Prophet Gabriel is divine knowledge, a secret hidden in the depths of the human soul.

The conveyance of knowledge to Prophet Muhammad through Gabriel has a specific philosophical content. Here the doctrine of the emergence of the divine spirit in the human nature of Prophet Muhammad is put forward, since divine knowledge is expounded by the Prophet in human language in poetic form. This is the expression of the wisdom of Allah in the Quran. Archangel Gabriel, who established the connection between Allah and man, appears here as a revelation of divine knowledge. The representation of Azrael through “letter” means purpose, life, and destiny. Nasimi’s philosophy implies that man must improve his destiny through the mind that the Creator has endowed him with, where his mind is represented through Michael, and his ideas (speech) through Israfil.

As can be seen from the above examples, since a symbol is not a scientific but a poetic concept, it has a meaning in a certain specific poetic system, where it is the truth. Sentences that contain the true meaning of Muslim theology in the form of a symbol characteristic of Nasimi’s poetry, briefly describing the meaning of prophetic traditions, inspired by the Quran and Hadith, are of an aesthetic nature. This gives the poet specific and broad opportunities to create new relationships between secular and religious ideas in poetry. Maintaining a balance of two different semantic ideological lines, the poet presents each of his philosophical thoughts in comparison or confrontation with the phenomena of existence. It is obvious that each of his poems of a secular nature is also distinguished by religious features, which is associated with the expansion of the thinker’s outlook through the experience of “self-knowledge” gained on the mystical path. This represents not only the experience of self-knowledge, but it also relates to the experience of comprehending the Existence, nature, and social relations.

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Rezyume: *Ushbu maqolada Nasimiy falsafiy she'riyatining ilmiy-falsafiy kontseptsiyasi tahlil qilingan bo'lib, unda so'z bilan ishlash qoidalari aniq va tasavvufiy jihatlariga ega bo'lib, shoirning o'z didaktik maqsadlarini o'ziga xos she'riy uslub, ramziy va majoziy til orqali o'ziga xos boy ifodalashi, o'ziga xos badiiy ifodani o'z ichiga olgan. metaforik va allegorik tuzilishga ega sifatlar.*

Резюме: *В данной статье анализируется научно-философская концепция философской поэзии Насими, в которой правила обращения со словами имеют явный и мистический аспекты, а также довольно богатое по содержанию изложение поэтом своих дидактических целей посредством особого поэтического стиля, символического и образного языка, содержащего художественные качества с метафорической и аллегорической структурой.*

Kalit so'zlar: *Nasimiy, musulmon falsafasi, she'riyati, so'z, Logos, metafora, timsol, tasavvufiy, ichki, tashqi, zahir, botin.*

Ключевые слова: *Насими, мусульманская философия, поэзия, слово, Логос, метафора, символ, мистический, внутренний, внешний, захир, батин.*

THE USE OF VISUAL AIDS IN TEACHING HISTORY

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Summary: *The article deals with the issues of effective use of the visualization method. An analysis is given of the types, methods of using visualization. The positive impact of visualization in improving the quality and effectiveness of the lesson is emphasized.*

Key words: *Education, education system, teaching methods, teaching resources, historical sources, visualization, historical visualization, demonstrative method, teaching visualization, visual aids, subject visualization, conditional visualization, historical monuments, photo albums, educational transparencies, films, layouts, models, drawings, maps, atlas, graphics, diagram, paintings, cartoons, illustrations.*

At present, due to the rapid development of the modern world, the amount of information is also increasing. For this reason, the educational system is faced with an acute question of how not to get lost in a large flow of information and keep children interested in learning.

And in this key, the main task of the school is to increase the interest of students in the study of a particular subject based on the effective use of existing and new teaching methods and means.

The problem of using visualization in teaching history is considered one of the most urgent. This is due to the fact that when studying the historical past, students often have difficulty visualizing the historical past. As far as possible, the history teacher needs to use various pictures, diagrams, maps, etc., when explaining the topic, in order to highlight the realities of the time he/she is talking about as much as possible. The use of various visual data (photos, posters, drawings, etc.) helps students form visual representations of the reported facts. The use of visualization in teaching at history lessons is a powerful motivating factor in teaching schoolchildren and occupies a special place in the system of teaching methods. It is impossible to achieve the desired result without the use of visualization in the perception of certain historical facts by students. Visualization increases the attention, memory and mental abilities of students and prevents their fatigue during the lesson.

Thus, the materials demonstrated in the history lesson are of particular importance in attracting and interest of students to the proposed material, in keeping it in memory, in general, to the lesson as a whole.

The main method in teaching students is the actual learning process. Through the use of visual materials in the lesson, it is possible to increase students' interest in the lesson, develop their desire for knowledge and learning. In addition, the teacher should concentrate not only on giving knowledge, but should form and improve some aspects of the child's developing personality.

The widespread use of visualization methods in the modern history lesson encourages students to deeply understand the content of the topic, analyze it, comparison of historical facts and events. Because the clarity in the teacher's explanation of the topic ensures the reliability of the information provided, and gives students the opportunity to see with their own eyes the features of the historical period, events and facts. This, in turn, provides an opportunity to see not only some external set of circumstances, but also creates pictures and situations comparison of facts, events, to visualize the real picture. The great specialist in didactic Y.A. Komensky characterizes the visual way of presenting the material as follows: they can and should see, hear, etc., they will thus save human nature from endless ambiguities and hallucinations..." [6].

Visual aids are educational tools that enable students not only to perceive information by ear, but also to visualize the information presented. It has several meanings, on the one hand it is demonstrative, on the other hand, it facilitates the process of modeling concepts.

The outstanding psychologist L.S. Vygotsky called visualization “a psychological instrument of learning” [1, p.235]. Visual illustrations reveal not only the external aspects of the historical fact, but help to understand their inner meaning. The value of visualization in history lessons is not limited to the perception of historical facts and events through visualization and the presence of a clear idea about them, it also facilitates the understanding of complex historical events and contributes to the true assimilation of knowledge of history.

One of the thinkers who paid special attention to the principle of visual learning is Jean-Jacques Rousseau. He believes that everything that is in nature, all everyday and vital facts that the baby gets acquainted with, is the very visibility [2].

A deeper interpretation of visibility, in comparison with Komensky, was given by I.G. Pestalozzi. He believed that without the use of visualization in the broadest sense of the word, it is impossible to achieve a complete understanding of the nature around us, as well as stimulating the thinking and speech of the child: “When I currently look back and ask myself: what, in fact, did I do for learning? humanity, I find the following: I have firmly established the highest basic principle of learning, recognizing visibility as the absolute basis of all knowledge” [3].

As a result of the teacher's use of visualization in the lesson, not only interest in the lesson increases, but it also affects the students' deep understanding of the content of the subject.

The founder of Russian pedagogy K.D. Ushinsky formulated the principle of visibility in the following words: “What is visual learning? Yes, this is such a teaching that is built not on abstract ideas and words, but on concrete images ... A teacher who wants to firmly capture something in youthful memory must take care that as many sense organs as possible - ear, eye, voice, the sense of muscular movements and even, if possible, smell and taste, took part in the act of remembering. Consequently, the conceptual and abstract properties of objects or phenomena are assimilated by younger students easier, easier and better when they are explained through the reinforcement of specific images and facts [4.12].

Visual aids in terms of content, historical appearance, methodological descriptions, techniques for their preparation, methods of application are divided into several types:

1. Material exhibits, historical monuments, sculptural objects, household items of historical eras, archaeological finds, school museum exhibits.

2. Graphic visualization prepared for use in the lesson, historical photographs and albums, works of art, photographic documents and copies of notes, color illustrations for historical facts, educational slides, filmstrips and films, models and all kinds of layouts.

3. Reference materials, tools, historical and overview maps, historical atlases, drawings, graphs, charts, diagrams and educational pictures.

Visualization occupies one of the most important places in visual education.

Pictures are works of art. Historical events do not repeat themselves. That is why we accept them as sources, the foundations of historical knowledge in school. Based on the historical realities depicted by great artists, certain facts of the historical past are determined. For example, in the textbooks for the 8th grade of "World History" the theme "England as the first industrial power of the world" is accompanied by an illustration of a medieval art workshop and English manufactories, pictures of factories. With a comparative approach, one can better and deeper understand the progress of society and the laws of methodology.

Paintings can also be perceived as a source of development and knowledge of culture at a certain historical moment. For example, it is a picture depicting drawings from the walls of the city of Afrasiab. These drawings were created to decorate the city walls. In the course of studying this picture, children understand that this picture is the cultural heritage of our people of that era, how our culture developed, what scene is depicted in the picture, the artistic skill of the artist, and at the same time, they come to the conclusion that the picture is a valuable document of our history. As in

lessons in other subjects, color illustrations occupy a significant place in the use of visual aids in history lessons.

Educational illustrations include not only illustrations, but also illustrated handouts created on specific topics of the history course. Based on the originality and practicality of the illustrations, the teacher provides students with a broad explanation of their content or is limited to compiling a short summary [5].

According to the nature of the plot, educational illustrations are divided into event and typological. In the depiction of events, single facts in public relations, military operations, the political situation, the struggle for freedom are shown. They require storytelling.

For example, a picture that tells about the Mongol invasion of the state of Khorezmshahs. In the process of explaining the picture to students, we can recall the causes of the war between the two states, the political structure in the state of Khorezmshahs before the Mongol invasion, the heroic struggle of the Khorezmians against the invaders, and make a deep analysis of the causes and consequences of the war. In the typological study of paintings, the method of conversation is mainly used. For example, when studying a reproduction of the painting "Art Workshop", we can ask students different questions and offer to perform various kinds of tasks. What type of production is shown in the picture? What are the people in the picture doing? Look closely, in which city is the workshop located? Can you distinguish who is subordinate to whom here, and who is a free person, what made you think so? What can you say about the situation of the forced people of that time?, and so on. In some cases, it is necessary to provide students with the opportunity to independently express them on the topic, where it is necessary to correct and supplement their answer.

Portraits also play an important role in teaching history, they can help in modeling typical images of social groups and historical figures. When working with portraits, students are given the opportunity to learn about the life and merits of a particular historical figure. For example, in the 6th grade, in the lessons on the topic "Ancient India", when it becomes necessary to explain the caste division in India, portraits of representatives of various segments of the population of India can be used, as additional information, students can be given knowledge about the rights and obligations of each caste. Analyzing these illustrations together with students, we must give them information about the consequences of dividing people into different layers (castes), about the conditions of inequality in society.

Learners in history lessons should learn historical facts in chronological order, understand the meaning of historical terms and how they are used, learn information about historical figures and their era, life path and merits, historical events, causes and time of their occurrence, should be able to synchronously analyze, compare and remember results and other information.

For example, a portrait of Jalaladdin Manguberdi, one of the famous people in history. When describing the personality of Manguberdy, the teacher makes an analysis of the place of Jalaladdin Manguberdy in history, about his life path, services to the Motherland, about his patriotism, about personal courage, about his military skills, about what is his role in the improvement of our desert lands. The teacher gives a comparative analysis with other military leaders and historical figures. And, of course, about how our government currently evaluates the contribution of our great ancestor to the development of our country.

Widely used in history lessons and cartoons. The use of cartoons arouses genuine interest of students in the materials provided about various periods of history.

For example, in the textbooks "World History" for grade 10 on the topic "The Beginning and course of the First World War" there is a cartoon depicting the actions that have begun to divide the world between the largest countries in the world. It should be noted that the caricature in a satirical form depicts attempts to divide the globe by some states, their goal, the participants who started this division and those who became victims.

Among the visual aids used in teaching history, the most commonly used types of visualization in the lessons are considered. Most importantly, in the design of the lesson, the pictures and other visual materials presented in it, symbols, tasks for self-fulfillment, should correspond to the age characteristics of schoolchildren. It is also necessary to explain to students what to pay more attention to when working with visual materials, and to form the habit of independently analyzing the historical picture.

Improving the quality of the lesson and the results of mastering the proposed material through the targeted use of the demonstration method, which has a positive effect on the improvement and effectiveness of the lesson, makes the lesson accessible and interesting for young students.

The purpose of history lessons at school is to arouse students' interest in the history of their people, and thereby awaken in them a sense of love for the Motherland, for the priceless wealth and achievements created by great ancestors. And in this direction - in the transfer of historical knowledge to the younger generation, visual aids provide invaluable assistance!

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Rezyume: *Maqolada ko'rgazmalilik metodini darsda samarali qo'llash masalalari ko'rib chiqilgan. Ko'rgazmalilikning turlari, qo'llash usullari taxlil etiladi. Dars sifati va samaradarligining ortishiga ko'rgazmalilikning ijobiy ta'siri ta'kidlanadi.*

Резюме: *В статье рассмотрены вопросы эффективного использование метода наглядности. Дается анализ видам, методам использований наглядности. Подчеркивается положительное влияние наглядности в повышении качества и результативности урока.*

Kalit so'zlar: *Ta'lim, ta'lim tizimi, o'qitish usullari, o'qitish vositalari, tarixiy manbalar, ko'rgazmalilik, tarixiy ko'rgazmalilik, demonstratsiya metodi, o'quv ko'rgazmaliligi, ko'rgazmali resurslar, predmetlik ko'rgazmalilik, rasmi ko'rgazmalilik, shartli ko'rgazmalilik, tarixiy obidalar, foto albomlar, o'quv diapozitivlar, kinofilmlar, maketlar, modellar, rasmlar, xaritalar, atlaslar, grafika, diagramma, kartinalar, karikatura, illyustratsiyalar.*

Ключевые слова: *Образование, система образования, методы обучения, средства обучения, исторические источники, наглядность, историческая наглядность, демонстрационный метод, учебная наглядность, ресурсы наглядности, предметная наглядность, изобразительная наглядность, условная наглядность, исторические памятники, фото альбомы, учебные диапозитивы, кинофильмы, макеты, модели, картинки, карты, атласы, графика, диаграмма, картины, карикатура, иллюстрации.*

PEDAGOGICAL TECHNOLOGIES FOR THE DEVELOPMENT OF CRITICAL AND CREATIVE THINKING AMONG STUDENTS (USING THE EXAMPLE OF PRIVATE UNIVERSITIES)

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Summary: *In this scientific article, it will consist mainly of conducting an effective lesson to students through pedagogical technologies and maintaining its quality level. It includes all the elements of the educational process the creation of a teaching graph and an educational plan, the assessment of teaching and its results.*

Key words: *pedagogical technologies, educational processes, goal achievement, pedagogical experience, assessment, curriculum of the subject, technological approach.*

Pedagogical technology, as an independent subject in the educational system, includes all the elements of the educational process the creation of a teaching graph and an educational plan, the assessment of teaching and its results. The educational process of the higher educational institution should rely on the principles of full mastery of educational material. Though, in accordance with the curriculum of the subject, the educational material is obliged to be mastered by all students.

The essence of pedagogical technology. Pedagogy has always been in search of ways to achieve a high result in the educational process and has perfected its tools, methods and forms all the time. It was in the hope of finding some kind of method or a set of methods, which would give the opportunity to achieve the intended goal. As a result of this, various methodologies were created. With the pedagogical experience, new and more effective methods are being created.

However, the result of practical work on the creation of new methodologies does not meet the growing requirements all the time. Problems such as consistency in flow, a guarantee of achieving planned results raised their solution. The imprecise setting of learning goals, the uncertainty of achieving expectations from related teaching, is the main disadvantage of organizing a traditional learning process. In the modern market economy, an institution of higher education cannot allow as there is no result to be expected from teaching.

The result of training should be clear and the goal achievable, otherwise the need for trained specialists will also be ambiguous and they will not be required. An institution of higher education, relying on the traditional educational process, will not be able to train specialists who meet the exact requirements of modern production and other industries. Therefore, work on improving the educational process which increasing the interest of students, the search for the most effective ways to guarantee the results of training is continued without interruption.

Due to the fact that improving the quality of teaching has become an objective necessity, the relevance of the problem of the transition from separate teaching methods to pedagogical technology is growing.

The policy of education and upbringing at the same time requires a new social order. Currently, our society demands individuals who quickly rebuild and find a way out of a difficult situation by creating ideas. Deep changes in modern education are putting the use of new technologies of education and upbringing as a priority.

Teacher's opinion have the opportunity to choose the methods and technologies of teaching that are most optimal for the construction and design of the educational process.

The purpose of the technology for the development of critical thinking is to develop the mental abilities of students, which are necessary not only in their studies, but also in their later life (the ability to make clear decisions, work with data, analyze various aspects of phenomena), etc. In the formation of critical thinking skills in students, higher education is considered dependent on the

organization of classes using educational technologies of professors and teachers, as well as the creation of favorable conditions for their independent education in them.

Today, our educators and parents demand that we not only pay special attention to the education of young people, but also talk more with them, and at the same time encourage our young people to think critically. In this regard, our country is undergoing several reforms in the field of education.

The production of such complex and laborious machines and equipment could only be organized using technological documents that were clearly developed on the basis of a technological process. In these documents – the acquisition of raw materials, semi-factories and products, the development of complex processes of processing, processing routes and methods are described, divided into interconnected, sequential and accurately performed actions, operations, achieving the planned result. This will become the basis for expanded and mass production. In our time, technology is understood as the art of performing a certain work. To master it, it is necessary to study in depth the reflected technological documents.

Pedagogical science has always been in search of ways to achieve a high result in the educational process and has been improving its tools, methods and forms all the time. It was in the hope of finding some kind of method or set of methods, giving the opportunity to achieve the intended goal. We can see that various stylistics have emerged as a result. With the accumulation of pedagogical experience, new, more effective methodologies began to be created. In teaching practice, various pathways, methods and forms of learning are widely used. But the search for a single effective (integral) approach to teaching is still being pursued with intensity. The search for didactic approaches, didactic tools, which can transform teaching into a technological process of self-production continues.

Technological approach to the educational process in order to facilitate the student's acquisition of knowledge, first of all, the separation of educational material (information) into interconnected parts, fragments (educational elements; then the training performed to achieve the intended result from education requires the sequential, step-by-step, consistent implementation of knowledge activities (actions); designed works, the uniform implementation of all actions. The term pedagogical technology and the first developments in this area appeared in the USA in the 50s of the XX century.

After 15-20 years, pedagogical technology covered the field of education of all developed countries. In recent years, the range of use of pedagogical technology has been continuously expanding. The method and conditions of production are constantly changing rapidly and make new demands on the educational system. The stated ones, on the one hand, confirm the need for pedagogical technology to occur, while on the other hand, it demonstrates that it is a product of the acceleration of scientific technical progress.

Develop its own attitude to the material being studied and problem it over and over again (a new "call"). As for me, such a lesson structure corresponds to the stages of human perception. First you need to speak, remember what you know about this topic, then get acquainted with new information, and then think about where you can apply the knowledge you have received. With this approach, not only a deeper assimilation of knowledge by children is carried out, but also the idea of material ties (within the same topic, interdisciplinary, theoretical and practical), its structure by the child, the determination of students' own educational goals create the necessary internal motivation for the educational process. Each stage has its own goals and objectives, as well as a set of characteristic methods aimed primarily at activating research and creative activities, and then at understanding and generalizing the knowledge gained. From the above, we can say that each student creates an integrated cognitive field that combines all available theoretical knowledge, practical information, skills and abilities. If the student thinks critically, he will easily enter any stage of the lesson. Each stage has its own methodological techniques aimed at performing its tasks.

By combining them, the teacher can plan classes in accordance with the level of maturity of the students, the purpose of the lesson and the size of the teaching material. Each method and strategy of critical thinking is aimed at bringing the creative potential of students to the surface. Therefore, it is important to organize the lesson on the basis of modern educational technologies.

The effectiveness of training generates motivation, the preservation of which will also depend on the role of the student in the teaching process, the educator's attitude towards it. Therefore, the pedagogical student attitude has an important importance in the formation of motivation. It is desirable that these relationships correspond to the principles of personality-oriented teaching technologies. Also, the use of the praise method leads to the formation of qualities such as optimism for the student. Optimism, on the other hand, leads to a strengthening of trust and will.

Motivation increases and the planned training results are achieved. The reprimand method, on the other hand, (warning, reprimand, warning of negative outcomes, punishment) leads to the formation of a condition such as pessimism. As a result, confidence and will sharply decrease, Motivation disappears, planned training goals are not achieved. To some extent, the student, as a person, suffers a spiritual crisis. The formation of motivation necessarily depends on the personal state of the student. This is taken into account, first of all, such qualities of the student as attention, fatigue. The time of careful study in lecture sessions on the results obtained by foreign scientists is at most 20 minutes. In theoretical classes, sufficient attention is maintained for 45 minutes. After about 60 minutes, attention falls to the lowest level of attention (decreases 3-4 times).

Nowadays, it is worth paying special attention to this. The application of new pedagogical and modern information technologies leads to the acceleration of the teaching process. Therefore, there is an opportunity to present many new educational materials several times at a time.

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Rezyume: *Mazkur ilmiy maqolada asosan pedagogik texnologiyalar yordamida talabalarga samarali dars o'tkazish va sifat darajasini qo'llab-quvvatlash holati ko'rib chiqiladi. U o'quv jarayonining barcha elementlarini o'quv jadvalini va o'quv rejasini yaratish, o'qitish va uning natijalarini baholash kabi o'z ichiga oladi.*

Резюме: *В этой научной статье рассматривается состояние из проведения эффективного урока студентам с помощью педагогических технологий и поддержания его уровня качества. Он включает в себя все элементы учебного процесса: создание учебного графика и учебного плана, оценка преподавания и его результатов.*

Kalit so'zlar: *pedagogik texnologiyalar, ta'lim jarayonlari, maqsadlarga erishish, pedagogik tajriba, baholash, fanning o'quv dasturi, texnologik yondashuv.*

Ключевые слова: *педагогические технологии, образовательные процессы, достижение целей, педагогический опыт, оценка, учебная программа предмета, технологический подход.*

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SEMANTIC ANALYSIS OF THE SEMANTIC FIELD OF THE INTERNATIONAL TERMS RELATED TO "HOSPITAL" IN PRESENT DAY ENGLISH

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Summary: *This article devotes to the semantic analysis of the semantic field of the international terms related to "hospital" in present day English.*

Key words: *semantic field, term, meaning, semantic, linguistic fantasy, group of words, vocabulary.*

The importance of this article is defined by the consideration of one of the least studied problem. As the title implies the article describes the semantic field of the term "hospital" and the different meanings, phrases, set expressions related to the concept "hospital" in English language. Moreover the essential problems of thematic and ideographic groups of the terms and the problem of the synonymy as the basic semantic structure in present day are discussed. Furthermore the paradigmatic relations of the semantic field of "hospital" and the special terminology of medical terms and its role in the lexical language structure are researched. As it is crucial to develop the hospital related vocabulary and methods of teaching it for English language learners.

"Термины-единицы специальных подязыков-входят в общий словарный состав национального языка и образует в нём определённые лексические пласты, ограниченные в употреблении" [1;1].

The activity of human consciousness in reflecting reality has relative independence, introduces elements of linguistic fantasy into the division of the world by language. Our knowledge of the world is constantly evolving, and with it the lexical organism of the language is being improved. New words are not mechanically added to existing ones, but are placed in a system that was previously formed in our consciousness. Some group of terms, connected semantically, is a reflection of those connections that actually exist between realities.

Thus, the semantic field is a way of reflecting objective reality, a complex system of interconnections of its objects. A semantic field system is a way of organizing a model of a real environment. The units of the lexical-semantic field are combined in such a way that they represent a hierarchical structure organized into interconnected semantic spaces, semantic networks that are correlated with certain conceptual areas. The study of the lexical system of the language is currently reduced to the synthesis of already structured and described lexical-semantic fields, filling in the peculiar voids formed between the considered paradigms, combining the latter into inter-level semantic fields. Units of the semantic field are characterized by conceptual correlation. Usually, the unit of the semantic field is the lexical-semantic version or the whole term, if it is unique. The boundaries of the semantic field are very arbitrary. To determine the semantic field, you can specify a number of identification features: 1) vastness, semantic attraction; 2) integrity; 3) orderliness; 4) the interdependence of elements when each element of the field is adjacent to the neighboring one; 5) completeness; 6) arbitrariness and blurring of borders; 7) continuity. The semantic field is also characterized by the principle of distinguishing the center and periphery.

At least 3 dimensions are represented in the semantic field: syntagmatic, paradigmatic and associative-derivational. Syntagmatic connections determine the connection of words within the same speech segment. Paradigmatic relationships determine the grouping of words regardless of their actualization. That is, the basis is the correspondence of this particular group or term, as such,

to a certain concept. Units of the semantic field have common syntagmatic and paradigmatic properties correlated with each other.

Terms located mainly on the periphery are distributed among various thematic groups, forming as if a micro-field inside a large one and being structured according to the same principles. For instance: If we take as the center of our semantic field the concept “Hospital”, we have some list of representative terms which is included into close periphery and distant periphery. Close periphery: “doctor”, “injection”, “medicine”, “treatment”, and etc. Distant periphery: “visitors”, “fear”, “accident”, “location”, “speed”. Analysis of the origin, lexical-semantic group, historical evaluation, definition of the concept-term helps us to identify these elements of semantic field. For instance: the term hospital comes from the Latin term *hospitalia*, which means **an apartment** for strangers and guests; in the early Christian times, it was more a place of hospitality than of **medical treatment**; the word “hospital” comes from the Latin “hospes” which refers to either a visitor or the host who receives the visitor. The majority of linguistics nowadays agrees that the terminology should be studied as a system. In native linguistics according to tradition “semantic field” is called not the group of “homogenous senses” as Trier supposed, but the group of semantically connected terms. Taking into consideration the theories of semantic field it is possible to make a conclusion that the semantic field is one of the largest paradigmatic unites. In order to give a precise definition of the semantic field it is necessary to determine the notion of “a field”. So the field is a limited to some extent unity of elements, groups, subgroups which are interconnected, have some semantic features and influence each other. The possible conclusion is that the notions of “rank” and “groups” greatly differ from the term “field”. First of all, they mean smaller combinations and secondly, they are absolutely different unites of terms. The semantic field may be defined as the totality of groups and subgroups of terms; it is the hierarchy of continuities on the basis of their possessions of the general (integral) semantic features- scientific definitions which reflect logical relations in the particular branch of knowledge. It is the organization of related lexemes into a system which shows their relationship to one another. There may be comparatively small lexical groups of words belonging to the same part of speech and linked by a common concept. One of the most fruitful concepts evolved so far in structural semantics is that of the “lexical field”.

All terms are, at their most basic, collections of different sounds. Phonetics is the branch of linguistics that deals with the sounds of speech and their production, combination, description, and representation by written symbols. Sounds are generally categorized by place of articulation, method of articulation, and voicing. While these individual sounds are the most basic elements of language, they do not have meaning in of themselves (apart from some sounds which can be considered sound symbolic. Morphology is the study of the structure and form of terms in language or a language, including inflection, derivation, and the formation of compounds. Morphemic analysis helps us understand a great many terms but indivisible morphological elements such as affixes and roots cannot account for all the terms and phrases in one's mental lexicon. In learning a language it is not enough for one to know what the morphemes of the language are, he should also know what they mean. Morphemes and terms as a rule have their own meanings.

Semantic structural relations of lexical entities can be seen in three ways: *semantic similarity*; *lexical relations such as synonymy, antonym, and hyponymy*, and *syntagmatic lexical relations were identified*. In language, the term is the smallest element that may be uttered in isolation with semantic or pragmatic content (with literal or practical meaning). This contrasts with a morpheme, which is the smallest unit of meaning but will not necessarily stand on its own.

The componential features of the semantic field of terms related to “hospital” contain examples with the meaning related to the semantic field of words related to “hospital” and they consist of notional parts of speech such as noun, verb and adjective.

The accuracy of the terms is largely in the sense that they actually exist. The actual meaning of the terms or (or their spiritual structure) is usually partially consistent with their true meaning.

For example: The original meaning of the term Damascus is native or inhabitant of Damascus. The practical meaning of this term is a reversible fabric, usually silk or linen, with a pattern woven into it. The original meaning of the term, or more precisely, its semantic structure, should reflect one of the most important features of the object (thing or event). The structure of meaning in terminology is a direct scientific understanding, the clarity of a given concept; classification. A concept that does not have a clear scientific classification cannot have a definite name that reflects the specificity of the event. Different terms that mean the same subject in different languages often differ in their original meaning. However, in any case, the original, exact meaning of the terms reflects some of the characteristics of the object in question. We are so accustomed to terms in the native language that we usually do not pay attention to their original meaning at all. We are faced with the dilemma of what specific features of the concept being terminated should be reflected in the structure of the meaning of the term, which is very important in terms of translation theory and practice. A complex term will typically include a root and one or more affixes (rock-s, red-ness, quick-ly, run-ning, un-expect-ed), or more than one root in a compound (black-board, rat-race). Terms can be put together to build larger elements of language, such as phrases (a red rock), clauses (I threw a rock), and sentences (He threw a rock too but he missed). The term word may refer to a spoken word or to a written word, or sometimes to the abstract concept behind either. Spoken terms are made up of units of sound called phonemes, and written terms of symbols called graphemes, such as the letters of the English alphabet. In short, structural-semantic analysis is a grammatical and semantic analysis performed in order to teach the true spiritual content of a term. Structural-semantic analysis in examining many rock examples, the term that corresponds to the meaning of an unknown term should be checked from dictionaries. Some will be able to determine the meaning of the term being analyzed in this way.

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Rezyume: *Maqola zamonaviy ingliz tilidagi “kasalxona” so‘zi bilan bog‘liq xalqaro atamalarning semantik sohasini semantik tahlil qilishga bag‘ishlangan.*

Резюме: *Статья посвящена семантическому анализу семантического поля международных терминов, связанных со словом «больница», в современном английском языке.*

Kalit so‘zlar: *semantik soha, atama, ma’no, semantika, lingvistik fantaziya, so‘zlar turkumi, lug‘at.*

Ключевые слова: *семантическое поле, термин, значение, семантика, языковая фантазия, группа слов, словарный запас.*

**PEDAGOGICAL TECHNOLOGIES FOR THE DEVELOPMENT OF FREE THINKING
OF STUDENTS OF TEACHING ON THE SUBJECT "EDUCATION" IN PRIMARY
GRADES (USING THE EXAMPLE OF PRIVATE SCHOOLS)**

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Summary: *The scientific article deals with the development of human education through innovation pedagogy. It is due to improving the quality of the course on the implementation of its abilities. Serious thoughts are expressed on this new science, which is being formed and developed in nowadays, the main task of which is to master the theory of the entire training system, which has become, by organizing are on the basis of innovation.*

Key words: *innovation pedagogy, team of educators, pedagogy-knowledge, national education, didactic purpose, science, traditional pedagogy, national ideology.*

Introduction. Innovation pedagogy is a system of knowledge that is known as an informal science in the modern era, which, one day after another, falls under the attention of specialists of the entire pedagogical and is rapidly developing. The team of educators who recognized his educational achamism, scientists, therefore, have a positive approach to traditional pedagogy. Serious thoughts are expressed on this new science, which is being formed and developed in nowadays, the main task of which is to master the theory of the entire training system, which has become by organizing are on the basis of innovation. Innovation pedagogy has been taken as the basis for the halting of problems in theory practice. Based on the opinion of innovators, the usual classical pedagogical theories are outdated, in the new conditions it is impossible to educate the current generation this way. This is how the situation in the modern pedagogical science is in general. Innovation in this situation is very difficult.

Pedagogy is a system of knowledge. Objectivity and non-contradiction are its main characterizations. It is fundamental that the pedagogical system is based on basic knowledge that makes up the principles that make up the system of any as a scientific theory, that is, that this system is based on basic knowledge. The basic principles of objective theory must be purely scientific but not ideological.

Regular to the attention, this definition fully covered the meaning of the concept of education. Because the core of national education is nationality. Education in the younger generations serves to form such qualities as respect for oneself and other people, national pride and patriotism. The existence of a national personality figure, which embodies the qualities common to people of the same nationality and curriculum argues that: in the formation of a "national identity", the role of the factors of social education, first of all, the nationalist influence of the family, followed by social education is incomparable. Zero national upbringing can be understood as the educatin of the younger generation to form as a person who embodies the national qualities inherent in his people. Therefore, education is the process of education that makes up such as national ideology, national pride, national consciousness, which is necessary for the formation of a certain person or people as a perfect person in society [1.43-49]

As a style of education, the game has been used for a very long time.

This style is widely admired in folk education, preschool and school educational children's institutions. You can activate through to transfer the game play to the learning process:

- a) for any existing or the subject of the study department as an independent process.
- b) as an element of a wide-ranging process.
- v) as a lesson or part of the reading lesson (introduction. explanation, review)

g) as technological processes of extracurricular activities. The concept of "technological processes of pedagogical games" includes many styles of pedagogical games.

The pedagogical house is distinguished by its pronounced in terms of, accordingly, the result and its direction. Home in terms of is performed during the course of the lesson according to the joys of the song:

(a) the didactic purpose is worn before the teaching as a condition of the house.

(b) reading activities are conducted under the terms of the game.

(c) training material is laced as its product.

(g) an element of competition is introduced into the activities of reading, which turns the didactic matter into a game. The good execution of a didactic task depends on the outcome of the game.

The costs associated with the preparation and printing of textbooks and educational and methodological complexes on the subject of "Education" for publication (preparation of textbooks for publication, printing and delivery, payment to the developers) were included in the total cost of textbooks and educational and methodological complexes;

Costs for the purchase and delivery of textbooks and educational complexes on the subject "Education":

First grade of general secondary educational institutions, orphanages, specialized schools and boarding schools for children with disabilities in physical or mental development, children of families in need of social assistance and the publication of textbooks, multimedia applications and educational and methodological complexes on the subject of "education" for teachers, as well as the primary provision of textbooks on the basis of rent;

providing students with textbooks on a rental basis-covered by the funds of the Republican target book fund under the Ministry of public education of the Republic of Uzbekistan⁸.

"Primary education", "history" (by country and region), "methodology of teaching history", "teaching philology and languages: Uzbek language", "Uzbek language and literature", "national idea, fundamentals of spirituality and law education", "pedagogy and psychology", "theology" and Islamic Studies (Islamic history and source studies)". Let the graduates of the educational areas" psychology (sociopsychology of religion) "take the necessary measures to give the right to teach the subject of "education" in general secondary schools, and make appropriate changes to the educational plans of these educational areas from the 2020/2021 academic year;

Together with the Ministry of economic development and poverty reduction, let the Cabinet-based proposals for a new direction of education, in which personal are trained to teach "education" in general secondary schools within a month.

The Ministry of public education of the Republic of Uzbekistan, together with other interested ministries and departments, to coordinate the regulatory legal acts adopted by them within a month of this decision.

Therefore, the participation of only teachers and students in the current educational process has become insufficient. Another necessary condition for the implementation of modern education consists in creating conditions in which information sources in the educational sciences can freely be used, including each teacher and student, from the types that allow quick and convenient use of new information technologies. Though, in order to provide quality education, it is necessary to organize an activity consisting of a service in which the teacher delivers the necessary information to the student. This direction is called the direction of introduction of information technology into the educational process.

Expressing these informations in logical forms that students can understand constitutes verbal communication between the student and the teacher. Verbal forms of communication are

⁸ Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, No. 422 of 06.07.2020. <https://lex.uz/docs/4885018?ONDATE=08.05.2023%2000>

diverse, with the main ones including speaking, talking, asking questions, answering questions, arguing, debating, reporting, counseling, exhortation, reprimand, greeting, saying goodbye. Speech intonations used in these forms of verbal communication make it possible to deepen, clarify the meaning of the speaker, which is consistent with his goal.

The teacher will familiarize himself with new information and explain it, based on the concepts known to the student. In this process, students are occupied with activities of concentration, listening, hearing, perception, logical thinking, storage in memory, recall. In this, the interest, need, interest, ability, talent of the student will be the basis of his success.

Conclusion. Usually in the process of introducing a novelty, a psychological pore appears in relation to the novelty. Psychological pore is manifested in the indifferent or negative attitude of the pedagogical team, which belongs to the novelty, towards its novelty. In people, it is observed that such a psychological pore occurs openly or secretly. The results of the study show that such a pore is due to the fact that people prefer the usual style of activity, fear of uncertainty, the emergence of overwork, do not understand the need or importance of innovation. The effectiveness of the application of modern pedagogical technologies to the educational process is strongly influenced by the attitude of the leaders of the pedagogical community to innovation, the style of management, the features of interaction between the leader and employees. It is necessary that the members of the pedagogical community are fully provided with the necessary information about this news, as well as that they carry out activities aimed at improving this attitude.

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Rezyume: *Ilmiy maqolada innovatsion pedagogika orqali inson ta'limini rivojlantirish bayon etiladi. Bu uning qobiliyatlarini amalga oshirish kursining sifatini oshirish bilan bog'liq. Hozirgi kunda shakllanayotgan va rivojlanib borayotgan ushbu yangi fan bo'yicha jiddiy fikrlar bildirilmoqda, uning asosiy vazifasi innovatsiyalar asosida tashkil etilgan butun o'quv tizimining nazariyasini o'zlashtirishdir.*

Резюме: *Научная статья посвящена развитию образования человека посредством инновационной педагогики. Это связано с повышением качества курса по реализации его способностей. Высказываются серьезные мысли об этой новой науке, которая формируется и развивается в наши дни, главной задачей которой является овладение теорией всей системы обучения, ставшей, благодаря организации, инновационной.*

Kalit so'zlar: *innovatsion pedagogika, o'qituvchilar jamoasi, pedagogika-bilim, milliy ta'lim, didaktik maqsad, fan, an'anaviy pedagogika, milliy mafkura.*

Ключевые слова: *инновационная педагогика, команда педагогов, педагогика-знание, национальное образование, дидактическая цель, наука, традиционная педагогика, национальная идеология.*

THE SIMILAR FORMS IN O`GUZ LAHJA (GROUP), USING EXPRESSIONS OF SOME PHRASES IN ORAL SPEECH (USING THE EXAMPLE OF KHOREZM DIALECTS)

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Summary: *The article deals with the Khorezm dialects. Phraseologisms were analyzed that received similarities and comparative forms in this dialect, as well as those used in describing person. Though examples of this dialect from oral speech are also given.*

Key words: *Dialect, lahja (group), lahja (group) of o`guz, phraseological unit, vocabulary, semantic, similarity, oral speech.*

The study of phraseology historically, though the history of the sources of phraseological formation is one of the main problems facing phraseological science.

Phraseologisms are the product of not only a linguistic phenomenon, but also a socio-historical period. In this sense, when the features of the formation of phraseologisms are investigated, their historical study has scientific and practical significance. Modern research shows that the emergence and formation of phraseology occurs in the distant. The phraseology of the Uzbek language has specific historical stages of development. At the initial stage, lexemes, naturally containing phraseology were the property of the vocabulary of the Uzbek language. Over the periods, many lexemes of Persian and Arabic, which were reflected in phraseology, treated our language. The phraseological composition like the lexical composition in the process of development and enrichment as well as changes follow the internal laws of the language. The formation of phraseology is associated with vocabulary. The more the lexical fund is enriched with words, the more the phraseological fund grows. Because the first source for the formation of phraseology is lexemes. Do not forget that phraseology is an interconnected association of lexemes. Accordingly, phraseology consists of compounds. However, the specific processes of phraseologism formation distinguish them from simple phrases. The formation of phraseology is also associated with lysonic and nolysonic factors. Do not forget that phraseology is an interconnected association of lexemes. The emergence and formation of phraseology is closely connected, firstly, with such factors as historical processes, the social environment, socio-political life, political and spiritual views, and secondly, fox, that is, the grammatical laws of the language. [1.49-186]

During the formation period, phraseologisms like vocabulary obey the internal laws of the language with phonetic, lexico-semantic and grammatical requirements.

In recent years, in Uzbek linguistics, serious advances have also been made in the study of various aspects of phraseology. A number of doctoral and candidate works on the scientific study of phraseology are protected dozens of scientific articles, textbooks, phraseological dictionaries have been created. In Uzbek linguistics, Sh. Rakhmatullaev was the first to begin the scientific study of phraseologisms. His doctoral work, defended in 1966, and in the monograph "Some issues of Uzbek Phraseology" widely covered the grammatical nature of phraseologisms. It is important that this work justifies the need to study phraseology as a dictionary unity. The opinions and conclusions set forth in the monograph made it. Possibly to study phraseology in semantic, grammatical, stylistic aspects. A number of scientific works of the scientist in recent years have also made an important contribution to the development of Uzbek phraseology. Thus, linguists began to study phraseologisms grammatically and semantically. In Uzbek linguistics, the study of phraseologisms in stylistic terms has been established. The methodological features of phraseologism of the works of Uzbek writers and poets became the topic for many candidate works. However, many works by poet-writers methodically covered phraseology rather than as a separate theme. This does not mean that the skill of Uzbek art artists to use phraseologisms and their methodological characteristics are

fully illuminated. It is also important to create a scientific and theoretical manual that defines the foundations of the phraseology of the Uzbek language. It is necessary to establish a multi-volume dictionary of the interpretation of the Uzbek language, which covers all its phraseological riches. It is also important for comprehensive schools to create an interpreted phraseological dictionary, which is often used in consumption. Of course, this work will allow a deep study of phraseology not only theoretically, but practically. This allowed phraseology to be shaped as a new field of linguistics and expanded the scope of its study. A comprehensive deep scientific analysis of the grammatical, syntactic, stylistic features of phraseologisms also raises the responsibility for creating some theoretical basis. However, despite the emergence of many theoretical and practical-scientific studies, phraseology is studied field of linguistics.

Due to the fact that phraseology is a complex phenomenon in the structural, semantic, functional and methodological aspects, it has specific formation laws.

Phraseological formation is the process between elements of language, in particular two or more words, to the formation of a new linguistic unity. The structural and spiritual formation of phraseology is very difficult in relation to vocabulary, and this process takes place in stages. It should be noted that phraseology is currently studied from a synchronous point of view and this approach continues to this day. This does not make to study the sources, historical and etymological foundations of phraseology. This is especially pronounced in the aspects of the formation of phraseology. In fact, the genetic basis of lexemes is the main source of phraseologisms. It is lexemes that are the "subject of construction" for phraseology. However, "phraseological unit arises on the basis of a specific contradiction and unit of the plan of expression and content, phraseological units require a special approach, study" [2.4]

In this article, we will semantically analyze some of the expressions in the Khorezm legends of our time. In these words there are also phrases in which quality is given in relation to people. Many of them had analogies and comparative additives.

The phrase "**Og'zi-burni o'ymoqdin**" means coordinated a bit beautiful. The sign word in this phraseology is a legend in literary language. When we put it on our finger, it will be compact and beautiful. The essential side of this phrase is that it does not apply to men, but to girls. Mn: I want you to tell our daughter. (Dialect which is from oral speech).

The phrase "**Tondiro qorog'on kuchukdin**" can be used in reference to a person sitting to taste. In fact, when women cover bread, street puppies keep an eye on bread. Bologinoma was waiting for me to pray.

The expression "**Yuvilmog'on qoshiqdin**" is used in reference to a person who walks in an unnecessary place and interferes with a conversation or business.

The phrase "**Mongloyi durip, angasini qoshidi**" is used in reference to those who is looking for the guilty others.

The phrase "**Tars qurilg'on tondirdin**" means that she did not appear. This phrase can be applied to both people and things. Mn: Actually, you've struck a tone and we're done. Or, by the way, you touched this thing (Dialect which is from oral speech).

The phrase "**Mulla mingan eshakdin**" means a nest and is equal to the expression of the Uzbek literary language, which did not take sheep from his mouth. Mn: Could she have become the donkey her daughter was riding? (Dialect which is from oral speech).

The word "**Ortilg'on tuxumdin**" means that it is mainly used in reference to men who have received juicy or bearded eggs. The expression "**Go'zzi po'stinni yirtiqidin**" is used in reference to something that is affected by something or, for the most part, opens the eyes of an evil person. The value is equal to a large open eye connection. Another similar phrase is found in this dialect, although the phrase "**Go'zzi kambog'olni otizidin**" "**Go'zzi o'g'rinikidin**" is also similar to the phrase, which means" open your eyes. "Mn: Voy voy nabalo, go'zzi kambog'olni otizidin (Dialect which is from oral speech).

The phrase "Osmonnon po'stin toshog'ondin" in Uzbek literary language can be synonymous in the full sense of the word "Tomnan tarasha tushgandek." And the meaning is from cat to surprise. Mn: You don't have to talk about it. (Dialect which is from oral speech).

This spoken word also contains the phrase "Itni odini marjon qo'yg'ondin" which does not correspond to the character of a bad, respectful and disrespectful person. Azizbeka, walking with you back-up, dipped the dog that bit him. (Dialect which is from oral speech).

"To'yo gayan to'toydin" is used in reference to a person who does not work at the place of work. Where everyone worked, you sat nearby. (Dialect which is from oral speech).

This phrase "Yuraki yorilg'on Potmodin" is used mainly in relation to people who speak to each other. Close to the phrase in the Uzbek literary language "Do not speak." Songo, if you're convinced of that, Potmodin. (Dialect which is from oral speech).

"Mol yolog'on qoziqdin" means very thin. In Uzbek literary language, the words "Eti suyagiga yopishgan", "Qulog'idan kun ko'rinadi" are equal. There was ours and I was very similar. (Dialect which is from oral speech).

The phrase "Tonobdo tonqoni yiqor" is used in reference to a person who regrets when he comes to the main place of work. Because we know from history that the body is a tool for measuring the earth.

The phrase "Boshshi go'ttinnan oshoq" applies to people who do one thing without listening to others and then feel sorry. The point of this phrase is though she herself knows what she is doing to make it better than ever.

While we are analyzing, there are also phraseologisms that are used by representatives of the dialect, and their meaning is expressed in the same word.

The phrase "**Ongi qochgon**" means literary language is amazed. In particular, this phrase has the phonetic phenomenon "**kallavarang, kalpang**".

There is an opinion that should be expressed. Phraseology will be directly related to the lifestyle, the national culture of a certain people. And if words are used in a colloquial style and precisely in Uzbek dialect, then they reflect their inner world, but also the one who lives with him in the same territory. Because language is the mirror and wolf of every nation.

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Rezyume: Bu maqolada o'g'uz lahjasining Xorazm shevalari asos qilib olingan. Ushbu shevadagi o'xshatish va qiyoslash shakllarini olgan hamda insonga ta'rif berishda qo'llaniladigan frazeologizmlar tahlil qilingan. Shuningdek shu sheva og'zaki nutqidan misollar keltirilgan.

Резюме: В статье рассматриваются хорезмские диалекты. Были проанализированы фразеологизмы, получившие сходства и сравнительные формы на этом диалекте, а также использованные при описании личности. Хотя примеры этого диалекта из устной речи также приведены.

Kalit so'zlar: sheva, lahja, o'g'uz lahjasi, frazeologizm, leksik, semantika, o'xshatish-qiyoslash, og'zaki nutq.

Ключевые слова: Диалект, лахджа (группа), лахджа угуза, фразеологическая единица, лексика, семантика, сходство, устная речь.

THE CLASSIFYING OF THREATS TO INFORMATION SECURITY, INFORMATION SECURITY, INFORMATION

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Summary: *The article deals with the information from any carriers against accidental and deliberate natural or artificial influences aimed at losing and changing data. If the further danger lies only in falsifying or copying confidential messages and documents and the danger currently lies in the use of a set of computer-electronic data, electronic arrays without requesting the permission of their owner. In addition, the desire to extract material benefits from these actions are developed.*

Key words: *Information security, confidential messages, computer-electronic data, electronic arrays, material benefits, constitutional barriers, falsifications.*

Information security refers to the security of information from any carriers against accidental and deliberate natural or artificial influences aimed at losing and changing data. If the further danger lies only in falsifying or copying confidential messages and documents and the danger currently lies in the use of a set of computer-electronic data, electronic arrays without requesting the permission of their owner. In addition, the desire to extract material benefits from these actions are developed.

Information protection refers to a regulated dynamic technological process that ensures information security of management and production activities and ensures the integrity, reliability, ease of use and confidentiality of the organization's information reserves.

The objectives of information protection are:

- prevention of leaks, losses, changes, falsifications of information without approval;
- prevention of threats to the security of the individual, society, state;
- prevention of unauthorized actions to destroy, modify, falsify, copy, block information;
- prevention of manifestations of information violence and any illegal interference in the information system, which ensures a rough procedure for documented information;
- protection of constitutional barriers of citizens preserving personal confidentiality and confidentiality of personal data available in the information system;
- preservation of state secrets, confidentiality of documented information in accordance with the law;
- ensuring the barriers of subjects in the creation, development and use of information systems, technologies and means of their provision.

Information Protection:

- ensuring physical integrity of information, as well as preventing destruction of information elements;
- prevention of falsification (change) of information elements with preservation of its integrity;
- prevention of unauthorized receipt of information from the network by people or process that have no relevant violations;

It is understood that information and resources transferred (sold) by the owner will be used only on the basis of contracts agreed between the parties.

Classification of risks in relation to information. One of the main tasks of the security policy is to find and eliminate potentially dangerous places in the protection system. Checks show that the greatest risks in the network are special programs for unauthorized access, computer viruses and

special codes placed inside the program, which pose a great danger to all objects of computer networks.

When determining the real need of higher educational institutions in the protection system and choosing the necessary security measures, various approaches are used. One such approach is based on the following three aspects of information security.

1. Breaches of protection. Any actions that harm the security of the storage and use of information belonging to the Institute.

2. Protection mechanism. Mechanisms for detection and elimination of violations of protection, as well as loss of consequences of violations.

3. Protection service. A service designed to improve the level of data processing systems and the security of information transportation corresponding to the institute.

Violation of protection, protection of a computer system or networking attempts can be classified by treating a computer system as an object to provide information. In general, a transfer of an information stream from some source (e.g., a file or part of memory) to another file or directly to a user is observed. From this point of view, the following attacks can be distinguished:

Disconnection (resolution);

- Detention (interception);
- Conversion (modification);
- Falsification (falsification).

Disable (enable). The system resource will be destroyed, the availability of information will be disrupted. As an example of such violations, a device failure, a disconnection of a communication line, or a violation of the file fixation system can be cited.

Hold (intercept). As a result, the confidentiality of information is violated. Such users may be individuals, programs or computers. As an example of such violations, we can specify a connection to a communication cable and illegal copying of files or programs for data retention.

Modification. Not only the path to illegal use of the resource be opened, but the resource will also be changed by the intruder. As a result, the integrity of the information is violated. As an example of such violations, changes in the content of data in the file, its modification to change the tasks and characteristics of the program, changes in the content of information transmitted over the network can be mentioned.

Falsification. A fake object is included in the system. As a result, the authenticity of the information is violated. As an example of such violations, you can specify the transfer of information on the network or adding records to the file.

That is in a telephone conversation, in e-mail information or in a transmitted file, there may be important or confidential information. Naturally, it is not acceptable to get acquainted with such information of people to whom this information is not intended.

It is difficult to identify passive protection violations since they do not provide for any changes to the data. However, it may be possible to prevent such violations. Therefore, in the case of passive violations, it is necessary to pay attention not to their detection but to their prevention.

As a result of active attacks, the data flow changes or false flows are formed. Such violations can be divided into four groups: imitation, recovery, information alignment (modification), service violations.

Simulation means that an object is another object. Typically, the simulation is performed along with an attempt at another type of active violation. For example, offending systems may store a stream of authentication data that is exchanged and restore the actual sequence of authentication information. This allows an object whose powers are limited to expand its competence by being an object with broader powers (imitation). Recovery refers to passive hold of a data block and then retransmission to create an unauthorized result. Modification of data refers to a change in the

legitimate part of information in order to create an unauthorized result or a change in the sequence of receipt of information.

Service problems impede the normal operation of communications or their management tools. In such violations, a certain goal is pursued: for example, an object can block all address information. Another example is blocking all network activity by overloading network with address information flow or by disabling the network.

It is very difficult to completely prevent active violations of protection. Therefore, the main goal of active violations of protection should be their prompt detection and quick restoration of system performance. Timely detection of violations also sets the task of stopping the offender, and this task can be considered as part of the violation prevention system.

Most of the protection mechanisms used in practice, chemical mechanisms are based on cryptographic methods. Converting information close to encryption is a way to chemically manipulate messages. The set of tasks of the protection service used in practice includes: confidence, authentication, integrity, impossibility of lying, usefulness, operation management.

Confidence helps protect the flow of messages from passive attacks. Depending on the importance of the content of information, several lines of chemistry can be set. The protection service in a wide range must be transmitted between two voluntary users for the entire time. For example, if virtual communication is established between two systems use of chemistry in such a wide array can prevent any loss in data transmission. The chemical service can guarantee the protection of individual information or a separate part of erroneous information. However, the effect of such measures is less than that of protection services on a large scale and their implementation can be more difficult and expensive.

Another aspect of certainty is the protection of the flow of messages from its analytical research. An analytical study refers to an attempt to find out the source of information related to the description of information in a communication system, the frequency of informational transmission and the size of information. The authentication service is designed to reliably identify the source of information. For example, the task of the authentication service is to check whether the signal source is actually signal transmitter. In external interactive communication for example when connecting to the head, two aspects of service can be distinguished. Firstly, when establishing authentication means must ensure that the contact members are indeed, secondly, these means must not allow any interference of third parties in the address flow during the subsequent exchange of addresses. Integrity may refer to the flow of information such as confidentiality and individual information. In this case, it is advisable to chemize the entire stream. Chemizing facilities based on information integrity links work with the information flow and ensure that despite the transfer of received information, the preliminary transmission without violation of sequence and will clearly coincide.

These means also affect protection against the destruction of messages. Though, chemizing means based on information integrity links include modifications and service cases.

Information integrity protection without establishing connections will work with special information and guarantee the protection of information only from modifications.

Given to the active opposition, to integrity protection attacks, it is important not to prevent violations but to identify violations. Once a breach of integrity has been identified such a service can only report a breach that has occurred and the recovery of broken or lost information is done by other software or operator. In general, the use of automatic recovery tools is preferred.

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Rezyume: Bu maqolada ma'lumotlarni yuqotish va o'zgartirishga yunaltirilgan tabiiy yoki sun'iy xossalari tasodifiy va qasddan ta'sirlardan har qanday tashuvchilarda axborotning himoyalanganligi haqida aytilgan. Xavf faqatgina konfidencial xabarlar va hujjatlarni o'g'irlash yoki nusxa olishdan iborat bo'lsa, hozirgi paytdagi xavf esa kompyuter ma'lumotlari to'plami, elektron ma'lumotlar, elektron massivlardan ularning egasidan ruxsat so'ramasdan foydalanishdir. Bulardan tashqari, bu harakatlardan moddiy foyda olishga intilish ham rivojlandi.

Резюме: Статья посвящена информации от любых носителей против случайных и преднамеренных естественных или искусственных воздействий, направленных на потерю и изменение данных. Если дальнейшая опасность заключается только в фальсификации или копировании конфиденциальных сообщений и документов и в настоящее время опасность заключается в использовании набора компьютерно-электронных данных, электронные массивы без запроса разрешения их владельца. Кроме того, вырабатывается желание извлечь из этих действий материальную выгоду.

Kalit so'zlar: Axborot xavfsizligi, maxfiy xabarlar, kompyuter-elektron ma'lumotlar, elektron massivlar, moddiy manfaatlar, konstitutsiyaviy to'siqlar, qalbakilashtirish.

Ключевые слова: Информационная безопасность, конфиденциальные сообщения, компьютерно-электронные данные, электронные массивы, материальные выгоды, конституционные барьеры, фальсификации.

MODERN EDUCATIONAL TECHNOLOGIES IN TEACHING PHYSICS

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Summary: *The article is devoted to the analysis of the influence of modern educational technologies on the process of teaching physics. The author discusses the introduction of interactive whiteboards, mobile applications, virtual and augmented reality, as well as online platforms and simulators as tools to improve learning efficiency and motivate students. Particular attention is paid to practical cases and examples of the successful use of these technologies in the educational process. The article substantiates the relevance of integrating innovative teaching methods for the development of critical thinking and practical skills of students. In conclusion, it is concluded that modern educational technologies have a significant potential in teaching physics.*

Keywords: *Modern educational technologies, interactive whiteboards, mobile applications, virtual and augmented reality, online platforms, simulators, learning efficiency, student motivation, practical skills.*

Introduction. In the modern world, where technology is developing at an incredible speed, the educational process is also undergoing significant changes. New educational technologies offer unique opportunities to improve learning efficiency and motivate students. The introduction of innovative approaches and tools, such as interactive whiteboards, mobile applications, virtual and augmented reality, as well as online platforms and simulators, is radically transforming traditional methods of teaching physics, making them more accessible, interactive and understandable for modern students. This is especially important for teaching natural science disciplines such as physics, where it is necessary not only to transfer the amount of theoretical knowledge to students, but also to ensure an understanding of the fundamental principles and laws of nature. Modern educational technologies, including digital tools and interactive platforms, open up new opportunities to improve learning efficiency and deepen understanding of the subject [1].

Main part. The purpose of this article is to highlight modern approaches and technologies in teaching physics, to research their impact on the quality of the educational process and the level of mastery of the material. The relevance of the research is due to the need for constant search and implementation of innovative teaching methods to maintain the interest and increase the motivation of students, as well as to develop their critical thinking and practical skills.

The article will discuss various aspects of the use of modern educational technologies in teaching physics, including the use of interactive whiteboards, mobile applications, virtual and augmented realities, as well as online platforms and simulators [2-4]. Particular attention will be paid to the analysis of practical cases and examples of the successful implementation of technologies in the educational process, which demonstrate their effectiveness and impact on educational results.

Interactive whiteboards allow teachers to visualize complex physical processes and phenomena by creating visual models that can be easily modified or adapted in real time to demonstrate different experimental conditions and parameters. This enhances students' understanding of the material because they can observe the dynamics of the processes, which is not possible with traditional teaching methods. For example, when learning Newton's Laws, the interactive whiteboard can demonstrate how an object's motion changes under different forces, allowing students to visualize these changes and better grasp the concepts.

Mobile apps, on the other hand, offer students the opportunity to self-study physical laws and principles at a time and place that suits them. There are different types of educational apps, from interactive textbooks to virtual labs that allow you to conduct experiments and gain the first-

hand experience needed to gain a deep understanding of a subject. Such applications may include tests and self-assessments, as well as multimedia materials that make the learning process more engaging and effective.

One of the successful examples of using mobile applications in teaching physics is an application for studying mechanics, which allows students to simulate and analyze the movement of objects under the influence of various forces, changing parameters and conditions and observing the results in real time. This not only helps students better understand the laws of mechanics, but also develops their analytical skills and problem-solving ability.

The introduction of interactive whiteboards and mobile applications into teaching physics can overcome traditional barriers in learning, providing students with greater opportunities to explore and understand the physical world.

The use of virtual and augmented realities (VR and AR) in teaching physics represents one of the most innovative areas in the use of modern educational technologies. These technologies enable the creation of a fully immersive research environment where students can experiment and study physical phenomena in a controlled but realistic environment.

Virtual reality (VR) offers a unique opportunity to deeply understand complex physics concepts by immersing students in 3D interactive environments. For example, a VR space flight simulation can give students the opportunity to study the laws of gravity and planetary motion in a realistic environment. Students can observe the orbital motion of bodies, change the speed or direction of motion, and observe the results of their actions in real time, which contributes to a deeper understanding of astrophysical processes.

Augmented reality (AR), in its turn, allows virtual objects to be superimposed on the real world, thereby enriching the learning process. An example of the use of AR in teaching physics is an application that allows students to "see" the electromagnetic fields around various objects using a smartphone or tablet. Such applications not only make invisible phenomena visible, but also allow students to experiment with changing the parameters of these fields, observing the changes in real time. One specific example of the successful use of VR in education is a project designed to study quantum mechanics. In this project, students use VR headsets to visualize and interact with quantum objects such as electrons and photons. This allows them to visualize how quantum particles behave differently from objects in classical physics, and to better understand the principles of uncertainty and superposition.

An AR use example involves the development of a mobile app that allows students to conduct virtual experiments with electrical circuits. Students can "build" circuits on real surfaces by adding components such as resistors and capacitors and observing the changes in current and voltage in the system. This not only helps students better understand electrodynamics, but also develops their practical problem solving skills.

The introduction of VR and AR into teaching physics opens up new prospects for the development of the educational process, making it more interactive, understandable and fascinating. These technologies provide students with opportunities for deep immersion in the material being studied and active participation in the educational process, which contributes to more effective knowledge acquisition and the development of practical skills.

Next, we will consider the use of online platforms and simulators for teaching physics, illustrating this with specific examples and case studies. These technologies allow students to explore physical phenomena and laws in an interactive and fascinating way, contributing to a deep understanding of the subject.

Online platforms such as Ph ET Interactive Simulations offer a wide range of free simulations to explore various aspects of physics, from mechanics to quantum physics [5]. These simulations allow students to visualize and manipulate elements of experiments while observing the results in real time. For example, the Pendulum Laboratory simulation allows the experimenter to

vary the length of the pendulum, the mass of the bob, and the initial position to examine how these variables affect the period of oscillation. This clearly demonstrates the dependence of the period of oscillation on physical parameters, making complex concepts easier to understand.

Another example is the use of the "Circuit Construction Kit" simulator, which provides users with the ability to create their own electrical circuits by experimenting with various electrical components such as resistors, capacitors and batteries. Through these simulators, students can learn Ohm's and Kirchhoff's laws in an interactive environment, thereby developing skills in applying theory to practice.

These examples demonstrate how online platforms and simulations can be used to enrich knowledge on physics. Such tools not only help students better understand complex physics concepts, but also stimulate their critical thinking and creativity by providing opportunities for independent exploration and experimentation.

As a result of the conducted review work, it was established that the integration of the latest technological solutions into the educational and research process opens up broad prospects for improving the quality of knowledge and competence of future specialists. These technologies not only make it possible to visualize complex concepts and conduct experiments in a safe and controlled environment, but also to provide the accessibility of educational content at any time and in any place contributing to the increase of students' motivation for learning and self-improvement.

However, it should be considered that the successful integration of modern technologies into the educational process requires not only appropriate investments in equipment and software, but also the training of teachers who are able to effectively use these tools in their teaching practice. In addition, there is a need for continuous updating of teaching materials and techniques to keep them up to date with the latest scientific advances and technological developments.

Conclusion.

In conclusion, we can conclude that modern educational technologies are a powerful tool in the hands of teachers and students, which, if used correctly, can significantly improve the process of teaching physics, making it more effective, interesting and accessible. It is important to continue research in this area, develop new technological solutions and teaching methods, and share experiences and best practices within the educational community to ensure qualitative and modern education for future generations.

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Rezyume: *Maqola zamonaviy ta'lim texnologiyalarining fizikani o'qitish jarayoniga ta'sirini tahlil qilishga bag'ishlangan. Muallif interfaol doskalar, mobil ilovalar, virtual va to'ldirilgan reallik, shuningdek, onlayn platformalar va simulyatorlarni joriy etishni ta'lim samaradorligini oshirish va o'quvchilarni rag'batlantirish vositalari deb hisoblaydi. Bu texnologiyalarni o'quv jarayonida muvaffaqiyatli qo'llash bo'yicha amaliy holatlar va misollarga alohida e'tibor qaratilgan. Maqolada talabalarning tanqidiy fikrlash va amaliy ko'nikmalarini rivojlantirish uchun*

innovatsion o'qitish usullarini integratsiyalashning dolzarbligi asoslanadi. Xulosa qilib shuni aytish mumkinki, fizika o'qitishda zamonaviy ta'lim texnologiyalari salmoqli imkoniyatlarga ega.

Резюме: Статья посвящена анализу влияния современных образовательных технологий на процесс преподавания физики. Автор рассматривает внедрение интерактивных досок, мобильных приложений, виртуальной и дополненной реальности, а также онлайн-платформ и симуляторов как инструментов для повышения эффективности обучения и мотивации студентов. Особое внимание уделяется практическим кейсам и примерам успешного применения данных технологий в образовательном процессе. Статья обосновывает актуальность интеграции инновационных методов обучения для развития критического мышления и практических навыков студентов. В заключении делается вывод о значительном потенциале современных образовательных технологий в обучении физики.

Kalit so'zlar: Zamonaviy ta'lim texnologiyalari, interfaol doskalar, mobil ilovalar, virtual va to'ldirilgan reallik, onlayn platformalar, simulyatorlar, o'quv samaradorligi, o'quvchilar motivatsiyasi, amaliy ko'nikmalar.

Ключевые слова: Современные образовательные технологии, интерактивные доски, мобильные приложения, виртуальная и дополненная реальность, онлайн-платформы, симуляторы, эффективность обучения, мотивация студентов, практические навыки.

ARTISTIC POETICS OF GADOY'S CREATIONS

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Summary: *Gadoy, one of the teachers of founder of Uzbek literature Alisher Navoy had his own unique working way that was very significant role in Uzbek literature. The article analyzes Gadoy's creative heritage and his poetics. Here you will be given a talk of his mastery of the arts.*

Key words: *arts, poetics, allegory, rubay, ghazal, passion, discussion, quote, radif, compliment.*

The article talks about the lyrics of Gadoy, one of the Turkish artists of the 15th century. The poet's only department is the "Devon Gadot" (*iCh[^]) "Bibliatque Nationale" ("National Library") in Paris "Department des des Manuscrits Suppl turc" ("Department of Turkish Manuscripts") preserved under accession number 981, and its photocopy was brought by Professor H. Suleyman in 1968 and transferred to the fund of the Alisher Navoy Literary Museum. There is no information about Gadoy's work or his other works. The existence of other handwritten copies of "Devoni Gado" has not yet been established. The sofa of Maulana Ghadoy is composed in accordance with the tradition of constructing sofas of the 15th century, that is, the sequence of ghazals is built on the basis of the Arabic alphabet. According to the genre of Gadoy's poetry, there are ghazal, qasida, mustakhzad and tuyuk. There are 237 poems in total. 230 of them gazelle, 1 mustakhzad, 1 qasida and 5 tuyuk. In Devon, 9 ghazals, 197 ghazals and 1 qasida, 1 mustakhzad and 1 tuyuk were written under the pseudonym "Gadoy", and 28 ghazals were written without a pseudonym. We can find information about the life and work of Gadoy only in Alisher Navoi's book "Majolis un-nafois" and the work "Mukhokamatul-Lugatain". The article describes the poetic features of Uzbek poetry of the first half of the 15th century and the significance of Gadoy's poetry in it; Genre poetics of Gadoy and Devonian "Devoni Gado"; Gadoy's image creation skills; Weight and rhyme in Gadoy's poetry; The issue of style, traditional and innovative features of Gadoy's poetry is analyzed. When analyzing Gadoy's work on the basis of a digitized manuscript, "Devoni Gado" (^ ù[^]j[^]) inventory number 981 was described. Based on Erkin Akhmadkhodjaev's monograph "Gadoy," the poet's ghazals were compared with the works of his contemporary Lutfiy in terms of artistic art and themes.

In Gadoy's work, the leading place is occupied by the art of comparison in relation to the object of the image. They also have their own metaphors and allusions, uniquely polished by means of verbal art. Gadoy's creative works are also popular with readers. Moreover, when using the art of speech and diagnostics, the face, eyes, eyebrows and lips of the beloved speak in such a way that you involuntarily believe her. In addition, through the skill of using words, the author reveals his inner experiences. In such ghazals, Gadoy created poetic arts with an extremely subtle magic of words, thanks to which one can understand how subtle the creator is Gadoy. Lyrical mastery is manifested through the poet's "I". Therefore, Gadoy's poetic style has a traditional and at the same time individual orientation in relation to the period.

Fine art is reflected in the poetry of the creators in graceful lines. Theoretical guidance on fiction first appeared among the Arabs and Persians, and later, in the 14th century, the work "Funun ul-Baloga" ("Sciences of Maturity") by Ahmad Tarazi came to the field of science among the Turks. When scholars wrote books on literary theory, they often addressed the question of the type, weight, or art of poetry, or explained the characteristics of the poetic genre. And Sheikh Ahmad intends to create in his "treatise" an ideal guide in this area, to highlight and analyze all theoretical issues so that those who read it receive as much information and benefit from the theory as possible.[6. 71] The third part of this work is dedicated to ilmi bade', that is, poetic art. Theoretical

information about the art of art in the work is based on examples of artists of that time. “Funun ul-baloga” is the first comprehensive manual on theoretical issues of literature in the Uzbek language. Similar theories are described in detail in “Mezon ul-Avzan” by Alisher Navoi and “Mukhtasar” by Babur. In the works, of course, the theory of science and art is illuminated and proven by ghazals. Based on the principles and requirements set forth in the above works, the poetry of many artists is examined. In particular, Gadoy's poetry also uniquely represents examples of the art of words.

The literary heritage of a number of Turkic-speaking poets who lived and worked in the second half of the 15th century contains examples of poems in the form of quatrains. In particular, among them are Yusuf Amiriy, Sakkokiy, Lutfiy, as well as Muhammad Temur Bugo and Hadji Akcha Kindiy, whose identity and literary heritage have not yet been established. However, when defining the genre of these poems in the form of quatrains, terms such as rubay, tuyuk, kita, quatrains are sometimes used as synonyms. This situation is observed not only in modern literary criticism, but also in sources of the 15th century. The poems of Gadoy in the form of quatrains are also called in one place a continent, then in another - in the form of a quatrain. In the scientific works of E. Akhmadkhodjaev, he is recognized in the continental style. The mastery of the individual approach to traditionalism in Gadoy's poetry requires a scientific basis. In each of his ghazals, many examples of ilmibade correspond to the periodic tradition and at the same time acquire an individual style. For this reason, Gadoy skillfully used creative features, interpretation of social problems, skills of artistic and symbolic creation, weight, rhyme and artistic imagery in his poetry. The use of love in art, and for it the compatibility of the system of rhyme and weight, the scope of application of poetic art, provokes deep analysis.

Navoi in his work “Mukhokamat ul-Lugatain” lists the names of several Uzbek poets and even puts Lutfi among them at the level of the great lyricists of Persian-Tajik literature, such as Hafiz. [5. 285] It is not without reason that Gada is also recognized in this series, especially as shown on the previous pages. In the history of Uzbek literature, ghazals are strangely polished in the works of representatives of the literary environment of that period. For example, if we compare the creative heritage of Gadoy and Lutfia, we see such verses expressed in the style of tatabbu art. It should be said that the content of the stanzas is the same as the content of the literary relationship between the two authors. In addition, the artistic process of the period and the traditions of dewan arrangement could be a reason for this.

In the ghazals of Gadoy, the science of art, which includes such important issues as the ways and means of expressing thoughts fluently and gracefully, the types and characteristics of artistic arts, which increases the impact and excitement of the content, expands the thought. He skillfully used a number of poetic forms such as tazad, talmeh, tashbe, tanasib, itfok, husni tallil, irsoli masal, tajahilu arif, laff va nash, tarse', tardu aks, tajnis and ihyom, which enhance the melody. Gadoy's creative works will also pass through the reader's language with the beauty of artistic art. In addition, through the skill of using words, the author reveals his inner experiences. Gadoy's creative heritage is a collection of science and art. From our observations it is known that, in addition to what is mentioned in E. Akhmadkhodjaev's book “Gadoy”, the poet's poems also mention such artistic arts as takrir and its types, enthusiasm, discussion, quotation, radif, iltifot. The player is mentioned often. Especially notable among them is the use of the art of quotation. During our research, it turned out that this is one of the most actively used artistic tools in the poet's poems. It is noted that this art is reflected in 46 of Devon's 237 poems. In them, the verses of the Holy Quran are quoted in a poem or their content is expressed in a poem. It's not a charm, it's a charm, it doesn't look like a peacock, it has a beautiful color. Showed the ideological and thematic nationalism of the poetic form in comparison with the ode and increasingly strengthened its nationalism. Ghazali's successes in this field are clearly visible in the history of Persian-Tajik literature, especially in the example of the poetry of Saadi and Hafez. The very fact that these giant lyricists devoted much space and attention to this form in their works showed their closeness to the

interests and oral poetry of their people. Because the topic of love is actually close to everyone, understandable to everyone, is democratic in nature, and every social group is interested in it and is connected with it. That is why this topic is of importance to the general public, the significance of society, and lyrical works on this topic have always acquired great social significance" Of course, this idea is typical of the romantic ghazals of Gadoy. Since the word is a sacred good, humanity finds education in its artistic interpretation. The work of such poets as Khorezmi, Khojandi, Sayfi Sarayi, Durbek, Amiri, Yakini, Ahmadi, Atoy, Mavlavi, Sakkoki, Lutfi, Gadoy, who grew up in the first half of the 15th century, played a major role in the development. Turkish poetry. The poets of this period sang of pure and pure love, which turned from metaphor into reality. The ghazals present an educational and mystical artistic interpretation, expressed in a hymn to human perfection. They also vividly explained such debates and epics in their large-scale works. The literary environment of this period greatly contributed to the development and strengthening of the Uzbek literary language. It also played an important role in the development of literary types and genres. During this period, various works were created in ghazal, rubay, kit, tuyuk, qasida, nom, debatable, epic and other genres.

Poetry of the 15th century is distinguished by its nationalism. Types of Turkish poetry and their forms were included in the Turkish-Uzbek poetry of the first half of the 15th century, and the flavor manifested itself through folk poetry and aruz of Uzbek poets even before the work of Alisher Navoy - they used different genres. From the 14th century until recent periods, literary types, forms, opinions and comments were described in works related to badoe, sanoe, aruz, and dictionary. Ghazal has become the most common among poetic genres. At the same time, other genres also developed, especially in the development of ghazal, qasida, whale, etc. Gadoy's poetry occupies a special place. The first example of the Mustazad genre is associated with his work.

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Rezyume: *O'zbek adabiyotining asoschisi Alisher Navoyning o'qituvchilaridan biri Gadoy o'zining noyob ish yo'liga ega bo'lib, o'zbek adabiyotida katta o'rin tutdi. Maqolada Gadoyning ijodiy merosi va uning she'riyati tahlil qilinadi. Bu erda sizga uning san'ati haqida ma'lumot beriladi.*

Резюме: *Гадой, один из учителей основоположника узбекской литературы Алишера Навоя имел свой уникальный рабочий путь, который был очень значимой ролью в узбекской литературе. В статье анализируется творческое наследие Гадоя и его поэтика. Здесь вам расскажут о его искусстве.*

Kalit so'zlar: *san'at, poetika, allegoriya, rubay, g'azal, ehtiyoj, muhokama, tsitata, radif, iltimos.*

Ключевые слова: *искусства, поэтика, аллегория, рубай, газаль, страсть, дискуссия, цитата, радиф, комплимент.*

**INDEPENDENT WORK IS ONE OF THE FACTORS OF QUALITY KNOWLEDGE
ACQUISITION BY STUDENTS**

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Summary: *the article provides solutions to issues regarding the quality training of specialists; new approaches are needed, the study of personality, the improvement of training technologies, and the introduction of innovative methods of training.*

Key words: *improvement of training technologies, self-development, self-education, abstract, educational process, independent work*

To resolve the issue of high-quality training of specialists, new approaches are needed, studying personality, improving training technologies, and introducing innovative methods of training. According to the decree of the President of the Republic of Uzbekistan dated April 20, 2017 PK-2909 “On measures for the further development of the higher education system,” as well as for the implementation of the State educational program, problems arise in improving approaches to the subjects of students. The main task of higher education is the formation of a creative personality of a specialist capable of self-development, self-education, and innovative activity. Solving this problem is hardly possible only by transferring knowledge in ready-made form from teacher to student. It is necessary to transfer the student from a passive consumer of knowledge to an active creator who can formulate a problem, analyze ways to solve it, find the optimal result and prove its correctness. The current reform of higher education is inherently connected with the transition from the learning paradigm to the education paradigm. In this regard, it should be recognized that students’ independent work (SWS) is not just an important form of the educational process, but should become its basis [1].

In practice, we often encounter problems of simply rewriting from the sources all the questions asked and at the same time we do not see a single word or analysis of one or another form of solution to the problem asked by the teacher in the topic of the student’s independent work.

This involves focusing on active methods of acquiring knowledge, developing students’ creative abilities, moving from continuous towards individualized learning, taking into account the needs and capabilities of the individual. This is not just about increasing the number of hours of independent work. Strengthening the role of students’ independent work means a fundamental revision of the organization of the educational process at a university, which should be structured in such a way as to develop the ability to learn, to form in the student the ability for self-development, creative application of acquired knowledge, and ways of adapting to professional activities in the modern world. At the same time, independent work, its planning, organizational forms and methods, and the system for tracking results are one of the weakest points in the practice of university education and one of the least studied problems of pedagogical theory, especially in relation to the modern educational situation (diversification of higher education, introduction of educational standards, implementation of a pedagogical monitoring system, etc.).

An important role in the process of teaching students to work independently is played by the teacher’s control over the progress of independent work to complete a given task. Often, due to lack of time, the teacher superficially studies independent work assignments and is unable to consider, analyze, give advice, etc. in more detail. Sometimes students cannot find the necessary literature and this fact stops his interest in completing the assignment and he naturally does everything just to pass the essay in order to get a satisfactory grade [3].

Particular attention is required to the issues of motivational, technological support for independent classroom and extracurricular cognitive activities of students - a holistic pedagogical

system that takes into account the individual interests, abilities and inclinations of students. Based on the analysis of students' independent work and many years of experience, we see that students need motivation what he does, that is, we teachers must provide the student with the opportunity to use his full potential and interest him in his profession. For this purpose, there are many different training systems in world practice. One of them can be said to be the direct participation of the student in the process of working in his specialty. The use of this method from the very beginning of training is of particular importance. These are methods such as, for example, visits to a construction site for visual observation of the process of construction work or to factories for the production of building materials and products.

Society places a fairly wide list of requirements on a modern specialist, among which it is of no small importance that graduates have certain abilities and the ability to independently obtain knowledge from various sources and systematize the information received. The formation of such skills occurs throughout the entire period of study through student participation in practical classes, completion of test assignments, course projects and final qualifying papers.

A deep understanding of the issues largely depends on the independent work of students during the preparation of both the essay and the course work. Since only the student himself, through intellectual activity, can acquire knowledge and make it his own property. The effectiveness of students' independent work largely depends on how independent it is and how the teacher can control it. When a student studies recommended literature sporadically, he does not gain deep knowledge. The systematic or unsystematic nature of students' independent work depends, first of all, on its planning and organization by the teacher, as well as on the control exercised over it. Therefore, the main content of students' independent work, its forms and methods, sequence and timing The execution of work is determined by the teacher as part of the educational process.

The educational process in a higher educational institution is largely based on the independent work of students, without which it is difficult to fully master complex program material and learn in the future to constantly improve the acquired knowledge and skills.

Independent work is extracurricular and is intended for the student to independently familiarize himself with certain sections of the course using materials recommended by the teacher and prepare for completing individual assignments for the course.

The purpose of students' independent work is:

- to teach the student to work meaningfully and independently, first with educational material, then with scientific information, to lay the foundations of self-organization and self-education in order to instill the ability to continuously improve their qualifications in the future.
- consolidation, expansion and deepening of knowledge, skills and abilities acquired by students in classroom lessons under the guidance of teachers;

Active independent work of students is possible only if there is serious and sustainable motivation. The strongest motivating factor is preparation for further effective professional activity. Let's consider the internal factors that contribute to the activation of independent work. Among them are the following:

1. The usefulness of the work performed. If a student knows that the results of his work will be used in a lecture course, in a methodological manual, in a laboratory workshop, in the preparation of a publication or in the preparation of any project, then the attitude towards completing the task changes significantly for the better and the quality of the work performed increases. At the same time, it is important to psychologically prepare the student, show him how necessary the work being done is. Using the example of students from the Department of Construction and Architecture of Karakalpak State University, the nature of the action of the independent work task was studied. The following facts emerged. From two stream groups of the same course of identical specialties, three groups were created voluntarily and they were assigned extracurricular tasks. The first group of three students was given the task of completing part of a

project to build a new type of sports facility. The second group will locate and design a small microdistrict in the city of Nukus and the third group to create a project for a new generation residential building that has not yet been built. In this way, the students' abilities, their employment, and most importantly, their interest in their profession increased several times.

In the process of performing independent work, student majoring in "Architecture", "PGS", "Urban Planning", it is recommended to be guided by educational, periodical, normative, scientific, technical and reference literature contained in the institute's library, Internet resources, methodological recommendations. When completing tasks, Particular importance is attached to the use of computer technology.

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Rezyume: Maqolada mutaxassislarni sifatli tayyorlash tahlili berilgan, yangi yondashuvlar, shaxsni o'rganish, o'qitish texnologiyalarini takomillashtirish, o'qitishning innovatsion usullarini joriy etish zarur. O'zbekiston Respublikasi Prezidentining 2017-yil 20-apreldagi "Oliy ta'lim tizimini yanada rivojlantirish chora-tadbirlari to'g'risida"gi PK-2909-sonli qaroriga muvofiq, shuningdek, Davlat ta'lim dasturini amalga oshirishga doir ta'lim muassasalari faoliyatini takomillashtirishda muammolar yuzaga kelmoqda. talabalarning mavzulariga yondashuvlar.

Резюме: В статье приведен анализ качественной подготовке специалистов, необходимы новые подходы, изучение личности, совершенствование технологий подготовки, внесение инновационных методов подготовки кадров. Согласно постановлению Президента Республики Узбекистан от 20 апреля 2017 года ПК-2909 "О мерах по дальнейшему развитию системы Высшего образования", а также для выполнения Государственной образовательной программы возникают проблемы совершенствования подходов к субъектам обучающихся кадров.

Kalit so'zlar: ta'lim texnologiyalarini takomillashtirish, o'z-o'zini rivojlantirish, o'z-o'zini tarbiyalash, konspekt, o'quv jarayoni, mustaqil ish.

Ключевые слова: совершенствование технологий обучения, саморазвитие, самообразование, реферат, учебный процесс, самостоятельная работа.

THE EFFECT OF PERSON-ORIENTED TECHNOLOGIES IN THE DEVELOPMENT OF STUDENTS' COMMUNICATIVE CULTURE

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Summary: The article describes educational technologies and methods for developing the communicative culture of students, methods for forming tolerant relationships among students, theoretical and practical foundations of education aimed at developing cooperative relations between the university and the family.

Key words: education, upbringing, tolerance, society, culture, psychology, information, cognitive, kindness, respect, nation, family, perfect person, personality

Today in our country, as a result of improving the education system, developing effective forms and methods of spiritual and moral education of students and educational work, practical work aimed at restoring our national cultural heritage and folk traditions, there have been expanded the possibilities for introducing technologies for ethical and aesthetic education of students, developing national culture through directing valuably.

In the pedagogical process, humanistic philosophy, psychology and pedagogy are characteristic of technologies oriented to the individual. This technology relies on the individual. He is a conscious, responsible person who strives to show himself and accept experiences. Person-oriented technology is aimed at the formation of an all-round developed personality, development of creativity, intellectual development directly related to spiritual and moral education.

In our research, we consider the importance of personal-oriented technologies in the development of tolerant attitudes in students in the context of interethnic communication.

Interethnic relations of students should be implemented comprehensively and ensure the creation of necessary psychological and pedagogical conditions.

One of these conditions is the implementation of step-by-step work on the formation of tolerance in interethnic relations among students. The following steps can be distinguished in the context of forming the attitude of tolerance in interethnic relations among students [1; p. 123]:

The first stage is informational and cognitive: assimilation of information, acquiring knowledge about the object necessary to form a tolerant attitude.

The second stage is the stage of forming an emotional-evaluative attitude in interethnic relations.

The third stage is the stage of forming a stable attitude of tolerance in inter-ethnic relations.

At each stage, the implementation of the process of forming an attitude of tolerance in interethnic relations in students involves the use of special forms and methods by the teacher. The first stage can also be called cognitive, that is, the stage of understanding the received information, followed by discussion. At this stage of forming tolerant attitudes in interethnic relations in students, young people receive necessary information about the diversity and differences of people in the world, age characteristics, their opportunities and limitations, as well as necessary adaptations for life, the help they need.

The main goal is to acquire information, knowledge and ideas about the object necessary to form a tolerant attitude, because a person cannot develop tolerance to something he does not know.

The following forms and methods can be used to achieve this goal:

Visual methods:

- viewing and discussing pictures, illustrations, movies, and viewing multimedia presentations that show people's behavior in the world around them;
- oral methods: conversation, teacher's story;

- reading fiction.

At the second stage of forming a tolerance attitude, the student's acquired knowledge and ideas are strengthened, and based on them, an emotional-evaluative attitude towards the behavior of students with disabilities is formed [4; p. 26]. This is where the formation of understanding and evaluation of the object takes place. At this stage, it is important for students to have a positive assessment of the people around them, everything that surrounds them, in accordance with the moral principles of society, regardless of skin color, appearance or psychophysiological development characteristics.

Important qualities such as kindness, sensitivity, respect, compassion, and sympathy are formed in students. Here, young people independently identify and evaluate situations where the rights of young people with disabilities are violated or there are patterns of intolerant behavior towards them. It is important to play these situations with young people, to talk about the nature of the characters' actions, to find ways out, to find acceptable solutions to the current situation.

Methods aimed at developing a positive emotional-evaluative attitude to students:

- a teacher, a personal example of parents;
- purposeful observation organized by the teacher, followed by discussion;
- joint discussion of various life situations in which there are examples of intolerant attitude towards inter-ethnic relations.

Fiction has a strong influence on the minds and emotions of students. Young people try to copy the behavior and actions of the heroes of the work of their ideal. It is important to influence not only the minds of young people, but also their emotions, so that they develop the ability to understand others.

In the third stage, stable tolerant behavior is formed, as well as self-focus of the student, independent assessment of his actions. You can talk to young people about whether they have ever done something wrong, when and under what circumstances, why it happened and what they should do, what they should do now. It is important for young people to be able to analyze their actions and understand that a lot depends on their behavior. It is also necessary to show young people how to resist violence, cruelty, injustice and how to prevent it. "Take someone else's side, protect your own interests, help others when needed, show compassion" is taught.

Tolerant interaction should be manifested through cooperation and communication, ensuring the personal growth of subjects [2; p. 2]. Cooperation makes it possible to create conditions for working together, living and reflecting on the situation (including directly related to tolerance). Students' lives should be filled with appropriate situations (preparing gifts for friends, caring for the sick, helping the weak). Here, a lot depends on the teacher, who must not only use the situations that arise, but also himself, as well as situations, including young people in different types of activities: play, work, specially organize lessons in all sections of the program. Any young person, regardless of characteristics (including health characteristics), must learn to organize activities with a partner [3; p. 23]. In this way, the student learns the behavior of sympathy, empathy, emotional self-control and tolerance. Of course, this stage is the most difficult and it may not be fully realized during youth. Methods aimed at developing tolerant behavior:

- practical activity;
- encouraging if young people have an attitude of tolerance;
- creating situations that require tolerance.

The next important condition is the creation of a subject-spatial environment in which education in a higher educational institution is aimed at developing a tolerant attitude towards people.

The implementation of this condition implies the creation of tolerance corners containing informational and educational materials (for example, fiction; various visual materials; encyclopedias; video materials, etc.); a selection of manuals, didactic presentations, films

promoting collectivism, friendship, goodwill and solidarity; as well as props and decorations for playing various situations, role-playing and theatrical games, in which students learn practical tolerant attitudes.

In the formation of tolerance the role of family is important. Therefore, the next condition that helps students to develop a relatively tolerant attitude in interethnic relations is, of course, to establish mutual relations with students' parents.

Psychological-pedagogical education of parents on the problems of forming a tolerant attitude in young people includes the following:

- taking into account the age and individual characteristics of students;
- interdependence, compatibility of programs, forms of formation of tolerant attitude in young people and topics of parent education;
- identifying problems in the formation of tolerant attitudes in students and taking them into account when determining the topic of education for parents [5; p. 42].

In addition, it is necessary to involve parents in socially significant activities together with young people and teachers in order to form an attitude of tolerance in interethnic relations in students. It can be the organization of joint holidays, excursions, entertainment events, open-door days, roundtable discussions, art exhibitions, the topics of which correspond to the problem of forming an attitude of tolerance. Cooperation between higher education institutions and families is a priority for forming tolerant behavior in students, ensuring the educational process and real interaction between youth, parents and society.

Such consistency in educational institutions and family work is the most important condition for the comprehensive education of young people and the formation of moral behavior in them.

The implementation of the above conditions depends on the pedagogical communication in the educational institution. In an educational environment where tolerance is formed, the style of communication should be democratic, which allows humanizing relations, free development and manifestation of activity, any member of the team, regardless of his characteristics, to increase initiative, any intolerance, and it is manifested in the social environment and displeasure towards them. However, none of the stages in the formation of tolerance can be considered closed or fully mastered. Cultivating a tolerant attitude is such a long and complex process that it cannot be limited to the youth period, it is even necessary to start forming a tolerant attitude at a young age, but the completion of this process depends on many factors.

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Rezyume: maqolada talabalarining kommunikativ madaniyatini rivojlantirishda ta'lim texnologiyalari va metodlari, talabalarda bag'rikenglik munasabatlarni shakllantirish usullari, Oliy ta'lim va oilalar o'rtasidagi hamkorlik munasabatlarni rivojlantirishga qaratilgan tarbiyaning nazariy va amaliy asoslari ko'rsatilgan.

Резюме: в статье показаны образовательные технологии и методы развития коммуникативной культуры студентов, методы формирования толерантных отношений

среди студентов, теоретические и практические основы образования, направленные на развитие отношений сотрудничества между вузом и семьей.

Kalit so‘zlar: ta'lim, tarbiya, bag'rikenglik, jamiyat, madaniyat, psixologiya, axborot, kognitiv, mexr-aqibat, hurmat, millat,oyla, komil inson, shaxs.

Ключевые слова: образование, воспитание, толерантность, общество, культура, психология, информация, познавательное, доброта, уважение, нация, семья, совершенный человек, личность.

STRENGTHENING THE CONSTITUTIONAL POWERS OF THE OLIY MAJLIS

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Summary: *This article analyzes the strengthening of the constitutional powers of the Oliy Majlis, the effectiveness of the parliament, the optimization of the activities of each of the chambers of the Oliy Majlis, as well as the exclusion of parallelism in their work*

Key words: *Oliy Majlis, parliamentarism, deputies, parliament, Legislative Chamber.*

Over the past years, Uzbekistan has become a country of democratic renewal, rapid development and large-scale reforms.

The legal basis for the development of national parliamentarism has been strengthened within the framework of the Action Strategy in five priority areas for the development of the Republic of Uzbekistan.

Over the past short period, the role and place of the parliament in the socio-political life of the country has changed radically, the importance of the supreme legislative body of our country has increased significantly, systemic changes and updates have taken place.

In 2017, a new democratic institution was introduced - the Institute of the Address of the President of the Republic of Uzbekistan to the Oliy Majlis of the Republic of Uzbekistan. This important institution, fully consistent with the experience of advanced foreign countries, undoubtedly increased the role and position of the parliament in the life of the country, opened up wide opportunities for ensuring public solidarity on important priorities and tasks of the new political path of development of Uzbekistan.

The mechanisms for exercising parliamentary control in the regions have been changed, and live communication between deputies in districts and voters has been significantly strengthened. Currently, in the last week of each month, deputies hold meetings and dialogues to identify problems that concern citizens and obstacles to the development of entrepreneurship in their chosen constituencies. In cooperation with the executive authorities, systematic work has begun to eliminate the identified problems.

Establishing close relations with the population, in turn, has a positive effect on the legislative activities of the deputies. Currently, the number of bills introduced by deputies has significantly increased.

Over the past 5-6 years, based on the requirements of reforms, a number of changes have been made to the organizational structure of the Lower House. In particular, the Institute of Problems of Legislation and Parliamentary Studies has been established under the Oliy Majlis. Taking into account the versatility of the activities of the Parliament in reforming the healthcare system, fighting corruption, supporting families, women and youth, in the Legislative Chamber there have been established the Committee for the Protection of Citizens' Health, the Committee for Combating Corruption and Judicial Affairs, the Commission on Family and Women's Affairs, as well as the Commission on Youth Affairs, whose activities were widely and effectively deployed.

Another important change in the activities of the chambers of parliament was observed in the direction of information policy. It should be noted that the speeches of senators and deputies through the media have significantly intensified. All the parliamentarians have opened their personal pages on the Internet and other social networks and inform the public about the essence and importance of the reforms being carried out in our country. In a short time, the deputies managed to gain authority and respect in society with their numerous bold and open speeches. Along with this, the meetings of the chambers of parliament began to be broadcast live on television, radio and the Internet sites.

As part of the initiatives of the Head of our state aimed at increasing the role of parliament in the system of mutual deterrence and balancing of various branches of state power, an important form of parliamentary control – “Government Hour” has been introduced into the activities of the parliament and is regularly carried out. [1]

The experience of approval by the Oliy Majlis of candidates for members of the government, put forward by the President of our country, has become another important step towards expanding the control powers of the Oliy Majlis.

The experience of approval by the Oliy Majlis of candidates for members of the government, put forward by the President of our country, has become another important step towards expanding the control powers of the Oliy Majlis. At the same time, it should be emphasized that the Oliy Majlis faces new tasks to improve legislative activity, strengthen parliamentary control and other positive changes aimed at legal support for the implementation of the ambitious strategic goals set by our country - to bring Uzbekistan into the ranks of economically stable countries with a high level of well-being of the people. The fulfillment of these tasks requires strengthening the constitutional powers of the Oliy Majlis.

In this regard, amendments and additions have been made to the new version of the Constitution. Thus, the joint powers of the Legislative Chamber and the Senate, as well as their exclusive powers and spheres of responsibilities of each of them, have been clearly defined. According to the current Constitution there are 5 of the exclusive powers of the Legislative Chamber, but according to the draft, their number has been increased to 12.

In particular, such powers as control over the execution of the State Budget, consideration of the report of the Accounts Chamber, are directly transferred to the Legislative Chamber, which is directly elected by the people. This change corresponds to the representative nature of the Lower Chamber and allows for a more efficient organization of its activities. [2]

Taking into account the advanced foreign experience, the powers to consider and approve the candidacy of the Prime Minister are transferred to the exclusive jurisdiction of the Legislative Chamber. Before presenting the candidacy of the prime minister to the Legislative Chamber, the President introduces a consultation procedure with all factions of political parties. After approval by the Legislative Chamber, the President appoints the Prime Minister. Under the current system, the nomination of a candidate for prime minister depended only on the will of the party that received the largest number of votes in the elections to the Legislative Chamber. The proposed new procedure will ensure the participation of all factions of political parties in the consideration of the candidacy of the prime minister. Thus, the rules in this regard become more democratic.

The absolute powers of the Senate have also been increased from the current 14 to 18. In particular, as a body representing territorial interests, our Constitution strengthens such important powers of the Senate as promoting the activities of local representative bodies of state power.

Also, on the basis of the principle of checks and balances in the system of state power, it is proposed to transfer to the Senate the authority to approve resolutions on the formation and termination of the activities of ministries and other republican executive bodies.

The functions of the Parliament to appoint the heads of supervisory and law enforcement agencies are being strengthened, and some powers of the President are being transferred to the Parliament. The new version of the Constitution proposes to introduce preliminary consideration and approval by the Senate of candidates for the positions of the Attorney General and the Head of the Accounts Chamber, with their subsequent appointment by the President.

A procedure is being introduced whereby the President appoints the Chairman of the State Security Service after consultations on this candidacy with the Senate.

In order to ensure the true independence of the judiciary, it is proposed to introduce a system for the election of all members of the Supreme Council of Judges by the Senate.

One of the other conceptual changes in this direction is to increase the efficiency of the Senate by optimizing its structure based on administrative reforms. On this purpose the number of senators is being reduced from the current 100 to 65. Members of the Senate are elected from the Republic of Karakalpakstan, regions and the city of Tashkent in equal numbers – four people, nine are appointed by the President of the Republic of Uzbekistan. The current procedure for the formation of the Senate has been preserved.

It is envisaged that the bill will be considered by the Senate within sixty days. If the Senate does not make a decision to approve or reject the law within sixty days, the law will be sent to the President of the Republic of Uzbekistan for signing and promulgation by the Legislative Chamber.

The joint powers of the chambers of the Oliy Majlis are also strengthened by the fact that in the Constitution it receives a special consolidation of the Institute of Parliamentary Investigation, which is an important form of parliamentary control.

Assigning to the joint authority of the chambers the issues of hearing the annual National Report on Combating Corruption in the Republic of Uzbekistan, determining the maximum amount of the state debt of the Republic of Uzbekistan and conducting a parliamentary investigation serves to achieve the goals of combating corruption, ensuring effective interaction of both chambers in this direction.

As a result, on the basis of the innovations introduced into the Constitution, on the one hand, the internal activities of the Oliy Majlis are being optimized by redistributing the powers of the chambers and their relationships, and on the other hand, the place and role of the Oliy Majlis in the system of state power is being strengthened. At the same time, the possibilities of the Parliament for the implementation of the function of popular representation and, thereby, the constitutional principle of democracy are expanding even more.

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Rezyume: Ushbu maqolada Oliy Majlisning konstitutsiyaviy vakolatlarini parlament samaradorligini oshirish, Oliy Majlis palatalarining har biri faoliyatini optimallashtirish, shuningdek, ularning 389shida parallellikni istisno qilishni tahlil qiladi

Резюме: В данной статье анализируется усиление конституционных полномочий Олий Мажлиса эффективности парламента, оптимизации деятельности каждой из палат Олий Мажлиса, а также исключения параллелизма в их работе.

Kalit soʻzlar: Олий Мажлис, парламентаризм, депутат, парламент, Қонунчилик палатаси.

Ключевые слова: Олий Мажлис, парламентаризм, депутаты, парламент, Законодательная палата.

EVOLUTION OF PHILOSOPHICAL VIEWS ON VIRTUAL REALITY

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Summary: This article examines the emergence of "virtual reality" as used in computer technology (virtual memory), as well as in other areas: quantum physics (virtual particles), control theory (virtual office, virtual control). It is scientifically and philosophically substantiated that the basis for the exacerbation of the problem of virtuality in the philosophical discussion was the formation of synergetics with the principles of self-development. Virtual reality is essentially "an inexhaustible reality, an inexhaustible phenomenon. The concept and practice of virtual reality arose and developed in various countercultures, the computer industry, literature (fiction), military development, space exploration, art and design among relatively young researchers. In the social sciences, virtual reality is viewed as a possible future of social systems, recognizing the constant openness of radical changes in society and the main alternatives to development. The concept of virtual reality has been significantly enriched by modern social sciences by the methodology of forecasting in various spheres of society and harmonizing future scenarios.

Key words: *virtual reality, cyberspace, hypothetical, virtual memory, world hierarchy of virtual reality, substantiality, potential, constants, cyberpunk, hyperpunk, virtual technologies, computer industry.*

Introduction: When it comes to virtualization, some scientists primarily recall the world of computers and the Internet, which is not yet well understood. Often "virtual reality" means "hypothetical world," "cyberspace" created on high-speed computers. It is in this sense that W. to "virtual reality." Bricken, M. Kruger, Dj. Scientists like Lane see this as a uniquely complex reality.

The term "virtuality" is also used in computer technology (virtual memory) as well as other fields: quantum physics (virtual particles), management theories (virtual office, virtual management), psychology (virtual skills, virtual situations, etc.). The problem of virtual reality arose within the post of classical philosophy of the 1980s and 1990s, initially as a problem of studying the nature of multifaceted polynomial reality. In philosophy, especially in scientific research of the XX-XXI centuries, the problem of virtual reality is studied as a serious socio-cultural phenomenon of the information society, its new aspects are investigated. The concept of "virtual" can be considered as the equivalent of the word "artistic" in the modernist sense.¹

Literature review and background: The problem of virtual reality was solved by Xenophanes, Parmenides, Zeno, Melissa, Leucippus, Democritus, Epicurus, Plato, Aristotle, J. Bruno, T. Hobbes, D. Diderot, G. Leibniz, F. Bacon, I. Kant, G. Hegel, B. Spinoza, K. Marx, F. Engels, M. Reflected in the works of philosophers such as Heidegger.

¹Vlasov V.G., Lukina N.Yu. Avangardizm . Modernizm. Postmodernizm. Terminologicheskii slovar .SPb .: Azbuka-klassika, 2005.p 67

The problem with the relationship of possibility and reality is that in philosophy R. Carnap, S.; Kanger, R. Montague, D. Scott, J. Xinticke, S. Kripke, A. Prior, A. Meridith, I. This is pronounced in the works of Thomas. These scientists approach the problem of virtuality from opposite positions. For this reason, the true meaning of this concept remains unknown to philosophers.

The understanding of virtuality is now dominated by the concept of virtual activity as an anthropogenic phenomenon, and only some works emphasize that this problem plays an important role in the study of natural and social virtual objects. M.Makliuen was one of the first to reveal the relationship of virtuality with social and cognitive psychology, the tradition of studying the socio-cultural aspects of these means of communication subsequently prevailed in the philosophy of

science and technology. The American philosopher M. Haim emphasizes the need to understand its fundamental technological and cultural significance in the analysis of artificial language based on computer technologies, virtualization is a metaphysical way leading to perfect knowledge. K. Jasper: "Feeling anxious about the real world is the only way to realize yourself. Being real in the world, even if the goal is not achieved, remains a condition of personal existence."²

Some scientists³ give a negative conclusion about the processes taking place in society. As for the disappearance of reality, in modern culture, the fact that a person lives in the world of laws, and not in the world of things, is clearly manifested in a negative way. At the same time, we are striving for the "Golden Age" of human evolution.

In it, humans will exist in their own universe, in which irreversible states of human existence can be observed, such as authenticity.

² Yaspers K. Smisl i naznachenie istorii . M.: Politizdat , 1991 .-p 528.

³ Baudrillard J .Simulacra and Simulation. – University of Michigan Press, 1994

Babenko B.S, O. Vlasenko, A. Voronov, S. Datsyuk, D. Ivankov, T. Karacheva, E. Kovalevskaya, I. Kondratyev, M. Kruglov, E. Prilukova, D. Shapiro and other scientists analyze virtual reality as an artificial environment created using computer tools.

E.P. Belinsky, N. Beim, A. Yichkin, W. Cooper, DJ. Suler, Sh. The problem of virtual reality is often addressed by Terkl et al., along with the Internet, which has become an important economic and social reality, communication field, and user identity shaping field.

N.A. Astafieva, P. Borsuk, P. Vaibel, S. Dobrotvorsky, M. Ignatiev, N. Karpitsky, I. Mankovskaya, A. Orlov, N. Petrova, A. Proksorov, V. Savchuk, V. On the other hand, scientists such as Khan-Magomedova consider virtual reality technology a new technique of screen art in terms of aesthetics and art history, often as special effects in television, computer animation and film.

The information space implies an information interaction technology that creates the illusion of direct existence in the "on-screen" world using modern operating media. At the same time, it is necessary to conduct a comparative analysis with the perception of the cinematic image, since the perceiver often "takes over" the plot, that is, identifies himself with the main characters and becomes a participant in the event.⁴

Research shows that in modern science, the concept of "virtual" is increasingly used in the sense of "opportunity." Because the formation of ideas about virtual reality is associated with the long-term development of historical and philosophical ideas about the connection between possibility and reality.

A special role here was played by the dialectical idea of interaction and passage of these phenomena. With this approach, the conclusion drawn from classical philosophical discourse can be formulated as follows: there is a reality that includes an

⁴ Sherevetov V.I. Opredelenie svoystv virtualnogo// Virtualnoe prostranstvo kulturi . Mater. nauch. konf. CII6., 11–13 aprelya 2000 .pp. 56–58.

objective real world (the world of being) and a world of potential (the world of objective possibilities).

Results: In the process of development, the possible becomes a constant reality, and the new reality sets the spectrum of new opportunities. There are real opportunities that comply with the laws of development, and the conditions for their implementation are ripe. There is an abstract possibility that does not contradict the laws of objectivity and development, but the objective conditions for its implementation have not yet matured, as well as a real possibility that is permissible only theoretically and extremely likely. After all, even the impossible will exist in the world against objective laws.

The emergence of quantum theory, which connects virtuality with concepts of probability and chance, which are recognized as fundamentally objective, played an important role in the

formation of ideas about virtual reality. These ideas about virtual reality were significantly enriched by synergies with the principles of self-development of dynamic systems, bifurcation, multivariable development, the emergence of order from Chaos. Virtual reality is the reality of objectively determined, potentially possible events, processes and even world in the development of reality.

In the social sciences, virtual reality is seen as a possible future for social systems, recognizing the constant openness of radical changes in society and major alternatives to development. The idea of virtual reality has been significantly enriched by modern social sciences with a methodology for forecasting in various areas of society and harmonizing future scenarios.

The transformation into "virtual reality" comes from the recognition of many developmental variables, its fundamental probabilistic nature and the key role of the case in emerging processes, the multiplicity of possible worlds. Science moves from the classical direction, which focuses on describing things on the principle of "something in the world," to finding a possible potential on the principle of "what if."

In fact, modern philosophical thought is based on the new principle of understanding the world, according to which you can know everything that is not prohibited in the world. Therefore, "it is necessary to reveal the philosophies of culture how closely virtualization is related to cultural and anthropological processes.

Undoubtedly, these processes are based on gaming, mobile, flexible and problematic models and elements, and these features are very similar to the types and predicates of the virtual world.⁵

An anthropological shift in the concept of "virtual" is an attempt to find the roots of virtuality in culture. The first place in the development of ideas about virtuality is given to the creative activity of man. Creativity in culture is radically different from the attitude of a person to knowledge with his own views.

Such a project manifests itself as a predictable situation, i.e. meaning. In turn, this meaning is not tied to the world by iron chains.

Possible, predictable and permissible situations become synonymous with the virtual world. Artificial virtual reality already lies in the plane of existence, it is objectified in artifacts (text, electronic data, artificial environment, simulators, etc.) that provide a certain view of the world.

Artificial virtual reality is characterized by the following features: a) created by man; b) it acts as a substitute (often a competitor) for objectively existing reality; c) it has similarities with existing reality.

Based on a comparative analysis of natural and artificial virtuality, not only their conflicting features are revealed, but also their unity, the presence of a common basis. Such a common basis is the creative activity of both the knowledge of the culture of subjects and the creator of possible worlds, their multiplicity, and the desire for pluralistic thinking.

⁵ Xorujiy S.S. Rod ili ne dorod. Zametki k ontologiy virtualnosti. Voprosi filosofii .-1997.- №6 .-pp.53-68.

This pluralistic thinking and the ability to create multiple images of reality depend on the ability of a person to create meaning, because in his sense a person can not only communicate with the existing world, but also rise above the existing one, think possible, alternative, necessary, imaginary "positional positions" pass. As the main term meaning the word "virtual," modern researchers propose the concept of possibility. Within the established classical ontology, such an approach is possible and practically appropriate. Virtuality is one of the options for natural development, the evolution of things in nature. In this regard, we move on to a tour of the connection between possible and current categories in the history of philosophy.

If the classical laws of development we talk about the possibility that this possibility will become a reality, then it is inherent when it becomes a reality for cases of non-linear development, therefore, when certain conditions are created, it becomes a reality again. Thus, the realization of the opportunity is not a single irreversible action, but a dynamic process of their interaction. These

views, in our opinion, fully reflect the complexity of the processes taking place in the modern world.

In recent decades, the history of virtuality has been filled with new and unique content. In our opinion, the basis for exacerbating the problem of virtuality in philosophical discourse was: the formation of synergetics with the principles of self-development, the formation of order from Chaos; development of scenario methodology in social sciences; the development of modal logic, the theory of possible worlds (J. Hintikka); development of the latest means of communication in modern society (media, Internet).

Analysis: Analyzing modern views on the ontological content of the concept of virtualism in the natural and social sciences, we see that the virtual world demonstrates many opportunities for the development of natural and social life. Choosing a virtual development update option is bifurcation, a transition to a new real state that is a fan of the new virtual state. As a result of the analysis of probabilistic development models, it can be concluded that the physical world is filled with virtual objects.

Discussion: The heuristic value of the concept of virtual reality for understanding the processes of natural and social transition lies in the transition from rigid epistemological monism (there is only one world, one reality) to pluralism, to a plurality of worldviews. And this pluralism suggests that there are different options for the development of the system. This pluralism is still characterized by a certain limitation: although there are many options, in fact only one option is implemented. In other words, natural virtuality always leaves virtual in a possible realm; in fact, one of the options proposed in this context will necessarily be implemented.

Conclusion: first, the analysis of all representations eventually allowed us to distinguish two main types of "virtual reality": natural and artificial, as well as to identify their opposite properties. Secondly, if the natural virtual is opposite to the real one, is realized and at the same time appears (with a certain probability) can become real, then artificial virtuality is no longer opposed to reality (it really exists in artifacts), but represents its authenticity.

Thirdly, the consciousness of the creator (scientist, artist, author, operator, informant) is a real generator of both natural and artificial virtuality. Meaning (as well as understanding the state of affairs) does not bind a person to some single truth. Fourth, the transition to virtuality is connected with a new approach to the abundance of reality. Creative activity in the field of artificial virtual reality is focused on new technological capabilities, but in fact the same thing - reflects the work of "imaginary worlds."

However, it differs from objective reality in that these values are objectified in texts, screens, simulators in artifacts.

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Rezyume: Ushbu maqolada kompyuter texnologiyalarida (virtual xotira), shuningdek, kvant fizikasi (virtual zarralar), boshqaruv nazariyasi (virtual ofis, virtual boshqaruv) kabi sohalarida ishlatiladigan «virtual haqiqat» ning vujudga kelishi tadqiq qilinadi. Ilmiy-falsafiy asoslashtirilishicha, falsafiy muhokamada virtuallik muammosini kuchaytirish uchun asos bo'lgan: o'z-o'zini rivojlantirish tamoyillari bilan sinergetikani shakllantirish. Virtual haqiqat – ma'naviy jihatdan kelib chiqib bo'lmaydigan haqiqat. Virtual haqiqat kontseptsiyasi va amaliyoti turli

kompyuter industriyasi, adabiyot (fantastika), harbiy ishlanmalar, kosmik tadqiqotlar, san'at va dizaynda yosh tadqiqotchilar o'rtasida yaratilib, rivojlanib bormoqda. Ijtimoiy fandlarda virtual haqiqat ijtimoiy tizimlarning kelajagi sifatida ko'rib chiqilib, jamiyatdagi radikal o'zgarishlarning doimiy ochiqqligini va taraqqiyotning asosiy alternativalarini tan oladi. Virtual haqiqat to'g'risidagi fikr jamiyatning turli sohalaridagi baholash va kelajak scenariylarini muvofiqlashtirish metodologiyasi bilan zamonaviy jamoat ilmlari bilan sezilarli darajada boyitildi.

Резюме: В данной статье рассматривается возникновение "виртуальной реальности" как используемые в компьютерных технологиях (виртуальная память), а также в других областях: квантовой физике (виртуальные частицы), теории управления (виртуальный офис, виртуальное управление). Научно-философский обосновано, что основанием для обострения проблемы виртуальности в философской дискуссии послужили: формирование синергетики с принципами саморазвития. Виртуальная реальность - по сути "неисчерпаемая реальность и неисчерпаемое явление. Концепция и практика виртуальной реальности возникла и развивалась в различных контркультурах, компьютерной индустрии, литературе (фантастике), военных разработках, космических исследованиях, искусстве и дизайне среди относительно молодых исследователей. В социальных науках виртуальная реальность рассматривается как возможное будущее социальных систем, признавая постоянную открытость радикальных изменений в обществе и основные альтернативы развитию. Представление о виртуальной реальности значительно обогатилось современными общественными науками методологией прогнозирования в различных сферах общества и гармонизации сценариев будущего.

Kalit so'zlar: virtual haqiqat, kiberhujum, gipotetik, virtual xotira, virtual haqiqat dunyosi, substansionallik, salohiyat, konstantlar, kiberpank, giperpank, virtual texnologiyalar, kompyuter sanoati.

Ключевые слова: виртуальная реальность, киберпространство, гипотетический, виртуальная память, мир иерархия виртуальной реальности, субстанциональность, потенциал, константы, кибепанк, гиперпанк, виртуальные технологии, компьютерная индустрия.

UDK 347.4

**ACTIVITIES OF SECRETARIATS AND COMMISSIONS SUPPORTING THE
ACTIVITIES OF THE COUNCILS OF PEOPLE'S DEPUTIES: LEGAL ANALYSIS**

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Summary: *This scientific document is to analyze about the activities of the secretariats and commissions assisting the activities of the councils of people's deputies are analyzed in detail on the basis of regulatory legal acts related to the sphere of the activities of the commissions and secretariats, as well as the opinions of scientists, specialists who conducted research within this topic.*

Key words: *Secretariat, commission, Council, District, City, state, people, chairman.*

In the development strategy of the new Uzbekistan “to take measures to strengthen control over the activities of territorial executive bodies and to further strengthen the activities of secretariats of local councils by forming a Corps of Deputies operating on a permanent basis in the councils of people's deputies and expanding their powers”[1], was established as one of the priority areas.

From the essence of this direction of the strategy, it can be understood that against the background of further improvement of the structural structure of territorial councils, which are local state representative bodies, the powers of the Corps of Deputies, representatives of this structure, along with their secretariats, are being further improved.

At present, one of the most important areas of development of the Republic of Uzbekistan and the Republic of Karakalpakstan is to increase the effectiveness of management at both the central and local levels, one of the main components of which is to support the councils of people's deputies for more effective implementation of their control, Representative tasks, involving civil society institutions[2].

According to the law of the Republic of Karakalpakstan on local state government, council secretariats have been established in order to provide services to the activities of permanent and temporary commissions and local councils for the duration of their term of office, to facilitate the implementation of the decisions of the Council of people's Deputies of the Republic of Uzbekistan and the Republic of Karakalpakstan.

The article provides a detailed legal analysis of the activities of secretariats and commissions on the basis of legislation regulating their activities.

MAIN BODY

In the structure of representative bodies of local government, secretariats are one of the council structures that perform important functional functions. That is, the provision of services to the activities of local councils in organizational, technical and other respects is carried out by the secretariat of local councils with the status of a legal entity.

Activities of the secretariat of the District, City Council of people's deputies The law of the Republic of Uzbekistan dated September 14, 2020 "On amendments to certain legislation of the Republic of Uzbekistan in connection with the improvement of the activities of the councils of people's deputies" was established by the law of the Republic of Uzbekistan No. 636[3].

The organization of separate secretariats makes it possible to follow the principle of division of powers – to conduct the activities of executive and legislative power separately, as well as to increase the efficiency of deputy control over the authorities[4].

The Secretariat is a permanent working body of the District and City Councils of People's Deputies.

According to the legislation, the head of the secretariat of the council is appointed from among the deputies of the council to the term of its competence.

According to the Model regulation "On the secretariat of the regional, district, city Council of people's deputies" approved by the resolution of the Council of the Senate of the Republic of Uzbekistan dated December 11, 2020 No. 161-IV, The Secretariat carries out its activities under the leadership of the chairman of the local council and the head of the Secretariat.

According to the charter, the head of the Secretariat is appointed from among the deputies of the relevant local council for the term of his authority. Employees of the secretariat are appointed and removed from office by the decision of the local council based on the recommendation of the head of the Secretariat.

The structure, charter, schedule of states, the amount of remuneration for the labor of its employees and the cost of material and technical support, as well as their maintenance, are approved by the relevant local council.

The secretariats of local councils operate their activities in cooperation with Jokargy Kenes of the Republic of Karakalpakstan, state bodies, territorial divisions of economic management bodies, judicial and law enforcement bodies and other organizations.

Special attention is also paid to specialists in these secretariats, which provide effective activities of the councils of people's Deputies of the district and City against the background of institutional reforms carried out in our country. In particular, the Decree of the President of the Republic of Uzbekistan dated February 2, 2024 "On measures to improve the effectiveness of the activities of local government bodies" No.PF-28 established a systematic organization of training courses aimed at improving the knowledge and skills of employees of Deputies and secretaries of local councils[5].

Local council commissions. In the structure of representative bodies of local state authorities, the activities of commissions are also formed in a permanent or temporary way.

That is, the Council of people's deputies shall establish permanent and temporary commissions for the term of its competence in order to preliminary review and prepare the issues to be included in the discussion of the session of the council, to promote the decisions of the Council of people's deputies to realize the legislation of the Republic of Uzbekistan and the Republic of Karakalpakstan, to establish[6].

These commissions are responsible and accountable to the local council and carry out activities on a community basis for the term of their mandate.

Presidium of The Jokargy Kenes of The Republic of Karakalpakstan According to paragraph 3 of the Model regulation "On permanent commissions of the district, city Council of people's deputies" approved by Resolution No. 488 of october 14, 2021, permanent commissions are elected in a local council session from among the deputies of the local council in a composition consisting of the chairman and members.

According to this regulation, in the structure of the local council, as a rule, the following permanent commissions can be formed: on the issues of the local budget, implementation of economic reforms, investment and development of entrepreneurship; on judicial issues and combating corruption; on education, health, culture, sports and social protection issues; on youth policy, women's and gender equality issues; on issues of industry, transport, construction, utility sector and public services; on agrarian, water management issues and ecology; on issues of information policy and ensuring openness in local government bodies[7].

In the draft law "On local representative bodies", developed by the Ministry of Justice of the Republic of Uzbekistan in 2022, the organizational form of commissions was proposed in the style of "Committees of the Council of people's deputies" of this bill According to Article 15,

committees are formed, headed by deputies from one person working on a permanent basis for the term of the Council of people's deputies, with the aim of preliminary consideration and preparation of issues to be included in the session discussion, to facilitate the implementation of decisions of the Council of people's deputies and legislative acts of the Republic of Uzbekistan[8].

In our opinion, if the councils of people's deputies are considered as a “territorial model” of Parliament, then in this project it is appropriate to state the Commissions of the Council in the manner of committees.

The local council can create a provisional commission from among the deputies to carry out specific tasks. The decision to create a provisional Commission is made in the session. The interim commission will end its activities upon completion of the duties assigned to it. The functions of the interim commission are determined by the decision of the local council[9].

Presidium of The Jokargy Kenes of The Republic of Karakalpakstan according to the Model regulation “On permanent commissions of the district, city Council of people's deputies”, approved by resolution No. 488 of October 14, 2021, decisions of permanent and temporary commissions sent to state bodies, enterprises, organizations, institutions, NGOs, citizens' self-governing bodies and officials in the territory will have a recommendation feature.

In conclusion, it should be noted that in the socio-economic development of territories, the bodies assisting in the activities of territorial expansions determine the importance of the institution of local representation in the system of state government, the effective functioning of commissions and secretariats.

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Rezyume: *Mazkur ilmiy maqolada xalq deputatlari kengashlari faoliyatiga ko‘maklashuvchi kotibiyat va komissiyalar faoliyati, komissiya va kotibiyatlar faoliyati sohasiga oid normativ-huquqiy hujjatlar hamda ushbu mavzu doirasida tadqiqotlar olib borgan olimlar, mutaxassislar fikr-mulohazalari asosida atroflicha tahlil qilingan.*

Резюме: *В данной статье анализируется деятельность секретариатов и комиссий, оказывающих содействие деятельности Советов народных депутатов, подробно анализируется на основе нормативных правовых актов, относящихся к сфере деятельности комиссий и секретариатов, а также мнения ученых, специалистов, проводивших исследования в рамках данной темы.*

Kalit so‘zlar: *kotibiyat, komissiya, kengash, tuman, shahar, davlat, xalq, rais.*

Ключевые слова: *секретариат, комиссия, совет, район, город, государство, народ, председатель.*

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TECHNOLOGY OF A DEONTOLOGICAL APPROACH TO THE DEVELOPMENT OF A CULTURE OF COMMUNICATION AMONG STUDENTS OF TECHNICAL UNIVERSITIES

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Summary: *This article explores the implementation of a deontological approach in fostering a culture of communication among students in technical universities. Deontological ethics, emphasizing moral duties and obligations, serves as a framework for promoting ethical behavior and responsible communication practices. The technology proposed integrates theoretical principles with practical strategies aimed at enhancing interpersonal interactions, fostering mutual respect, and cultivating ethical decision-making skills among students. Through a comprehensive examination of the deontological approach within the context of technical education, this study contributes to the advancement of pedagogical methodologies aimed at nurturing a culture of ethical communication among students.*

Key words: *Deontological approach, communication culture, technical universities, ethical behavior, responsible communication, pedagogical methodology.*

INTRODUCTION

In the dynamic landscape of modern education, the cultivation of effective communication skills is increasingly recognized as essential for success in various fields, including technical disciplines [1]. However, the mere acquisition of technical knowledge and expertise is insufficient without the ability to effectively convey ideas, collaborate with peers, and engage in ethical decision-making processes. Recognizing the significance of communication skills in technical education, educators are exploring innovative pedagogical approaches to foster a culture of communication among students. One such approach gaining attention is the integration of deontological principles into communication training programs within technical universities [2].

Deontological ethics, rooted in the philosophy of moral duty and obligation, offers a principled framework for guiding ethical behavior and decision-making [3]. By emphasizing moral rules and obligations, the deontological approach provides students with a foundation for ethical conduct in their interactions with peers, faculty, and industry stakeholders. In the context of communication, a deontological perspective encourages students to consider ethical considerations such as honesty, respect, and integrity in their verbal and written exchanges [2].

The application of a deontological approach to communication training in technical universities represents a novel endeavor aimed at instilling ethical values and promoting responsible communication practices among students. By integrating deontological principles into communication curricula, educators seek to equip students with the skills and mindset necessary to navigate complex ethical dilemmas and communicate effectively in diverse professional settings. This approach aligns with the broader goals of technical education, which aim to cultivate well-rounded professionals capable of ethical decision-making and responsible leadership in their respective fields.

To date, limited research has explored the implementation of a deontological approach to communication training within the context of technical education. Therefore, this study seeks to fill this gap by examining the technology of a deontological approach to the development of a culture of communication among students of technical universities. Through a comprehensive analysis of

theoretical foundations, practical applications, and case studies, this article aims to contribute to the body of knowledge on effective communication pedagogy in technical education.

Despite the potential benefits of integrating a deontological approach into communication training, there remains a paucity of research exploring its implementation within the context of technical education. Therefore, this study seeks to address this gap by examining the technology of a deontological approach to the development of a culture of communication among students of technical universities. Through a comprehensive analysis of theoretical underpinnings, practical applications, and case studies, this article aims to contribute to the body of knowledge on effective communication pedagogy in technical education.

MATERIALS AND METHODS

The technology of a deontological approach to fostering a culture of communication among students in technical universities involves several key components aimed at instilling ethical values and promoting responsible communication practices. This section delineates the main elements of this technology and discusses their implications for communication training in technical education.

Integration of Deontological Principles:

A fundamental aspect of this technology is the integration of deontological principles into communication curricula. Concepts such as integrity, honesty, and respect serve as the cornerstone of ethical communication and are infused throughout course materials and discussions [4]. By grounding communication training in these moral principles, educators provide students with a solid ethical foundation for their professional interactions.

Ethical Decision-Making Frameworks:

Students are introduced to ethical decision-making frameworks that align with deontological principles. These frameworks offer systematic approaches to analyzing ethical dilemmas and guiding ethical behavior in communication contexts [5]. By familiarizing students with these frameworks, educators equip them with the tools to navigate complex moral challenges they may encounter in their academic and professional lives.

Case Studies and Scenario-Based Learning:

The inclusion of case studies and scenario-based learning activities is another integral component of the technology. Through these exercises, students are presented with real-world ethical dilemmas relevant to their field of study and are challenged to apply deontological principles to resolve them [6]. Engaging with these practical scenarios helps students develop critical thinking skills and ethical reasoning abilities in communication settings.

Role-Playing and Simulation Exercises:

Role-playing and simulation exercises provide students with opportunities to practice ethical decision-making and communication skills in simulated environments. By assuming different roles and engaging in simulated communication scenarios, students hone their ability to apply deontological principles in diverse contexts [7]. These exercises also foster collaboration, empathy, and conflict resolution skills essential for effective communication.

Reflective Practices:

Incorporating reflective practices into the curriculum encourages students to critically reflect on their communication experiences and ethical decision-making processes. Through journaling, self-assessment activities, and group discussions, students are prompted to evaluate their communication behaviors and consider the ethical implications of their actions [8]. This reflective process promotes self-awareness and continuous improvement in students' ethical communication competencies.

In summary, the technology of a deontological approach to cultivating a culture of communication among students of technical universities encompasses the integration of deontological principles, ethical decision-making frameworks, case studies, scenario-based learning, role-playing exercises, simulation activities, and reflective practices. By incorporating

these elements into communication training, educators can empower students to communicate ethically, responsibly, and effectively in their academic and professional endeavors.

RESULT AND DISCUSSIONS

The implementation of the technology of a deontological approach to fostering a culture of communication among students in technical universities yields significant outcomes and prompts essential discussions within the educational realm.

Ethical Awareness and Sensitivity:

The integration of deontological principles into communication curricula enhances students' ethical awareness and sensitivity to ethical issues in communication [10]. Through engagement with ethical decision-making frameworks, students develop a deeper understanding of ethical dimensions in communication and the importance of upholding ethical standards.

Critical Thinking and Problem-Solving Skills:

The technology encourages students to engage in critical thinking and problem-solving activities, such as analyzing case studies and participating in scenario-based learning. By critically evaluating complex ethical dilemmas, students enhance their critical thinking and problem-solving skills, essential for navigating ethical challenges in professional contexts.

Communication Competencies:

Students participating in the technology demonstrate improved communication competencies, including ethical reasoning and conflict resolution skills [11]. Role-playing and simulation exercises enable students to practice ethical communication behaviors, enhancing their ability to communicate effectively and ethically in various interpersonal and professional settings.

Ethical Decision-Making Abilities:

The technology empowers students to make ethically sound decisions in communication contexts [9]. Exposure to ethical decision-making frameworks and reflective practices enables students to evaluate ethical dilemmas systematically and make principled decisions, contributing to their ethical decision-making abilities.

Professional Ethical Standards:

Participation in the technology instills in students a commitment to upholding professional ethical standards throughout their careers. By internalizing deontological principles and engaging in ethical reflection, students develop a strong sense of professional ethics and a dedication to ethical conduct in their future roles as technical professionals.

In summary, the technology of a deontological approach to developing a culture of communication among students of technical universities yields outcomes that enhance ethical awareness, critical thinking skills, communication competencies, ethical decision-making abilities, and adherence to professional ethical standards. These outcomes are crucial for preparing students to navigate the complex ethical landscape of the professional world and contribute to the development of ethical and responsible technical professionals.

Conclusion

In conclusion, the technology of a deontological approach to fostering a culture of communication among students of technical universities represents a significant step forward in addressing the multifaceted challenges inherent in contemporary communication education. Through the integration of deontological principles into communication curricula, this approach equips students with the necessary tools and competencies to navigate complex ethical dilemmas in their personal and professional lives.

The outcomes of implementing this technology are far-reaching and impactful. Firstly, students develop a heightened awareness of ethical considerations in communication, enabling them to recognize and navigate ethical challenges with greater confidence and sensitivity. This enhanced ethical awareness serves as a foundation for fostering a culture of integrity and ethical responsibility within technical university settings.

Moreover, the technology facilitates the development of critical thinking and problem-solving skills among students. By engaging with ethical decision-making frameworks and analyzing real-world case studies, students learn to approach ethical dilemmas with analytical rigor and intellectual honesty. These critical thinking skills are invaluable assets in the professional world, where complex ethical issues abound and thoughtful decision-making is paramount.

Additionally, the technology cultivates essential communication competencies, including ethical reasoning, empathy, and conflict resolution skills. Through role-playing exercises and simulation activities, students practice applying ethical communication behaviors in diverse interpersonal and professional contexts. This experiential learning approach not only enhances students' communication proficiency but also instills in them a deep-seated commitment to ethical conduct in their interactions with others.

Furthermore, the technology empowers students to make ethically sound decisions in communication contexts. By providing them with the tools and frameworks necessary to evaluate ethical dilemmas systematically, students develop the confidence and competence to navigate ethical challenges with integrity and principled judgment.

Finally, participation in the technology fosters a strong sense of professional ethics and a dedication to upholding ethical standards throughout students' careers. By internalizing deontological principles and engaging in ethical reflection, students emerge as ethical leaders and responsible professionals who prioritize ethical conduct in all aspects of their professional lives.

In essence, the technology of a deontological approach to developing a culture of communication among students of technical universities holds immense promise for shaping the next generation of ethical and socially responsible technical professionals. By equipping students with the knowledge, skills, and ethical principles necessary to navigate the complexities of the modern world, this approach ensures that technical graduates are not only proficient in their respective fields but also ethical stewards who contribute positively to society.

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Rezyume: *Ushbu maqolada texnik oliy o'quv yurtlari talabalari o'rtasida muloqot madaniyatini shakllantirishda deontologik yondashuvni amalga oshirish ko'rib chiqiladi. Axloqiy burch va majburiyatlarni ta'kidlaydigan deontologik etika axloqiy xulq-atvor va mas'uliyatli muloqot amaliyotini targ'ib qilish uchun asos yaratadi.*

Резюме: В данной статье исследуется реализация деонтологического подхода в формировании культуры общения студентов технических вузов. Деонтологическая этика, подчеркивающая моральные обязанности и обязательства, служит основой для продвижения этического поведения и практики ответственного общения.

Kalit so'zlar: Deontologik yondashuv, muloqot madaniyati, texnik universitetlar, axloqiy xulq-atvor, mas'uliyatli muloqot, pedagogik metodologiya.

Ключевые слова: Деонтологический подход, культура общения, технические вузы, этическое поведение, ответственное общение, педагогическая методика.

**DEVELOPMENT OF STUDENTS' SPEAKING COMPETENCES THROUGH STORIES
IN MOTHER TONGUE CLASSES**

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Summary: *This article is devoted to the development of students' speaking competences through storytelling in primary school mother tongue classes.*

Key words: *Story, competence, oral speech*

In the world, teaching the younger generation their native language, observing the norms of correct speech, a necessary factor in fostering a culture of spoken language, a culture of behavior, resources and the development of working methods are among the priorities.

It is a fact that secondary schools have become a decisive force in the reforms carried out in the field of education in our country. Possessive speech is a major part of parenting and learning. The stronger the nail, the stronger the place, therefore, the knowledge gained in education is the basis for achieving higher results without any difficulties in high school and subsequent stages of education. For this reason, it is necessary to use all opportunities to improve the literacy of classroom teachers, give them solid knowledge and form the necessary skills and scientific experience, and ensure the quality of primary education and the training process. This task imposes a great responsibility on every teacher. To improve the child's knowledge in the classroom, the teacher must teach in a modern way. That is, raising a child in accordance with the foreign education system, especially nowadays, means that the education system is focused on the intellectual development of the child. One of the most important issues is the development of students' speech in speech classes. Children's speech is formed by reading beautiful works of art in books and reading stories in a small circle. Among the necessary tasks for students of the conversational class are reading books, storytelling, expanding the worldview of students, developing conversational skills, and forming spirituality. According to current global trends, increasing the interest of young people in learning is one of the most important factors. When reading to children, it is important to choose books that are appropriate for their age and interests. Reading stories about animals' life is necessary if first grade students are interested in animals. It is necessary to take children to the library often, try to introduce children to fairy tales and stories about real events that happened in the family. A story is a work of fiction. There are different stories about people and events. A short story is a piece of fiction that can usually be read in one sitting. Pride is very important in parenting. It only increases his literacy and teaches him to be superstitious, bookish and polite.

Storytelling in native language classes develops students' speech at an excellent level. The final and pedagogical purpose of native language lessons today is to educate young people of a national mentality, to form in them a sense of respect for national values, and to implement the educational tasks facing education. One of the main goals of teaching a native language is to teach students to speak this language – to develop their oral monologue and dialogic speech. One of these goals is to organize learning-related activities based on speech activity that provides a sufficiently wide range of speech to form a speaking mechanism, that is, when learning a language, you should speak a lot in this language. The student speaks both when studying the text, when answering questions, and when he tells the story himself. However, these "statements" are not general level statements. When the text is studied, it is voiced. A similar situation arises when answering questions. Only the process of speaking in a free form more meets the requirements of improving oral communication. At each lesson, how many words each student should speak and express their opinion, how much and at what level to perform exercises to ensure the development of oral speech,

what should be the structure of lessons. This is not an easy task, the problem of resentment. These issues can be resolved by providing preliminary justifications with specific arguments from psychologists. Given that the main purpose of language teaching is the development of oral and written speech of students in the form of a monologue, as well as speech in the form of a dialogue, in classes in their native language, the teacher must know ways to implement this task.

It is important to develop conversational competence: it is necessary to teach children to speak correctly and express their thoughts correctly in writing, observing the norms of the language related to literature. The word "competence" comes from the English word "competence" and in a lexicological sense means "ability". In terms of content, it expresses the concept of "effective use of theoretical knowledge in activities, excellent professional scientific experience, manifestation of talent." It is used by a specialist in the sense of acquiring knowledge, skills and abilities necessary for the realization of professional competence, and the ability to apply them in practice at an excellent level. National educational standards and training programs based on a competency-based approach to teaching the native language are determined from the point of view of the child's ability to think, understand enlightened thought, express his opinion in a competent, logical sequence. Competence-based education is an education aimed at developing students' individual, professional and social service competencies.

Education based on a competency-based approach allows students to have independence, an active civic position, initiative, the ability to intelligently use media resources and information and communication technologies in their activities, an informed choice of profession, healthy competition, and cultural skills. In order for a person to enter into solitary, social, economic and professional relationships in his life, take his place in society, solve the problems he faces, and most importantly, be competitive in his field and profession it is necessary to have the necessary lean competencies. In addition, in the process of mastering each academic subject in education, students develop individual competencies related to this field, based on the uniqueness and content of this subject. Folk proverbs and riddles can also be usefully used in the development of speech competencies of first grade students, to teach correct interpretation and reasoning. For example, you can divide students into 2 groups and assign each of them the following riddles so that they read correctly and find the answer. You can't find it on the market, it's not attracted to scales, it's rusted like honey, but you can't buy it. (To sleep). I was riding a sleigh and crossing a stream, I didn't see any shadow, I was wearing a red velvet coat, I didn't see any fun. (Dream) Snow falls on the ground, the children, seeing it, cry, the day disappears from sight. (Snow). If you are a master, you will not be caught, If you run, you do not see, When you walk, there are no completions, you do not have eyes to see, What is wrong with the dawn, You see when you think You know magic. (Wind). Such puzzles help to develop students' speech, intelligence and mental abilities.

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Rezyume: *Mazkur maqola boshlang'ich sinf ona tili darslarida o'quvchilarning hikoyalash orqali nutqiy kompetensiyalarini rivojla'tirishga bag'ishlangan.*

Резюме: *Данная статья посвящена развитию речевых компетенций учащихся посредством рассказывания историй на уроках родного языка в начальной школе.*

Kalit so'zlar: *Hikoya, kompetenciya, og'izaki nutiq.*

Ключевые слова: *Рассказ, компетентность, устная речь*

USING THE STAGES OF INTEGRATION OF MULTI-AGENT SYSTEMS IN EDUCATIONAL PROCESSES

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Summary: *This article discusses the evolutionary process of implementing multi-agent systems in various aspects of the learning process. Based on the described approaches, a new multi-agent model of the learning process is proposed, where the category of efficiency is introduced. It is proposed to unite all participants in a single information educational environment and thereby manage the educational process.*

Key words: *integration, multi-agent, model, assistant, agent, expert.*

Shortly after the advent of the multi-agent method (MA) in the 90s, attempts began to apply MA models to various aspects of the learning process. Various approaches have been used and are currently being used to create these MA models.

One of the first approaches was to use agents as components of an intelligent system in addition to LMS/LCMS systems [1].

In one of these models, the architecture of the system is proposed to be represented as a set of agents of the following types: - an assistant agent, whose task is to communicate with the student, help him in the learning process, memorize tips and instructions; - an assessment agent, whose task is to assess the student's level of development and update information about his profile; - teacher (pedagogical agent).

In such systems, the assistant agent receives information from the student, such as problem solving, through the course Content Management System (LCMS) and transmits it to the assessment agent. The assessment agent evaluates the completed assignment with the involvement of an expert agent and updates the student's profile, informing the student agent, who, in turn, restores the curriculum for the student if necessary. With this approach, three characteristics of AI systems are important: - firstly, it acts as an additional intelligent LCMS management mechanism, - secondly, the agent is a separate relatively autonomous part of the system performing a certain set of functions, - thirdly, the set - the number and type of agents in such a system are all strict.

This application of multi-agent technologies is popular both for modeling and designing separately derived LMS and LCMS systems, and for solving problems of distributed artificial intelligence, where the training system is built from intelligent reflex agents that are completely autonomous systems [2].

It is worth noting that agents are not participants in the educational process, but model elements of an additional intellectual system. This approach is known as "bottom-to-top modeling".

In subsequent practices of applying MA models, the participants of the educational process themselves began to be modeled. There were three main types of agents in such models: a student agent, a learning agent (learning resource agent), and one or more intermediate assistant agents who interacted with the first two types of agents and interacted with databases and knowledge bases. Examples include models built on ontologies using semantic web technologies.

These models and technologies began to develop at a time when the task of combining all educational materials into a single space with the possibility of machine processing appeared on the basis of large foreign universities.

Education systems have been established in many countries that combine geographically distributed learning resources from various educational service providers, from schools to universities and professional development centers.

But the existing client-server technology, which was actively used in the construction of SMS/LMS, did not fully ensure the processing of educational materials from disparate information educational resources. Then they began to use the results of the SeMAntic Web project, based on a multi-agent ontological approach, to create a distributed distance learning system [3].

The algorithm of the system based on this model consists of several stages:

1. The user registers through the system interface (often a web interface); a personal agent creates a user profile based on the ontological model of the trainee and the data obtained from it and writes it to the database.

2. The program agent coordinator forms a request for obtaining profiles of educational materials using an ontological model of an educational resource and a student profile.

3. The Learning Resource Software Agent, using the Step 2 query, creates a request for learning resources on the Internet to search for metadata of learning materials.

4. Educational resources provide metadata of educational materials to analyze the need for their use in the educational process.

5. Individual selection of educational materials is carried out by the program agent coordinator at the intersection of the student's profile and the profile of educational materials, after which a request is sent for the necessary educational materials.

6. The Learning Resource Agent creates a set of learning materials recommended to the student.

7. At the final stage, the program agent coordinator hands over a large amount of training materials to the personal software agent in order to demonstrate them for the intern to study.

A feature of the described model is the complete absence of assessment tools. That is, ontological multi-agent models have been developed from the very beginning to search for and form educational resources for the student. To fully support the learning process and LMS/LCMS systems, ontological MAs should be complicated by the addition of knowledge assessment tools and reader feedback tools.

Based on the described approaches, a new multi-agent model of the educational process is proposed, where the efficiency category is introduced. There will be two main types of agents in this model: the consumer agent (educational resources) and the delivery agent (educational resources).

A consumer agent is a student who wants to start studying and is looking for acceptable options for himself, and a representative of the software of a real and potential student. A delivery agent is a program representative of an organization that has educational resources (curricula, courses, territories, material resources) and offers them to students.

A special platform is required for interaction between consumer agents and supplier agents. Currently, interaction platforms are almost always created by educational organizations, that is, in our model, platforms are created by supplier agents. As a result, there is a set of static educational platforms in the education market today, and potential students have to choose from "what they have."

The choice of an educational trajectory - that is, the sequence of interaction between student agents and resource agents depends entirely on the potential student, and even after graduation, given the current level of his qualifications and the required level of qualifications, the student may make a mistake in choosing an effective way of interaction. This may lead to the need to subsequently adjust personnel training, retraining, and retraining.

To solve the problem of efficiency, it is necessary to unite all participants in a single information educational environment (SIEE) and control the educational process in SIEE. All types

of SIEE participants have goals and criteria that determine their behavior. To control the effectiveness of the interaction of the system participants – that is, the effectiveness of training – an additional type of agent is introduced into the system - a virtual intermediary.

The task of a virtual intermediary is to create interaction platforms in accordance with the goals and criteria of agents, replenish them with suppliers and consumers, monitor the lifecycle of sites, optimize interaction between agents and mitigate conflicts.

The platforms created by the virtual intermediary are independent of both delivery agents and consumer agents.

It should be understood that in the proposed model, the task of virtual intermediaries is not to forcibly manage the entire educational environment, but only to create points of interaction between supplier agents and consumer agents, in fact, control the external environment and implement the idea (situation management) [4].

An important feature of the described model is the introduction of a category of efficiency of the educational process and an approach to education management in terms of efficiency criteria (and not only convenience, well-being and effectiveness described above).

The YAATM model with virtual intermediaries can form the basis of a complex global information system to which many educational organizations are connected and which can be used by students of different categories and levels.

Analyzing the results of using multi-agent technologies, a number of common points and trends can be identified. They have taken a firm place in education and made this process irreversible and became the basis for the use of information technology in education. At the same time, the tendency to use the Internet immediately manifests itself not only as a powerful tool for storing, processing and transporting various types of information, but also as a system of self-education. This trend has led to the fact that currently the informatization of education sets the task of developing appropriate psychological and pedagogical software based on Internet information technologies.

Informatization of education also raises the question of what cognitive skills should be developed in students. There is a problem of combining general skills with the ability to successfully operate in certain areas. In this case, the forms and methods of teaching aimed at using information and computer technologies receive new content.

Thanks to the availability of the Internet, it is possible not only to quickly perform complex search procedures, but also to carry out training functions related to the formation of the user's ability to apply the information received. R.Khamdamov and R.A.Begimkulov give examples of modern technologies in their research: "the capabilities of modern telecommunications facilities are a fairly extensive system, which, in addition to concepts such as computer, multimedia, computer networks, the Internet, includes a number of new concepts. Examples of such systems are Information systems, Information Systems Management, Information Transmission Systems, Data Warehouse, Data Warehouse Management System, Knowledge warehouse [5].

Thus, the main directions of the development of modern pedagogy have become, first of all, the modernization of traditional education within the framework of a reproductive approach. Secondly, the implementation of an innovative approach to the integrated use of information technology tools, the main purpose of which is to form students' creative and practical skills of creativity.

The widespread use of multi-agent systems makes it possible to use them for teaching the course "Information Technology in Education".

The use of such training systems is based on the knowledge, skills and qualifications acquired in the process of studying the means of information communication offered on the Internet.

At the moment, software in the form of separate programs hosted on the World Wide Web is often used not as a program for obtaining practical skills, but for solving specific educational goals and objectives, for example, implementing a student project, completing assignments on various topics [6].

The use of this type of software can be described as "pedagogically neutral", since the issue of the educational environment remains completely open.

Attempts to consider the Internet as an innovative socio-pedagogical environment are relatively rare [6] or are associated with distance education and educational work [7]. In our opinion, software educational programs are educational environments in situations that actually convey content (educational programs in the broadest sense of the word). Applications in this aspect are no longer pedagogically neutral and are always (explicitly or indirectly) based on one of the theories of learning (cognitive). The pedagogical task of teaching in a communicative and information environment differs from the traditional one in that it is aimed at managing the independent study of the material.

According to A.O.Uvarov, the learning environment is an "open educational architecture" of mobile goals, content, methods and organizational forms, consisting of communication, information and physical space [10].

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Rezyume: *Ushbu maqolada o'quv jarayonining turli jihatlarida ko'p agentli tizimlarni joriy etishning evolyutsion jarayoni muhokama qilinadi. Ta'riflangan yondashuvlar asosida o'quv jarayonining yangi ko'p agentli modeli taklif etiladi, bu erda samaradorlik toifasi joriy etiladi. Bu barcha ishtirokchilarni yagona axborot ta'lim muhitida birlashtirish va shu orqali o'quv jarayonini boshqarish taklif etiladi.*

Резюме: *В данной статье рассматривается эволюционный процесс реализации многоагентных систем в различных аспектах процесса обучения. На основе описанных*

подходов предлагается новая многоагентная модель процесса обучения, где вводится категория эффективности. Предлагается объединить всех участников в единую информационную образовательную среду и тем самым управлять образовательным процессом.

Kalit so‘zlar: *integratsiya, multiagent, model, assistant, agent, ekspert.*

Ключевые слова: *интеграция, мультиагент, модель, помощник, агент, эксперт.*

**ADVANCES IN COMPUTER LINGUA-DIDACTICS IN TEACHING FOREIGN
LANGUAGES USING COMPUTER AND NETWORK TECHNOLOGIES**

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Summary: *This article deals with the computer lingua-didactics which developing areas of the method of teaching a foreign language. Currently, the introduction of a computer, multimedia technology and the Internet affects the education system, causing significant changes in the content and methods of teaching foreign languages.*

Key words: *Methodology, computer lingua-didactics, multimedia technology, computer training programs, software classes, network resources, information technology.*

Computer lingua-didactics is one of the most intensively developing areas of the method of teaching a foreign language. Since mid- 80Kh, it has undergone a number of changes closely related to the development of computing and the concept of language learning. Opportunities that are provided by modern information technology are significant for language learning. Interest in this field of methodology is increasing, and the use of computers becomes an integral part of the educational process.

In the methodology of teaching foreign languages, it opens up new opportunities for teachers and students in their research and allows solving fundamentally new problems in the methodology of teaching a foreign language.

The theory of teaching foreign languages is also undergoing significant changes under the influence of new information technologies. New information technologies create the conditions for the full implementation of the basic principles of didactics, such as clarity, accessibility, strength, consciousness and activity, while changing the course of the educational process.

Currently, the introduction of a computer, multimedia technology and the internet affects the education system, causing significant changes in the content and methods of teaching foreign languages. The computer is widely used as a tool for working with information.

When using a computer, verbal communication activity is considered in three aspects. First, how to communicate students. In real time through the use of e-mail and information networks. Secondly, as an interactive dialogue between student and computer, in which a man-machine dialogue is carried out. Thirdly, as interaction of students with computer training programs.

The possibility of using a computer in foreign language software classes is due to the specifics of the educational discipline. Leader a component of the content of learning a foreign language is teaching various types of speech activities: speaking, listening, reading, writing.

Training computer programs are simulators that contribute to the organization of independent work of students and creates conditions under which students independently form their knowledge, which is valuable, since the knowledge gained in the ready form very often does not remain in the memory of students. The use of computers in English lessons is a time requirement.

The use of multimedia means contributes to the implementation of a person-oriented approach. In training, provides individualization and differentiation taking into account the characteristics of students. Learning using a computer makes it. Organizing the independent work of each student. The selection of training programs depends on the educational material and the level of training of students. Working with a computer helps to increase motivation and interest in studying. In addition, the computer allows you to completely eliminate one of the most important reasons for the negative attitude towards study - failure due to misunderstanding of the material or the problem in knowledge. It is this aspect that is provided by the authors of many computer

training programs. Working on a computer, the student gets the opportunity to complete the solution of the problem, relying on the necessary help.

Advantages of introducing internet technologies in the process of teaching a foreign language. At present, there is no doubt the influence of various forms of synchronous and asynchronous internet communication (e-mail, chat, forums, web conferences) on the formation of foreign-language communicative competence of students is also positive. Network resources are an invaluable base for creating an information and subject environment, training and self-education of people, satisfying their personal and professional interests and needs. However, the availability of access to internet resources in itself is not a guarantor of fast and high-quality language education. Methodically illiterate work of students with internet resources can contribute to the formation in them not only false stereotypes and generalizations about the culture of the country of the language being studied, but even racism and xenophobia.

Educational internet - resources should be directed to the integrated formation and development:

- aspects of foreign language communicative competence, including its components: linguistic, sociolinguistic, sociocultural, strategic, discursive, cognitive;

- of communication and cognitive skills of search and selection, product of analysis and synthesis of the obtained information;

- communication skills of presentation and discussion of the results of work with internet resources;

- skills using internet resources for self-education in order to get acquainted with the cultural and historical heritage of various countries and people, as well as act as a representative of the native culture, country, city;

- skills to use network resources to meet your information and educational interests and needs.

Didactically, the internet includes two main components: forms of telecommunications and information resources. The most common forms of telecommunications are e-mail, chat, forum, ICQ, video - and web conferences. Initially they were created for real communication between people who are on.

distance from each other, and currently they are widely used in teaching a foreign language.

Five types of educational internet resources stand out in English-language literature:

1. Hotlist (List by topic) - list of sites with text materials on the topic under study. To create it, you need to enter the keyword into the search engine.

2. Multimedia scrapbook (multimedia draft) collection of multimedia resources, unlike the hotlist, in addition to links to text sites, there are also photos, audio files and video clips, graphic information, animated virtual tours. These files can be easily downloaded by learners and used as informative or illustrative material in learning a particular topic.

3. In addition to links to various sites, the software of the topic under study contains and questions on the content of each site. With these questions, the teacher directs students "search and learning activities. In conclusion, students are asked one more general question on a holistic understanding of the topic (actual material). The detailed response will include answers to more detailed questions about the software of each of the sites.

4. Sample Subject - the next stage of complexity compared to hunt. Also contains links to text and multimedia materials of the internet. After studying each aspect of the topic, students need to answer the questions posed, but the questions are not aimed at the actual study of the material (as in the previous case), but at discussing discussion topics. Students need not only to familiarize themselves with the material, but to express and argue their opinion on the discussed issue being studied.

5. Webquest (internet project) is the most complex type of educational internet resources. This is the project management students on any topic using internet resources. He includes all components of the above four materials and assumes the implementation of the project "With the participation of all students".

One of the scenarios of the PD organization may be as follows. From the beginning, the whole class gets acquainted with general information on the topic, then students are divided into groups, each group gets a certain aspect of the topic. The teacher needs to select the necessary resources for each group according to the aspect being studied. After study, discussion and full understanding of a specific problem. In each primary group, students regroup so that in each new group there is one representative of the primary group. During the discussion process, all students learn from each other all aspects of the discussed problem. Each of these types of educational internet resources flows from the previous, gradually becoming more complicated, thereby allowing to solve more complex educational tasks. The first two are aimed at searching, selection and classification of information. The rest contain elements of problematic learning and are aimed at activating the search and cognitive activities of students.

Introduction of educational internet resources into the educational process contributes to the development of communication skills of students. Complexity of the material and its scope vary and must correspond to the level of development of students at each stage of training. The methodological potential of educational Internet resources allows:

- select text, graphic, photo, audio and video materials on the studied topics;
- organizing a discussion of cultural and social problems in groups and the whole class;
- to conduct a linguistic analysis of the oral and written speech of native speakers (representatives of various social groups, native speakers of dialects and accents);
- organize extracurricular and extracurricular project activities of students;
- create favorable conditions for students with a high level of foreign-language communicative competence to realize their intellectual potential.

It can be concluded that the use of ICT currently forms an integral part of the educational process, contributes to the modernization of higher education, allows you to implement an active approach in learning and successfully form the communicative and informational competencies of students.

Competently using the information resources of the Internet, you can more effectively solve a number of didactic problems in the lesson:

- to form skills and reading skills directly using network materials of varying degrees of complexity;
- improve listening skills based on authentic audio texts of the Internet;
- improve the skills of monologues and dialogic statement on the basis of problematic discussion of network materials;
- vocabulary of a modern foreign language, reflecting a certain stage in the development of the culture of the people, the social and political structure of society;
- to get acquainted with cultural knowledge, including speech etiquette, especially speech behavior of various people. In the conditions of communication, peculiarities of culture, traditions of the country of the language being studied.

An equally popular way to use computer technology is to create multimedia Power Point presentations. The use of computer presentations in classes allows you to introduce new lexical, country science material. In the most exciting form, the principle of visibility is implemented, which contributes to the solid acquisition of information. The independent creative work of students to create computer presentations as well as possible expands the stock of active vocabulary.

The use of multimedia presentations in classes is effective for providing visual support for speech learning. The advantages of multi-family presentations include the following:

combination of text, audio and video visibility;

- possibility of use for interactive presentation,

multimedia board, which allows you to more clearly new lexical, grammatical and phonetic material, as well as provide support for training in all types of speech activities;

- ability to use individual slides as a handout (supports, tables, charts, graphs, diagrams);

- intensification of students' attention;

- ensuring the efficiency of perception and memorization of the new educational material;

- control over the acquisition of new knowledge and systematization of the studied material;

- saving training time;

- formation of computer multimedia competence of students.

Messaging, comment services are designed for individual communication between a teacher and a student, which may involve reviewing works, discussing individual educational problems.

For complete understanding of the current possibilities of the development of the interactive method of training, let's consider further the technologies of the new generation of web-2.0, which are social services for ensuring user communication.

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Rezyume: Mazkur maqolada chet tilini o'qitish usulining yo'nalishlarini rivojlantiruvchi kompyuter lingvodidaktikasi ko'rib chiqilmoqda. Bugungi kunda kompyuter, multimedia texnologiyalari va internetni joriy etish ta'lim tizimiga ta'sir ko'rsatib, xorijiy tillarni o'qitish mazmun va usullarida muhim o'zgarishlar yaratmoqda.

Резюме: В данной статье рассматривается компьютерная лингводидактика, развивающая направления метода преподавания иностранного языка. В настоящее время внедрение компьютера, мультимедийных технологий и интернета влияет на систему образования, вызывая значительные изменения в содержании и методах обучения иностранным языкам.

Kalit so'zlar: Metodologiya, kompyuter lingvodidaktikasi, multimedia texnologiyalari, kompyuter o'quv dasturlari, dasturiy ta'minot sinflari, tarmoq resurslari, axborot texnologiyalari.

Ключевые слова: Методология, компьютерная лингводидактика, мультимедийные технологии, компьютерные учебные программы, классы программного обеспечения, сетевые ресурсы, информационные технологии.

THE STUDY OF PHRASEMES IN RELATED TURKIC LANGUAGES

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Summary: *Phraseologisms are the word combinations made up of several words, which are formed over a long period of time in the course of its development in our language. Such phraseological word combinations have peculiarities in terms of their appearance, stability of meaning, and style. The historical life path, wisdom, whole spiritual and cultural life, past of the people who created that language are reflected in the vocabulary. There, the place of figurative and impressive language riches created by the people during the captivity is important. They provide a certain data service in explaining the inimitable national character and richness of the language. Now, in this article, we will learn the phrasemes in comparison with related Turkic languages. The steps of occurrence of phrasemes are discussed.*

Key words: *vocabulary, phraseologism, term, vocabulary, artistic (literary) text, semantics, Stable word combination, idiom, irony, stylistics.*

In the course of its development, our language has word combinations made up of several words, which have been formed by combining for a long time. Such phraseological word combinations have peculiarities in terms of their appearance, stability of meaning, and style. The historical life path, wisdom, whole spiritual and cultural life, past of the people who created that language are reflected in the vocabulary. There, the place of figurative and impressive language riches created by the people during the captivity is important. They provide a certain data service in explaining the inimitable national character and richness of the language.

We can see that the study of the phraseology of Turkic languages began in the 40s of the 20th century. The Kazakh scientist S.I. Kenesbaev and Uzbek scientist Sh. Rahmatullaev are considered to be the founders of Turkic phraseology. Academician S. Kenesbaev understands phraseologies in a broad sense and includes all stable (phraseological) word combinations - proverbs, idioms, pair words. According to him, from the structural-semantic point of view, the phraseological units are not the same, and all types of phrasemes are united by one common sign - the repetitive use [1]. S.N. Muratov, in his book "Türkiy tillerindegi turaqlı söz dizbekleri (Stable word combinations in Turkic languages)" [2, 115] introduced all the stable word combinations into the set of phraseological units in a ready-made form in the language and was recognized as a scientist who understands the term phraseology in the Turkic language in a broad sense. The Tatar scientist G. Kh. Akhunzyanov in his doctoral dissertation on the topic "Idioms" divides the idioms into two types: idiom -word combinations and idioms-sentences. The idiom sentences include proverbs [3, 6]. Also «Azerbayjan tili frazeologiyasınıñ tiykarları (The basis of phraseology of the Azerbaijani language)» by G. A. Bayramov (1970), «Bashqurt tili frazeologiyası (Phraseology of the Bashkir language)» by G. Uraksin (1975), «Házirgi zaman chuvash tili frazeologiyası (Phraseology of the modern Chuvash language)» by M. F. Chernov (1988), «Türkmen tilindegi frazeologiyalıq söz dizbekleriniñ dúzlislik tárepleri hám frazeologiyalıq sinonimiya máseleleri (The structural sides of phraseological word combinations in the Turkmen language and problems of phraseological synonymy)» by M. Abdirakhmanov, «İngliz hám turkmen tillerindegi frazeologiyalıq birliklerdiñ salıstırma izetlew (Comparative study of phraseological units in English and Turkmen languages)» by N. Sh. Shammaeva (1994) candidate, doctoral theses, several monographs and scientific articles were published [4, 10].

Uzbek scientist Sh. Rahmatullaev in his candidate's thesis studied the grammatical differences of figurative verb phraseologies in Uzbek language, and in his monograph «Ózbek frazeologiyasınıñ bazı bir máseleler (Some Issues of Uzbek Phraseology) » he founds on learning

Uzbek phrasemes as a lexical unit. In this work, the issues of polysemy in phrasemes, synonymy in phrasemes, antonymy in phrasemes, homonymy in phrasemes, variability in phrasemes were learned from a new perspective [5].

A. Mamatov in his monograph «Házirgi zaman ózbek ádebiy tilinde leksikalıq hám frazeologiyalıq norma mashqalaları (The issues of lexical and Phraseological Norm in Modern Uzbek Literary Language)» and in his doctoral thesis defended in the basis of this, for the first time in Uzbek linguistics, researched the linguistic norms of phraseology and the issues related to its speech culture [6]. After him, the scientist professor B. Yuldoshev made a significant contribution to the development of Uzbek phraseology. He studied the problem of phraseology in all sides. Some of his valuable works are «Ózbek frazeologiyasidan materiallar (Materials from Uzbek phraseology) » (1976; 1979), «Frazeologiya tarixidan lavhalar (views from the history of phraseology) » (1998), «Frazeologik uslubiya asoslari (Fundamentals of phraseological style)» (1999), and other more works can be noted. In particular, his doctoral dissertation on the topic «Házirgi ózbek ádebiy tilinde frazeologiyalıq birliklerdiń funktsional-stilistik ózgeshelikleri (Functional-stylistic features of phraseological units in the modern Uzbek literary language) » [7], defended in 1993, is of great importance.

In Karakalpak linguistics in prof. E. Berdimuratov's works "Házirgi zaman qaraqalpaq tiliniń leksikologiyası (Lexicology of Modern Karakalpak Language)" information about stable word combinations in our language is given. After that, in making the phraseological dictionary, J. Eshbaev's «Qaraqalpaq tiliniń qısqasha frazeologiyalıq sózligi (Brief Phraseological Dictionary of the Karakalpak Language) », T. Jumamuratov's «Mektep oqıwshıları ushın russha-qaraqalpaqsha qısqasha frazeologiyalıq sózlik (Brief Russian-Karakalpak Phraseological Dictionary for School pupils) », K. Pakhratdinov and K. Bekniazov's «Qaraqalpaq tiliniń frazeologizmler sózligi (Phraseological Dictionary of the Karakalpak Language) were published. Among the dissertation works on phraseological units in the Karakalpak language, we can mention the scientific work of T. S. Naurizbaeva «Qaraqalpaqsha-russha sózlikte atawısh frazeologiyalıq birliklerdiń tipleri (Types of nominal phraseological units in the Karakalpak-Russian dictionary) » [8]. G. Ainazarova was a scientist who specially studied phraseologisms. In her candidate's thesis, equal two-component phraseologies in the Karakalpak language were studied. This work is considered valuable because it is dedicated to the special learning of phraseological units in the Karakalpak language [9]. B. Yusupova's study guide "Qaraqalpaq tiliniń frazeologiyası (Phraseology of the Karakalpak language)" [10] and several articles on learning phraseology in the textbooks were published. Recently, a number of scientific studies on phraseologisms in Karakalpak linguistics have been conducted. G. Allambergenova's research on the topic of "I.Yusupov shıǵarmalarında frazeologizmlerdiń stilistik qollanıwı (The stylistic use of phraseological units in the works of I. Yusupov)" [11], and A. Pirniyazova's doctoral thesis on "Qaraqalpaq tili frazeologiyalıq sisteması hám onıń stilistik imkaniyatları (Phraseological system of the Karakalpak language and its stylistic possibilities)" [12] can be noted. J. Tanirbergenov's research on the topic "Qaraqalpaq tilinde feyil frazeologizmlerdiń lingvistikalıq analiz (Linguistic analysis of verb phraseologisms in the Karakalpak language)" studied the phraseologies from the verb that is most productively used among the parts of speech in Karakalpak language [13].

Scientific works devoted to the study of the usage features of phraseological units in the language of the literary works were carried out. in Kazak language Kh. Kojakhmetova's work "Frazeologizmlerdiń kórkem ádebiyatta qollanıwı (Use of phraseologies in literary literature)" [14], I. Kushkarov's «Abdulla Qohhonıng frazeologik novatorlıǵı (Phraseological innovation of Abdullah Kahhon" [15], T. Choriev's candidate's thesis on phraseologies in S. Ainiy's journalistic works in his [16], Sh. D. Abdullaev studied the semantics of phraseological units in the Uzbek translation of T. Kaipbergenov's works [17], B. Yuldoshev's monographs about Erkin Vohidov's mastery of using phrasemes [4, 258] can be mentioned. Therefore, these studies prove once again

that the phraseological word combinations are used as special lexical units of the language of literary work.

Several articles have been published in the Karakalpak language related to the use of phraseological word combinations in the literary works. Sh. Abdinazimov's "Berdaqtiń frazeologiyalıq jańashılıǵı (Phraseological Innovation of Berdak)", E. Berdimuratov and G. Ainazarova's ««Qırıq qız» dástanınıń leksikasında frazeologizmler hám olardıń eki komponentli túrleriniń paydalanılıwı haqqında (About the Use of Phraseologisms and Their Two-Component Types in the Lexicon of the Epic "Kirk kiz) », A. Kaipov's "Frazeologizmlerdiń kórkem ádebiyatta qollanıw ózgeshelileri (Differences in the Use of Phraseologisms in Fiction)", O. Embergenova's "Qaharmanlıq dástanlarda frazeologiyalıq sóz dizbekleri arasındaǵı sinonimlik qatnaslar (Synonymous relations between phraseological word combinations in heroic epics)", and other articles on the usage peculiarities of such phraseologisms in the language of the literary works can be cited [19].

In Karakalpak linguistics, the phraseologisms require even deeper learning. In particular, it is appropriate to say that the learning of phraseologisms in new aspects - semantic, lingua-cultural, pragmatic orientation has just begun. In Russian linguistics, as well as in the related Turkic languages, these problems have already started, and enormous research works have been carried out on learning phrasemes in a new direction.

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Rezyume: *Frazeologizmlar tilimizda uzoq vaqt davomida o'zining rivojlanish jarayonida shakllangan bir necha so'zlardan tashkil topgan so'z birikmalaridir. Bunday frazeologik iboralar ko'rinish, ma'no barqarorligi va uslub jihatidan o'ziga xos xususiyatlarga ega. Lug'atda bu tilni yaratgan xalqning tarixiy hayot yo'li, hikmatlari, butun ma'naviy-madaniy hayoti, o'tmishi o'z aksini topgan. U yerda xalqning asirlikda yaratgan obrazli va ta'sirchan til boyligi muhim o'rin tutadi. Ular tilning o'ziga xos milliy xususiyati va boyligini tushuntirishda ma'lum bir axborot xizmati ko'rsatadi. Endi biz ushbu maqolada frazeologik birliklarni turkiy tillarga qiyoslab o'rganamiz. Frazemalarning paydo bo'lish bosqichlari haqida so'z boradi.*

Резюме: *Фразеологизмы – это словосочетания, состоящие из нескольких слов, образующиеся на протяжении длительного периода времени в процессе его развития в нашем языке. Такие фразеологические словосочетания имеют особенности с точки зрения внешнего вида, устойчивости значения и стиля. В лексике отражены исторический жизненный путь, мудрость, вся духовная и культурная жизнь, прошлое народа, создавшего этот язык. Там важное место занимает образное и впечатляющее языковое богатство, созданное народом во время плена. Они оказывают определенную информационную услугу в объяснении неповторимого национального характера и богатства языка. Теперь в этой статье мы выучим фразеологизмы в сравнении с родственными тюркскими языками. Обсуждаются этапы возникновения фразем.*

Kalit so'zlar: *lug'at, frazeologik birlik, termin, lug'at, badiiy (badiiy) matn, semantika, turkum ibora, frazeologik birlik, ironiya, stilistika.*

Ключевые слова: *лексика, фразеологизм, термин, лексика, художественный (литературный) текст, семантика, Устойчивое словосочетание, фразеологизм, ирония, стилистика.*

**IF IT IS NOT STRENGTHENED, IT CANNOT BE CONSIDERED AS THE BASIS OF
CONSTITUTIONAL – LEGAL RESPONSIBILITY**

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Summary: *The article examines the principles and subjects of constitutional-legal responsibility. Representing the subjects of responsibility, constitutional and legal measures of responsibility, authorized bodies applying constitutional measures and the mechanism for their implementation.*

Key words: *Constitutional-legal responsibility, Uzbekistan, Constitution of the Republic of legal responsibility of Uzbekistan, constitutional law, legal norm, state authorities, officials.*

According to A.S. Koshel, it is necessary to recognize the violation of the Constitution and other sources of constitutional law as a basis for the emergence of constitutional-legal responsibility

The Constitution of the Republic of Uzbekistan specifies the constitutional duties and rights, the subjects of responsibility, the constitutional-legal measures of responsibility, the authorized bodies that apply the measures of constitutional influence, and the mechanism of their implementation.

Only the main principles and rules of all types of legal responsibility are strengthened in the Constitution of the Republic of Uzbekistan. The Constitution of the Republic of Uzbekistan cannot be the only source of criminal, civil-legal, administrative, disciplinary and constitutional- legal responsibility. However, the Constitution pays more attention to the regulation of constitutional legal responsibility than to criminal responsibility.

The fundamentals of constitutional-legal responsibility reflect the essence of the subject of constitutional law in comparison with other areas of law. The subject of constitutional law as a field of law has two characteristics. On the one hand, constitutional law implements intersectoral regulation of social relations, that is, it covers all spheres of social relations and regulates them constitutionally.

The norms of constitutional law regulate the most basic, fundamental social relations and serve as the basis for the norms of other branches of law. On the other hand, as noted by P.A. Kuchura, as a field of law, the subject of constitutional law is only anumber that is directly regulated by it. forms social relations. Among them, it is related to the provision of the principle of "separation of powers"; power relations arising in the process of mutual relations of the head of state, legislative, executive, judicial authorities; elections, referendums are power relations directly related to the implementation of forms of democracy

Crime is the basis of different legal liability and can have different names depending on the specific type, namely: crime, tort, etc. According to P.A. Luchin, the basis of constitutional- legal responsibility is not indicated by any specific term, in this regard, terms such as constitutional offense and constitutional delict are used

At the same time, it should be noted that the term of the basis of a certain type of liability is historically formed, and there is no clear difference between the terms "crime" and "delict" (delictum means "criminal offense"). Therefore,- the normative legal basis of constitutional legal responsibility can be defined as "constitutional offense".

On the other hand, using the opinion of F. Rakhimov, a constitutional offense is a constitutional violation of the state power body or an official who, as a result of the illegal, culpable (intentional or negligent) activity (action or inaction) of the state power, or the risk of harming the social relations of the subject means determination of constitutional-legal responsibility based on legal norms

Signs of a constitutional violation are visible in the following:

- 1) the constitutional offense must be in the form of harm (act or inaction)
2. the illegality must contradict the requirements of this legal norm. Illegality can be expressed in the violation of any legal norms regulating the exercise of state power, but the responsibility itself must be determined by clear constitutional norms of law;
3. mental attitude towards the constitutional legal responsibility of the subject who committed the guilty act in the form of malice or negligence, if the person is found to be innocent of his actions, it is not allowed to hold the person responsible,
4. public danger is represented by encroachment on social relations protected by law (causing harm or risk of harm) in the exercise of state power;
5. the constitutional legal liability for this act of punishment should be provided by law;
6. state bodies subject to special responsibility and officials of these bodies and public associations In order to recognize an action as a constitutional violation, all the above-mentioned signs must be present at the same time.

Based on the constitutional and legal status of the officials of the state power bodies, priority is given to their final results rather than their official actions, and the achievement of results can be the basis for applying measures of legal responsibility against them. The constitutional-legal obligation of state authorities and their officials is a legal notification to this subject to achieve (obtain) a certain positive result within the scope of their powers.

The compositional concept of the crime is applied to the constitutional crime, taking into account its specific features. Therefore, its composition describes the object features include the object itself, the objective side, the subject itself, the subjective side.

The objective side of the constitutional offense is first of all the illegal non-fulfilment of constitutional duties or the abuse of constitutional rights. Optional elements of the objective side of the constitutional offense are harmful consequences, causal relationships between actions and consequences, other methods and circumstances of committing the offense.

The distinctive feature of the objective side of the constitutional offense is that its necessary element is only illegal activity (action

or inaction), and it is not necessary for the permanent occurrence of harmful consequences. The presence of harmful consequences as a necessary element of the composition of a constitutional offense must be reflected in the regulatory legal document defining responsibility.

Therefore, in most cases, social harmful consequences, actions and consequences between the cause and effect relationship are auxiliary elements of the objective side.

The object of a constitutional offense is social relations that are protected by law, regulated by the norms of constitutional law, and develop in connection with the exercise of state power.

These social relations represent the highest social values established in the Constitution of the Republic of Uzbekistan, in necessary cases, constitutional legislation and decisions of the Constitutional Court of the Republic of Uzbekistan.

In the case of constitutional crime, it is possible to distinguish the general, related and direct objects of the crime. The constitutional object (for all types of crimes) is the principles of the constitutional system, the form of governance, the form of governance of the state structure, collective self-governance.

It is a set of power relations regulated and protected by the Constitution and other sources of constitutional law, which includes measures and individual freedom (individual, society, state relations).

Encroachment by constitutional offenses on individual parts of social relations of the same kind as a related object of the constitutional offense should be understood. G.A. According to Trofimova, the following apply to them: relations that develop the rights and freedoms of people

and citizens, relations in the system of people's representation; organization and activities of local government bodies, relations with the self-government bodies of the people. The direct object of the constitutional offense is the direct reference of the constitutional offense to this object

It is necessary to distinguish the subject of the constitutional offense from the object of the constitutional offense. Subjects of constitutional offenses are objects of constitutional-legal relations. In the generalized formula, it is possible to include "global" collective institutions of the state and law in the first place among the subjects of constitutional violations.

Also, from a wider point of view, the following are the subjects of constitutional violations: normative legal documents, objects and events of reality, social values that connect the powers of state authorities and officials with personal rights and freedoms; the powers of the officials and bodies of the state power, the rights and freedoms of the person, the activities and actions of the participants of constitutional-legal relations are concerned.

It is possible to show any type of constitutional offense: different

-Constitution of the Republic of Uzbekistan, Constitution of the Republic of Karakalpakstan;

-mass power, people's sovereignty, citizenship;

-material capabilities on a global scale (ownership as an indicator of the economic form of mass power organization).

Subjects of constitutional violations are subjects of constitutional-legal relations, in which constitutional-legal sanctions can be applied to them in case of not fulfilling their constitutional duties (failing to fulfill them to the required extent) or exercising their constitutional rights. Such subjects may be a body of state power or an official of the state, as well as a public association, entrusted with the powers to exercise public power by the Constitution.

In a broad sense, subjects of constitutional legal responsibility potentially correspond to subjects of constitutional legal relations. Subjects of constitutional and legal responsibility can be both individual and collective.

The types of subjects of constitutional-legal liability are not final, because as the constitutional legislation develops, constitutional rights and obligations are given to some subjects of law in the event that they become delictual. The delictual capacity of officials starts from the moment they start their work and ends when their authority is terminated.

The criminality of mass state authorities, which are collegial subjects, is determined from the moment of their establishment, but the constitutional legal responsibility of officials as members of collegial bodies can be applied only if they occupy their positions.

The analysis of the Constitution of the Republic of Uzbekistan makes it possible to distinguish the following subjects of constitutional and legal responsibility provides: the state, state authorities, local state authorities, public associations, officials

State bodies and officials can be characterized as subjects of a constitutional offense by the following signs:

these are constitutionally established state bodies (officials) or other bodies (officials), participants of constitutional-legal relations;

the subjects of the constitutional offense are, first of all, the elected bodies (officials) of public state power, which are at the highest place in the hierarchy of public-law state institutions and occupy the appropriate political-legal, administrative-territorial position in the state structure,

-State bodies with independent competence within the scope of their powers granted in accordance with the Constitution of the Republic of Uzbekistan and other sources of constitutional law,

-not only individual, but collegial subjects;

-the immunity of certain categories of private officials (for example, deputies, senators), the existence of immunity takes into account the special, complex procedure of bringing legal

responsibility here. A necessary element of the subjective side of a constitutional offense is the presence of guilt, which is the expression of the subject's mental attitude to the act committed intentionally or negligently.

The evil intention of the person who committed the crime is characterized by the fact that he understood that his action or inaction was illegal, that he foresaw its harmful consequences and had a desire for them, or that he deliberately allowed these consequences to begin.

Negligence is understood only in one case, that is, the person who committed the offense, although he foresaw the possibility of harmful consequences of his action or inaction, but did not take any actions to prevent them or could not foresee the occurrence of such consequences.

For example, timely cancellation of an unconstitutional document issued by an official or a collegial body, if this responsibility is assigned to the offender, as well as taking measures to eliminate the negative social consequences caused by this action, is an indicator of negligence. It is an indicator of an official (collegial body) in the position of delaying the execution of the court decision on annulment of the document or publishing a new regulatory legal document together with the annulled document.

The question of culpability in relation to the constitutional legal liability of the community is a complex one.

When it comes to the responsibility of public entities, it is appropriate to use the concept of guilt accepted in civil law. Guilt is understood as the failure of a subject of collective law to take objective measures to eliminate or prevent the negative results of their actions, and in some cases it is applied to individual subjects of constitutional-legal responsibility.

For example, the level of guilt of a certain member of the government is not taken into account when resigning the government. In this place, M.Yu. As Vyskrebentseva rightly points out, the measures of accountability against the government "are related to a certain constitutional and legal competence, used as an inseparable whole body".

In any case, the existence of guilt is necessary for the occurrence of constitutional legal responsibility. However, constitutional

the specific composition of the crime, its role in the development of the law. It is desirable to identify the characteristics. In some cases, fault itself is sufficient, its form (intent or negligence) does not need to be shown. The liability is related to the fact that the subject of responsibility did not perform all possible actions to prevent negative consequences. In other cases, it is appropriate to define the form of culpable intent or negligence as an element of the subjective side of the constitutional offense in the legislation.

Auxiliary elements of the subjective side can be cause and purpose. In particular, if political parties, in their organization and activities, pursue the prohibited goals listed in the Constitution of the Republic of Uzbekistan, this becomes a constitutional offense. Such goals include: forcible change of the constitutional system, opposition to the sovereignty, integrity and security of the republic, the constitutional rights and freedoms of the citizens, war propaganda, inciting social, national, racial and religious enmity, encroachment on the health and morals of the people. Based on foreign experience, S.M. Baaramidze researched similar cases in his work.

Thus, the violation of a specific legal norm (normative basis) to the bases of legal, including constitutional-legal responsibility, at the same time, the concrete structure (factual basis) of the constitutional-criminal offense in the actions of a person includes availability.

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Rezyume: *Maqolada konstitutsiyaviy-huquqiy javobgarlik tamoyillari va sub'ektlari ko'rib chiqiladi. Javobgarlik subyektlarini ifodalovchi konstitutsiyaviy-huquqiy javobgarlik choralari, konstitutsiyaviy choralarni qo'llovchi vakolatli organlar va ularni amalga oshirish mexanizmi.*

Резюме: *В статье исследуются принципы и субъекты конституционно-правовой ответственности. Представление субъектов ответственности, конституционно-правовых мер ответственности, уполномоченных органов, применяющих конституционные меры, и механизма их реализации.*

Kalit so'zlar: *Konstitutsiyaviy-huquqiy javobgarlik, O'zbekiston, O'zbekiston Respublikasi Konstitutsiyasi yuridik javobgarlik, konstitutsiyaviy huquq, huquqiy norma, davlat hokimiyati organlari, mansabdor shaxslar.*

Ключевые слова: *Конституционно-правовая ответственность, Узбекистан, Конституция Республики Узбекистан о юридической ответственности, конституционное право, правовая норма, органы государственной власти, должностные лица.*

SYSTEM AND TYPE OF CONSTITUTIONAL-LEGAL SANCTIONS

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Summary: *The article examines the system and types of constitutional and legal sanctions, the necessary signs, and the specifics of constitutional and legal responsibility.*

Key words: *Constitutional and legal responsibility, the Constitution of the Republic of Uzbekistan, legal responsibility, constitutional law, legal norm, public authorities, officials.*

Constitutional legal sanctions are a necessary feature of constitutional legal responsibility. In order to justify the conclusion regarding the recognition of sanctions as a mandatory element of the legal norm, its legal norm is considered as a possibility of state coercion. Otherwise, the norm ceases to exist as a measure, as a measure of behavior, because the violation of the norm does not lead to the use of coercion by the state as a measure of behavior, which is the case in legal literature. Therefore, it seems appropriate to recognize responsibility, including constitutional legal responsibility, as the enforcer of sanctions.

In this regard, S.N. We can agree with the following opinion of Bratus: "A norm without sanction ceases to be a measure, a scope of behavior, because the violation of this measure, going beyond the established limits, does not lead to a correct reaction, condemnation by the state and coercion by the state, does not ensure the order of social relations broken order in the "feedback Constitutional-legal sanctions have consequences appear) and at the same time they have the following characteristics: a) consolidated in the Constitution of the or Republic of Uzbekistan in other sources of constitutional law; [1]

6) almost all constitutional legal sanctions "cannot be used as sanctions of other types of legal responsibility" (except, for example, compensation for material damage, which is possible not only civil legal, but also constitutional legal be sanctioned responsibility);

B) constitutional-legal sanctions can be applied not only for constitutional violations, but also on the basis of positive constitutional-legal responsibility, that is, constitutional incompatibility. Constitutional inconsistency as the basis of constitutional legal responsibility means that the state body (official) does not conform to its constitutional status, the subjects of constitutional legal relations with the appropriate authority are not able to effectively perform the tasks of public authority entrusted to them by the people (voters).

Constitutional legal sanctions are legally established unfavorable measures of mandatory impact on the subject of rights in case of non-fulfillment (incorrect fulfillment) of constitutional obligations or abuse of rights. Constitutional legal sanctions and protective measures used for actions.

The uniqueness -of constitutional legal sanctions can be seen, first of all, in the variety of their types. Depending on the purpose and consequences of their application, constitutional legal sanctions can be divided into the following types: a) restorative rights; b) preventive; c) punishment; d) preventive measures.

According to this classification, each type of constitutional legal responsibility is aimed at preventing broken legal relations, negative consequences, restoring the right, applying preventive measures, punishing and, if possible, restoring the right. However, in the system of constitutional legal sanctions, there is a main task that determines the place of a certain impact measure.

Sanctions for the restoration of rights are, first of all, measures of constitutional and legal responsibility aimed at restoring the violated constitutional state and values violated as a result of a constitutional offense. This is one of the main features that distinguish them from other types of sanctions.

When the subject of law is forced to fulfill its constitutional duties, the model of the appropriate situation established by the legal norm is restored. Non-fulfillment of any obligation leads to violation of the rights and interests of other legal subjects. Therefore, the mandatory fulfillment [2] of the constitutional obligation is aimed at restoring the constitutional rights and freedoms of other persons.

Such sanctions include recognition of the invalidity of the normative Preventive sanctions are understood as measures aimed at warning subjects of constitutional and legal responsibility about the possibility of further negative legal consequences for them in case of continued heavy illegal activities.

These measures: unsatisfactory assessment of the activities of state bodies; includes a written warning to the registration authorities about the inconsistency of the activities of public associations and political parties, etc. Penal sanctions (fines) are understood as constitutional legal sanctions aimed at punishing the guilty.

As a result of their application, the rights of the subject of constitutional legal responsibility are limited. Punitive measures include the following: dissolution of the legislative (representative) body of state power, recall of deputies and senators, early dismissal of officials, refusal to register public associations, including political parties, etc. Preventive measures are constitutional-legal sanctions aimed at stopping a negative process that leads to negative consequences in the constitutional legal sphere. Threats to constitutional and legal security, violations of compliance with various types of regulatory legal documents, and other negative consequences are included. [3]

Preventive measures, which include: suspension of documents of state authorities; suspending the activities of authorities, suspending the activities of public associations Classification of constitutional legal sanctions may be different. In particular, according to the criteria of the subject and object of constitutional legal liability, constitutional-legal sanctions can be divided into the following types: constitutional legal sanctions considering the negative consequences for the state bodies themselves (officials) as subjects of a constitutional crime;

constitutional legal sanctions aimed at the result (product of activity) of the state body (official) issued by the subject of the law or other regulatory legal document;

constitutional legal sanctions in the field of activities of civil society institutions, elections, referenda, party activities, etc.

Constitutional - legal sanctions include consideration of negative consequences for state bodies (officials) as subjects of constitutional violations. They are as follows: [4]

Release of the Prime Minister of the Republic of Uzbekistan resignation of the government of the Republic of Uzbekistan;

In case of irreconcilable differences in the composition of the Cabinet of Ministers of the Republic of Uzbekistan, as well as due to the reasons of threats to its legal activity as a result of the Cabinet of Ministers taking decisions that contradict the Constitution of the Republic of Uzbekistan, laws, decrees, decisions and orders of the President of the Republic of Uzbekistan several times, the Republic of Uzbekistan Dismissal of the Prime Minister by the President of the Republic of Uzbekistan;

According to the presentation of the President of the Republic of Uzbekistan a dismissal of the Chairman of the Board of the Central Bank of the Republic of Uzbekistan by the Senate of the Oliy Majlis of the Republic of Uzbekistan;

According to the presentation of the President of the Republic of Uzbekistan, the Senate of the Oliy Majlis of the Republic of Uzbekistan dismisses the chairman of the State Committee for Nature Protection of the Republic of Uzbekistan;

dismissal of the Prosecutor General of the Republic of Uzbekistan and his deputies by the President of the Republic of Uzbekistan, with further confirmation by the Senate of the Oliy Majlis of the Republic of Uzbekistan;

dismissal of the chairman of the National Security Service of the Republic of Uzbekistan by the President of the Republic of Uzbekistan, with further confirmation by the Senate of the Oliy Majlis of the Republic of Uzbekistan;

Release of members of the cabinet of Ministers of the Republic of Uzbekistan by the President of the Republic of Uzbekistan;

Dismissal of regional and Tashkent mayors by the President of the Republic of Uzbekistan;

dismissal of district and city mayors by the President of the Republic of Uzbekistan if they violate the Constitution, laws, or commit acts that demean

the honor and dignity of the mayor;

premature termination of the powers of a deputy of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan in the case of the court's conviction against the deputy, its recall, as well as the dissolution of the Legislative Early termination of the powers of a senator of the Senate of the Oliy Majlis of the Republic of Azerbaijan;

premature dismissal of the human rights representative (Ombudsman) of the Oliy Majlis of the Republic of Uzbekistan by the chambers of the Oliy Majlis of the Republic of Uzbekistan in the event of the conviction of the court;

Early recall of the Speaker of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan by the decision of the Legislative Chamber;

Early recall of the chairman of the Senate of the Oliy Majlis of the Republic of Uzbekistan by the decision of the Senate;

-Dissolution of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan by the decision of the President of the Republic of Uzbekistan in agreement with the Constitutional Court of the Republic of Uzbekistan; Dissolution of the Senate of the Oliy Majlis of the Republic of Uzbekistan by the decision of the President of the Republic of Uzbekistan in agreement with the Constitutional Court of the Republic of Uzbekistan; [5]

Early termination of the powers of a judge of the Constitutional

Court of the Republic of Uzbekistan by the decision of the Senate of the Oliy Majlis;

termination of powers of a member of the Central Election Commission by the Oliy Majlis of the Republic of Uzbekistan; The right to deprive a commission member of his powers belongs to the body that created the commission, and the commission member may be deprived of his powers if he violates the requirements of this Law or regularly neglects the possibility of exemption powers; his duty infers from execution of those deprived of their

in the case of the court's indictment against the chairman (elder) of the citizens' assembly, the decision of the citizens' assembly and the premature termination of his powers.

Constitutional and legal sanctions on the activities of civil society institutions, elections, referenda and party activities, include the following:

-in case of falsification of signatures on the electoral rolls, the Central Election Commission's refusal to allow political parties to participate in elections or to register a candidate nominated by an initiative group of voters; [6]

-annulment of the decisions of district election commissions and district commissions holding referendums, if these decisions contradict the laws on elections and referendums, independently or according to the presentation of the Prosecutor General of the Republic of Uzbekistan;

-In case of cancellation of the decision of the political party to nominate a person as a candidate for deputy, as well as in case of termination of the activity of the political party that nominated him as a candidate for deputy, the Central Election Commission to be deprived of the position of deputy candidate;

-due to a violation committed during the election and affecting the results of the voting, the election may be declared invalid in general or for some electoral districts or some polling stations.

The decision to invalidate the election is made by the Central Election Commission; if it is allowed to be violated in a way that affects the results, the Central Election Commission may declare the election of the members of the Senate invalid;

- If, as a result of the inspection, cases of forgery of signatures and other violations of the Law are detected, the Central Election Commission of the Republic of Uzbekistan will issue a decision that the initiative to hold a referendum is invalid. A copy of this decision will be sent to the initiative group of citizens;

- if less than half of the citizens included in the list participated in the referendum, the Central Election Commission of the Republic of Uzbekistan considers the referendum not to have been passed;

- due to a violation committed during the voting and consequently affecting the results of the voting, the results of the voting may be declared invalid in general or for some districts or some precincts. The decision to invalidate the results of the voting shall be made by the Central Election Commission of the Republic of Uzbekistan;

- refusal to register the initiative group of voters by the relevant election commission;

- refusal by the relevant election commission to register the candidate nominated by the initiative group of voters in case of forged signatures in the electoral rolls;

- a political party, a citizen's self-government body has the right to cancel its decision to nominate one or another person as a candidate for deputy, this person may be deprived of the status. Also, during voting, ballots and ballots, in which more than one square is marked with a cross or not even one square is marked with a cross, are considered invalid by the precinct election commission;

- if less than thirty-three percent of the voters included in the voter's list participated in the election, the relevant election commission will consider the election not held;

- due to a violation committed during the election and affecting the results of the voting, the election may be declared invalid for the region, district, city, or for some electoral districts or some polling stations;

- if less than half of the citizens included in the list of participants in the citizens' meeting took part in the election of the chairman (elder) of the citizens' meeting, the election is deemed not to have taken place. In the event that the election of the chairman (elder) of the citizens' meeting is held at the meetings of citizens' representatives, if at the meeting two-thirds of citizens' representatives from courtyards, cows, and streets if less than half participated, the election was not held topilades;

- due to irregularities committed during the election of the chairman (elder) of the assembly of citizens or during the counting of votes and affecting the results of the vote, the election may be declared invalid by the court; [7]

- if the charter of a public association contradicts the legal provisions, or if a public association with the same name was previously registered, registration of the charter of a public association may be refused.

In particular, in accordance with Article 3 of the Law of the aimed at violating the principles, universal humanitarian values, as well as illegally changing the constitutional system or violating the unity of the territory of the Republic of Uzbekistan, inciting war, violence and cruelty, social, including class, as well as racial, national and religious enmity leading to the disintegration of society, with legislation does not allow the formation of public associations aimed at committing other prohibited acts. [8]

It is prohibited to establish paramilitary public associations and armed structures, as well as religious parties, their branches and other structural units. It is forbidden to use force in an undemocratic manner against the authorities and management bodies formed by the public associations and their agencies in a legal and democratic way, as well as those who have the powers

of authority. Any attempt to put pressure on legally functioning authorities and officials under the pretext of a democratic solution shall be abolished by the Law.

The creation of public associations and their activities that encroach on the health and morals of the population, the rights and interests of citizens protected by law shall be prosecuted in accordance with the law. In the event that a public association deviates from the goals and tasks defined in its charter or commits acts that violate the law, the head office of this public association may be warned in writing by the office that registered the charter of the public association or the prosecutor; in case of violation of the requirements stipulated by the Law and the statute, the public association may be terminated by a court decision;

-if the political party's charter, goals, tasks and activity method contradict the Constitution of the Republic of Uzbekistan, the law on political parties and other legal documents, or if a political party or public movement with the same name was registered earlier, this party will not be registered;

-if a political party violates the Constitution of the Republic of Uzbekistan, the law on political parties, other legislative documents or its charter, the Supreme Court of the Republic of Uzbekistan may suspend the activity of the political party based on the submission of the Ministry of Justice of the Republic of Uzbekistan or the Prosecutor General of the Republic of Uzbekistan;

In the cases of committing the actions provided for in the second part of Article 3 of the Law of the Republic of Uzbekistan "On Political Parties" of December 26, 1996, or in the cases of repeating those actions within one year after the suspension of their activities, the Ministry of Justice of the Republic of Uzbekistan or the Ministry of Justice of the Republic of Uzbekistan According to the presentation of the Prosecutor General of the Republic, the activity of the political party is suspended by the decision of the Supreme Court of the Republic of Uzbekistan;

-According to Article 8 of the Law of the Republic of Uzbekistan "On Financing Political Parties" dated April 30, 2004, if a political party fails to obtain the necessary number of seats to form a faction based on the results of the elections to the Legislative Chamber, the state funds allocated to finance the political party should be returned to the State budget of the Republic of Uzbekistan at the expense of funds;

- State political party according to Article 11 of the cited law financing by the party has been suspended or in case of termination, it will be suspended or terminated.

Also political party charter activity by the state to suspend or terminate funding as well may be the basis: in accordance with the law reorganization of the political party (empty political except for sending and receiving to parties);

this Financial accountability of political parties and political law on the funding sources of the parties on the reports in accordance with Articles 16 and 17 non-fulfillment of the demands by the political party;

political party from state funds for an unspecified purpose its use, including the activities considered in the charter to participate in the elections from the funds allocated for used for financing.

The decision to suspend or terminate the state funding of the charter activity of the political party is adopted by the Ministry of Justice of the Republic of Uzbekistan. A political party may appeal to the Supreme Court of the Republic of Uzbekistan against the decision to suspend or terminate state funding.

When a political party is reorganized in the form of merger or acquisition, the legal successor of the political party has the right to be financed by the state.

Of course, the above-mentioned classifications - of constitutional legal sanctions are not complete and final, because in the legislative practice, constitutional legal liability is gradually new measures are being implemented by state bodies, officials and public associations.

In short, a large number of sanctions (positive or negative) are aimed at changing the powers of higher, local, citizens' self-government bodies and their officials. At the same time, according to

social relations, electoral legal relations have the clearest and most developed system of constitutional-legal sanctions, and it can be taken as a basis for the development of the theory of positive legal responsibility.

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Rezyume: *Maqolada konstitutsiyaviy-huquqiy javobgarlikning tizimi va turlari, zaruriy belgilari, konstitutsiyaviy-huquqiy javobgarlikning o'ziga xos xususiyatlari ko'rib chiqiladi.*

Резюме: *В статье рассматриваются система и виды конституционно-правовых санкций, необходимые признаки и особенности конституционно-правовой ответственности.*

Kalit so'zlar: *Konstitutsiyaviy-huquqiy javobgarlik, O'zbekiston Respublikasi Konstitutsiyasi, yuridik javobgarlik, konstitutsiyaviy huquq, huquqiy norma, davlat hokimiyati organlari, mansabdor shaxslar.*

Ключевые слова: *Конституционно-правовая ответственность, Конституция Республики Узбекистан, юридическая ответственность, конституционный закон, правовая норма, органы государственной власти, должностные лица.*

**COMPARATIVE ANALYSIS OF THE ENGLISH, UZBEK AND KARAKALPAK
CONSONANT SYSTEM**

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Summary: *This article deals with the investigation of consonant system in English, Uzbek and Karakalpak languages, which is one of the important problems that needs for further investigation. The comparative analysis of the English, Uzbek and Karakalpak consonant system is related to the study of typological system of languages. As a result of investigation similarities and differences have been revealed in languages.*

Key words: *language families, phonetics, phonology, pronunciation, English language, Karakalpak language, Uzbek language, sound system of a language, consonants, comparison of languages, similarities and differences.*

It is known that the English, Uzbek and Karakalpak languages, originating from different language families, have significant differences in their phonological structure, division and formation. These differences are essential for the development of effective methods of teaching foreign languages. The relevance of the study of this issue lies in the significant interest in understanding standard English pronunciation, as well as in the absence of comprehensive comparative studies of the Uzbek and Karakalpak languages.

Currently, the comparative analysis of language systems, regardless of whether they are genetically related or unrelated, is of paramount importance. When comparing languages, regardless of whether they belong to the same group or not, similarities and differences are inevitably revealed. The results of comparative linguistic analysis allow us to anticipate potential interference, which cannot hide language acquisition and lead to misunderstandings. Many scientists and researchers emphasize the theoretical and practical importance of comparing languages that reveal genetic connections. They emphasize the importance of conducting comparative studies of languages in the field of phonetics. This is due to the fact that both the lexical and grammatical aspects of a language manifest themselves through its sound system and depend solely on sounds in their existence [1:94].

Consonants are speech sounds that combine in a syllable with vowels and/or syllabic consonants and, in contrast, do not form the tops of a syllable. Acoustically, consonants have a relatively lower total energy than vowels and may not have a clear formant structure.

Consonants are also sounds, when pronounced, the vocal tract narrows, so that the air flow is completely or partially blocked and, overcoming an obstacle (see the place and method of consonant formation), changes its direction. These are noisy consonants (explosive, slotted and affricates), a group of sonorants (smooth and lateral), a group of sonorous consonants (trembling and nasal), as well as a semi-voiced (or semi-consonant).

Consonants are often also understood as letters that convey such sounds. Sometimes, in order to avoid confusion, the term "consonant sounds" is used.

The consonant system of a particular language is called "consonantism". They are speech sounds in the pronunciation of which noise is heard. The degrees of noise are different. There are consonants in the production of which only noise is heard, there are consonants in the production of which noise and voice are heard and there are consonants in the production of which voice prevails over noise, but the fact is that noise in different degrees and forms is always present. Consonants do not give periodic voice waves.

The consonants should be classified on the following principles:

1. The manner of production,

2. The active organs employed in the production,
3. The place of production.

The last division is very important; due to it the parricidal difference in the formation of consonants in English and of consonants in Uzbek may be clearly shown. The system of English consonants consists of 24 consonants. They are: [p, b, t, d, k, g, f, v, s, z, ʃ, ʒ, tʃ, dʒ, θ, ð, h, n, ŋ, l, m, r, w, j] and the problematic phoneme [ju] [4: 56-57]

The system of Uzbek consonant phonemes consists of 27 phonemes. They are: [п, б, т, д, к, г, қ, ғ, м, н, л, нг, в, р, с, й, ш, з, х, ڭ, ф, р, ж, ч, с, ڧ, тс] [3: 23].

Some of the English consonants like [θ, ð] have no counterparts in Uzbek and in Karakalpak. There are also some Uzbek and Karakalpak [2: 77] consonants which do not exist in the system of the English consonant phonemes. They: are [κ, ʁ, x, tɕ].

Many consonants have their counterparts in the languages compared, but they differ in their articulation. The difference in the articulation and acoustics of English and Uzbek consonant phonemes may be summed up as follows:

1. The English [f, v] are labio-dental fricatives, whereas the Uzbek [f, v] are bilabial fricatives. They have labio-dental versions in dialects. So Uzbek [v] pronounced in the same way as the English [v], especially in the - middle of words. eg. ковуи, совуи, шавла, давлат, шавкат, кувват. Uzbek students often substitute [w] for [v]: wine – vine.

2. [t, d, n, s, z] also [1] are alveolar in English. The corresponding consonants in Uzbek are dentals. The English [t, d, n] require apical articulation, while their Uzbek and Karakalpak counterparts are dorsal (dental). The dorsal articulation does not exist in English.

3. The English [r] is a post - alveolar fricative, while the Uzbek and Karakalpak [p] is a post-alveolar rolled (thrilled) consonant.

4. The English [ɹ] phoneme consists of the main member; the clear alveolar [ɹ], used before the vowels a and semi - vowel and its positional, also dialectal, versions dark [ɹ] which besides, being alveolar is also velar. The latter is used before consonants and in word final position. The Uzbek and Karakalpak [ɹ] is dental consonants.

5. The English [h] is pharyngeal. Uzbek and Karakalpak have:

- a. the velar fricative [x]

- b. the pharyngeal fricative [x]

- c. The replacement of [h] by [x] is a phonemic mistake. The English [h] is weak and there is less friction than in the production of the Uzbek and Karakalpak [x].

6. The English affricates [tʃ, dʒ] and fricatives [ʃ, ʒ] are palato-alveolar, while Uzbek and Karakalpak [ɬ, ʂ] are post-alveolar fricatives and [ʂ] may be palatalized.

7. The English voiceless [p, h, k, s, ʃ, tʃ] are more energetic than the corresponding Uzbek and Karakalpak voiceless consonants. In the Uzbek and Karakalpak [n, t, k] there is less aspiration than in the corresponding English voiceless plosives. While the English voiced [b, d, g, z, j] are less energetic than the corresponding Uzbek and Karakalpak voiced consonants.

8. We regard the jota combination [ju:] as a separate phoneme in English. It is not a chance combination, it is very often used and there is a letter in the alphabet to denote R In spelling. According to its first element it may be regarded as a consonant phoneme [C+V] may-form phonological opposition

9. The English [j] is a palatal semi-vowel. The Uzbek and Karakalpak [й] is a palatal fricative» [2: 80]. Compare: yet= ет [йт]

10. The English [θ, ð] are interdental. The interdental articulation is unknown in Uzbek and in Karakalpak. They are extremely difficult for Uzbek and Karakalpak to master.

11. The English sonant [m, ɫ, n] in word - final position are very sonorous and somewhat prolonged before a pause, especially when they are preceded by a short vowel, whereas the

corresponding Uzbek sonant are les& sonorous in Use same position. Compare: Bell, Toni, on; Uzbek: бел, том, он; Karakalpak: бел, том, он.

12. The English voiced consonants remain voiced in word final position and before voiceless consonants, while the Uzbek voiceless consonants become devoiced in the same position. The Uzbek students of English are able to make phonologic mistakes: bed-bet, course-cause.

Above mentioned research make it possible for us to come to the conclusion that there is a necessity of further theoretical and experimental research of many important problems like phonological system in above mentioned languages.

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Резюме: Данная статья посвящена исследованию системы согласных в английском, узбекском и каракалпакском языках, что является одной из важных проблем, требующих дальнейшего изучения. Сравнительный анализ систем согласных английского, узбекского и каракалпакского языков связан с изучением типологической системы языков. В результате исследования были выявлены сходства и различия в языках.

Rezyume: Ushbu maqola ingliz, o'zbek va qoraqalpoq tillarida undosh tizimni o'rganish bilan bog'liq bo'lib, bu keyingi tekshiruv uchun zarur bo'lgan muhim muammolardan biridir. Ingliz, o'zbek va Qoraqalpoq undoshlar tizimining qiyosiy tahlili tillarning tipologik tizimini o'rganish bilan bog'liq. Tergov natijasida tillarda o'xshashlik va farqlar aniqlandi.

Ключевые слова: языковые семьи, фонетика, фонология, произношение, английский язык, каракалпакский язык, узбекский язык, звуковая система языка, согласные, сравнение языков, сходства и различия.

Kalit so'zlar: til oilalari, fonetika, fonologiya, talaffuz, ingliz tili, Qoraqalpoq tili, o'zbek tili, tilning tovush tizimi, undoshlar, tillarni taqqoslash, o'xshashlik va farqlar.