



# ACTUAL PROBLEMS OF MODERN SCIENCE, EDUCATION AND TRAINING

**KHOREZMSCIENCE.UZ**





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## MODERN PROBLEMS OF TECHNICAL SCIENCES

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### A METHOD OF STUDENT ACTIVATION USING SOFTWARE TOOLS TO DETERMINE THE ROOT SECTION OF A NONLINEAR EQUATION

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**Annotatsiya:** Hozirgi vaqtda ta'lim muammolari haqida gapirganda, biz birinchi navbatda shaxsning individualligini nazarda tutamiz. Ta'limni tashkil etishda ta'lim sifati, fundamentalligi, insonparvarligi va uzluksizligi tamoyillariga ustuvor ahamiyat beriladi. Ushbu maqola matematik injiniring, dasturiy injiniring kabi sohalarda talim olayotgan talabalar uchun mo'ljallangan "Dasturlash asoslari" kursining mazmunini mantiqli strukturalangan tizim asosida modulli yondashuvi tavsiflangan. O'quv mashg'ulotlarida strukturali modulli yondashuvni samarali amalga oshirishga imkon beradigan, o'quv jarayonini kelajakdagi kasbiy faoliyatning kommunikativ ehtiyojlariga maksimal darajada bo'ysundirishga imkon beradigan ba'zi usullar va dasturiy vositalardan foydalanilgan. Strukturalangan modulli yondashuv kasbiy-faoliyat jihatdan belgilangan o'quv birliklarini oqilona tanlash va tizimlashtirish imkonini beradi, o'qitishning moslashuvchanligini, uni o'zgartirish imkoniyatini ta'minlaydi va talabalarning mutaxassisliklarining xilma-xilligini hisobga olishga imkon beradi.

**Kalit so'zlar:** o'quv fani, tahlil, mantiqli struktura, graf sxema, modul, o'quv jarayoni, dasturiy vosita, samaradorlik.

**Аннотация:** В настоящее время, когда мы говорим о проблемах образования, мы прежде всего имеем в виду индивидуальность человека. В организации образования приоритет отдается принципам качества, фундаментальности, гуманности и непрерывности образования. В данной статье описан модульный подход к содержанию курса «Основы программирования», предназначенного для студентов, обучающихся по таким направлениям, как математическая инженерия и разработка программного обеспечения, на основе логически структурированной системы. На учебных занятиях использовались некоторые методы и программные средства, что позволило эффективно реализовать структурированный модульный подход, позволивший максимально



подчинить процесс обучения коммуникативным потребностям будущей профессиональной деятельности. Структурно-модульный подход позволяет осуществлять рациональный отбор и систематизацию профессионально обусловленных образовательных единиц, обеспечивает гибкость обучения, возможность его изменения, позволяет учитывать многообразие специальностей студентов.

**Ключевые слова:** педагогика, анализ, логическая структура, графовая схема, модуль, образовательный процесс, программный инструмент, эффективность.

**Abstract:** When we talk about educational problems at this time, we primarily mean the individuality of the individual. In the organization of education, priority is given to the principles of quality, fundamentalism, humanism and continuity of Education. This article describes the modular approach of the content of the course "fundamentals of programming", designed for students studying in such areas as mathematical engineering, software engineering, in the framework of a logically structured system. In training, some methods and software tools have been used that allow you to effectively implement a structured modular approach, to maximize the subordination of the educational process to the communicative needs of future professional activities. The structured modular approach makes it possible to wisely select and systematize professionally-operationally defined units of study, ensures the flexibility of teaching, the possibility of changing it, and allows you to take into account the diversity of student specialties.

**Keywords:** educational science, analysis, logical structure, graph scheme, module, educational process, software tool, efficiency.

**Introduction:** One of the pressing problems in the conditions of the modernization of education in higher educational institutions that build the foundation of an informed society is the formation of the development and improvement of professional communicative competencies in several areas of training, the goals of such courses as "Information technology, programming fundamentals" intended for students. One way to solve methodological problems associated with the characteristics of the course consists in structuring the composition of science on the basis of the principles of logic. Based on modular concepts, which are associated with the development of the educational process, personality-oriented and active-pragmatic approaches, demand at all stages of vocational education is increasing and is reflected in many scientific and pedagogical works. [1],[10].

As a result of the active development of computer technology, the process of digitization in all areas of the halq economy is gaining momentum in snapshots. In the Chunonchi talim system, taking into account the individual abilities of each student when setting training goals, organizing the educational process on the basis of a differentiated approach is one of the effective ways to achieve the goal. This can be explained by the fact that not all students can equally master the material presented by the teacher. Therefore, we find the content of educational material very convenient for students to effectively absorb educational material, in the form of a linear graph scheme, giving material in certain parts that are strutured and interconnected taking into account the degree of difficulty.



We consider it advisable to organize the course of the lesson by preparing the educational material in the form of structured learning elements, logically interconnected through the principles of decomposition. In the process of mastering the new material of students, the presence of specially developed software agents (tools), which include consultation between the student and the teacher in case of difficulties between participants in the educational process, is the same period; at the same time, it is necessary for the teacher to make timely adjustments to the student's educational activities in order to avoid serious mistakes. The content of the subject to be mastered can be significantly increased in expressiveness, comprehensiveness, efficiency of the educational process using software agents based on logically structured modules.

All teachers of secondary educational institutions, including professors of the higher education system, solve three main tasks at the same time when conducting classes:

- ensure effective assimilation of a large amount of knowledge on the subject being studied;
- formation of the foundations of holistic systematic thinking on this course in the student;
- contribute to the mental development of students in professional activities.

The level of effectiveness of the educational process activity largely depends on the teacher's ability to control the attention of students, and it is necessary to teach them the principles of mastering effective planning on the basis of structured methods of their own attention. [5],[8].

Despite the large amount of scientific and theoretical and practical work devoted to the problem of developing educational skills, a number of aspects of this problem have not been studied. The description of subject skills and educational-cognitive skills is not clearly distinguished, the conditions for the systematic formation of the ability of their students to structure the structure of educational material are not sufficiently specified, indicative signs that should be based on methods of semantic processing of educational material are practically not identified and their implementation is not well revealed. [8],[10].

Scientists from the countries of the Commonwealth of independent states, such as V.Bespalko, T.Boronenko, B.Gershunskiy, S.N.Grinchuk, A.O.Karelin, V.V.Laptey, Ye.Mashbis, I.Robert, N.Yu.Severova, N.Talizina, O.V.Tarasyuk, Ye.K.Xenner, studied the issues of introducing computerized information technologies into pedagogical and psychological spheres, using pedagogical technologies in improving student educational and cognitive activities, and structuring the design of educational courses based on modern information technologies. And the methodology for teaching subjects on the basis of structured modules was studied by V.Alekseev, D.Vasnikov, N.Dobrovolskaya, Yu.Kolsov, V.Terexov, I.Yasinskiy.

In our republic, such as A.Abduqodirov, N.Azizxo'jaeva, M.Aripov, F.Zakirova, X.Ibragimov, M.Lutfullaev, U.Nishonaliev, N.Taylaqov, A.Xayitov, R.Hamdamiyov, U.Yuldashev conducted scientific research on the issues of teaching Informatics, informatization of the higher education system, creation of electronic textbooks, Organization of Distance Education, use of web technologies in the preparation of future educators.

However, in higher educational institutions, the methodological aspects of structuring the content of the subject of programming fundamentals on the basis of clear methodological, logical criteria and teaching on the basis of computerized technologies, organizing and activating the educational process have not been specially studied. This made it necessary to carry out special research on the development of a methodology for activating students using software agents based on the systematization of structured modules, the content of the science of programming fundamentals.

**Methodology.** A methodology for visualizing the subject of approximate determination of the roots of a nonlinear equation in the form of elements separated into logical partitions (concepts) is considered using the decompositional method. [6].

Subject: A structured logical scheme for determining the cross-section (interval) where the roots of the nonlinear equation lie can be imagined as follows. (Figure 1).

1. Determining the roots of a nonlinear equation, general considerations.

A given equation  $f(x) = 0$  has a root if the function  $f(x)$  changes its sign in any chosen interval  $x \in [A, B]$  divided into  $p$  equal parts, that is, from negative to positive or from positive to negative (Fig. 2). The functions  $f_1(x)$  and  $f_2(x)$  in Figure 2 have changed sign on the interval  $x \in [A, B]$ , that is, they have crossed the  $Ox$ -axis in the section shaded in red. The functions  $f_3(x)$  and  $f_4(x)$  in Figure 1 did not change sign in the interval  $x \in [A, B]$ , that is, did not cross the  $Ox$ -axis, which means that the equation does not have a solution in the desired interval. such issues belong to the category of mini-max issues.

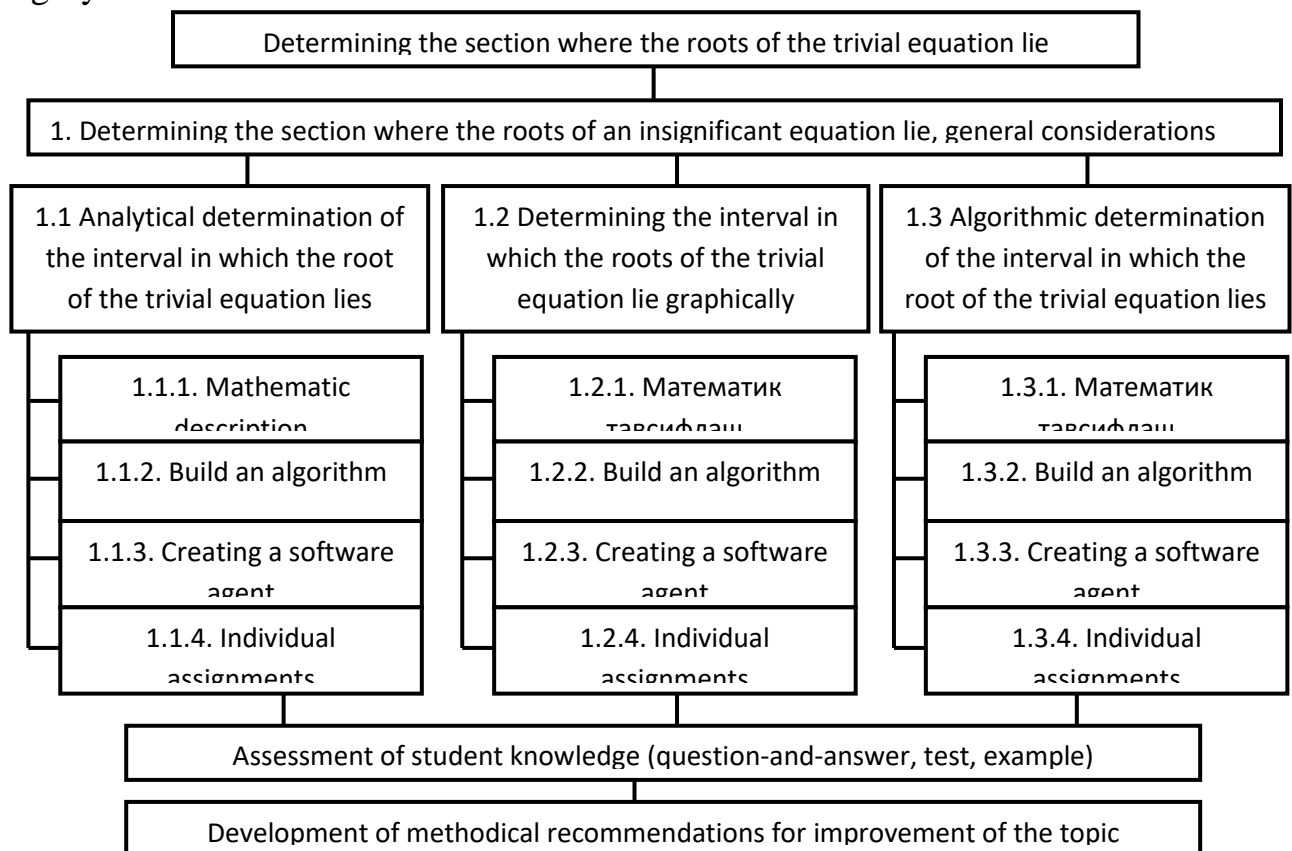


Figure 1. A structured logical scheme of the topic

We will consider analytical, graphical and algorithmic methods of determining the interval where the roots of a nonlinear equation lie.

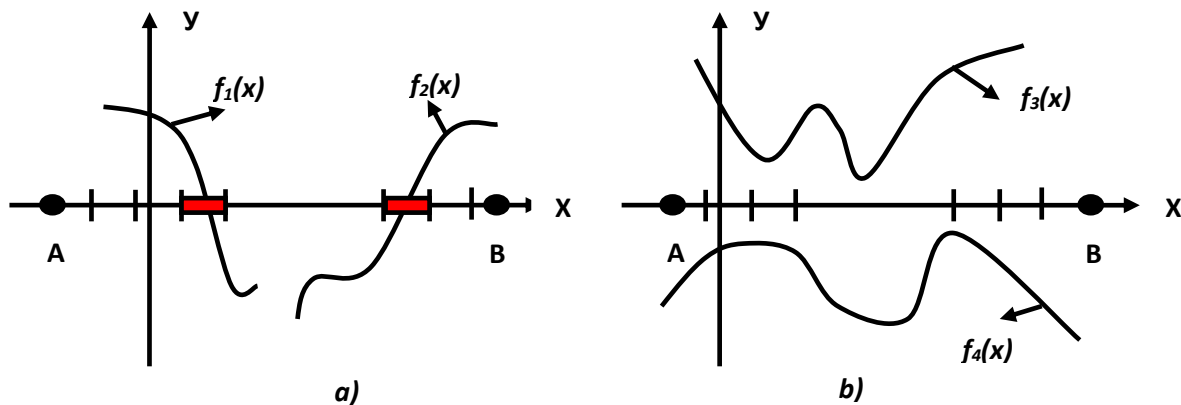


Figure 2. Description of the roots of the nonlinear equation

1.1. Analytical determination of the interval in which the roots of the nonlinear equation lie

1.1.1 Mathematical description. Suppose we are given a nonlinear equation  $5^x - 6x - 3 = 0$ . To do this, we find the first-order derivative of the function  $f(x) = 5^x - 6x - 3$  and determine the value of the critical points by setting  $f'(x) = 0$  equal to zero:

$$5^x \ln 5 - 6 = 0, \quad 5^x = \frac{6}{\ln 5}, \quad x \ln 5 = \ln 6 - \ln(\ln 5), \quad x = \frac{\ln 6 - \ln(\ln 5)}{\ln 5}, \quad x \approx 0,82.$$

We make a table of signs of the function  $f(x)$  at or near the critical point of the argument and in the boundary areas of the argument (Table 1):

Table 1. function pointer table

$x$	$-\infty$	$1$	$+\infty$
$Sign f(x)$	$+$	$-$	$+$

$$5^{-\infty} - 6(-\infty) - 3 > 0, \quad 5^1 - 6(1) - 3 < 0, \quad 5^{+\infty} - 6(+\infty) - 3 > 0,$$

According to Table 1,  $f(x)$  changes the sign of the function 2 times. Therefore, the function  $f(x)$  has two real roots (that is, the function  $f(x)$  crosses the  $Ox$ -axis twice), in the intervals  $x_1 \in [-\infty; 1]$  and  $x_2 \in [1; +\infty]$ . Now we reduce the intervals in which the roots of the equation lie and make a table of signs around the critical points of the  $f(x)$  function (Table 2):

Table 2. Function pointer table

$x$	$-1$	$0$	$1$	$2$
$Sign f(x)$	$+$	$-$	$-$	$+$

the intervals on which the roots of the equation lie are  $x_1 \in [-1; 0]$  and  $x_2 \in [1; 2]$ .

1.1.2. Algorithm for analytically determining the interval where the roots of a nonlinear equation lie. By shifting the point  $x = 1$  to the right and to the left by small steps  $h=1$  (the value of  $h$  can be taken as small as desired), we determine the change of



signs of the function, as a result, the small interval(s) in which the root lies are determined (Fig. 3). Creating software is assigned to students as an independent work.

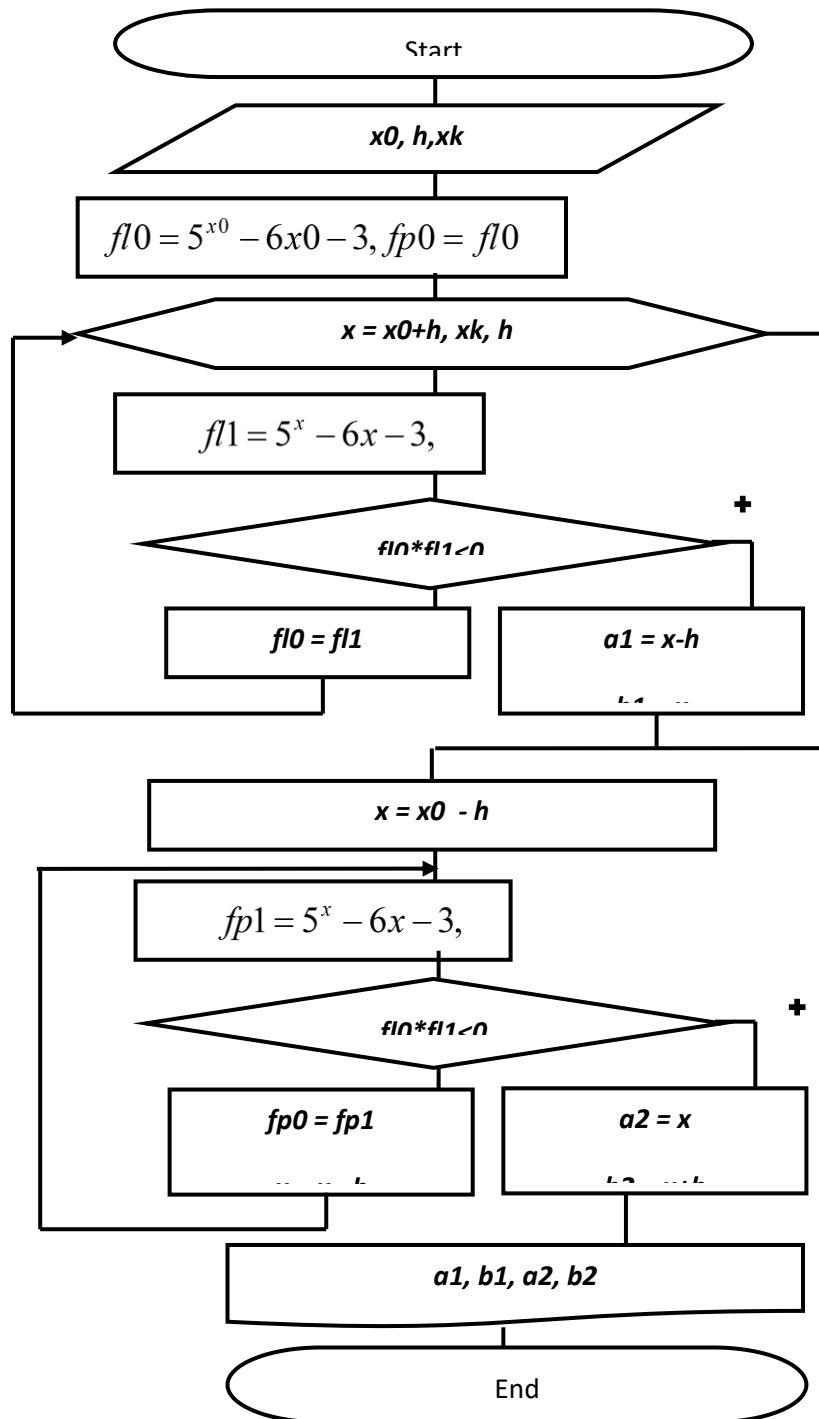


Figure 3. Algorithm for determining the root interval analytically

1.1.3 The result obtained using the software:

$$\begin{aligned}
 x_0 \quad h \quad x_k &= 1 \quad 1 \quad 5 \\
 a_1 &= 1.0000 \quad b_1 = 2.0000 \\
 a_2 &= -1.0000 \quad b_2 = 0.0000
 \end{aligned}$$

If we further reduce the value of the argument of the function to  $h=0.6$ , we get the following result:

$$x_0 \quad h \quad x_k = 1 \quad 0.6 \quad 5$$

$$\begin{array}{ll} a_1 = 1.0000 & b_1 = 1.6000 \\ a_2 = -0.8000 & b_2 = -0.2000 \end{array}$$

1.2. Determining the interval in which the roots of a nonlinear equation lie graphically.

1.2.1. Mathematical description. We graphically determine the interval in which the roots of this  $5 \sin(x) - x^2 - 3$  nonlinear equation lie. Let's make the equation look like  $5 \sin(x) = x^2 - 3$ .

Let's determine:  $y_1 = 5 \sin(x)$ ,  $y_2 = x^2 - 3$  and we will build the algorithm and program for making the graph of these functions on the computer screen.

1.2.2. We chose the algorithmic language C# to make the graph of the function. Algorithm for making a graph of functions on a computer screen:

1. The graphical mode of the C# algorithmic language is initialized;
2. The background, color of the screen and the color of the  $Ox$  and  $Oy$  coordinate axes to be drawn are selected, for example, making a graph of a function with white color on a black background or black color on a white background;
3. The scale of the  $Ox$  and  $Oy$  coordinate axes is selected, the  $Ox$  and  $Oy$  axes are defined with a section equal to one unit;
4. The limit value of the argument is chosen for creating functions,  $x \in [a; b]$ ;
5.  $x \in [a; b]$  is a graph of functions with one  $h$  step;
6. From the computer screen, the value of the intervals of the roots is determined by the points of intersection of the functions.

Paragraphs 1, 2, 3 of the algorithm are explained in the practical lesson. Here is a block diagram of the function graphing part.

The quantities  $hx$  and  $hy$  in the algorithm are scales that increase the value of the argument  $x$  and the function  $y$ , for example,  $hx=30$ ,  $hy=20$  pixels.  $X_0$  and  $Y_0$  are the center of the coordinate plane on the monitor.

1.3.3 The result obtained by the program:

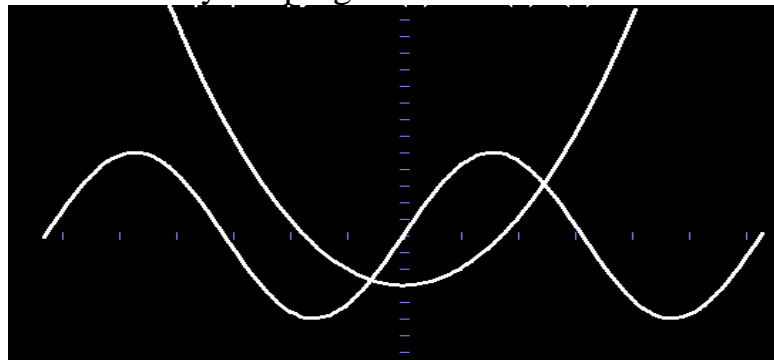


Figure 4.  $y_1 = 5 \sin(x)$ ,  $y_2 = x^2 - 3$  is the graph of functions.

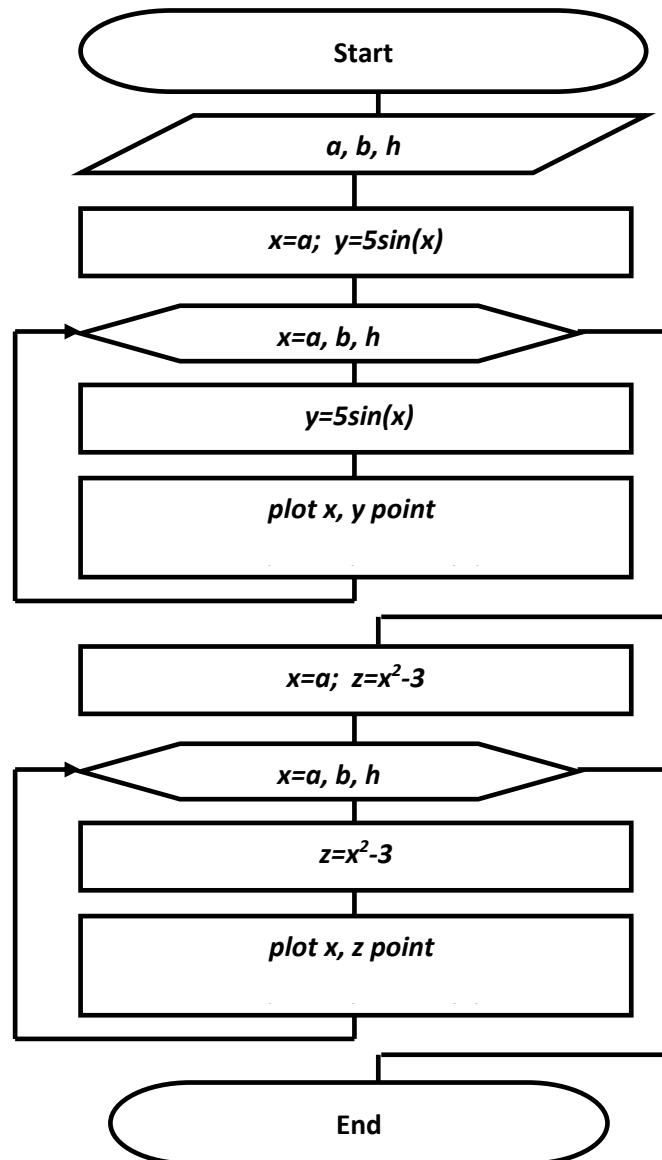


Figure 5. Algorithm for determining the root section graphically

In Figure 4, the amount of the small section on the  $Ox$  and  $Oy$  axis represents one unit. The first intersection of the functions in the searched interval is in the interval, and the second intersection is in the interval. So,  $x_1 \in [-1; 0]$  and  $x_2 \in [2; 3]$ .

1.4. Algorithmic separation of the cross section where the roots of the equation lie.

Let us say  $5 \sin(x) - x^2 - 3$ . We search for the roots of the function in the section  $x \in [A; B]$ , taken to a certain extent, with a step  $h$  as follows.

1.4.1. Mathematical description:

1. The numerical values of the quantities  $A$ ,  $B$  and  $h$  are selected;
2. we calculate the value of the function at point "A",  $y = f(A)$ ;
3. An iteration is organized, which ensures that the value of the argument changes from  $A$  to  $B$  by steps  $h$ ;
4. We calculate the value of the function at the point corresponding to the "x" argument,  $z = f(x)$ ;

9. The value of the function corresponding to the changed state is used for further calculations, i.e.  $y = z$ ;

10. Repetitions will continue.

A variant of the above-mentioned algorithm in the form of a block diagram is depicted in Fig. 6.

1.4.3. Compilation of the program is assigned to students as an independent work. The result obtained using the program.

$a, b, h = -5 \ 7 \ 1$

$a1 = -1.000000$	$b1 = 0.000000$	$y = -2.207355$	$z = 3.000000$
$a1 = 2.000000$	$b1 = 3.000000$	$y = 3.546487$	$z = -5.294400$

To verify the correct operation of the program, test samples are created and the correct operation of the program is verified in practice. As a result, the program development and testing process is completed.

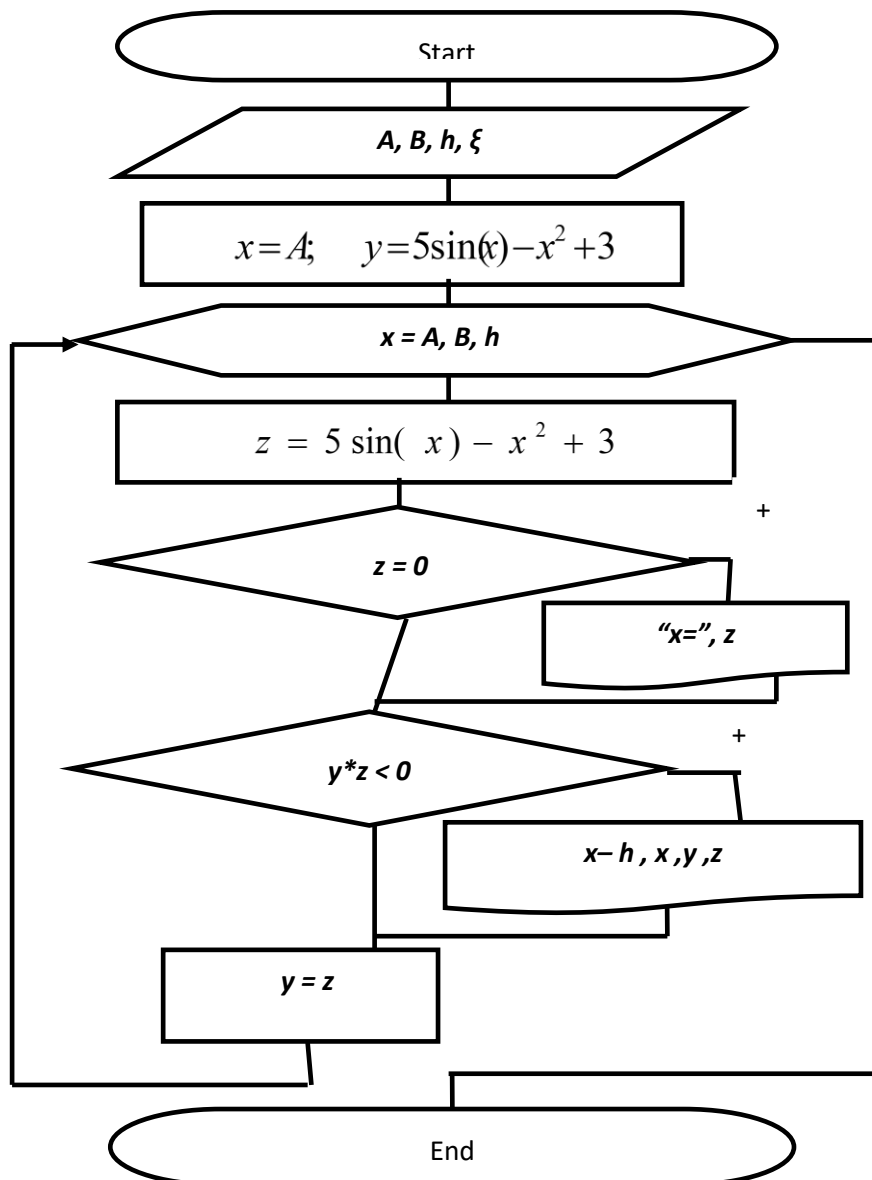


Figure 6. Algorithm for algorithmic determination of root section

1.5. Individual assignments are given to students. Examples of assignments:

Assignment. Using analytical, graphical and algorithmic methods, isolate the cross section where the roots of the equation lie.

1. $5 \sin(x) - x^2 = -3$	4. $x^3 - 2x^2 + 5x - 3 = 0$	7. $5 \lg(0.6x + 0.2) = x^2$
2. $7 \cos(x) - 2x^2 = 8$	5. $x^2 - 4x - 12 = -3$	8. $x - 6 \sin(x) = 2.5$
3. $x - \sin(x) = 0.75$	6. $x^3 - 3x^2 + x + 4 = 0$	9. $\sqrt{x + 0.24} = 6 \cos(0.42x)$

Students' knowledge will be evaluated.

**Conclusions:** Conducting lessons using modern methods on the basis of materials organized in the form of logically structured semantic graphs of the "Methods of approximate calculation of the roots of nonlinear equation" section of the science of programming fundamentals accelerates the process of independent learning among students, as a result, the effectiveness of the educational process increases.

Systematizing the content of the educational material, explaining science based on modern technologies (lecture, practical, experience), organizing the content and essence of the subject in a dialogic, individual way using software tools, in the form of a teacher-student, saving time, learning improving the effectiveness of the educational process, developing optimal methods and methods of teaching material.

Experience shows that a modular approach to the logical structure of the content of the "Basics of Programming" course allows for the rational selection and systematization of didactic units included in it, as well as timely control of their acquisition. Teaching with structured modular technology elements helps to organize the educational process more effectively, increases the quality of mastering theoretical and practical materials of professional orientation, and helps to form professional and communicative competence of students.

#### References:

- [1]. Gushina, O.M. Strukturniy analiz i proektirovanie sistem upravleniya obrazovatel'nim prosessom : ucheb. posobie //O.M. Gushina, S.V. Lapteva. – Tol'yatti : Izd-vo TGU, 2013. – 188 s.
- [2]. H. S. Narman et al., "Augmented Reality for Teaching Data Structures in Computer Science," 2020 IEEE Global Humanitarian Technology Conference (GHTC), Seattle, WA, USA, 2020, pp. 1-7, doi: 10.1109/GHTC46280.2020.9342932
- [3]. Shatalov M.A. Metodologiya otbora i strukturirovaniya sodержaniya uchebnix kursov // Mejdunarodniy jurnal eksperimental'nogo obrazovaniya. – 2012. – № 4-2. – S. 274-278;  
URL: <https://expeducation.ru/ru/article/view?id=4062> (data obrasheniya: 26.08.2023).
- [4]. F. Yusupov, I. Shamuratova, D. Yusupov and T. Khudayberganov, "Improving the effectiveness of teaching the course "Data structure and algorithms" based on structuration and integration of the discipline," 2019 International Conference on Information Science and Communications Technologies (ICISCT), Tashkent, Uzbekistan, 2019, pp. 1-4, doi: 10.1109/ICISCT47635.2019.9011846
- [5]. Yusupov, D. F. Logiko-strukturirovanoe predstavlenie uchebnogo materiala po teme organizatsiya siklicheskix vichislitel'nix prosessov na yazike S++ / D. F. Yusupov,



Uktambov Sapaev. — Tekst : neposredstvenniy // Molodoy ucheniy. — 2016. — № 9.5 (113.5). — S. 77-83. — URL: <https://moluch.ru/archive/113/29721/> (data obrasheniya: 26.08.2023).

[6]. Yusupov F, Nafasov I.Sh. Methodology of student activation on the subject of determining the roots of a nonlinear equation based on a decomposed graph scheme // European Journal of Education and Applied Psychology . 2023. №3. URL: <https://ppublishing.org/archive/publication/823-methodology-of-student-activation-on-the-subje>. DOI:10.29013/EJEAP-23-3-31-35

[7]. Mixnina N.V. Sposobi strukturirovaniya uchebnogo materiala kak uslovie razvitiya vnimaniya// Sovremennye naukoemkie texnologii №7, 2007. — s.71-73

[8]. Glinkina G. V. Strukturirovanie predmetnogo sodержaniya uchebnix dissiplin kak sposob obnovleniya nauchno-metodicheskogo obespecheniya universitetskogo obrazovaniya// Aktual'nie voprosi organizatsii nauchno-metodicheskogo obespecheniya universitetskogo obrazovaniya : materialy Mejdunar. nauchno-prakticheskoy internet-konferentsii, Minsk, 26–27 oktyabrya 2017 g. / BGU, Sentr problem razvitiya obrazovaniya GUUiNMR ; redkol.: L. I. Moseychuk (otv. red.) [i dr.]. — Minsk : BGU, 2017. — S. 24-36.

[9]. Lozinskaya A. M., Shamalo T. N. Modul'noe strukturirovanie sodержaniya obucheniya dissipline//Pedagogicheskoe obrazovanie v Rossii. № 3. 2014. — S.39-44

[10]. Xalmetov T.A. Printsipi otbora i strukturirovaniya uchebnogo materiala mul'timediynogo obuchayushchego kompleksa // Problemi sovremennogo pedagogicheskogo obrazovaniya. 2018. №58-3. URL: <https://cyberleninka.ru/article/n/printsipy-otbora-i-strukturirovaniya-uchebnogo-materiala-multimediynogo-obuchayushchego-kompleksa> (data obrasheniya: 02.12.2023).

[11]. Zenkov A. V. Chislennye metody: ucheb. posobie// A. V. Zenkov. — Yekaterinburg : Izdvo Ural. un-ta, 2016. — 124 s.

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## **PROBLEMS OF USING NEURAL NETWORKS TO ASSESS STUDENT'S KNOWLEDGE**

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**Annotatsiya:** Oliy ta'lim tizimida talabalar bilimni baholash o'quv jarayonining ajralmas jihati bo'lib, ta'lim strategiyasini yo'naltiruvchi va ta'lim natijalarini shakllantiruvchi sanaladi. An'anaviy baholash usullari talabalar faoliyatini tushunish uchun asos yaratdi, ammo rivojlanayotgan texnologik yutuqlar ushbu amaliyotni yaxshilash uchun yangi yondashuvlarni ishlab chiqarishni taqozo etmoqda.



**Kalit so‘zlar:** ta’lim texnologiyasi, xborot kommunikatsiya texnologiyalari, sun’iy intellekt, neyron to‘rlari, baholash mezoni.

**Аннотация:** В системах высшего образования оценка знаний студентов является неотъемлемым аспектом образовательного процесса, который определяет образовательную стратегию и формирует образовательные результаты. Традиционные методы оценки обеспечили основу для понимания успеваемости учащихся, но новые технологические достижения предлагают разрабатывать новые подходы к улучшению этой практики.

**Ключевые слова:** образовательные технологии, информационно-коммуникационные технологии, искусственный интеллект, нейронные сети, критерии оценки.

**Abstract:** In higher education, the assessment of student knowledge is an integral aspect of the educational process, which guides the educational strategy and shapes the educational results. Traditional assessment methods have provided a framework for understanding student performance, but emerging technological advances are offering new approaches to improve this practice.

**Keywords:** educational technologies, information and communication technologies, artificial intelligence, neural networks, evaluation criteria.

**Introduction.** In the educational system, pedagogues have accumulated a lot of experience on the rational organization of the process of evaluating the student's acquired knowledge, and have tried it in practice [1-12]. But these achievements do not reduce the urgency of the issue. In order to increase the quality and effectiveness of training, it is necessary to improve the practice of assessing students' knowledge based on new information communication and pedagogical technologies in accordance with the requirements of the time. Assessment means determining the level and quality of the students' performance of the tasks set before them in the educational process. The grade is a determination of the student's level of knowledge as determined by state standards. Control is a procedure for checking and evaluating the educational achievements of students aimed at determining the level of compliance of the actual results of educational activities by each student with the educational standards and the planned educational results of the form of science and activity specified in the educational programs. Assessment of students' knowledge in higher education is an important aspect of the educational process. Traditionally, assessment methods have included exams, quizzes, and assignments, but advances in technology have led to innovative approaches [3-8]. One such new approach is the use of neural networks, a part of artificial intelligence, to assess and analyze student learning. This article explores the use of neural networks in higher education to assess student learning, discussing its benefits, challenges, and potential implications for the future. In the traditional (old) evaluation system, objectivity, transparency has been one of the biggest main problems. The essence of this problem is that almost 90% of knowledge assessment was based on the human (knowledge examiner) factor. That is, the evaluation of the student's knowledge is determined based on the attitude of only one teacher. This evaluation system aims to minimize the human factor as much as possible. The assessment system can be divided into two types - summative, periodical (summative) and rapid (formative, operative) assessment.



Periodic evaluation is aimed at determining the level of mastery of the material covered in a certain period or the level of knowledge given in relation to a completed chapter. That is, after the teacher delivers a chapter covering a certain number of logically connected topics to the students, the knowledge gained by the students in this chapter is determined. In the old evaluation system, such control work was mainly in the form of abstract writing.

Rapid assessment - the student is continuously assessed during the lesson. The real purpose of such an evaluation system is not the student's acquired knowledge, but it is introduced in order for the teacher to evaluate the effectiveness of the content of his lesson and make changes and additions to it.

In the rapid evaluation system, teachers try to motivate the student to give him a high grade, regardless of his level of knowledge, taking into account his activity in the lesson process. As a result, the level of knowledge of a student who shows activity in the course of the lesson and always brings a high grade, but the level of knowledge of a student who has a high level of knowledge but does not show activity in the course of the lesson may be evaluated low.

In periodic assessment, the student continues to study the learning material, but is not assessed daily by the teacher, but is assessed at certain intervals. In such an assessment, the attitude towards each student is the same, resulting in objectivity in the assessment. While the periodic evaluation system cannot be completely denied, it also has its positive aspects.

A quick grading system can't be completely ruled out either, of course. It also has its own positive aspects. For example, every time the student's activity in the class is evaluated and encouraged, it is motivation for the student. Willing to be more prepared and active for the next lesson. It is considered appropriate to carry out rapid assessment methods with periodic assessment of knowledge in a developed ratio.

In the current modern education system, each learner is only interested in acquiring knowledge, which prepares the ground for getting rid of the competition, arrogance, rudeness, arrogance, and authoritarian qualities that are formed in him. This is in line with the requirements of the current education reform. The main essence of these technologies in education is based on the maturity, critical thinking and unique individuality of the learner. In fact, the application of educational technologies to the educational process as a whole creates an opportunity to use innovative pedagogical and information and communication technologies. They are a person-oriented technology that has a humanitarian character with a psychological and pedagogical essence. Ҳамкорликда ўқитиш, лойиҳалар методи, табақали ўқитиш, «ўқувчи папкаси» мазмун-моҳияти жиҳатдан ўзаро боғлиқ ҳолда бир-бирини тақозо қилади ва ўз навбатида яхлит дидактик тизимни ташкил этади. Булар таълим олувчиларни ҳалоллик, ошкоралик, бошқаларга ғамхўрлик, саховат, самимийлик, ўзаро ёрдам руҳида тарбиялайди [10-13].

Technologies based on neural networks are being applied to the current modern teaching process. There are many reasons for the interest in neurotechnology in education.





The goal of neuroeducation is to optimize the educational process, make it more effective and inclusive. Neuroeducation currently uses a variety of technologies and approaches. Experts roughly divided them into several large categories [9,14,15,16].

**Online education.** In distance education, neurotechnology is used to optimize the educational process and help students better master the material even without personal contact with the teacher.

**EdTech (Educational Technology).** This area includes a variety of technologies, from microlearning formats to interactive whiteboards.

**Wearable devices to monitor and improve concentration.** Special devices that control the concentration and activity of a person - their use helps to adapt the educational process to students individually.

**Augmented reality.** Virtual reality (VR) and augmented reality (AR) are currently used in various fields (for example, in construction), but in education they help students better master subjects that require clear visualization, such as anatomy.

**Neuroprotectors.** A class of medicinal substances used to protect brain cells from harmful effects and improve their functioning. Neuroprotectants can help people with ADHD, for example, to concentrate better.

**Educational programs and applications.** Basically, such technologies are focused on personalized education, which often allow people to independently learn new subjects, for example, foreign languages.

**Application of games.** Gamification of education is one of the trends of recent years. It is believed that the game format is not only for children, but also facilitates the acquisition of new information.

**Brain-Computer Interfaces (BCIs).** Such devices are used to transfer information between the brain and electronic devices. They provide human-computer interaction without direct implantation of the device (for example, electrodes are placed on the scalp). This technology is not yet widespread, but developers are hoping for it.

**Online brain trainers.** Websites and apps designed to maximize specific mental functions. With this, people of all ages can improve their learning abilities, increase their thinking speed, personal effectiveness, and more.

The attractiveness of neurotechnologies for education, in addition to socio-economic reasons, is also related to the fact that they offer a response to the needs of modern educational trends - the personalization of educational technologies.

Neurotechnologies, on the one hand, offer ways to record the individual characteristics of educational subjects and then adapt to them. Educational process (for example, in inclusive education when working with children with attention deficit hyperactivity disorder). On the other hand, neurotechnologies themselves are able to change in accordance with the goals and interests of the student, the characteristics of his motivation (for example, important in working with gifted students).

Neurotechnologies are driving the transformation of education, primarily in relation to the digital professional future. Defines the main directions of educational change under the influence of neurotechnologies, accordingly supports the following innovations [14-18]:

- personalization of teaching;

- classification of educational activities;
- speeding up the pace of personnel training based on the introduction of virtual and augmented reality technologies;
- the urgency of the need to interact with the changing "Self-Concept";
- advance adaptation of the subjects of educational activity to the uncertainty of social and professional future development.

The essence of neural networks. The term neural networks, or interest in them, dates back to the early work of McCollak and Pitts in 1943. They proposed a scheme of a computer that works on the basis of an analogy based on the working activity of the human brain, and as a result of their research, they named it a neuron. A neural network is like a human brain.

Incoming information is included in it, and based on the model, i.e., formulas, it also contains outgoing information. A lot of work has been done on neural nets according to their types. In particular, in 2008, a number of specialists-scientists conducted research within the scope of the subject in the CIS countries, in particular, Y.P. Zaychenko has researched fuzzy logic and fuzzy neural network systems, which are part of artificial intelligence, and their application in various practical problems.

Neural network technology is based on brain activity modeling, as R. Shannon says, "modeling is an art." Indeed, modeling is now recognized as an art form. These researches are not over, of course, there are a lot of new scientific works and achievements in this field.

In the field of information and communication technologies, in general, in all fields, there are specific aspects of training a specialist, that is, in a word, it is necessary to create a training model and an evaluation model. By the teaching model, we study a set of models based on the knowledge base and methodological concept of teaching, which includes all knowledge in the subject area. The evaluation model includes providing knowledge to the student based on the teaching model and including all the parameters of the student, including the true, objective assessment [1-3,8,12,13,16]. The automation of solving the problems of teaching and monitoring the acquired knowledge requires the use of artificial neural networks. Neural networks are computational models designed to recognize givens and make informed decisions. In the context of higher education, neural networks offer a new approach to assessing student learning. These networks can process large amounts of data and generate insights that traditional methods of student assessment may miss [16-18]. Evaluation using neural networks is also important in ensuring that the latest technologies are learned. This method is one of the main principles of highly automated, specialized and adaptive learning and helps to create new learning platforms and tools. The advantages and challenges of using neural networks to assess abstract knowledge are explored, while highlighting their ability to provide personalized learning experiences, identify learning gaps, and mitigate assessment bias [1-3,8, 9].

As the educational process evolves, continuous collaboration between the teacher and students during the learning process becomes important to maximize the benefits of neural network applications [9,14-16]. By addressing ethical issues and responsibly adopting these innovative technologies, higher education institutions can

harness the transformative potential of neural networks to improve the quality and effectiveness of student learning assessments.

**Advantages of neural network-based assessment:** The use of neural networks in the assessment of student knowledge brings a number of important advantages. First, these networks can offer a personalized learning experience. By analyzing individual student performance patterns, neural networks can tailor learning content to meet each student's unique needs, leading to more effective learning. In addition, these networks can reduce the biases inherent in human evaluation and promote a fair and objective evaluation process.

The integration of neural networks into the assessment of student learning offers the opportunity to further automate the process of higher education. Integrating Neural Networks into Student Learning Assessment As these technologies continue to evolve, they have the potential for educators to better understand, support, and guide their students. Neural networks can help improve curricula, optimize teaching methods, and improve overall learning outcomes by providing real-time insights into learning patterns.

**Disadvantages of neural network-based assessment:** Neural networks also present challenges in assessing student learning. Ensuring data privacy and security is important because technology relies heavily on student data. Designing and implementing neural networks requires precision, which can be a barrier for some educational institutions. Additionally, the balance between technology-based e-assessment and human interaction requires careful consideration to ensure that the learning experience is holistic and engaging.

#### **Facilities for teachers:**

In higher education, it is possible to assess student learning using neural networks, analyze how well they have learned information, monitor student progress, and innovate teaching methods. This, in turn, leads to many improvements in the processes of teaching students with the help of modern and latest technologies and their active participation in the e-learning environment.

Neural networks should not be seen as a substitute for teachers, but as a powerful tool to empower them. Educators can use the insights generated by neural networks to make informed decisions about instructional strategies, curriculum development, and student support mechanisms. A symbiotic relationship between technology and the human experience can lead to a more holistic and enriched learning experience.

**Conclusion:** In higher education, the assessment of students' knowledge with the help of neural networks is considered the need of the times. These intelligent systems offer a new approach for personalized insights, objective assessments and a more flexible and engaging learning environment. Although there are issues related to data privacy and technical expertise, the benefits of incorporating neural networks into objective assessment of student learning in education are undeniable. The use of neural networks in the assessment of student knowledge in higher education opens up new opportunities. These intelligent systems have the ability to provide personalized learning experiences, identify learning gaps, and improve the accuracy and fairness of assessment. However, careful implementation, a balance between technology and human interaction is essential to harness the full potential of neural networks. With



continuous research and collaboration between teachers and students, neural network-based assessment can redefine the process of higher education and enrich the learning potential for students and teachers.

In higher education, it is possible to evaluate the knowledge of students using neural networks, analyze how well they have learned information, control the level of knowledge of students and update teaching methods in an innovative way. This, in turn, leads to many improvements in the processes of teaching and assessing students' knowledge using modern and latest technologies in an electronic learning environment.

### References

- [1]. Miller I.S. Problemy systemy otsenivaniya znaniy studentov //Pyatigorskiy gosudarstvennyy universitet. [https://upload.pgu.ru/pages-from-chast-10\\_11](https://upload.pgu.ru/pages-from-chast-10_11).
- [2]. Bazarbaev J.M., Ermekbaev D.K., Esimsitov Z.B. Objektivnost otsenki znaniy studentov – neobhodimoe uslovie povysheniya kachestva podgotovki spetsialistov// Rossiyskaya Akademiya Estestvoznaniya. <https://s.econf.rae.ru/2012/06/bazarbaev>
- [3]. Khaitmatov U.T., Khakimov A.F., Azamatov O.Kh., Yulchieva G.T. Sozдание intellektualnoy sistemy otsenki kachestva uchebnogo protsessa/"Economics and innovative technologies" scientific electronic journal, [www.iqtisodiyot.uz](http://www.iqtisodiyot.uz), 2014, No. 6. - p.1-8.
- [4]. Osadchi V. V. Komputernaya sistema reytingovogo otsenivaniya znaniy, kak sredstvo povysheniya urovnya znaniy studentov // OTO. 2013. #2. URL: <https://cyberleninka.ru/article/n/kompyuternaya-sistema-reytingovogo-otsenivaniya-znaniy-kak-sredstvo-povysheniya-urovnya-znaniy-studentov> (data obrashcheniya: 30.11.2023).
- [5]. Esina O.V. Rating system otsenki znaniy studentov // Innovative development of professional education. 2013. No. 2 (04). URL: <https://cyberleninka.ru/article/n/rejtingovaya-sistema-otsenki-znaniy-studentov-1> (data obrashcheniya: 30.11.2023).
- [6]. Ilina V. V. Rejtingovaya attestatsiya studentov // Psychology and pedagogy: methodology and problems of practical application. 2010. #11-2. URL: <https://cyberleninka.ru/article/n/rejtingovaya-attestatsiya-studentov> (data obrashcheniya: 30.11.2023).
- [7]. Ivanov A. P., Morozova A. V. Sistema otsenivaniya znaniy uchashchikhsya po matematike // Problemy i perspektivy razvitiya obrazovaniya v Rossii. 2010. #1. URL: <https://cyberleninka.ru/article/n/sistema-otsenivaniya-znaniy-uchaschihsya-po-matematike> (data obrashcheniya: 30.11.2023).
- [8]. Skokov P.I., Lutseykovich V.I. Systematicheskaya kolichestvennaya otsenka urovnya podgotovlennosti studenta kak factor organizatsii ego uspeшной ucheby // [http://charko.narod.ru/tekst/un\\_obr\\_2001/Lucejkovich.htm](http://charko.narod.ru/tekst/un_obr_2001/Lucejkovich.htm)
- [9]. Yusupov D.F. Neurosetvye tehnologii adaptivnogo obucheniya i kontrolya znaniy studentov po kursu osnovy programmirovaniya// Molodoy uchenyy, 2014. - №5 (64). - 779-783 S.
- [10]. Kalashnikov I. Sistema otsenivaniya znaniy studentov. "Elementary mathematics"



- [11]. Kachmazova I.L., Tebieva A.B., Timoshkina N.V. Method and priemy otsenivaniya znaniy uchashchikhsya na urokax okrujayushchego mira // Mejdunarodnyi studencheskiy nauchnyi vestnik. – 2018. – No. 6. ;  
URL: <https://eduherald.ru/ru/article/view?id=19347> (data obrascheniya: 10.10.2023).
- [12]. El-Sabagh H. A. "Adaptive e-learning environment based on learning styles and its impact on developing students' engagement," International Journal of Educational Technology in Higher Education, vol. 18, no. 1, 2021, doi: 10.1186/s41239-021-00289-4.
- [13]. Khajieva I.A., Yusupov F. O lichnostno-orientirovannoy model of computer training of humanities discipline// Molodoy uchenyy, 2014. - No. 6(65). - pp. 765-767
- [14]. Aggarwal C. C. "Neural networks and deep learning: a textbook / by Charu C. Aggarwal.," Neural networks and deep learning: a textbook, 2018.
- [15]. X. Wang, P. Wu, G. Liu, Q. Huang, X. Hu, and H. Hu, "Learning performance prediction via convolutional GRU and explainable neural networks in e-learning environments," Computing, vol. 101, no. 6, 2019, doi: 10.1007/s00607-018-00699-9.
- [16]. Z. Sevarac, J. Jovanovic, V. Devedzic, and B. Tomic, "EXPLODE—a new model of exploratory learning environment for neural networks to improve learning outcomes," Interactive Learning Environments, 2022, doi: 10.1080/10494820.2022.2042030.
- [17]. K. Sunday, P. Ocheja, S. Hussain, S. S. Oyelere, O. S. Balogun, and F. J. Agbo, "Analyzing student performance in programming education using classification techniques," International Journal of Emerging Technologies in Learning, vol. 15, no. 2, 2020, doi: 10.3991/ijet.v15i02.11527.
- [18]. "BIG DATA IN EDUCATION DATA MINING AND LEARNING ANALYTICS," International Journal of Modern Trends in Engineering & Research, vol. 3, no. 11, 2016, doi: 10.21884/ijmter.2016.3126.gb2rq.



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## CREATION OF A DATABASE OF THE PERSONNEL DEPARTMENT PERFORMANCE MANAGEMENT INFORMATION SYSTEM BASED ON THE RELATIONAL MODEL

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**Annotatsiya:** Ushbu maqolada xodimlar bo‘limi faoliyatini boshqarish axborot tizimida ma‘lumotlar bazasining xodimlar ma‘lumotlari, ularning qarindoshlari (ma‘lumotnoma uchun), oliy ta‘lim tashkilotlari, ularning tuzilmalari, hujjatlar to‘plamlari va hududlar bo‘yicha ma‘lumotlarni umumlashtiruvchi jadvallarni yaratish hamda ular o‘rtasidagi relyatsion bog‘lanishlarni o‘rnatish tavsiflangan.

**Kalit so‘zlar:** ma‘lumotlar bazasi, jadvallar, atribut, ma‘lumotlar strukturasi, relyatsion algebra, maydon, xodim.

**Аннотация:** В данной статье объекты базы данных информационной системы управления эффективностью отдела кадров состоят из создания таблиц, обобщающих данные о сотрудниках, родственниках (для резюме), учебных заведениях, структуре и отделе, комплектах документов и регионах, а также создании реляционных связей, между ними.

**Ключевые слова:** база данных, таблицы, атрибут, структура данных, реляционная алгебра, поле, сотрудник.

**Abstract:** In this article, the database objects of the personnel department's performance management information system consist of creating tables that summarize information about employee data, relatives (for the CVs), educational institutions, structure and department, document sets, and regions, and making relational links between them.

**Keywords:** database, tables, attribute, data structure, relational link, field, employee.

**Introduction.** Nowadays, information systems are rapidly entering all fields. In particular, the information systems created for the organization and management of employees' work are serving the development of this field and ensuring transparency. It is possible to achieve high efficiency of management processes by organizing work through information systems [1,3,5].

In our republic, comprehensive measures aimed at designing, modeling, creating information systems are being implemented within the framework of electronic government. In particular: In the Decree of the President of the Republic of Uzbekistan No. PF-6079 of October 5, 2020 "On the approval of the Digital Uzbekistan - 2030 strategy and measures for its effective implementation" more than 280 on the automation of management, production and logistics processes in enterprises in the real sector of the economy introduction of information systems and software products and introduction of more than 400 information systems, electronic services and other software products in various areas of socio-economic development of regions. Implementation of such large-scale information systems certainly requires scientific approaches. In the development and introduction of information systems, it is important to carry out scientific research work on the organization of data exchange, modeling of processes in information systems, development of data structure, database design, and methods of building information systems based on modern technologies.

**Analysis and Results.** All the requirements and rules were taken into account when creating the database of the personnel department's performance management information system, and the database of the information system was developed based on the rules of Adam's normal forms [2].

The database objects of the personnel department's performance management information system will be as follows:

- Structure and section: dep, dep\_type, dismiss, staff\_table, vacation, vacation\_type, work\_activity, post, extra\_work\_activity, mission;
- regions: province, region, countries.
- set of documents: doc, doc\_kind, doc\_type, contract;
- educational institutions: edu, edu\_type, univer, univer\_type, specialties;
- employee information: employee, gender, family, military, nation, academic\_degree, academic\_title, award, award\_type;
- relatives (for lens): relative, relative\_type;

These tables, as shown in Figure 1, were grouped into tables such as structure and department, educational institutions, regions, document sets, employee information, relatives (lens) and created links between them.

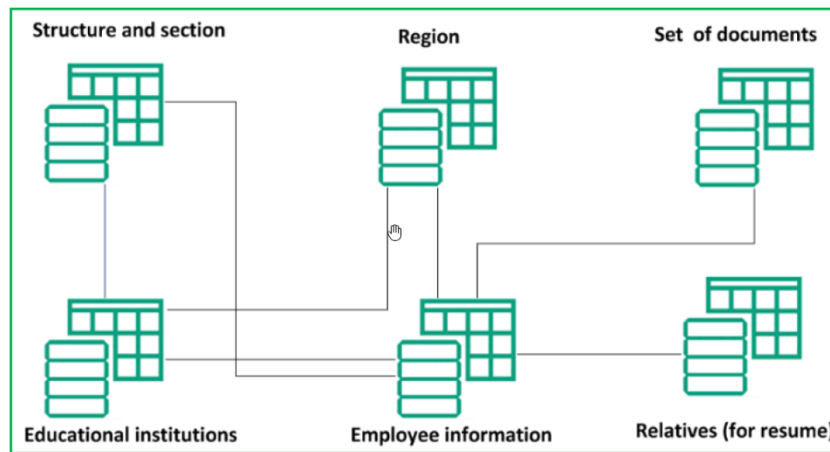


Figure 1. Database objects

Figure 2 below shows the relational connection of an information system database. The more optimal these links are, the faster and better the exchange of information in the system can be established [7,8].

We start the connection between the tables from the **dep** table belonging to the "structure and section" group.

say –  $R_1$  relationship serves to form information about the department in the system and it has the following form [5].

$$R_1[x_1, \dots, x_6] = \{r_1[x_1], \dots, r_1[x_6] \mid r_1 \in R_1\}, \quad (1)$$

where,  $r_1[x_1]$  – department code,  $r_1[x_2]$  – department name (Russian),  $r_1[x_3]$  – department name (Uzbek),  $r_1[x_4]$  – department type and it takes the value from  $r_2[x_1]$ ,  $r_1[x_5]$  – state,  $r_1[x_6]$  – salary.

dep\_type –  $R_2$  relationship forms information about the type of partition in the system and is described in the following form.

$$R_2[x_1, x_2, x_3] = \{r_2[x_1], r_2[x_2], r_2[x_3] \mid r_2 \in R_2\}, \quad (2)$$

here,  $r_2[x_1]$  – the code of the type of department,  $r_2[x_2]$  – the name of the department (Russian),  $r_2[x_3]$  – the name of the department (Uzbek). In this table, the Uzbek and Russian forms of the department types are created.

employee –  $R_3$  relationship forms information about employees in the system and it will have the following form.

$$R_3[x_1, \dots, x_{41}] = \{r_3[x_1], \dots, r_3[x_{41}] \mid r_3 \in R_3\}, \quad (3)$$

This table has 41 fields and is one of the main tables of the database. Let's see how the fields of this table are related to other tables.

award\_type –  $R_4$  relationship serves to form information about the type of awards of employees in the system, and it will look like this.

$$R_4[x_1, x_2, x_3] = \{r_4[x_1], r_4[x_2], r_4[x_3] \mid r_4 \in R_4\}, \quad (4)$$

here,  $r_4[x_1]$  – the code of the award type,  $r_4[x_2]$  – the name of the award type (Russian),  $r_4[x_3]$  – the name of the award type (Uzbek).

award – relationship is  $R_5$  used to register employee awards:



$$R_5[x_1, \dots, x_5] = \{r_5[x_1], \dots, r_5[x_5] | r_5 \in R_5\}, \quad (5)$$

where,  $r_5[x_1]$  is the reward code,  $r_5[x_2]$  is the employee code, and it takes the value from  $r_3[x_1]$ ,  $r_5[x_3]$  award name,  $r_5[x_4]$  reward type and it takes the value from  $r_4[x_1]$ ,  $r_5[x_5]$  given time,

*military* -  $R_6$  serves to record information related to military activities of employees and is described as follows:

$$R_6[x_1, \dots, x_{10}] = \{r_6[x_1], \dots, r_6[x_{10}] | r_6 \in R_6\}, \quad (6)$$

where,  $r_6[x_1]$  is the data code,  $r_6[x_2]$  is the employee code, and it takes the value from  $r_3[x_1]$ ,  $r_6[x_3], \dots, r_6[x_{10}]$  - other additional information field related to military activity is mentioned.

*vacation\_type* - relationship  $R_7$  serves to form information about vacancies in the system, that is, the type of vacancies, and it has the following form.

$$R_7[x_1, x_2, x_3] = \{r_7[x_1], r_7[x_2], r_7[x_3] | r_7 \in R_7\}, \quad (7)$$

here,  $r_7[x_1]$  - the information code,  $r_7[x_2]$  - the name of the vacancy type (Russian),  $r_7[x_3]$  - the name of the vacancy type (Uzbek).

*vacation* -  $R_8$  relationship serves to register vacancies and it will look like this:

$$R_8[x_1, \dots, x_8] = \{r_8[x_1], \dots, r_8[x_8] | r_8 \in R_8\}, \quad (8)$$

where,  $r_8[x_1]$  - information code,  $r_8[x_2]$  - department code and it takes the value from  $r_1[x_1]$ ,  $r_8[x_3]$  employee code and it takes the value from  $r_3[x_1]$ ,  $r_8[x_4]$  vacancy type and it takes the value from  $r_7[x_1]$ ,  $r_8[x_5], \dots, r_8[x_8]$  - contains other additional fields related to the vacancy table.

*doc\_type* -  $R_9$  relationship serves to form information about document types and it has a view.

$$R_9[x_1, x_2, x_3] = \{r_9[x_1], r_9[x_2], r_9[x_3] | r_9 \in R_9\}, \quad (9)$$

here,  $r_9[x_1]$  - information code, - name of the document type  $r_9[x_2]$  (Russian),  $r_9[x_3]$  - name of the document type (Uzbek).

*doc* -  $R_{10}$  relationship documents serves to form:

$$R_{10}[x_1, \dots, x_{11}] = \{r_{10}[x_1], \dots, r_{10}[x_{11}] | r_{10} \in R_{10}\}, \quad (10)$$

where,  $r_{10}[x_1]$  is the data code,  $r_{10}[x_2]$  is the document type, and it takes the value from  $r_9[x_1]$ ,  $r_{10}[x_3], \dots, r_{10}[x_{11}]$  - contains other additional fields.

*mission* -  $R_{11}$  relationship forms information about tasks:

$$R_{11}[x_1, \dots, x_9] = \{r_{11}[x_1], \dots, r_{11}[x_9] | r_{11} \in R_{11}\}, \quad (11)$$

where,  $r_{11}[x_1]$  - information code,  $r_{11}[x_2]$  employee code and it takes the value from  $r_3[x_1]$ ,  $r_{11}[x_3]$  - document code and it takes the value from  $r_{10}[x_1]$ ,  $r_{11}[x_4]$  department code and it takes the value from  $r_1[x_1]$ ,  $r_{11}[x_5], \dots, r_{11}[x_9]$  - contains other additional fields.

*contract* -  $R_{12}$  form the information about the contracts concluded with the employees and it looks like this:

$$R_{12}[x_1, \dots, x_6] = \{r_{12}[x_1], \dots, r_{12}[x_6] | r_{12} \in R_{12}\}, \quad (12)$$

where,  $r_{12}[x_1]$  is the data code, the  $r_{12}[x_2]$  employee code, and it takes the

value from  $r_3[x_1]$ ,  $r_{12}[x_3]$ , ...,  $r_{12}[x_6]$  – contains other additional fields.

*edu\_type* –  $R_{13}$  relationship serves to form information about the type of educational institutions:

$$R_{13}[x_1, x_2, x_3] = \{r_{13}[x_1], r_{13}[x_2], r_{13}[x_3] \mid r_{13} \in R_{13}\}, \quad (13)$$

here,  $r_{13}[x_1]$  - the information code,  $r_{13}[x_2]$  - the name of the type of educational institution (Russian),  $r_{13}[x_3]$  - the name of the type of education (Uzbek)

*edu* –  $R_{14}$  relationship forms information about educational institutions and has the following form:

$$R_{14}[x_1, \dots, x_9] = \{r_{14}[x_1], \dots, r_{14}[x_9] \mid r_{14} \in R_{14}\}, \quad (14)$$

where,  $r_{14}[x_1]$  is the data code, the  $r_{14}[x_2]$  employee code, and it takes the value from  $r_3[x_1]$ ,  $r_{14}[x_3]$  educational institution type code and it takes the value from  $r_{13}[x_1]$ ,  $r_{14}[x_4]$ , ...,  $r_{14}[x_9]$  – contains other additional fields.

*relative\_type* –  $R_{15}$  relationship serves to form information about the type of kinship:

$$R_{15}[x_1, x_2, x_3] = \{r_{15}[x_1], r_{15}[x_2], r_{15}[x_3] \mid r_{15} \in R_{15}\}, \quad (15)$$

here,  $r_{15}[x_1]$  - the information code,  $r_{15}[x_2]$  - the name of the type of kinship (Russian),  $r_{15}[x_3]$  - the name of the type of kinship (Uzbek).

*relative* –  $R_{16}$  relationship forms information about kinship and has the following form:

$$R_{16}[x_1, \dots, x_9] = \{r_{16}[x_1], \dots, r_{16}[x_9] \mid r_{16} \in R_{16}\}, \quad (16)$$

where,  $r_{16}[x_1]$  – information code,  $r_{16}[x_2]$  employee code and it takes the value from  $r_3[x_1]$ ,  $r_{16}[x_3]$  relationship type code and it takes the value from  $r_{15}[x_1]$ ,  $r_{16}[x_4]$ , ...,  $r_{16}[x_9]$  – contains other additional fields.

*work\_activity* –  $R_{17}$  relationship forms information about work activity and has the following form:

$$R_{17}[x_1, \dots, x_6] = \{r_{17}[x_1], \dots, r_{17}[x_6] \mid r_{17} \in R_{17}\}, \quad (17)$$

where,  $r_{17}[x_1]$  is the data code, the  $r_{17}[x_2]$  employee code, and it takes the value from  $r_3[x_1]$ ,  $r_{17}[x_3]$ , ...,  $r_{17}[x_6]$  – contains other additional fields.

*countries* –  $R_{18}$  relationship serves to form information about countries:

$$R_{18}[x_1, x_2, x_3] = \{r_{18}[x_1], r_{18}[x_2], r_{18}[x_3] \mid r_{18} \in R_{18}\}, \quad (18)$$

here,  $r_{18}[x_1]$  - information code,  $r_{18}[x_2]$  - name of the country (Russian),  $r_{18}[x_3]$  - name of the country (Uzbek).

*province* –  $R_{19}$  the relationship of the regions serves to form information about:

$$R_{19}[x_1, x_2, x_3, x_4] = \{r_{19}[x_1], r_{19}[x_2], r_{19}[x_3], r_{19}[x_4] \mid r_{19} \in R_{19}\}, \quad (19)$$

here,  $r_{19}[x_1]$  - information code,  $r_{19}[x_2]$  - region name (Russian),  $r_{19}[x_3]$  - region name (Uzbek) is obtained,  $r_{19}[x_4]$  - state code and value  $r_{18}[x_1]$  from.

*region* –  $R_{20}$  relationship serves to form information about districts:

$$R_{20}[x_1, \dots, x_6] = \{r_{20}[x_1], \dots, r_{20}[x_6] \mid r_{20} \in R_{20}\}, \quad (20)$$

here,  $r_{20}[x_1]$  - information code,  $r_{20}[x_2]$  - state code and value  $r_{18}[x_1]$  from,  $r_{20}[x_3]$  - region code and value  $r_{19}[x_1]$  from,  $r_{20}[x_4]$  - district name (Russian),  $r_{20}[x_5]$  - district name (Uzbek),  $r_{20}[x_6]$  - status his is obtained. In addition, it takes

$r_3[x_{38}]$  the value of the - field  $r_{20}[x_1]$  from the employee table.

The above links are the main links. Other links in the table are organized in this way and information exchange is organized.

**Conclusion.** In short, in this article, based on the relational model, the database of the information system for managing the performance of the personnel department was released. A database structure consisting of 33 tables was designed for the personnel department performance management information system, and a database containing 39 relational relationships was developed using relational algebra operations. The created database serves to form information about the organizational structure of the institution, institutions, personnel contingent and references, document collections, and personnel movements. Trainees can make payments in an inventive way at their discretion.

### Reference:

- [1] Khamdamov U., Abdullayev A., Elov J., Sultanov D. Conceptual Model of the Education Management Information System for Higher Education Institutions. *International Journal of Advanced Trends in Computer Science and Engineering*, 2020, Volume 9, No.5.
- [2] EF Codd. Relational data model for large shared data banks [Electronic resource] / EF Codd; per. from English. MR Kogalovsky//DBMS. 1995. No. 1. Access mode: [http://citforum.ru/database - /classics/codd/](http://citforum.ru/database-/classics/codd/).
- [3] Jamshid Elov, Utkir Khamdamov, Utkir Khamdamov. Development of a database of higher education process management information system based on the relational model , *International Conference of Information science and communications technologies applications, trends and opportunities ICISCT 2021*. 3-5 November, 2021. Tashkent, Uzbekistan, 5p
- [4] Karakozov Sergey D., Ryzhova Natalia I. Information and education systems in the context of digitalization of education // *Journal SFU . Humanities*. – 2019. No. 9.
- [5] Sultanov, D. (2019). *Strategies for Improving Education Services through Collective Value Creation (Doctoral dissertation, seouldaehaggyodaehag-won )*.
- [6] Sultanov, D., Kim, K., & Altmann, J. (2018, September). Snooping Around a Fence: A Lesson from Education Sector in a Software Service Ecosystem. In *International Conference on the Economics of Grids, Clouds, Systems, and Services* (pp. 66-76). Springer, Cham.
- [7] Bekmurodovich, EJ, Rakhmatillayevych, KU, Bakhodirovich, SD, & Quدراتovich, MO (2020). Structure of functional processes and information model of e-referral module of the system for medical personnel retraining. *International Journal of Scientific and Technology Research*, 9(5), 207-211. Retrieved from [www.scopus.com](http://www.scopus.com)
- [8] F. Salimovna, 'Improving the structure and model interaction of information processes on distance learning', *International Journal of Advanced Trends in Computer Science and Engineering*, vol. 9, pp. 4043– 4048, Jun. 2020, doi: 10.30534/ijatcse/2020/230932020.
- [9] DV Timofeev. use of properties of relational algebra operations to optimize the calculation of expressions//*St. Petersburg Institute of Informatics and Automation. Spiran, St. Petersburg*, 2007.



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## ANALYSIS OF QUALITY PARAMETERS OF MACHINE-PICKED COTTON AND FIBER OBTAINED THROUGH ITS INITIAL PROCESSING

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**Annotatsiya.** Ushbu maqolada mashina yordamida terilgan paxtaga dastlabki ishlov berishdan ishlab chiqarilgan tolaning sifat ko'rsatkichi bo'yicha bir barabanli 1ВПУ rusumli tola tozalagichlarga ega bo'lgan Jizzax viloyatining Akmal Ikromov, Do'stlik paxta tozalash korxonalarida, ikki barabanli 2ВПМ rusumli tola tozalagichlarga ega bo'lgan Sirdaryo viloyatining Guliston paxta tozalash korxonasida, Toshkent viloyatining Bo'ka paxta tozalash korxonasida tajriba-tadqiqot ishlari olib borilgan natijalari tahlili keltirildi.

**Kalit so'zlar.** Paxta, tola, tola tozalagich, mashina, terim, ifloslik.

**Аннотация.** В данной статье по показателю качества волокна, получаемого при предварительной переработке хлопка машинного сбора, Акмал Икромов Джизакской области, имеющий однобарабанные волоконоочистительные машины типа 1ВПУ, и хлопкоочистительные предприятия «Достлик», имеющие двухбарабанные Очистители волокна типа 2ВПМ Представлен анализ результатов экспериментальных исследований, проведенных на Гулистонском хлопкоочистительном комбинате Сырдарьинской области и Бокинском хлопкоочистительном комбинате Ташкентской области.

**Ключевые слова.** Хлопок, волокно, очиститель волокна, машина, сбор, грязь.

**Annotation.** In this article, according to the quality indicator of the fiber produced from the preliminary processing of machine-picked cotton, Akmal Ikromov of Jizzakh region, which has one-drum 1VPU type fiber cleaners, and Dostlik cotton ginning enterprises, which has two-drum 2VPM type fiber cleaners. An analysis of the results of experimental research conducted at the Guliston cotton ginning enterprise of the Syrdarya region and the Boka cotton ginning enterprise of the Tashkent region was presented.

**Keywords.** Cotton, Fiber, Fiber cleaner, Machine, collection, dirt.

**Introduction.** In order to enter the world market, it is necessary to use modern technology that allows the modern textile industry to adapt to market conditions, lean on the latest achievements of Science and Technology, produce products that are

resistant to market competition according to cost and use specifications. In such conditions, an increase in quality, a decrease in the cost of products will stimulate mass labor efficiency, material resource savings, the use of basic funds, further improvement in the standard of living. The rational use of advanced technologies in order to make the products produced competitive with foreign products is one of the necessary issues for the economy in the construction of joint and small enterprises and the export of products abroad in the realization of products in Khol, which attracted foreign progressive equipment and technologies.

In terms of cotton production, The Republic of Uzbekistan is one of the leading countries in the world economy, which ranks high along with China, the United States, India and other countries. Cotton planting in western Europe is also practiced in Albania, Bulgaria, Greece, Spain and Italy. In developed countries, cotton is an important sector of the economy. In the above foreign countries, cotton is mainly picked using a machine.

According to the decisions of the Cabinet of ministers, the formation of cotton picking on the machine is set as the main task. Large-scale work is being carried out to relieve manual labor, reduce additional costs and mechanize the picking of cotton according to a government decision in the implementation of a cluster system in cotton [1,2].

Today, due to the great attention given by our government to the picking of cotton by car, the harvesting of cotton by car in Sirdaryo, Jizzakh and Tashkent regions is expanding from year to year. According to the quality indicator of the fiber produced from the initial processing of cotton and cotton picked using the machine, experimental research work was carried out at Akmal Ikromov of Jizzakh region, friendship cotton refineries, Guliston cotton refineries of Sirdaryo region with two - drum 2VPM fiber cleaners, Bukhara cotton cleaning enterprise of Tashkent region. The results are shown in Table 1.

Table 1.

**Preliminary performance results of machine-picked cotton**

t / r	Cotton raw materials										Fabric				Class. Standard requirements	Cleaning efficiency, %		Fiber of waste, %	Grasshopper		lent	
	Moisture, %		Filth, %								Before the cleaner, %		After cleaning, %			Real	technological regulation requirement		Тўқдорлиги, %		separation of lent	Class
	Starter	From Jin	Uxk aggregate				From gin				Moisture	Filth	Moisture	Filth					After Jin	After linter		
			Starter	After equipment	Тозалаш самарадорлиги		Real	technological regulation requirement	Real	technological regulation requirement												
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A.Ikromov cotton cleaning enterprise																						
1	Sulton, 1/2	9.8	8.3	9.7	2.4	75.3	88.0	2.2	1.5	6.7	4.4	6.6	3.2	I-simple, 4.0	26.3	30	25.6	10.4	7.2	1/2, 1/1	3.2	Middle
2	Sulton, 2/2	10.6	8.6	9.9	2.6	73.7	88.0	2.4	1.5	6.9	6.2	6.8	4.5	II-simple, 5.5	27.4	32	28.2	11.2	7.7	2/2, 2/1	3.5	Middle
3	An-Bayovut-2,1/2	10.6	8.5	10.8	2.9	73.4	88.0	2.5	1.5	6.5	4.6	6.5	3.3	I-simple, 4.0	28.0	30	23.8	11.0	7.5	1/2, 1/1	3.5	Middle
Dustlik cotton cleaning enterprise																						

4	C-6524, 1/2	10.3	8.6	9.5	2.2	76.8	88.0	1.9	1.5	6.3	4.65	6.27	3.46	I-simple, 4.0	25.6	30	24.2	10.6	7.3	1/2, 1/1	3.3	Middle
5	C-6524, 2/2	10.8	8.9	10.2	2.5	75.5	88.0	2.1	1.5	6.8	5.89	6.62	4.23	II-simple, 5.5	28.2	32	29.7	11.3	7.6	2/2, 2/1	3.7	Middle
6	An-Bayovut-2,1/2	9.9	8.4	9.6	2.4	75.0	88.0	2.1	1.5	6.0	4.9	5.83	3.6	I-simple, 4.0	26.5	30	27.5	10.7	7.4	1/2, 1/1	3.3	Middle
7	An-Bayovut-2,2/2	10.4	8.5	10.7	2.5	76.6	88.0	2.16	1.5	6.7	6.34	6.6	4.6	II-simple, 5.5	27.4	32	28.9	11.5	7.9	2/2, 2/1	3.6	Middle
Guliston cotton cleaning enterprise																						
8	Porloq-1,1/2	9.6	8.4	9.5	2.2	76.8	88.0	2.0	1.5	6.4	4.28	6.32	3.1	I-simple, 4.0	27.6	30	24.7	10.6	7.3	1/2, 1/1	3.3	Middle
9	Porloq-1,2/2	10.9	8.7	10.2	2.2	78.4	88.0	2.04	1.5	6.8	6.4	6.84	4.54	II-simple, 5.5	29.1	32	29.0	11.4	7.8	2/2, 2/1	3.6	Middle
10	An-Bayovut-2,1/2	9.3	8.0	9.6	2.4	75.0	88.0	2.1	1.5	6.5	4.4	6.5	3.2	I-simple, 4.0	27.3	30	25.6	10.9	7.3	1/2, 1/1	3.6	Middle
11	An-Bayovut-2,2/2	11.2	9.0	10.9	2.3	78.3	88.0	2.14	1.5	6.8	6.56	6.7	4.63	II-simple, 5.5	29.4	32	29.5	11.6	7.6	2/2, 2/1	4.0	Middle
Buka cotton cleaning enterprise																						
12	Namangan -77, 1/2	9.7	8.2	9.8	2.3	75.6	88.0	2.0	1.5	6.3	4.4	5.86	3.2	I-simple, 4.0	27.3	30	25.8	10.9	7.5	1/2, 1/1	3.4	Middle
13	Namangan -77, 2/2	10.3	8.9	11.2	2.4	78.6	88.0	2.2	1.5	6.7	6.6	5.72	4.72	II-simple, 5.5	28.5	32	29.0	11.5	7.8	2/2, 2/1	3.7	Middle

From the results of the table, Akmal Ikromov showed that the cleaning efficiency of UXK in the cleaning of Sultan Selectable Grade I Class 2, Grade II Class 2 cotton in the UXK aggregate was in turn 75.3% and 73.7%, respectively, 12.7% and 14.3% less than the cleaning efficiency required by the PDI 70-2017 technological regulation. As a result of this, the pollution of cotton in gin was in turn 2.2% and 2.4% in terms of varieties, indicating that the cotton required by the technological regulation was 0.7% and 0.9% higher than the dirt that should be in gin. Due to the high pollution of cotton being given to gin, the mass fraction of defective fiber and dirty impurities in the fiber being produced from Cotton Ginning was high, accounting for 4.4% and 6.2%, respectively, by varieties. The cleaning efficiency of the equipment when cleaning this fiber in a 1vpu fiber cleaner in technology is 26.3% and 27% respectively in terms of varieties. When cleaning S-6524 selective Grade I Grade 2 and Grade II Grade 2 cotton at Friendship cotton ginning enterprise in UXK aggregate, the cleaning efficiency of the aggregate was in turn 11.2% and 12.5% less than the technological regulation requirement, while cleaning of Grade I Grade 2, Grade II grade 2 cotton in an - Bayavut-2 selection showed that the cleaning efficiency of the aggregate was 13.0% and 11.4% less S - 6524 Selection Grade I Grade 2 and Grade II Grade 2 cotton ginning showed that the mass fraction of defective fiber and dirty impurities in the produced fiber is 4.65% and 5.89% by grade 1vpu fiber cleaner, the cleaning efficiency of the fiber cleaner is 25.6% and 28.2%, respectively, which is 4.4% and 3.8% less than the technological regulation requirement[3.4.5].

**Learning new technology.** It was studied that the mass fraction of defective fiber and dirty impurities in the fiber produced from the ginning of An-Bayavut - 2 selection grade I Grade 2 and Grade II Grade 2 cotton is 3.5% and 4.6% less than the cleaning efficiency of a single-drum cleaner from the cleaning of fiber by varieties at 4.65% and 5.89% respectively. From the low quality indicator of the fiber produced, the state standard UzDsT 632-2016 “Cotton fiber technical conditions” fell on the

ordinary classes of Grade I and Grade II, respectively, according to the secondary varieties [6,7].

The cleaning efficiency of UXK in the cleaning of glossy-1 Selection Grade 2, Grade II Grade 2 cotton in the Guliston cotton cleaning enterprise of Sirdaryo region with a two - drum 2vpm fiber cleaner installed was in turn 76.8% and 78.4%, indicating that the cleaning efficiency of UXK in the UXK aggregate was 11.2% and 9.6% less than the cleaning efficiency required by the PDI 70-2017 technological regulation. The mass fraction of defective fiber and dirty impurities in the fiber produced from the ginning of glossy-1 Selection Grade I Grade 2 and Grade II Grade 2 Cotton was studied to be an average of 7.4% and 6.4% less than the technical characteristics of the cleaner, compared to 7.4% and 6.1% less than the technical characteristics of the cleaner. Produced fiber ESA UzDsT 632-2016 “cotton fiber, according to the state standard” technical conditions “according to the varieties I and II-grade”

In the treatment of machine-picked Namangan - 77 selection of Grade I Class 2, Grade II Class 2 cotton in UXK aggregate at the Buka cotton ginning enterprise, UXK's cleaning efficiency was shown to be on average 11.5% and 9.4% less than the cleaning efficiency required by the technological regulation. When the fiber produced from the ginning of this selective grade cotton is cleaned in a 2vpm double drum fiber cleaner in technology, the cleaning efficiency of the cleaner is equal to 27.3% and 28.5% by varieties, and it was found that the cleaning efficiency of the technical characteristic is on average 5.7% and 6.5% less than the cleaning efficiency [10.11].

**Conclusion.** As can be seen from the results of the textilecarried out in the cleaning of high-grade and low-grade cotton fiber in a single-drum 1VPU fiber cleaner, the cleaning efficiency of the cleaner was 6-8% less than its technical characteristics, with an average of 21-29%. When cleaning fiber, we can see from the test that the fiber content of the waste is on average 10-15% higher than its technical characteristic, which negatively affects the amount of fiber being produced. As a result of the shortcomings in the construction of the two-drum 2vpm fiber purifier, which is also introduced into production, the production of fiber of the “higher” class has decreased due to the fact that the cleaning efficiency of the cleaner in the cleaning of high and low grade fiber is on average 5-8% less than the cleaning efficiency. In addition, when cleaning the fiber, a decrease in the total amount of fiber produced occurs due to the fact that fibers suitable for the production of waste are separated from the norm by 8-10% in large quantities.

### References

- [1]. FO Egamberdiev, KJ Jumaniyazov, IZ Abbazov. Study of the influence of the guiding device on increasing the efficiency of fiber cleaning // IOP Conference Series: Earth and Environmental Science 614 (1), 012123
- [2]. K Jumaniyazov, F Egamberdiev, I Abbazov. The Effect of Crop Type on Cotton Quality Indicators // International Journal of Advanced Research in Science, Engineering and
- [3]. F Egamberdiev, K Jumaniyazov, I Abbazov, H Yodgorova, M Rajapova. Theoretical study of the impact aimed at improving the efficiency of fiber cleaning // IOP Conference Series: Earth and Environmental Science 939 (1), 012032



- [4]. FO Egamberdiev, Q.Jumaniyazovich, BB Doniyorov, ET Mukhametshina Improving the cleaning efficiency of improved two drum straight-flow fiber cleaner equipment *Journal of Technical Research* 3 (5)
- [5]. M Yuldasheva, FO Egamberdiev, FZ Sadikov, ZF Valieva. Changing the quality indicators of threads made from fibers with different indicators of upper average length *Science and the World*, 76-78
- [6]. M Yuldasheva, SM Israilova, FO Egamberdiev, FS Sadikov The effect of a mixture of various silk wastes on the unevenness and physico-mechanical properties of yarn *Young scientist*, 238-243
- [7]. K. Jumaniyazov, F. O Egamberdiyev, S. A Karimov// The effect of the type of cotton picking on the quality of the yarn *Science and Education* 3 (4), 232-240
- [8]. FO Egamberdiev, ZF Valieva Influence of the composition of standard sorting and technological processes on the mechanical damage of fibers *Young scientist*, 97-100
- [9]. K Djumaniyazov, F Egamberdiev, I Abbazov, N Gadoyev .Influence of Different methods of Cotton Pickinc on the Quality of Cotton *International Journal of Psychosocial Rehabilitation*, ISSN, 1475-7192
- [10]. Creation of improved UXK equipment for cleaning cotton from large impurities A Usmankulov, A Salomov, I Abbazov, F Egamberdiev *IOP Conference Series: Earth and Environmental Science* 1142 (1), 012080
- [11]. *Faulkner W.B., Hequet E.F., Wanjura J., Boman R.* Relationships of cotton fiber properties to ring-spun yarn quality on selected High Plains cottons // *Textile Research Journal*. – 82(4), 2012. P.400...414.

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**METHODS OF EVALUATING A PERSON'S EMOTIONAL STATE  
BASED ON THE ANALYSIS OF TEXTUAL DATA.**

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**Annotatsiya:** Ushbu maqolada matn ma'lumotlari orqali hissiy holatlarni tahlil qilishga uslubiy yondashuvning ba'zi usullari ko'rib chiqiladi. Matnga asoslangan hissiy baholash - bu yozma yoki terilgan so'zlar orqali odamlar tomonidan ifodalangan his-tuyg'ularni aniqlash va miqdorni aniqlash. Tuyg'ularni tahlil qilish, his-tuyg'ularni aniqlash, til va ohangni tahlil qilish kabi usullardan foydalangan holda, bu yondashuv yozma muloqotga xos bo'lgan hissiy tarkibni dekodlash va miqdorini aniqlash qobiliyatini ochadi.

**Kalit so'zlar:** Mashinani o'rganish, chuqur o'rganish, tabiiy tilni qayta ishlash, his-tuyg'ularni aniqlash, matn ma'lumotlarini tahlil qilish, his-tuyg'ularni aniqlash, HCI, vektorli mashinalarni qo'llab-quvvatlash, takroriy neyron tarmoqlar.

**Аннотация:** В данной статье рассматриваются некоторые приемы методического подхода к анализу эмоциональных состояний посредством текстовых данных. Текстовая эмоциональная оценка — это идентификация и



количественная оценка эмоций, выражаемых людьми посредством письменных или напечатанных слов. Используя такие методы, как анализ настроений, обнаружение настроений, а также анализ языка и тона, этот подход открывает способность декодировать и количественно оценивать эмоциональное содержание, присущее письменному общению.

**Ключевые слова:** машинное обучение, глубокое обучение, обработка естественного языка, обнаружение эмоций, анализ текстовых данных, обнаружение эмоций, HCI, машины опорных векторов, рекуррентные нейронные сети.

**Abstract:** In this article, some methods of methodological approach to the analysis of emotional states through textual data are considered. Text-based emotional assessment is the identification and quantification of emotions expressed by humans through written or typed words. Using techniques such as sentiment analysis, sentiment detection, and language and tone analysis, this approach unlocks the ability to decode and quantify the emotional content inherent in written communication.

**Keywords:** Machine learning, Deep learning, Natural language processing, Emotion detection, Textual data analysis, Emotion detection, HCI, Support Vector Machines, Recurrent Neural Networks

**Introduction.** Since the birth of Artificial Intelligence in 1950 and its rebirth in the 20th century, it has contributed significantly to providing effective solutions to major human and societal problems in various fields including natural language processing, which employs computational and linguistics techniques to aid computers understand and sometimes generate human languages in the form of texts and speech/voice [1].

In today's fast-paced digital world, the ability to understand and analyze human emotions has become increasingly important. Emotion can be conveyed in various forms, including facial expressions, spoken language, and written text. Emotion recognition in text documents is a challenging task that involves identifying and classifying emotions based on principles derived from machine learning, particularly deep learning techniques.

Machine learning, especially deep learning, has revolutionized the field of natural language processing (NLP) and opened up new possibilities for emotion detection in textual data. By training models on large datasets, machine learning algorithms can learn to recognize patterns and extract meaningful information from text.

In this article, we will explore the concept of emotion detection in text using machine learning. We will delve into various methodologies and techniques that researchers have used to uncover emotions hidden within written language. From the use of support vector machines to recurrent neural networks, we will discuss the different approaches and their effectiveness in analyzing textual data and detecting emotions.

In the age of digital communication, an enormous volume of textual data is generated daily through emails, social media interactions, chat messages, and more. The ability to analyze and understand emotional states through textual data has become a vital tool in various fields, from psychology to marketing and beyond.

To extract emotional information from various data sources, several methods and techniques are employed:

➤ **Facial Expression Analysis:** Computer vision techniques are used to analyze facial features, including muscle movements and expressions, to recognize emotions. Deep learning models, particularly Convolutional Neural Networks, have shown remarkable success in this domain.

➤ **Speech and Audio Analysis:** Emotion detection from vocal cues involves analyzing speech prosody, tone, pitch, and speech content. Machine learning algorithms, including Recurrent Neural Networks and Support Vector Machines, are frequently used.

➤ **Text Analysis:** Natural language processing models, such as sentiment analysis, are adapted for emotion detection in text data. These models analyze word choice, context, and linguistic patterns to infer emotions.

➤ **Physiological Sensors:** Biometric sensors, like heart rate monitors and galvanic skin response sensors, are used to detect physiological responses associated with emotions. These sensors can provide real-time insights into emotional states.

Emotions are a fundamental aspect of the human experience, influencing our thoughts, actions, and decisions. Traditionally, assessing emotional states relied on surveys, interviews, or observations, which can be time-consuming, expensive, and limited in scale. [2] Textual data analysis offers an efficient and scalable alternative for studying human emotions, providing researchers and professionals with a unique window into the emotional lives of individuals.

### **Deep Learning Assisted Semantic Text Analysis (DLSTA)**

Deep Learning Assisted Semantic Text Analysis (DLSTA) is a proposed model for detecting human emotions using big data and natural language processing (NLP) concepts. DLSTA leverages the power of deep learning algorithms, specifically word embeddings, to improve the efficiency of emotion detection in textual data.[2]

**Literature review. To understand the current state of emotion detection in text, it is essential to examine the work that researchers have already done in this field. Several studies have focused on developing models and algorithms to detect emotions in text. Let's take a closer look at some of these approaches.**

### **The Knowledge-Enriched Transformer (KET) Model**

Zhong et al. developed the Knowledge-Enriched Transformer (KET) model, which tackles the challenge of emotion detection by introducing an enriched information transformer. This model incorporates hierarchical attention to perceive internal statements and dynamic context-aware graph attention for external information. Experimental results show that both semantic and contextual information contribute to the success of emotion detection. [3]

### **Emotion Detection and Analysis (EDA)**

Gaind et al. proposed the Emotion Detection and Analysis (EDA) model, which classifies text into six types of emotions: pleasure, sadness, fear, anger, outrage, and disgust. EDA utilizes both natural language processing techniques and machine learning algorithms to effectively derive these emotions from text. By combining these two methods, EDA eliminates the need for manual annotation of large datasets.[4]

## Sequence-Based Convolutional Neural Network (SB-CNN)

Shrivastava et al. discussed the Sequence-Based Convolutional Neural Network (SB-CNN), which implements word embedding for emotion recognition based on sequence-based convolution. The SB-CNN model includes a mechanism of focus that allows the network to concentrate on words that have a greater impact on emotion identification. This model has been used to track public sentiment in social media and gather insights into users' emotional states.[5]

### Emotion and Sentiment Analysis (ESA)

Sailunaz and Alhajj proposed the Emotion and Sentiment Analysis (ESA) model, which recognizes, evaluates, and generates suggestions on the sentimental emotions expressed in users' Twitter posts. ESA collects tweets and responses on specific topics and generates a dataset of users, sentiments, emotions, and more. By analyzing this data, ESA assesses the impact of users and messages based on various metrics. [6]

### Touch Interactions Model (TIM)

Ghosh et al. introduced the Touch Interactions Model (TIM), which focuses on capturing touch experiences with a mobile device to detect user emotions. TIM differentiates between typing and swiping behaviors to accurately capture emotional states. By gathering data directly from users, TIM trains a machine learning model to detect four emotional states: happy, sad, stressed, and relaxed.[7]

### Collaborative Learning Environment (CLE)

Jena developed the Collaborative Learning Environment (CLE), which combines machine learning techniques and emotion analysis to assess student knowledge and predict their emotions. CLE leverages big data structures and adapts them to enhance learning outcomes for children, faculty, and other stakeholders. By analyzing emotions and academic performance, CLE provides valuable insights into the learning process.[8]

### Research Methodology.

Analyzing emotional states through textual data involves several methodological approaches, each with its own set of techniques:

**Sentiment Analysis:** Sentiment analysis categorizes text as positive, negative, or neutral based on the words and phrases used. Advanced sentiment analysis models can even identify specific emotions, such as happiness, anger, or sadness, expressed in the text.

### Understanding Sentiment Analysis

At its core, sentiment analysis aims to answer the following questions about a piece of text:

- **Polarity:** Is the sentiment positive, negative, or neutral?
- **Intensity:** How strong is the expressed sentiment?
- **Subjectivity:** To what degree is the text opinionated or factual?

### Methods of Sentiment Analysis

There are various approaches to sentiment analysis, each with its strengths:

**Lexicon-Based:** Lexicon-based methods rely on predefined sentiment lexicons or dictionaries containing words and phrases associated with specific sentiments. The overall sentiment of a text is determined by summing the sentiment scores of its constituent words.

**Machine Learning-Based:** Machine learning models, such as Support Vector Machines, Naive Bayes, and deep learning models like Recurrent Neural Networks or Transformers, are trained on labeled datasets to predict sentiment.

**Rule-Based:** Rule-based approaches involve creating custom rules and patterns to identify sentiment. While they can be effective, they require manual crafting and may not handle context well.

**Hybrid Approaches:** Some sentiment analysis systems combine multiple methods for improved accuracy and flexibility. For instance, they may use lexicon-based methods for quick analysis and machine learning models for more nuanced understanding.

### Challenges in Emotion Detection

While there has been significant progress in detecting emotions through facial expressions and speech, text-based emotion detection still poses challenges. Unlike spoken language, where emotions can be conveyed through tone and intonation, written language lacks these cues. Therefore, machine learning models need to rely solely on the words and expressions used in the text to detect emotions.

Another challenge in text-based emotion detection is the lack of a standardized structure for emotions. While there are commonly recognized emotions such as joy, sadness, anger, fear, and disgust, the way these emotions are expressed can vary greatly from person to person. Additionally, the context in which emotions are expressed can also influence their interpretation.

To overcome these challenges, researchers have developed various methodologies and techniques that leverage machine learning algorithms and NLP concepts. In the following sections, we will explore some of these approaches and their effectiveness in detecting emotions in textual data.

Analyzing emotional states through textual data involves several key steps:

#### Step 1: Data Collection

The first step is to collect a representative dataset of textual data that captures the desired emotional states. This data can be sourced from various platforms such as social media, customer reviews, or online forums. The dataset should be diverse and balanced to ensure a comprehensive analysis.

#### Step 2: Preprocessing

Once the dataset is collected, it needs to be preprocessed to remove noise, standardize formats, and handle missing data. This step may involve techniques such as tokenization, stemming, and removing stop words. Preprocessing is essential to ensure the accuracy and reliability of subsequent analysis.

#### Step 3: Sentiment Analysis

Sentiment analysis is a key component of analyzing emotional states. It involves determining the polarity of each text sample, i.e., whether it expresses a positive, negative, or neutral sentiment. Various techniques, such as rule-based approaches, machine learning algorithms, and deep learning models, can be employed for sentiment analysis.

#### Step 4: Emotion Classification

While sentiment analysis provides a broad understanding of emotional states, emotion classification aims to categorize texts into specific emotions such as

happiness, sadness, anger, or fear. This step typically involves training a supervised machine learning model using annotated data or utilizing pre-trained models such as BERT or GPT.

#### Step 5: Feature Extraction

Feature extraction involves identifying relevant features or patterns in the textual data that are indicative of specific emotional states. This step can include techniques such as topic modeling, word embeddings, or named entity recognition. Extracted features serve as inputs for subsequent analysis and interpretation.

#### Step 6: Data Analysis and Interpretation

Once the features are extracted, various statistical and analytical techniques can be applied to gain insights into the emotional states present in the dataset. This analysis can include exploratory data analysis, correlation analysis, or clustering techniques to uncover patterns and relationships within the data.

#### Step 7: Validation and Evaluation

Validation and evaluation are crucial to ensure the reliability and validity of the findings. This step involves comparing the results obtained from the textual analysis with established psychological frameworks or expert judgment. It also includes assessing the performance of the models used in sentiment analysis and emotion classification.[8][9]

Based on the steps mentioned above, we can consider the logic that evaluates the emotional state of a person based on the text. The method we have given is a recommendation to solve the problem.

Step 1: Data mining: A number of data sets are recommended to extract sentiment from text. We use kaggle.com a lot in our project. this dataset contains a dictionary of words and phrases and their most appropriate emotion.

(<https://www.kaggle.com/code/jarvis11/text-emotions-detection/input>)

Step 2: The convenience of the given data set is in plain text format and it is very convenient to read the data from it into an array. We include the necessary libraries for the program:

```
import re
from collections import Counter
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score
from sklearn.svm import SVC
from sklearn.svm import LinearSVC
from sklearn.ensemble import RandomForestClassifier
from sklearn.tree import DecisionTreeClassifier
```

(fig-1 Include necessary library in Python)

Step 3: We can create two functions for tokenization and generation, and then combine the basic Joy, Fear, Anger, and other basic emotion symbols into labels.

```
def ngram(token, n):
    output = []
    for i in range(n-1, len(token)):
        ngram = ' '.join(token[i-n+1:i+1])
        output.append(ngram)
    return output

def create_feature(text, nrange=(1, 1)):
    text_features = []
    text = text.lower()
    text_alphanum = re.sub('[^a-z0-9#]', ' ', text)
    for n in range(nrange[0], nrange[1]+1):
        text_features += ngram(text_alphanum.split(), n)
    text_punc = re.sub('[a-z0-9]', ' ', text)
    text_features += ngram(text_punc.split(), 1)
    return Counter(text_features)
```

(fig-2 tokenization)

```
def convert_label(item, name):
    items = list(map(float, item.split()))
    label = ""
    for idx in range(len(items)):
        if items[idx] == 1:
            label += name[idx] + " "
    return label.strip()

emotions = ["joy", "fear", "anger", "sadness", "disgust", "shame", "guilt"]

X_all = []
y_all = []
for label, text in data:
    y_all.append(convert_label(label, emotions))
    X_all.append(create_feature(text, nrange=(1, 4)))

X_train, X_test, y_train, y_test = train_test_split(X_all, y_all, test_size = 0.2, random_state = 123)

def train_test(clf, X_train, X_test, y_train, y_test):
    clf.fit(X_train, y_train)
    train_acc = accuracy_score(y_train, clf.predict(X_train))
    test_acc = accuracy_score(y_test, clf.predict(X_test))
    return train_acc, test_acc

from sklearn.feature_extraction import DictVectorizer
vectorizer = DictVectorizer(sparse = True)
X_train = vectorizer.fit_transform(X_train)
X_test = vectorizer.transform(X_test)
```

(fig-3 Enter some labels )

Step 4: In the main part of the program, we separate the data and carry out the training and testing process and choose the model that works best on the training and testing sets.

```
[ ] svc = SVC()
lsvc = LinearSVC(random_state=123)
rforest = RandomForestClassifier(random_state=123)
dtree = DecisionTreeClassifier()

clifs = [svc, lsvc, rforest, dtree]

# train and test them
print("{} | {} | {} | {}".format("Classifier", "Training Accuracy", "Test Accuracy", ""))
print("{} | {} | {} | {}".format("-"*25, "-"*25, "-"*17, "-"*13))
for clf in clifs:
    clf_name = clf.__class__.__name__
    train_acc, test_acc = train_test(clf, X_train, X_test, y_train)
    print("{} | {} | {} | {}".format(clf_name, train_acc, test_acc, ""))
```

Classifier	Training Accuracy	Test Accuracy
SVC	0.9067513	0.4512032
LinearSVC	0.9988302	0.5768717
RandomForestClassifier	0.9988302	0.5541444
DecisionTreeClassifier	0.9988302	0.4625668

(fig-4 Training and testing)

Step 5: We can write codes to input arbitrary text and get output. The approximate text of the program:

[https://colab.research.google.com/drive/1AR2Tx9s87TG6IjhuRHc9nV\\_j3KWMj6S9](https://colab.research.google.com/drive/1AR2Tx9s87TG6IjhuRHc9nV_j3KWMj6S9)

Available here.

**Results and Discussion.** Textual analysis is a research method used to examine and interpret various types of texts, such as written, spoken, or visual communication. It involves systematically analyzing the content, structure, and context of texts to derive meaningful insights.

When it comes to emotions in textual analysis, researchers often focus on understanding how emotions are expressed, conveyed, and perceived through language. This can involve identifying emotional words, phrases, or patterns in the text and examining how they contribute to the overall emotional tone or sentiment.

Methodological strategies for analyzing emotions in texts may include:

**Sentiment Analysis:** This involves using computational methods to determine the sentiment or emotional tone of a piece of text. Automated tools can be employed to classify text as positive, negative, or neutral based on the words used.

**Content Analysis:** Researchers may use content analysis to systematically categorize and analyze specific features of the text, including emotional expressions. This can involve coding and categorizing text segments based on predefined emotional categories.

**Qualitative Analysis:** Qualitative methods involve a more in-depth exploration of the emotional content, often through manual coding and interpretation. Researchers may use thematic analysis or other qualitative approaches to uncover and understand the nuances of emotions in the text.

**Contextual Analysis:** Understanding the context in which the text is produced and received is crucial for a comprehensive analysis of emotions. Contextual factors, such as cultural background, historical context, and audience, can significantly influence the interpretation of emotional expressions.

**Conclusion.** In conclusion, machine learning, particularly deep learning, has revolutionized the field of emotion detection in text. By leveraging NLP techniques and word embeddings, researchers have developed models and algorithms that can accurately detect and classify human emotions in written language.

While significant progress has been made, there are still challenges to overcome in text-based emotion detection. Future work should focus on developing models that can detect the magnitude of emotions and handle multiple emotion classes simultaneously. Additionally, alternative emotion class models should be explored to improve the accuracy and granularity of emotion detection.

As technology continues to advance, the ability to analyze and understand human emotions through machine learning will become increasingly valuable. Emotion detection in text has the potential to revolutionize the way we interact with computers, personalize user experiences, and gain insights into human behavior. With further research and development, the field of emotion detection will continue to evolve and contribute to various domains.

## References

- [1]. Chowdhury GG. Natural language processing. *Ann Rev Inf Sci Tech.* 2003; 37(1): 51-89.
- [2]. Jia Guo. Deep learning approach to text analysis for human emotion detection from big data. *Journal of Intelligent Systems.* January 12, 2022



- [3]. Peixiang Zhong, Di Wang, Chunyan Miao. Knowledge-Enriched Transformer for Emotion Detection in Textual Conversations. Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and the 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP)
- [4]. Gaind B, Syal V, Padgalwar S. Emotion detection and analysis on social media. Global Journal of Engineering Science and Researches (ICRTCET-18) (2019) 78-89
- [5]. Shrivastava K, Kumar S, Jain DK. An effective approach for emotion detection in multimedia text data using sequence based convolutional neural network. Multimed Tools Appl. 2019;78(20):29607–39.
- [6]. Sailunaz K, Alhadj R. Emotion and sentiment analysis from Twitter text. J Comput Sci. 2019;36:101003.
- [7]. Ghosh S, Hiware K, Ganguly N, Mitra B, De P. Emotion detection from touch interactions during text entry on smartphones. Int J Human-Comput Stud. 2019;130:47–57.
- [8]. Jena RK. Sentiment mining in a collaborative learning environment: capitalizing on big data. Behav Inf Technol. 2019;38(9):986–1001.
- [9]. Olayinka Ayodele Jongbo, Idris-Tajudeen Rashidat, Mary Aina Ogbonna, Adebayo Olusola Adetunmbi. Diabetes Mellitus Detection Using Information Gain and Machine Learning Algorithms. International Journal of Scientific Research in Computer Science and Engineering. Vol.11, Issue.4, pp.31-37, August 2023. E-ISSN: 2320-7639
- [10]. Hidehiko Okada. Evolutionary Training of Binary Neural Networks by Differential Evolution. International Journal of Scientific Research in Computer Science and Engineering. Vol.10, Issue.1, pp.26-31, February (2022). E-ISSN: 2320-7639
- [11]. Gunes H, Schuller B, Pantic M, Cowie R. Emotion representation, analysis and synthesis in continuous space: a survey. Paper presented at: Proceedings of the Face and Gesture; 2011:827-834; IEEE.
- [12]. Acheampong FA, Chen Wenyu, Henry NM. Text-based emotion detection: Advances, challenges, and opportunities. Engineering Reports Volume 2, Issue 7 Jul 2020. ISSN: 2577-8196
- [13]. Chatterjee A, Gupta U, Chinnakotla MK, Srikanth R, Galley M, Agrawal P. Understanding emotions in text using deep learning and big data. Comput Hum Behav. 2019;93:309–17. [10.1016/j.chb.2018.12.029](https://doi.org/10.1016/j.chb.2018.12.029) Search in Google Scholar
- [14]. Abdulsalam Auwal Jamilu, Lawal Abubakar, Ubaidullah Abdallah. A Convolutional Neural Networks (CNN) Approach to Music Genre Classification. International Journal of Scientific Research in Computer Science and Engineering. Vol.10, Issue.5, pp.37-44, October (2022). E-ISSN: 2320-7639
- [15]. Kanjo E, Younis EM, Ang CS. Deep learning analysis of mobile physiological, environmental and location sensor data for emotion detection. Inf Fusion. 2019;49:46–56.





UDK: 681.3.062; 004.432

## THE POSSIBILITY OF WEB-QUEST EDUCATIONAL TECHNOLOGY IN IMPROVING THE EFFICIENCY OF TEACHING OBJECT-ORIENTED PROGRAMMING LANGUAGES

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**Annotatsiya.** Ushbu maqolada ta'lim jarayonida web-kvest ta'lim texnologiyasidan foydalanish bo'yicha olimlarning ishlarini tahlili keltirilgan. Shuningdek, web-kvest ta'lim texnologiyasini obyektga yo'naltirilgan dasturlash tillarini o'qitishdagi imkoniyatlariga oid tahlily ma'lumotlar keltirilgan hamda obyektga yo'naltirilgan dasturlash tillari yordamida masalalarni dasturlashni va turli amaliy dasturlar tayyorlashda web-kvest ta'lim texnologiyasidan foydalanish bo'yicha tavsiyalar keltirilgan. Shuningdek, web-kvest ta'lim texnologiyasidan foydalanib dasturlash tillarini o'rgatishda samaradorligini aniqlash bo'yicha tajriba-sinov ishlari olib borilgan hamda uning samaradorlik darajasi Styudent-Fisher kriteriyasidan foydalanib isbotlangan.

**Kalit so'zlar:** dasturlash, obyektga yo'naltirilgan dasturlash, web-kvest, ta'lim texnologiyasi, differensial, ijobiy motivatsiya, algoritmik fikrlash, Styudent-Fisher.

**Annotation:** This article presents an analysis of the work of scientists on the use of web-quest educational technology in the educational process. Analytical information on the possibilities of the web-quest educational technology in teaching object-oriented programming languages is also presented, and the use of the web-quest educational technology in the preparation of various practical programs and programming problems with the help of object-oriented programming languages is presented. recommendations are presented. Experiments were also carried out to determine the effectiveness of the web-quest educational technology in teaching programming languages, and its level of effectiveness was proven using the Student-Fisher criterion.

**Keywords:** programming, object-oriented programming, web-quest, educational technology, differential, positive motivation, algorithmic thinking, Student-Fisher.

**Introduction:** In the continuous education system, the web-quest educational technology plays an important role in increasing the efficiency of teaching subjects and in forming and developing the competencies of students. Web-quest educational technology combines active learning methods and the advantages of interactive technologies by searching for necessary educational information using the global network [4-6]. Therefore, it is considered appropriate to use the web-quest educational technology to increase the effectiveness of teaching programming languages.

**Literature review.** Research on the possibilities of web-quest educational technology, problems and solutions of using web-quest educational technology in teaching subjects, as well as the possibilities of web-quest educational technology in forming and developing the creative abilities and competencies of students G.A. It was studied by such scientists as Vorobyov, M.V. Andreyeva, O.V. Volkova, G.A. Vorobyov, T.A. Naumova, A.A. Baranov, Y.L. Tarakanov, N.G. Muravyova, O.V.

Volkova, Ye.A. Igumnova, I.V. Radetskaya, O.V. Gorbunova. These scientists say that the web-quest educational technology is of great importance in increasing the efficiency of teaching subjects and in increasing the creative ability of students to independently solve the given problem, as well as in forming and developing their necessary competencies.

In particular, according to T.A.Naumova, A.A.Baranov, Y.L.Tarakanov, the use of web-quest educational technology in the educational process increases students' motivation, develops leadership qualities, and forms a culture of independent learning [1]. According to N. G. Muravyova, the web-quest educational technology forms the research skills of students and develops their competence in designing web technologies [2]. O.V. Volkova [3], G.A. Vorobyov [4], Ye.A. Igumnova [5], I.V. Radetskaya [5], M.V. Andreyeva [6], O.V. Volkova [7], O.V. Gorbunova [8], web-quest educational technology has the following features:

- 1) an opportunity to get education is created by searching for scientific information with the help of hyper-references;
- 2) increases positive motivation in education;
- 3) provides differential education;
- 4) creates an opportunity for independent education;
- 5) develops competence by creating mental problem situations for the learner.

Summarizing the opinions of the above-mentioned scientists, it can be said that the web-quest educational technology primarily forms the ability to use the global network to search for educational information. Secondly, it increases the effectiveness of training by creating a problematic environment for the development of active cognitive activity of students.

Thus, web-quest is a technology designed to involve students in the learning process, which creates an opportunity to learn in an information technology environment.

Taking into account the above-mentioned possibilities of the Web-Quest educational technology, it is necessary to use object-oriented programming languages to increase the effectiveness of teaching them and to develop the logical and algorithmic thinking of students regarding object-oriented programming, as well as to form and develop their necessary competencies. we came to a conclusion.

**Research methodology.** The peculiarity of the use of Web-quest educational technology in teaching programming languages is that it directs students to solve a problem independently or in a group using the global network. In this case, the student is given the task of collecting educational information on the global network on a certain topic related to programming, using them to solve the problem. Some resources are linked by the teacher, and some can be found independently using traditional search engines. This in turn provides the following opportunities:

- encouraging students to learn new material about object-oriented programming languages;
- orientation to target research to perform practical tasks using object-oriented programming languages;
- increases students' ability to perform projects developed using object-oriented programming languages [13].

At the same time, in teaching object-oriented programming languages and solving practical problems with them, web-quest develops a number of competencies of students through the use of educational technology: the use of information technologies to solve professional problems and the necessary educational search for information from websites and databases; increases the ability to make independent decisions; develop the ability to find several ways to solve a programming problem, choose an effective option, and justify one's solution.

Thus, the web-quest educational technology enables students to activate their research activities and to improve students' critical thinking skills and abilities when working with a large amount of information related to object-oriented programming, to make a choice, and to take responsibility for it. the skills of obtaining, evaluating the efficiency of information search, correctly determining the amount of information provided are formed.

Also, in teaching object-oriented programming languages using web-quest educational technology and preparing various practical projects, the following goals are implemented for students:

- educational. Involve each student in the process of active learning, organize their individual and collective activities, and improve the skills and abilities of independent work in object-oriented programming languages;
- developing. It increases students' interest in object-oriented programming languages, develops their creative abilities, and develops the skills of independent work with research, public speaking, literature and Internet resources;
- creativity. Forms responsibility for performing practical tasks related to object-oriented programming languages.

As in any project, the use of web-quest educational technology is a complex task that requires systematic efforts from the executor. In the process of project work, students' research activities are aimed at achieving meta-subject learning results related to the use of information and communication technologies to solve communication and cognitive tasks, including search, collection, processing, analysis , consists of organization, transfer of information, the following opportunities are created [9, 10]: affects the development of the student as an active subject by providing a solution to the problem; increases the ability to effectively use the information capabilities of the global network [13].

Thus, the web-quest educational technology is an integrated technology that combines the ideas of the project method, problem-based and game-based educational teamwork, and information and communication technologies. consists of combining adventures and a certain plot-based game. The essence of this technology incorporates some role-playing technologies in pedagogy and ideas related to Case-Study, design and problem-based learning technologies [11, 12]. Different aspects of these technologies are aimed at solving problematic tasks using search engines of the global network and hyper-applications, which are characterized by learning in the open information space (the search results of the global network are published on websites or social networks, special computer programs present using). Such opportunities help in teaching object-oriented programming languages and increase students' motivation

and creativity in programming, as well as their cognitive thinking in preparing practical projects [13].

Therefore, it is considered appropriate to use web-quest educational technologies to develop students' competence in performing various calculations and creating practical programs using object-oriented programming languages.

**Analysis and results.** Experiments were conducted in order to determine the level of effectiveness of web-quest educational technology in increasing the effectiveness of teaching object-oriented programming languages in higher educational institutions. Experimental work Students of Navoi State Pedagogical Institute "Methodology of Informatics" were involved and they were divided into experimental (31) and control (32) groups. Web-quest educational technology was used to teach object-oriented programming languages to the experimental group. The control group was not given this opportunity. The results of the students involved in this experiment were analyzed and mathematical-statistical analysis was performed based on the Student-Fisher criterion in order to check their reliability. Appropriate mean values for samples using

this criterion  $\bar{X} = \frac{1}{n} \sum_{i=1}^4 n_i X_i$ , dispersion coefficients  $D_n = \sum_{i=1}^4 \frac{n_i (x_i - \bar{X})^2}{n-1}$ , and in

determining the mastery indicators  $A \% = \frac{\bar{x}}{3} \cdot 100\% - \frac{\bar{y}}{3} \cdot 100\%$  from the formulas. According to the calculation result, it was found that the average mastery rate of the experimental group was higher than the control group, that is, it increased by 10.3%.

**Conclusions and suggestions.** Web-quest educational technology is a modern educational technology aimed at solving a given problem by independently searching the global network. Therefore, today, the use of web-quest educational technology is effective in increasing the effectiveness of teaching students of the "Methodology of Informatics" education in professional subjects, including object-oriented programming languages. it can be said. Students of the "Methodology of Informatics" education are considered to have the ability to effectively use the global network compared to other professions. Therefore, in teaching object-oriented programming languages of students of "Informatics Teaching Methodology" in higher education institutions, using them to design various practical programs and numerically solve mathematical problems, web-quest educational technology is used. should be used.

#### References:

- [1]. Naumova T.A., Baranov A.A., Tarakanov Ya.L. Development of personal leadership qualities among university students // Internet journal "Naukovedenie" Volume 7, No4 (2015) <http://naukovedenie.ru/PDF/108PVN415.pdf> (free access). Cap. from the screen. Language Russian, English DOI: 10.15862/108PVN415.
- [2]. Muravyova N.G. Model for the formation of sociocultural competencies of university students in project activities (using the example of a foreign language) // Education and Science. – 2013. – No. 3 (102). – pp. 121-131.
- [3]. Volkova O.V. Preparing a future specialist for intercultural communication using web quest technology // Abstract of the dissertation for the academic degree of candidate of pedagogical sciences. – Belgorod, 2010. – 25 p.



- [4]. Vorobyov G. A. Web-quest technology in teaching sociocultural competence (English language, linguistic university) // Dissertations for the degree of candidate of pedagogical sciences. – Pyatigorsk, 2004. –220 b.
- [5]. Igumnova E.A., Radetskaya I.V. Quest technology in education // Textbook. Chita Transbaikal State University 2016. –164 p.
- [6]. Andreeva M. V. Web-quest technologies in the formation of communicative and sociocultural competence // Information and communication technologies in teaching foreign languages. Abstracts of reports of the I International Scientific and Practical Conference. – M., 2014. – P. 58 -62.
- [7]. Volkova O.V. Preparing a future specialist for intercultural communication using web quest technology // Abstract of the dissertation for the academic degree of candidate of pedagogical sciences. – Belgorod, 2010. – 25 p.
- [8]. Gorbunova, O.V. Web quest in pedagogy as a new didactic model of teaching // School technologies. 2016. – No. 2. – P. 3-7.
- [9]. Budilova A.S. Using webquests in teaching computer graphics // Science and Perspectives. 2017. – No. 1 [Electronic resource] URL: [nip.esrae.ru/13-92](http://nip.esrae.ru/13-92) (access date: 2022).
- [10]. Bykhovsky Ya.S. Educational web quests // Proceedings of the international conference “Information technologies in education. ITO-99” [Electronic resource]. URL: <http://ito.bitpro.ru/1999> (access date: 2022).
- [11]. Baguzina E. I. Web quest technology as a didactic means of developing foreign language communicative competence: on the example of students of a non-linguistic university // Dissertation for the degree of candidate of pedagogical sciences. – Moscow, 2012. – 194 p.
- [12]. Karavka A.A. Quest lesson as a pedagogical information technology and didactic game aimed at mastering certain competencies // Internet magazine “World of Science” 2015 No. 3 <http://mir-nauki.com/PDF/45PDMN315.pdf> (free access).
- [13]. Mirsanov U.M. The possibility of web-quest educational technology in increasing the effectiveness of teaching programming languages // News of UzMU. - Tashkent, 2022. - No. 1/11. - P. 158-160.



## MODERN PROBLEMS OF PEDAGOGY AND PSYCHOLOGY

UDC: 37.01

### TECHNOLOGIES OF FORMATION OF CONCEPTS OF THE SIZE OF OBJECTS BY PRESCHOOL CHILDREN

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**Annotatsiya:** Ushbu maqolada maktabgacha ta'lim yoshidagi bolalarda miqdor va son, buyumlarning kattaligi va shakli, geometrik figuralar hamda narsalarni kattaliklari bo'yicha taqqoslash malakalari, o'lchash faoliyatlarini amalga oshirishda narsalarning shakllarini aniqlash masalalari batafsil yoritib berilgan.

**Kalit so'zlar:** matematik tasavvur, kattalik, taqqoslash, miqdor, tenglik va tengsizlik, matematik bilimlar, sensor tuyg'u, ko'rish usullari, shakl.

**Аннотация:** В данной статье подробно рассмотрены вопросы определения у детей дошкольного возраста количества и числа, величины и формы предметов, умения сравнивать геометрические фигуры и предметы по величинам, определять формы предметов при выполнении измерительной деятельности.

**Ключевые слова:** математическое воображение, величина, сравнение, количество, равенство и неравенство, математические знания, сенсорное восприятие, методы зрения, форма.

**Abstract:** This article describes in detail the issues of quantity and number, size and shape of objects, geometric figures and comparison skills of objects by sizes, determining the shapes of objects in the implementation of measuring activities.

**Key words:** mathematical imagination, magnitude, comparison, quantity, equality and inequality, mathematical knowledge, sensory perception, ways of seeing, shape.

**Introduction.** Today, large-scale reforms are being implemented in all areas of our country. In particular, fundamental changes have been made in the field of preschool education, and the issue of education of preschool children has become an urgent issue at the state level. Based on the requirements of the Law of the Republic of Uzbekistan "On Education", the Law of the Republic of Uzbekistan "On Preschool Education and Training" and the State Curriculum "Ilk Kadam" the main goal of educating children is to educate the young generation as a healthy, comprehensively developed person based on the ideology of independence and to prepare them for school education.<sup>1</sup>

In order to form the concepts of quantity and number, size and shape of objects, and geometric figures in children of preschool age, repeating the same methods of movement many times in different situations and with different visual materials allows children to master them. . Mathematical knowledge is given to children in a clear system and sequence, taking into account what they have learned and what they can

<sup>1</sup> Law of the Republic of Uzbekistan "On Preschool Education and Training" No. 595 of December 16, 2019.

do. Children's successful mastery of mathematical concepts is directly related to the development of their perception, that is, their sensory feelings.

**Literature review :** In the development of elementary mathematical concepts in MTT in preschool children, in the "Size" section of the program, great importance is attached to the skills of comparing the sizes of objects, performing measurement activities, determining the shapes of objects and other skills. Issues that introduce children to the sizes of objects occupy a certain place in the formation of mathematical ideas. The size of the item is no less important than its other main characteristics in giving a correct full description of any item. It is possible to describe the size of the item only on the basis of comparison. Russian mathematician D. Galanin expresses the meaning of the concept of "magnitude" as follows: "magnitude refers to such a characteristic of objects and actions that we can compare objects with each other according to this characteristic, this characteristic is present in different quantities in different objects. can be". According to the criteria of comparison of items, their size, equality or inequality relationship is determined. But things are not always directly comparable. We often compare the sizes of objects in our general ideas. At this point, the size of the perceived object is compared with a generalized image, in which the experience of actually distinguishing objects seems to be completed. Size is also characterized by variability.

V.V. Davydov says: "Dimensions are such a state of an object that, even if it changes up to certain limits and changes a given individual object, it does not change its type, initial quality." Changing the length of the table changes only its size, but does not change its content and quality, the table remains a table. The third property of magnitude is relativity. Indeed, an item itself can be defined as large or small depending on the size of the item it is compared to. It should also be noted that size is such a property of an object that it cannot be imagined separately from the object. Size cannot be separated from the item. In mathematics classes, children get acquainted with the simplest geometric shapes, some of their properties, learn to analyze and evaluate their (items) shape based on the comparison of objects with geometric standards. Children gradually develop a general idea of shape, such an idea becomes the basis for mastering subjects such as geometry and drawing at school.

A small group. Geometric shape. Learning to recognize and name a circle. Teaching ways to examine it by feeling, moving and seeing. Introducing the square. Learning to tell the difference between a circle and a square by feeling, moving and seeing. To teach children about sphere and cube. Consolidation of knowledge about the sphere and the cube with the help of various tasks. Learning to recognize and name a triangle. Teaching ways to examine it by feeling, moving and seeing.

Middle group. Geometric shapes. Strengthening the distinction between circle, square, triangle shapes. To introduce the shape of a rectangle, to learn to distinguish and say a rectangle-square, to feel them - through movement and vision. To introduce the shape of an oval, to distinguish and say a circle, an oval, to teach them through the methods of perception - movement and vision. Learning to name and distinguish shapes such as cube, sphere, cylinder. Creating an idea that shapes can be of different sizes (large circle - small circle, large square - small square). To teach how to make rectangles, squares, triangles from sticks, to make different things using these shapes.



A big group. Geometric shapes. Creating an idea that shapes can be of different sizes (large circle - small circle, large square - small square). Creating an idea about shapes and some of its symbols: For example, a rectangle has 4 corners and 4 sides (as an example of different views of a rectangle). Strengthening children's imagination about spheres, cubes, cylinders and using them to create projects on various topics. Carrying out various exercises to distinguish the shape of a circle and an oval. Teaching to find familiar geometric shapes among surrounding objects: for example, a plate, bread looks like a circle; the table top, walls, doors and windows are square, handkerchief is square, headscarf of girls is triangular, glass is cylinder and so on. Create objects and shapes of different sizes from triangles and rectangles. Playing various games from a set of different geometric shapes, teaching how to make model objects using a special set of shapes. To teach to make a rectangle, square, triangle from sticks, to make different things using these shapes. To teach how to solve problems related to changing the appearance of geometric shapes made of sticks by taking several sticks. Learn to create shape silhouettes from patterned parts using a set of special shapes.

**Research methodology.** The teacher carefully studies the content of the program while preparing for the educational activities. Mathematical knowledge is given to children in a strictly defined system and consistency, in which new materials should be at a level that children can master. Each task is divided into a number of sub-tasks. These subtasks are studied sequentially. For example, introducing the children of the preparatory group to the division of objects into pieces is carried out in this sequence:<sup>2</sup> in the first educational activity, children practice dividing objects into two equal parts and learn what a half is; in the second educational activity, children's understanding of divisible objects is expanded and corresponding vocabulary is activated; in the third educational activity, the educator introduces children to the methods of dividing objects into four equal parts, and also shows the relationship of the whole to the part; later shows children different ways of dividing geometric shapes into two and four parts, children learn the relationship between the whole and the part. Thus, each part of the program is implemented in several (three-six) educational activities conducted in a row.

Children's knowledge is expanded, clarified and strengthened when they move from one educational activity to another. When moving from one section of the program to another, it is important to repeat what has been passed, to ensure the connection of new knowledge with acquired knowledge. In the process of learning new material, repetition of past material not only deepens children's knowledge, but also allows them to focus on new material and learn it thoroughly. Usually, a new topic is studied during three to five lessons, first in its first part, and later in the second part. The topic should be repeated after two weeks, sometimes three weeks. As the period of returning to the old material increases, each studied section of the program should remain in the mind of the educator until the end of the school year. In this regard, studying issues related to one section of the program or different sections, namely

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<sup>2</sup> Bikbaeva N.U., Ibragimova Z.I., Kasimova X.I. Formation of elementary mathematical concepts in children of preschool age. - T. Teacher, 1995.





"Quantity", "Count", "Size", "Shake" and other sections of the program in one session. and can be repeated. In this way, it will be possible to ensure that children consistently study the program in all sections and form a system of elementary mathematical knowledge in them. Different types of educational activities are used in teaching mathematics.

**Analysis and results.** Familiarity with the wonderful world of mathematics begins at preschool age. With interest and desire, children get acquainted with numbers, learn to work with them, compare objects by size, study geometric figures, acquire the skills of orientation in space and time.<sup>3</sup> Mathematics provides great opportunities for the development of thinking, logic and attention.

Games with numbers and numbers

1. Didactic game "Collect the flowers". Age 5-6 years

Objective: determine the composition of the numbers 5, 6, 7, 8, 9, 10.

Equipment: flower petals with examples of the composition of the numbers 5, 6, 7, 8, 9, 10, in the middle with the numbers 5, 6, 7, 8, 9, 10.

The teacher invites the children to collect beautiful flowers. He puts flower centers on the tables, cards and leaves are distributed to the children. At the signal, children must find the right middle and collect the flower. The team that collects chamomile correctly and quickly wins.

The game is the main activity of a preschool child. The question of using the game as a tool for comprehensive development of a child, taking into account the characteristics and self-esteem of a child of kindergarten age, is an urgent issue today. The game as an activity successfully solves the problems of forming mathematical ideas, because it involves rules and problems that allow not only to achieve a high level of game skills and songs, but also to train children to test their mathematical knowledge and practical experience. Knowledge of numbers and the relationships between them, time and space, as well as their cognitive functions (memory, thinking, speech, reasoning) are easily developed and mastered in the form of a game. At the same time, the child's personality is formed, moral qualities such as goodness, kindness, friendship, honesty, truthfulness, intelligence, will be formed. The positive effect of the game and its correct organization largely depend on the personality of the pedagogue, his ability to direct the game correctly, and his ability to use it as an educational tool. Each game implies communication of the child with adults and other children. This is a cooperative school, where he studies and rejoices in the success of his peers and bravely overcomes his failures. With each other's knowledge, interesting information brings children closer and reveals their common interests. A friendly attitude to each other, support, a joyful situation of thinking and fantasy, in such conditions, games are considered useful for the development of preschoolers.

Comparison of objects. Arrangement of objects by size.

We compared bananas and cucumbers in terms of shape, size, color, taste, purpose - all these are the signs by which objects can be compared. 1. Look at the pictures (picture 2-4) and tell the general characteristic of the group.

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<sup>3</sup> Bikbaeva N.U, Ibragimova Z.I., Kasimova X.I. Formation of elementary mathematical concepts in children of preschool age. - T. Teacher, 1995.



The correct answer is: color (all objects are red)



Correct answer: shape (all objects are round).



Correct answer: production material (they are all made of wood).

**Conclusions.** The success of the development of elementary mathematical ideas in children of preschool age depends on the teacher's specialty and his professional training. Problems of developing elementary mathematical ideas in children cannot be solved without planning and organizing work. Educators should know the program content of the educational activities conducted in other groups, not only in their own group.

At the beginning of the year, it is very important for the educator to plan educational activities in mathematics. Also, the speech of educators is very important here. His speech should be fluent, polite, simple, clear, short, understandable, fully meet the requirements of cultural speech. It is necessary to work one-on-one with each child outside of educational activities.

He should strengthen the knowledge acquired in mathematics educational activities in other educational activities. You need to learn and know how to work with the program. But you should pay attention to such things:

1. To the knowledge levels of all and some children
2. To the tasks of the program
3. It will be necessary to know how many visual aids there are and what materials to prepare.



### References:

- [1]. Law of the Republic of Uzbekistan "On Preschool Education and Training" No. 595 of December 16, 2019
- [2]. Decree No. 2707 of December 29, 2016 "On further improvement of the preschool education system of the Republic of Uzbekistan in 2017-2021".
- [3]. Decision No. PQ-3955 "On measures to improve the management of the preschool education system" September 30, 2018
- [4]. Decree of the President of the Republic of Uzbekistan "On measures to radically improve the management of the preschool education system" No. PF-5198 September 30, 2017
- [5]. "Concept of development of the preschool education system of the Republic of Uzbekistan until 2030 May 8, 2019
- [6]. Regulation "On general type state and non-state pre-school educational organizations". Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 391 of May 13, 2019 "On measures to further improve the activities of preschool educational organizations"
- [7]. State requirements for the development of elementary and preschool children of the Republic of Uzbekistan June 18, 2018
- [8]. "First step" state curriculum. Grosheva I.V., Evstafeva L.G., Mahmudova D.T., and others. Tashkent, 2018
- [9]. Bikbaeva N.U, Ibragimova Z.I., Kasimova X.I. Formation of elementary mathematical concepts in children of preschool age. - T. Teacher, 1995.
- [10]. library. ziyonet.com

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## **FUTURE SCIENCE TEACHER OF DIGITAL TECHNOLOGY IN THE LEARNING ENVIRONMENT RELATED TO THE CRAFT OF PROFESSIONAL QUALITY DEVELOPMENT OF METHODS**

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**Annotatsiya:** Ushbu raqamli ta'lim muhitida bo'lajak texnologiya fani o'qituvchilarining hunarmandchilikka oid kasbiy sifatlarini rivojlantirish usullari haqida so'z boradi.

Shuningdek, mazkur maqolada talabalarning hunarmandchilikka oid kasbiy sifatleri turlari, bo'lajak texnologiya fani o'qituvchilarini tayyorlash jarayoniga raqamli ta'lim muhitini joriy etishdagi muammolar va ularning yechimlari taklif va tavsiyalar berilgan.

**Kalit so'zlar:** hunar, kasbiy sifat, milliy hunarmandchilik, xalq hunarmandchiligi, raqamli texnologiya, raqamli ta'lim vositalari, innovatsiya, modellashtirish, texnologiya, kreativlik, konstruksiyalash.

**Аннотации:** В данной статье рассматриваются способы развития ремесленных навыков будущих учителей технологий в цифровой среде обучения.

Также в данной статье приведены виды профессиональных качеств учащихся, связанных с ремеслами, проблемы внедрения цифровой образовательной среды в процесс подготовки будущих учителей технологии, их решения, предложения и рекомендации.

**Ключевые слова:** ремесло, профессиональное качество, народное ремесло, народное ремесло, цифровые технологии, цифровые образовательные средства, инновации, моделирование, технология, творчество, строительство.

**Annotatsiya:** This craft future digital science technology in the learning environment related to the development of methods of teacher professional quality about the word will go.

Also, this article is related to the professional quality of the students in the craft of the types of digital technology to the process of the preparation of future science teachers in the implementation of a learning environment, the complexity of problems and their solutions, and offer recommendations given.

**Keywords:** professional, professional-quality, national hinarmandchilik, crafts, digital technology, digital learning tools, innovation, modeling, technology, creative, not constructing.

**Introduction.** Currently in the country in the education system of ongoing reforms to meet the requirements of full, independent in the future, interest, abilities and tend to compatible relation to the choice of profession, that arise in the field of production, competitive, decisive buyers adapt to changes, as well as, in the labor market and the profession of choice at the level of the person doing the professional requirements for the formation of effective operating the contribution of the school is great. Any profession in a number of your readers be the owner of multiple kompetensiya crafts with setting up the development environment should be related to base [1]. Today, a radical change in the goals and objectives of education in the country. For this reason, secondary school education in digitala'lohida attention is given to the organization.

Of our republic social, economic, political and ideological changes that are happening in their life, that is, the science-engineering and technology and others many factors such as the rapid development of the education system, including higher education institutions on the basis of the requirements of the process requires time teaching students of modernization [2]. Creativity and professional pedagogical staff occurred in the context of globalization of the world-creative increasing the quality of education in the development of the increased quality requirements of a wide range of innovative activities at the time kuchaytirilayotgan attention to the organization of this natural weakness of course. In this respect, the supply of science education in the process of applying their education to produce a didactic electronic and digital media use are of great importance.

**Literature review.** To master the importance of professional, practical and people in a variety of types of decorative art, crafts, science teachers in the preparation of future technology, and kompetensiya kompetenlik problems, the problems of the

introduction of digital technologies in the process of education and training on domestic and foreign scientists have carried out extensive research work. The research problem in the field of our country P.T.Magzumov scientists from, S.S.Bulatov, M.X.Shomirzayev, N.A.Muslimov, Sh.S.Sharipov, A.O.Kuysinov, K.Olimov; O.A.Abdukudusov, N.I.Taylaqov, J.A.Hamidov, H.Turakulov, F.S.To'rabekov, scientists from the cis countries, I. V.Kachnev, G.V.Razumovskiy, A.Yefanov, T.B.Antipova, foreign scientists from G. Selwyn, B., Bloom, T. Drug as have scientific researches.

**Research methodology:** the purpose of digital education established methods of teaching tools to perform to the teacher and their use of different forms from the set, that is, necessary to establish a learning environment allows. Teaching and teacher training in the use of digital learning tools from the conditions of computerized control program

Digital tools in education – read this in the quality of information transmission, the speed of digital technology being developed to increase the attractiveness and a small group: e-education systems, social networks, video services, work with graphics, and others [3]. come out you will be able to change and additions.

On the basis of digital learning tools teaching: tutorials, animated, audio-visual tools and information and communication technology increases the effectiveness of independent work of future teachers to use to engage in creative activities and opportunities, opportunities to apply for unconventional sources of information reveals calamities, you will develop the science related to the quality. Digital learning tools based on the latest pedagogical qonuniyat the production of the younger generation in self-confidence, interest in science, hard-working, the other to honor the hard work of modern knowledge to get a professional interest in the position, plays an important role in the development of independent and creative qualities. This modern, highly qualified personnel to fit the needs of the labor market, and the improvement of their components, physically healthy, psychologically and mentally developed in has grown with creative and intellectual potential of the younger generation is of great importance.

The future of technology in pedagogical higher education institutions in the process of the preparation of science teachers, students conducted research in the area of crafts related to the development of professional-quality work onthe world'si analysis, as well as the results of practical work experience in this respect, it showed that particular play an important role in the following: digital learning environmentrelated to the development of the theoretical basis of professional quality at students in development of crafts; crafts related to the development of professional qualities in students digital learning environmentto create and get to determine the level of improvement; crafts related to digital learning environmentto create; education digital environmentrelated to the craft of the professional quality of students at the development of methodsto productionsh.

Future technology science teachers should take related to kompetensiya of craft: crafts and their types on cognitive, affektiv information and can be applied in practice and to be able to psixotor; wood carry out the activities of the united nations since they get themselves on the basis of their artistic and decorative appearance to get information about the types of bring forth; consumer products (plate, dish, spoon),

construction products (column, closed, rom) work items (beshik, we san, racks) are made to get; various crafts networks (mesh subsequently devised to the basket, jewelry, temirchi let kulollik, pichoqchi and others) of their work methods, introduction to the practice of the specifics and sh.k.

Digital technology in the learning environment in the science of crafts related to the formation of future teachers should be professional quality that consists of the following:

material and their properties, features and technical data related to objects and technological processes study; in the operation of technical objects and technological processes and special umummehnat to know; to take control of technological processes and operations used in the practice of special umummehnat get;

creative thinking, development of intellectual abilities; the technological process and the quality of the products prepared a complete sequence of the product of analysis;

conclusions on the operation of products and processes to fulfill production and labor, the work of a professional assessment of the quality of the product, preparing conscious to choose the base implementation kompetensiya related to the formation and development of science and technology.

future technology science teachers in the digital learning environment as an important factor in the development of base kompetensiya crafts related to electronic forms, methods and tools are listed in the following table 1.

The policy, which came out, it may be noted that education in the form of digital education technologies, the internet and its possibilities are intended to be used; the alternative to know them and in turn the use of a digital learning environment to prepare future science teachers technology on the base leads to the formation and development of science of kompetensiya [2].

**1-table**

**Digital learning environment of the future technology teacher of science's craft pertaining to professional quality directed to the development of the program's content**

№	Program name	Crafts in the program
1. A) a mobile phone, a personal computer through a software that allows you to work without internet:		
1.	Android to make the book of r (and not-listed book)	Android apk version of the program in this book to produce (textbooks and manuals).
2.	Hot Potatoes	Hot potatoes program to install the operating system from a different computer and mobile side application effective use of all opportunities (exercise test).
3.	iSpring QuizMaker	The creation of the electronic information and educational resources ispring quizmaker one of the software using the software which comes in wide use (non-standard tests).
B) the potential use of the internet networkilib programs used		
	Mobile Learning	Future of science digital technology in the learning environment the teacher's craft pertaining to professional-quality products is connected to the internet and able to reflect the real opportunities in the

		development of mobile devices, the use of a modern computer.
	Cloud computing	The calculation cloudy digital learning environmentat future science teacher of technology's craft pertaining to professional-qualityproducts in the development of the studentsto the world the incarnation of an enabling environment for the use of internet applications and digital learning environment: introduction and formation [3].
	One-to-one computing	Higher education institutionsin the world, the creation of the digital learning environment and perform increasingly close to the reader in a friendly manner.
	Smart portfolio assessment	Smart portfolio assessment the principle of "Technology" for teacher "physique is" assessment system to provide real-time data analysis incisions in the desired time range, taking the reader the knowledge and growing.

Future teachers of technology into the teaching process, especially in the development of digital learning tools in the designer to the use of kompetensiya on the base creates greater opportunities. The reason the visual and digital education tools colorful ko'rsatmali, reaches animated, audio-visual means to attract wealth with future teachers within the active and creative abilities, creative, design, technological, and creative designer kompetensiya serves to the development of [5]. For example, the implementation of digital tools for modeling the operation of the application in the process of education is important.

Modeling – model the structures of the physique and form of this variety in the creative process of producing clothing is complicated. Therefore physique and fashion modeling before any of the product from different structures form in the structure of the main structures on the base of work or on the same base can be obtained from [7]. This technique is called process modeling [6]. Based on the technical design of a new model of model of model structures to the level of being delivered.

Digital learning environmentto be innovative to be established on the basis of the approach, teaching the personal goals of education in coordination with the purpose of the debtor education of independence and responsibility of the recipient of the hard work of the teachers at the expense of a permanent increase to relieve studentsare not at the expense of the reduction of the size and content of the educational material [8], but the individual at the expense of increasing the share of independent education to handle in practice but not in theory of the unity of teaching and ensure the educational process; interaction of conscious and responsible in education to increase the effectiveness of the education process allows to prepare to get an education.

**Summary.** The future technology teachers is related to the craft of quality professional development in education in a digital learning environment plays a huge role to create, because digital learning environmentat bo'lajak technology teacher attention, kuzatuvchanlik, emotions, perception, memory, thought, imagination, will and the mobilization of other processes it. The results indicate field research as a digital learning environmentat high levels, and bind with a combination of motives mutual



aspiration bo'lajak the craft of the professional quality of teachers related to technology for the development of a favorable environment for successful implementation in the analysis were determined to be increased occurrence [7]. An integral action is available in the educational process without providing theoretical knowledge and practical knowledge tart crafts related to multimedia, please create electronic voice, crafts kompetensiya aimed at the development of digital readers on the base is considered one of the important elements of the learning environment.

#### **Used literature.**

- [1]. The president of the republic of uzbekistan, 2019-8 years-order up-5847-number “until the development of the higher education system of the republic of uzbekistan on approval of the concept for the year 2030”is a decree: <https://lex.uz>
- [2]. The president of the republic of uzbekistan in 2017-20 years-April pp-2909-the number of “on measures for the further development of the higher education system in accordance with: <https://lex.uz>
- [3]. Qurbonov N. Ya. Kompetentlik approach on the basis of the technological improvement in the school teachers ' creativity // “innovative approaches for the teaching of science on the theme of” republican scientific-practical conference on materials. – Dzhizak, 2019. – P. 127-129.
- [4]. Kodirov B.E. The development of skills related to problems of national and educational crafts e // of education. – Tashkent, 2019. – P. 34–36.
- [5]. Kodirov B.E. Crafts to teach the students in their profession and grade school classes (on the example of leadership mesh). // School and life magazine. 2019 y – 3–the number of. – P. 28–29.
- [6]. Kodirov B.E. “The development of competencies in technology in the lesson students basic crafts” // journal of research and reflection in educational science Yeuropean Voles. 8 no. 4, 2020, Part III ISSN 2056-5852. –P. 32-37
- [7]. Kodirov B.E. Elektron information to readers in the development of the educational environment on the base crafts kompetensiya methodology // p.f.f.d.(PhD) dissertations. – Termez, 2021. – 53-p.
- [8]. Yuldoshev G’., Po'latov Sh. On the organization of innovative technologies in education. Methodological guide. – Tashkent. 2011 y. P 73.



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**FORMS OF ADDRESS IN NON-LINGUAL RESOURCES**

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**Annotatsiya.** Ushbu maqolada nolisoniy vositalar orqali murojaat shakllari tahlil qilingan bo‘lib, nolisoniylikning zamonaviy tushunchasi imo-ishoralari (jest), tana harakatlari va muloqotning boshqa vositalariga bo‘lgan faoliyatli yondashuvdan kelib chiqishi va olimlarning tadqiqotlari tahlili keltirilgan hamda nolisoniy muloqot shakllari Erkin A‘zamning “Xonadon egasi”, “Kechikayotgan odam” kinoqissalari orqali tahlil qilingan.

**Tayanch so‘zlar:** Nolisoniy muloqot, yuz, qiyofa imo-ishoralari (mimika), tana harakatlari, ishoralari (jestikulyatsiya), noverbal til, supersegment birliklar, kommunikativlik ohang.

**Abstract:** In this article, the forms of communication through non-verbal means are analyzed, the modern concept of non-verbal comes from the active approach to gestures, body movements and other means of communication, and the analysis of the researches of scientists is presented, and the forms of non-verbal communication are Erkin A'zam's "Landlord", "Late" "man" was analyzed through film stories.

**Key words:** Non-verbal communication, face, facial gestures (mimicry), body movements, gestures (gesticulation), non-verbal language, supersegmental units, communicative tone.

**Introduction.** In recent years, the field of science has been developing significantly in Uzbekistan. The more the society develops, the more the communication will improve. During the years of independence, attention to the language and its practical activities in our country increased. In particular, the need to study verbal and non-verbal forms of communication is increasing significantly. "In today's era of globalization, every nation, every independent state should give priority to the issue of securing its national interests, in this regard, preserving and developing its culture, ancient values, and native language"[1].

The following main problems in the study of non-verbal communication: the study of the history of the face, facial expressions (mimicry), body movements, gestures (gesticulation) and body language, the expression of different mental states of a person using facial expressions, various body parts, eye movements and its control possibilities is one of the most interesting and relevant issues.

**Literature Review.** "The difference between all anthropocentric research works is that the linguistic system and linguistic structure are analyzed as means and methods of receiving extralinguistic subjective knowledge of a person. In the book

"Communication and Gestures" by M. Saidkhanov, there are symbols, conventional signs, morse language, signs and several other means of communication that serve for the communicative process. , said that it is considered a ready-made means of communication and emphasized that gestures, facial expressions, different states of voice and body movements serve as a secondary means in communication, regardless of the role of communication-intervention[2].

In contrast to objective knowledge that describes external material objects, subjective knowledge describes the world of internal images of a concrete person.

Humans acquire these two types of knowledge directly through natural language, and at a very low level through non-linguistic communication. A person's extralinguistic subjective knowledge is based on his reception of various information and continues to be formed through the personal analysis of this information by a person" [3].

Psychologists A.G. Asmolov and E.I. Feigenberg explain the complex nature of non-verbal communication as follows: "Non-verbal communication is considered a very important means of communication and mutual understanding between people along with vocal speech.

Voice speech as a means of communication is a very necessary, significant and important information carrier for the listener, regardless of the semantics of the words, about the speaker, the interlocutor, the topic of the conversation, the subject, his personal attitude towards himself and others.

The fact that a non-verbal message can significantly strengthen and significantly weaken the semantic meaning of a word, even when it is completely rejected by the receiving subject (for example, "I'm glad to see you" is said in a nervous or sarcastic tone), non-verbal communication in the process of speech communication justifies its important spiritual significance.

Due to the considerable freeness and involuntary (non-conscious) reception of non-verbal information, its recipient (also at a considerable unconscious level) tends to believe in the non-verbal content of the message more than the verbal content" [4-54].

"In the second half of the 20th century, several studies were conducted on speech disorders - local damage to the brain - aphasias. According to the results obtained by psychologists Kelman, Rossi and Wallenstein, people with severe speech disorders retain the ability to understand pantomime. According to the conclusions of one of the researchers, Rossi, speech disorder and understanding of pantomime sometimes complement and correct each other, but they are phenomena of different origins.

Therefore, the physiological non-verbal transmission channel of information can exist autonomously from the speech channel. These studies had an impact on the worldviews of supporters of the paralinguistic and linguocentric approaches" [4-55].

"The American researcher R. Harrison introduced a long-awaited description of the non-verbal status of language. The results of his research show that verbal language has the following features - discreteness, freedom, accuracy, while non-verbal language has opposite features - constancy, non-freedom, probable origin. According to Harrison's conclusion, most of the non-linguistic texts cannot be transferred to any language code without significant loss of their meaning for interlocutors (partners)"[4-56].

Turkish scientist I. Yildirim also emphasizes that body language (non-verbal means) signals can have a speech effect on the listener, taking into account professional groups. The scientist points out that body language is used the most by bankers, the military, judicial authorities and employees of the trade industry.[5]

In modern science, the history of the study of body language, detailed classification of gestures and other non-linguistic manifestations of the inner state of mind are given. Non-verbal communication is the basis of speech perception process. Because they not only listen to the speaker's speech, but also discuss it. A.K. Mikhalskaya in her work "Russian Socrates" (Russian Socrates) [6] cites as examples a number of gestures typical of a Russian speaker, but not typical of speakers of other languages:

1. An open hand gesture is a symbol of giving information.
2. The closed hand gesture is a symbol of displeasure, disappointment.
3. A set of fingers born into a fist represents a threat or a set of several ideas.
4. United hands represent the meaning of "covering the idea, thoughts".
5. Counting the same events with closed hands.
6. Block yourself from the audience with folded hands.

Although some approaches to non-verbal communication have been put forward in the studies of the above-mentioned scientists, the non-verbal methods of addressing, which are more characteristic of spontaneous discourse, have not been sufficiently scientifically and theoretically researched.

**Research methodology.** The modern understanding of non-literacy stems from a functional approach to gestures, body movements and other means of communication. Currently, non-verbal communication is understood as an extensive development of the individual. In interactions with other people, a person clearly defines his position and point of view in order to gain advantage in self-presentation communication, and in the discourse, which is a semiotic system, along with costume, color, etc., non-verbal methods of self-activation (self-realization) and self-expression, self-competitiveness (samopozitsirovanie) are used. applies.

In addition to gestures, the use of tone, one of the supersegmental units, is also important in non-verbal communication. Communicativeness is the first and main function of tone. Use the tone to determine the purpose of the sentences. Thus, tone allows us to distinguish sentences according to their purpose - question from answer, affirmation, etc. In this case, the moment when you logically separate one or another phrase in the sentence with the help of tone is very important. "The structure (organization) of information in a sentence according to the sign of centrality-periphery, that is, importance-irrelevance, is one of the additional, normative meanings. Using prosodic means, the speaker indicates to the listener which information is necessary to receive and remember, and which is just additional, unimportant information.

The study of non-verbal communication in the field of modern science mainly requires a detailed description of gestures, body language, classification of the human body in conversation and other processes of communication. Also, non-verbal means of communication include various supersegmental means - tone contours of a sentence,



a sentence that allows the listener to receive information, information and other emotional reactions through the prism of surprise, anger, annoyance.

Various non-verbal forms of address are used in the characters' speech in the following places:

"R a h b a r o y (lightly hugging Aziza's neck). The tagin is also the efforts of our god... They make it "Elite", sister?

Ch e v a r (shrugs). That's what your God says.

M a n z u r a (coming out). So this room is complete. Was the carpet six by nine? (To Laziza.) Do you remember, comrade? Now go to the other side.

L a t o f a t (patting him lightly on the temple). This person is proud of these days!

A k r o m (he also patted his wife like this). Okay, I'm gone. I will inform you soon. Don't forget to tell Nizam, okay?" [7].

In the above-mentioned sentences, the meaning of address is brought out through non-verbals expressing thoughts or attitudes without words or language units, such as "shrugged", "come to the middle", "toward Laziza", "slap on the temple".

Non-verbal communication manifests its own secondary semiotic system, like a parallel channel, which is in harmony with the linguistic system, which changes and clarifies the meaning of words. At the same time, the non-verbal system of address also shows a special level of interaction with a person: an address is touching a person, moving, looking, etc. in an informal interaction. can also be done at the expense of

Uzbek language mainly uses units such as "imladi", "pointed", "looked", "nodded" to express the address:

"Dadil (pointing to the bag in Shamshad's hand). Is it useful?

Shamshad. What about themselves?

Bold. Yeah, you're white, aren't you? (Pointing to Shamshodni's shoes) Probably because of the heels?

Here is our famous singer, our own hash, dear brother - Bakirjon Tirkashev! Let's have a round of applause! (Bakir whispers into the ear of the Gypsy Ataman and points to Shamshad.) Bakirjan brought his military commander, our dear Shamshodbek, to the wedding today. Let's clap!

Uncle Levon (looking at his wife). You see, Marina, this person is an artist, and he doesn't like his fans very much. (Looking at Shamshodbek) Here, brother, you burned the house too.

Doctor. Yes, you are interested, what to do with being both small and tall - you look smarter, after all! (Slapping his top) Here, look at me!.." [8]

In such situations, there is no need to say the name, patronymic and surname of the interlocutor. In the process of communication, behavior expresses attitude or thought, feeling.

**Conclusion/Recommendations.** Non-verbal communication is more related to gestures (gesticulations) than verbal speech, which is formed with the help of supersegments. Non-verbal modes of communication are more characteristic of spontaneous discourse, since in institutional discourse contexts, in many cases, a certain distance between communicants is felt. Kinetic methods of reference used in such interactional contexts are unstable, variable, and non-verbal supersegmental means of influence dominate the contexts. Linguistic tools are used in parallel with



non-linguistic tools. The analysis of non-verbal communication in reference contexts is common as an independent semiotic system, phonetic and kinetic systems accompany the linguistic system mainly in institutional discourse contexts.

Any discourse is emotional, and emotionality determines the amount of forms of reference. An increase or decrease in emotionality is an important factor in the increase or decrease in the number of forms of appeal. Emotions, which have historically been embedded in speech, are changing in tandem with the increase in the amount of information. When addressing in Uzbek, in comparison to other languages, there is less reliance on exhortations, in particular, "To the director of our speech school!" It is based on the fact that it is possible to apply without prompting. You can find many such peculiarities in Uzbek communication ethics.

#### References:

- [1]. Decree of the President of the Republic of Uzbekistan No. PF-5850 dated October 21, 2019 "On measures to fundamentally increase the prestige and status of the Uzbek language as a state language" // <http://lex.uz/docs/4561730>
- [2]. Saidkhanov M. Communication and gestures. - Tashkent: Science, 2008. - P.3
- [3]. Sobol E.Yu. Nonverbal components of text information: Diss. ...cand. Philol. Sci. – M., 2009. – P. 12.
- [4]. Asmolov A.G., Feigenberg E.I. Some aspects of nonverbal communication: beyond the threshold of rationality // Psychological Journal. – 1989. – T. 10. – No. 6. – P. 54-56.
- [5]. Yildirim I. Communication. Third party. – Ankara: Hacettepe University, 2017. – P. 19.
- [6]. Mikhalska A.K. Russian Socrat: Lectures on comparative historical rhetoric. – M.: Publishing center Academia, 1996. – P. 18.
- [6]. Free Member. The owner of the apartment. Short stories. - Tashkent, 2012 - P.63.
- [7]. Free Member. A person who is late. Small. Stories. Short stories. - Tashkent, 2002. - P. 414, 435, 443.

## MODERN PROBLEMS OF TOURISM AND ECONOMICS

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### PERFORMANCE OF COOPERATION IN THE AGRO-INDUSTRIAL SECTOR OF THE REPUBLIC OF UZBEKISTAN

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**Abstract.** The article considers the process of effectiveness of cooperation in the agro-industrial sector of the Republic of Uzbekistan. As you know, the world practice of agro-industrial cooperation has a certain position, which fruitfully influence the economy of their countries. In the course of the study in this area, the problems encountered in Uzbekistan in this activity were analyzed, recommendations were made to improve cooperation in the agro-industrial sector in the country.

**Key words:** cooperation, industry, model, cluster.

**Аннотация.** В статье рассмотрены процесс результативности кооперации в агропромышленном секторе Республики Узбекистан. Как известно, мировая практика по агропромышленной кооперации имеет определённую позицию, которые плодотворно влияют на экономику своих стран. В ходе исследования данного направления проанализированы проблемы, встречающиеся в Узбекистане по данной деятельности, предложены рекомендации по улучшению кооперации в агропромышленном секторе в стране.

**Ключевые слова:** кооперация, промышленность, модель, кластер.

**Annotatsiya.** Maqolada O'zbekiston Respublikasining agrosanoat sohasida kooperatsiya samaradorligi jarayoni ko'rib chiqilgan. Ma'lumki, agrosanoat kooperatsiyasining jahon amaliyoti o'z mamlakatlari iqtisodiyotiga samarali ta'sir ko'rsatuvchi ma'lum mavqega ega. Bu boradagi o'rganishlar jarayonida O'zbekistonda mazkur faoliyatda uchrayotgan muammolar tahlil qilindi, mamlakatimizda agrosanoat sohasida hamkorlikni takomillashtirish bo'yicha tavsiyalar berilgan.

**Kalit so'zlar:** kooperatsiya, sanoat, model, klaster.

**Introduction.** Scientifically based agricultural policy, which is an important condition for the alternative and effective development of the agro-industrial complex, is an integral part of the state economic policy and one of the key factors in providing the population of the republic with food. In the coming years, one of the urgent tasks remains the development of priority and new agricultural policy strategies aimed at increasing the competitiveness of the agricultural sector and ensuring the social development of rural areas.

World experience, especially the agro-industrial sector of countries such as the European Union, the United States of America, Canada, Japan, which have gone through three hundred years of development, is developing economically. "In these countries, the cooperative movement produces 45-50 percent of food industry products, completely covering the rural population, and in France and Germany, cooperative enterprises unite more than 80 percent of agricultural enterprises." [1][2]. In modern conditions of globalization, in modern innovative management of the agro-industrial complex, regardless of the form of ownership, special importance is attached to the harmonization of the management system of production, preparation, storage, processing, service, sales and other areas, and the development of cooperation based on mutual cooperative relationships.

In the process of creating a new Uzbekistan, special importance is attached to such issues as effective management of the agro-industrial complex, sustainable and planned development of the industry, intensive introduction of innovative technologies and resource-saving developments, and modernization of production. "The creation of a comprehensively perfect and effective management system is the main condition for achieving the great tasks facing us." In this regard, it is important to expand the scope of scientific research in such areas as improving innovative management methods in the agricultural sector, increasing the efficiency of the management system in the digital economy, and developing cooperative relations in production.

The development of the agricultural sector has both social and economic significance. A number of scientific literature and scientific articles on Internet sites, as well as other relevant literature, as well as data from the State Statistics Committee are important methodological sources in the preparation of this article. Agriculture in Uzbekistan is one of the most state-controlled sectors of the economy. The property rights of the largest agricultural producers and farmers are very poorly protected.

**Analysis and Results.** Agricultural cooperation in the broad sense of the word, as a special form of organization of production, is not only a technical and technological form of application of labor, but also an economic and social form of organization of farms for the production and sale of finished products, as well as their servicing in order to limit risks in a competitive environment. fight against larger financially independent farms in market conditions[3]. In this regard, the main socio-economic task of agricultural cooperation is the creation of an organizational and legal system for protecting the interests of agricultural producers in market conditions based on the creation of self-governing forms of management. An analysis of the current state of the agro-industrial complex shows that not a single area of the agro-industrial complex is able to independently overcome the economic crisis. In this regard, the most important condition for revitalizing the activities of agricultural enterprises can be the unification of their efforts on the basis of cooperation and integration, as the most important factor in stabilizing the economy. The agro-industrial complex, the quality management of the development of which will allow it to play an important role in overcoming the agrarian crisis and the further rise of the country's agriculture.

It should be noted that in this regard, the experience of some foreign countries in creating agricultural cooperation deserves some attention. So, in the second half of the 19th century. The Minister of Agriculture of Italy, a native of peasant cooperatives, prepared the “Law on Cooperation”, subsequently approved by the government, which provided for a number of conditions for the preservation of cooperatives as associations of small farmers. In total, he blocked the way for capitalists and bankers to join cooperatives and approved the principle of “equalization” (“equal share”) for the peasant cooperator: each member of the cooperative contributed a stable, equal amount to the authorized capital; the cost of one share was determined at 100 monetary units, the number of shares was equal for all members of the cooperative. Income was also equal for everyone. This law, with some modifications, is still in effect today.[4]. It protects cooperatives from monopolistic competition, high-interest loans, high taxes, high prices for machinery, agricultural implements and fertilizers, and guarantees cooperators stable markets at competitive prices. All these measures ensure the growth and development of individual peasant farming under the patronage of the cooperative. At the same time, through the efforts of the cooperative, not only economic but also social issues are resolved: preferential healthcare, education and housing for families, as well as children of cooperators.

The strongest cooperative ties have also been created in the United States, where supply cooperatives also operate successfully, covering the sphere of providing farms with means of production and production services. Cooperative supply accounts for 23-27% of the total industrial supply to farmers. The functions of large supply



cooperatives include: wholesale purchases of seeds, chemicals, fuel and veterinary drugs; feed production, quality control of feed ingredients, delivery of feed to the farm; repair of machinery and equipment, supply of spare parts[5]. Their goal is: increasing the monetary income of members of the organization based on growth in sales and production, effective distribution of income; development of only the most suitable activities for members of cooperatives; providing cooperators with all necessary types of services. Large regional supply cooperatives have several feed mills with warehouses. They have a fleet of trailers, tractors and delivery trucks. The largest associations have recently begun producing fertilizers and certain types of agricultural machinery. In our opinion, the most suitable experience for Uzbekistan in the functioning of agricultural cooperatives is the cooperative system of Japan, which has a branched structure: from the Japanese Federation of Agricultural Cooperatives, the central cooperative bank of agriculture and forestry to the All-Union Japanese Federation of Agricultural Cooperatives in the field of mutual assistance and the Japanese Federation of Agricultural Cooperatives in the field health services, which operate in 47 prefectures of the country[1]. All farms in Japan, with few exceptions, are members of agricultural cooperatives organized in each district.

A large place in cooperative construction is given to planning, but in some specific forms. The agricultural cooperative is preparing a local plan for the development of the industry. In which, on the one hand, the agricultural policy of the government and provinces is taken into account, and on the other, the wishes of farmers. Planning consists of drawing up specific economic and agro technical plans, taking into account the agro-ecological environmental conditions for growing crops in the area. The plan is advisory in nature, but covers all economic issues and all technological details, and its implementation is under the control of the state.

**Research Methodology..** During the research, general scientific logical methods of analysis and synthesis, induction and deduction, and statistical data processing were used. The information base for the study was materials from domestic and foreign research institutions and international organizations.

The current economic situation in the agro-industrial complex of the Republic of Uzbekistan requires an integrated approach to solving priority problems of sustainable development of agricultural production. In these processes, not only economic, but also organizational factors are important, among them the reform of management of the agro-industrial complex occupies an important place.

**Discussion.** In modern conditions, the main priorities of the agro-industrial complex management system are the modernization of the production and technical-technological base of agriculture and other sectors of the agro-industrial complex; increasing the potential of agricultural production (use of innovative and resource-saving technologies, reducing direct costs, etc.); interest in practice, the use of modern mechanisms for stimulating production and labor, etc. Currently, the search for the most effective forms of organizing the management of the agro-industrial complex continues, the process of restoring cooperative relations based on the creation of specialized cooperatives with the participation of farms, infrastructure entities, agrilogistics, clusters and other economic entities subjects. AFM refers to the variety



of economic relationships between various organizations in all sectors of the economy involved in the production and distribution of food and other agricultural goods.

In the context of the formation of market relations and digitalization of the economy, economic entities in the agricultural sector of Uzbekistan are undergoing radical modernization[6][7]. The fact is that ensuring the required performance indicators of business entities is impossible without product, process and organizational innovations that create the basis for the necessary changes[8]. The first stage of reforming the agricultural sector of Uzbekistan was fundamental socio-economic transformations[1]:

the foundations of a completely new economic mechanism were developed, the procedure for financing agricultural producers was improved;

acceleration of mutual settlements for manufactured products, increasing the independence of goods producers, etc.;

a legal framework has been created for reforming economic and agrarian relations in the new conditions;

changes were made to the structure of the agricultural sector, the system and principles of management of the agrarian-industrial complex were changed;

the structure of agricultural production was significantly changed, food production was sharply increased by reducing cotton production;

regulation of land relations has been improved;

soil fertility increased.

About 90 percent of all agricultural products produced in Uzbekistan come from private businesses. There are more than 80 thousand farmers in the country, with more than 3.8 million hectares of land assigned to them. In this regard, it is important to note that the Laws of the Republic of Uzbekistan “On Farms” and “On Dekhkan Farms” of 1998 are the legal basis for organizing agricultural farming, creating an economic mechanism and relationships between entrepreneurs.

Table No. 1 shows the main indicators of agriculture for the 2018-2022 periods, where it can be noted that there was a decline in the sown area of agricultural crops in general over 5 years, but agricultural products increased by as much as 160139.2 billion soums during these periods.

**1-table**

**Main indicators of agriculture [9]**

<b>Indicators</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
Sown area of agricultural crops, thousand hectares	3396.0	3309.4	3396.1	3260.7	3356.6
Agricultural products, billion soums	187425.6	216283.1	250250.6	303415.5	347564.4

At the same time, the further development of these farms requires the creation of appropriate conditions, a system of incentives, economic levers and a mechanism for regulating these relations between agricultural entities. This must certainly be reflected in the new legislation that will regulate these processes.

2-table

**Growth rate of agricultural production [9]**

Indicators	2018	2019	2020	2021	2022
All categories of farms	100.2	103.3	102.7	103.9	103.6
including: farms	93.1	110.5	105.6	106.2	103.5
dekhkan (personal subsidiary) farms	102.3	99.2	100.5	101.5	102.4
organizations engaged in agricultural activities	125.7	140.4	121.5	126.2	118.5

Table No. 2 informs about the growth rate of agricultural production, such as farms, dekhkan (personal subsidiary) farms, organizations engaged in agricultural activities in the period from 2018 to 2022. Based on these data, we can say that, in addition to indicators for organizations carrying out agricultural activities, all others have a positive result in this period.

I would also like to draw attention to the fact that there are still significant reserves in the agro-industrial complex of Uzbekistan. The efficiency of use of natural resources is low. There is little irrigated agricultural land. Unfavorable condition of irrigation structures. Low technical equipment of dekhkan (personal subsidiary plots) farms and labor productivity in them. In this regard, an important innovative direction in the development of some sectors of the republic's agriculture is their transfer from small-scale production (in dekhkan farms) to an industrial basis (in large farms). This is, first of all, the lemon industry. In Uzbekistan, the Agriculture Development Strategy for 2020-2030 has been developed and adopted; it outlines the priorities for the development of the industry and the most important strategic indicators, the mechanism for its implementation. The fundamental goals of the strategy are the development of a stable and competitive agro-industrial sector, focused on both the domestic and foreign markets, increasing the income of agricultural producers, creating new jobs, increasing food security and ensuring the efficient use of natural resources. As a result of these measures, the growth of added value in the agricultural sector (including forestry and fish farming), according to the strategy, will be 3-5 percent per year, while the share of farmers in total GDP will decrease from 32 to 20 percent. Job growth in the food industry will be 3-5 percent, in the textile industry - 3-4 percent per year.

Uzbekistan has confidently taken a course towards developing an innovative economy based on the widespread use of advanced technologies and creating investment attractiveness for foreign investors. In recent years, the country has become a major exporter of more than 150 types of fresh and processed fruits and vegetables, its annual export potential is estimated at more than 5 billion US dollars. The strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030 sets the task of increasing the volume of processing of agricultural products by 30% by 2030 through the introduction of new equipment and innovative technologies, expanding its range through the introduction of new types, increasing product exports to 20 billion US dollars. At the same time, it is planned to develop new markets for products - the states of the Eurasian Economic Union and the European Union. The results of 2017-2020 provide confidence in achieving the goals set by the Strategy. However, persistent work is required to further increase the export potential of the

republic's agro-industrial complex, improve state management of the complex, introduce a market management mechanism, improve interaction between sectors of the complex, introduce innovations, and digitalize enterprises. ' activity. At the same time, an important innovative direction in the development of some sectors of the republic's agriculture is their transfer from small-scale (dekhkan) farms to an industrial basis (large farms).

The main direction of agricultural policy is to provide the population with quality products:

- comprehensive development of agro-industrial complexes, providing an integrated approach to all types of economic activity;
- development of measures to reduce the influx of imported products and grow fully compensated agricultural products;
- improving the quality of local agricultural products to world standards; - protecting the interests of local producers;
- modernization of agro-industrial production, development and adoption of laws aimed at increasing the competitiveness of the industry, etc., are leading factors in solving important problems of the national economy.

Currently, the process of cooperation in the agro-industrial complex should be carried out taking into account the integration of the industry into the world economy. In the context of the globalization of the world economy, special attention should be paid to the development and regulation of agro-industrial foreign trade, the creation of a more advanced mechanism for protecting domestic producers from imports on the domestic market and, at the same time, creating the necessary conditions for the export of agricultural products is one of the most important issues.

In a word, the effectiveness of cooperation in the agro-industrial sector of the Republic of Uzbekistan requires the development and implementation of an improved strategy for the development of the agricultural sector. Its development requires the involvement of scientific potential, agricultural sector management bodies, leading specialists and industry leaders, as well as foreign consultants.

#### **References:**

- [1]. Р.Р.Исламиев, “Основные направления развития кооперации и интеграции в аграрном производстве,” vol. 4, no. 96, pp. 75–77, 2012.
- [2]. И.Ферова, “Управление финансовой устойчивостью и финансовыми результатами,” 2013.
- [3]. N. K.Yuldashev, V.I.Nabokov, K.V.Nekrasov, and B. O. Tursunov, “Innovative and export potential of the agro-industrial complex of Uzbekistan,” *E3S Web Conf.*, vol. 282, pp. 1–8, 2021, doi: 10.1051/e3sconf/202128206004.
- [4]. M.Eshov, L. Amirov, and M. Askarova, “Development of the agricultural sector and its importance in Uzbekistan,” *E3S Web Conf.*, vol. 244, pp. 1–9, 2021, doi: 10.1051/e3sconf/202124403014.
- [5]. A.A.Matchanova, “Formation and development of cooperation of agro-industrial complex in the conditions of modernization economics of the Republic of Karakalpakstan,” *Austrian J. Humanit. Soc. Sci.*, pp. 11–14, 2015, doi: 10.20534/ajh-15-3.4-11-14.
- [6]. Н.С.Соменкова, “Совершенствование методики оценки эффективности



инновационного развития предприятия,” *Russ. J. Entrep.*, 2017, doi: 10.18334/rp.18.6.37657.

[7]. К.А.Семячков, “Цифровая экономика и ее роль в управлении современными социально-экономическими отношениями,” pp. 1–15, 2017.

[8]. О.Н.Мельников, В.Г.Ларионов, and Н.А.Ганькин, “Основные Этапы Инновационного Развития Организации Производства С Позиций Динамики Использования Принципов Бережливого Производства,” *Russ. J. Innov. Econ.*, vol. 6, no. 3, pp. 239–258, 2016, doi: 10.18334/vines.6.3.36996.

[9]. <https://stat.uz/>-Агентство статистики при президенте Республики Узбекистан.

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## **IMPROVING THE MANAGEMENT SYSTEM OF THE CHEMICAL INDUSTRY AT THE PRESENT STAGE**

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**Аннотация.** Данная статья рассматривает актуальные вопросы и требования, связанные с совершенствованием системы управления в химической отрасли на современном этапе. Она охватывает такие аспекты, как охрана окружающей среды, промышленная безопасность, качество продукции, экологический менеджмент, которые являются неотъемлемой частью современных систем управления химической отрасли. Рассматриваются требования к процессам планирования, контроля, улучшения процессов и управления ресурсами в целях обеспечения высокого качества продукции и снижения воздействия на окружающую среду.

**Ключевые слова:** окружающая среда, химическая отрасль, система управления, промышленная безопасность, оптимальное использование ресурсов.

**Abstract.** This article examines current issues and requirements related to improving the management system in the chemical industry at the present stage. It covers such aspects as environmental protection, industrial safety, product quality, environmental management, which are an integral part of modern management systems in the chemical industry. Addresses the requirements for planning, control, process improvement and resource management processes to ensure high product quality and reduce environmental impact.

**Key words:** environment, chemical industry, management system, industrial safety, optimal use of resources.

**Introduction.** In today's rapidly developing world, the chemical industry plays an important role in various fields of industry and science. From producing pharmaceuticals to developing new materials, the chemical industry plays a key role in improving our lives. However, as the complexity and volume of chemical production increases, new management and safety challenges arise. In this article we will consider the issue of improving the management system of the chemical industry at the present stage and the role of new technologies in this process.



**Theoretical aspects of the research.** Review of basic management concepts and principles in the chemical industry: Includes concepts such as production planning, quality control, risk and safety management. Production planning involves determining raw material requirements, optimal utilization of resources, and planning production operations. Quality control involves monitoring and ensuring product compliance with quality requirements and standards. Risk and safety management aims to minimize potential hazards and risks associated with chemical processes and products.

In Uzbekistan, there are significant regulatory documents governing the improvement of the management system of the chemical industry, such as the Decree of the President of the Republic of Uzbekistan “On approval of the concept of environmental protection of the Republic of Uzbekistan until 2030”<sup>4</sup>, which defines the legal framework in the field of environmental protection and requirements for the environmental sustainability of chemical enterprises. Law of the Republic of Uzbekistan "On Industrial Safety"<sup>5</sup>, which sets safety standards and requirements for the chemical industry, including risk management systems, accident prevention, personnel training and other safety aspects. National standard of Uzbekistan O'z DSt ISO 9001:2015 "Quality management systems. Requirements" - defines the requirements for quality management systems that can be applied in the chemical industry to improve efficiency and quality control of processes and products. National standard of Uzbekistan O'z DSt ISO 14001:2015 "Environmental management systems<sup>6</sup>. Requirements and guidance for use" - defines the requirements for environmental management systems aimed at reducing the impact of the chemical industry on the environment and ensuring environmental sustainability, and others. According to these standards, it is necessary to improve the management systems of the chemical industry at the present stage.

**Foreign experience of the research.** In the US, the Environmental Protection Agency (EPA) worked with Congress, industry and the public to develop the Framework for Reforming Chemicals Management Laws. When considering US regulations, keep in mind that, unlike EU legislation, where most regulatory initiatives are top-down (i.e., governing bodies and regulators), the US regulatory system is largely based on supporting the best initiatives coming from business and public (bottom-up); as a consequence, economic and social aspects often come to the fore<sup>7</sup>.

The preamble to the Framework for Chemical Agreement Law Reform points to the need to increase confidence that chemicals used in trade are vital to a country's economy, that they are safe and do not jeopardize the public health and well-being of consumers, workers, and particularly sensitive populations such as children or the environment. In reviewing the six principles underlying regulatory reform, the national goal is for the United States to develop the nation's scientific capacity in chemical safety assessment, strengthen (particularly financially) the EPA's leadership role in this process, and encourage development green chemistry.

<sup>4</sup>Decree of the President of the Republic of Uzbekistan, dated October 30, 2019 No. UP-5863.

<sup>5</sup>Law of the Republic of Uzbekistan, dated September 28, 2006 No. ZRU-57.

<sup>6</sup> <https://iso-management.com/wp-content/uploads/2013/12/ISO-14001-2004.pdf>.

<sup>7</sup> N.P.Tarasova and A.S.Makarova Comparative analysis of chemicals management systems// Russian Chemical Bulletin, International Edition, Vol. 62, No. 7, pp. 1682—1697, July, 2013.



In China, the main objectives of the revision of chemicals management legislation, which was carried out in 2011, were to: strengthen controls over safety; prevention and mitigation of emergency situations; protect the lives and well-being of people; and protect the environment. In China, unlike the EU countries or the USA, the development of new regulations was focused primarily on the development of domestic laboratory facilities for assessing the hazardous properties of substances (physico-chemical characteristics and toxicity) and eco-toxicity parameters).

The main objectives of the revision and updating of environmental legislation in Turkey were related to preparations for accession to the EU. The regulation on the supervision and accounting of chemical substances was intended to improve the administrative and technical rules for the control and accounting of substances, taking into account the potential risk to human health and the environment. The law enforcement practice of regulating chemical products in Turkey, as in the EU countries, is aimed at protecting the domestic market for chemical products and creating additional jobs. It is expected that once the internal list of traded chemicals is completed, Turkey will move to limit and reduce the quantities of the most dangerous chemicals.

Currently in Russia there is no strategy for the safe handling of chemicals, developed and agreed upon with all stakeholders. However, an analysis of foreign experience shows that the development of both a national (Russian) chemicals management system and a regional system, i.e. The Customs Union (CU) of the EurAsEC, which is the common customs territory of Russia, Belarus and Kazakhstan, should take into account international obligations. It is also necessary to take into account national interests and details of the economic and social development of the country/region.

**Analysis and result of the research.** The following provides information on general approaches and principles used to improve the management system in the chemical industry. Some of them include:

**Implementing a Quality Management System:** Many businesses in the chemical industry seek certification to international standards such as ISO 9001. This allows them to establish and maintain quality management processes, improve production efficiency and reliability, and increase customer satisfaction.

**Development of an environmental management system:** Given the growing awareness of environmental issues, enterprises are trying to reduce the negative impact of their activities on the environment. Implementing an environmental management system based on the ISO 14001 standard allows businesses to identify and manage their environmental aspects, improve energy efficiency and implement measures to reduce emissions and waste.

**Ensuring industrial safety:** The chemical industry is characterized by the presence of potentially hazardous processes and substances, so ensuring safety is a priority. Businesses must develop and implement safety management systems, comply with legal requirements and standards, conduct risk analysis and assessments, train staff and conduct regular inspections and testing of equipment.

**Introduction of new technologies and innovations:** The chemical industry actively uses new technologies and innovations to improve production processes,



increase efficiency and reduce negative impacts on the environment. This could include developing more efficient catalysts, using renewable energy sources and developing safer and cleaner processes.

**Stakeholder participation:** Modern management systems in the chemical industry increasingly incorporate principles of participation of stakeholders such as customers, suppliers, employees and members of the public. This helps to establish an open and transparent dialogue with various stakeholders, consider their needs and expectations, and implement improvements based on the feedback received.

In addition, it should be noted that today there are several modern approaches to controlling chemical processes. Here are some of them:

**Manufacturing Execution Systems (MES):** MES (Manufacturing Execution Systems)<sup>8</sup> are integrated software platforms that allow you to monitor and manage production processes in real time. They integrate data and operations at the production level, providing monitoring, planning, quality control, reporting and other functions. MES can optimize manufacturing operations, increase efficiency, reduce costs and improve product quality.

**Enterprise resource planning (ERP) systems:** ERP (Enterprise Resource Planning)<sup>9</sup> systems provide complete visibility and management of enterprise resources, including production operations management. They integrate information about orders, inventory, finance, accounting and other processes, providing a single platform for planning, coordinating and monitoring enterprise activities. ERP systems can improve resource management, optimize production planning and increase operational efficiency.

**Artificial Intelligence and Data Analytics:** The use of artificial intelligence (AI) and data analytics in the chemical industry is becoming more common<sup>10</sup>. Data analytics allows you to analyze large volumes of data, identify hidden patterns, predict results and make informed decisions. AI technologies such as machine learning and neural networks are used to optimize manufacturing processes, quality control, equipment failure prediction, and other applications.

**Conclusion.** Improving the management system in the chemical industry at the present stage includes many aspects, such as quality management, environmental management, industrial safety, the use of new technologies and taking into account the opinions of stakeholders. These approaches help chemical companies improve their efficiency, reduce their environmental impact, and ensure the safety of their workers and customers. However, successfully improving the management system of the chemical industry requires not only technical innovation, but also personnel training and compliance with relevant standards and regulations.

### References:

[1]. Decree of the President of the Republic of Uzbekistan, dated October 30, 2019 No. UP-5863.

<sup>8</sup> Rajesri Govindaraju, Krisna Putra A methodology for Manufacturing Execution Systems (MES) implementation// IOP Conf. Series: Materials Science and Engineering 114 (2016).

<sup>9</sup> Samwel Matende and Patrick Ogao, Enterprise Resource Planning (ERP) System Implementation: A case for User participation // Samwel Matende and Patrick Ogao / Procedia Technology 9 (2013) 518-526.

<sup>10</sup> С.М. Леонтьев Искусственный интеллект и машинное обучение: новые тенденции и применения в бизнесе и научных исследованиях// Вестник магистратуры. 2023. № 8 (143).



- [2]. Law of the Republic of Uzbekistan, dated September 28, 2006 No. ZRU-57.
- [3]. Rajesri Govindaraju, Krisna Putra A methodology for Manufacturing Execution Systems (MES) implementation// IOP Conf. Series: Materials Science and Engineering 114 (2016).
- [4]. Samwel Matende and Patrick Ogao, Enterprise Resource Planning (ERP) System Implementation: A case for User participation// Samwel Matende and Patrick Ogao / Procedia Technology 9 (2013) 518-526.
- [5]. С.М.Леонтьев Искусственный интеллект и машинное обучение: новые тенденции и применения в бизнесе и научных исследованиях// Вестник магистратуры. 2023. № 8 (143).
- [6]. N.P.Tarasova and A.S.Makarova Comparative analysis of chemicals management systems// Russian Chemical Bulletin, International Edition, Vol. 62, No. 7, pp. 1682—1697, July, 2013.
- [7]. <https://iso-management.com/wp-content/uploads/2013/12/ISO-14001-2004.pdf>.

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## PRIORITIES FOR IMPROVING THE INFORMATION AND STAFFING OF THE AGRICULTURAL MANAGEMENT SYSTEM

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**Abstract.** Agriculture should remain an integral part of the system of agricultural production, such as information supply, electrification, mechanization and chemicalization, and, as in other sectors, have its own scientific supply, technical base, organizational infrastructure and qualified personnel.

**Keywords.** Informatization, staff training, management, research, consulting, cooperation, management decisions, structure, information security.

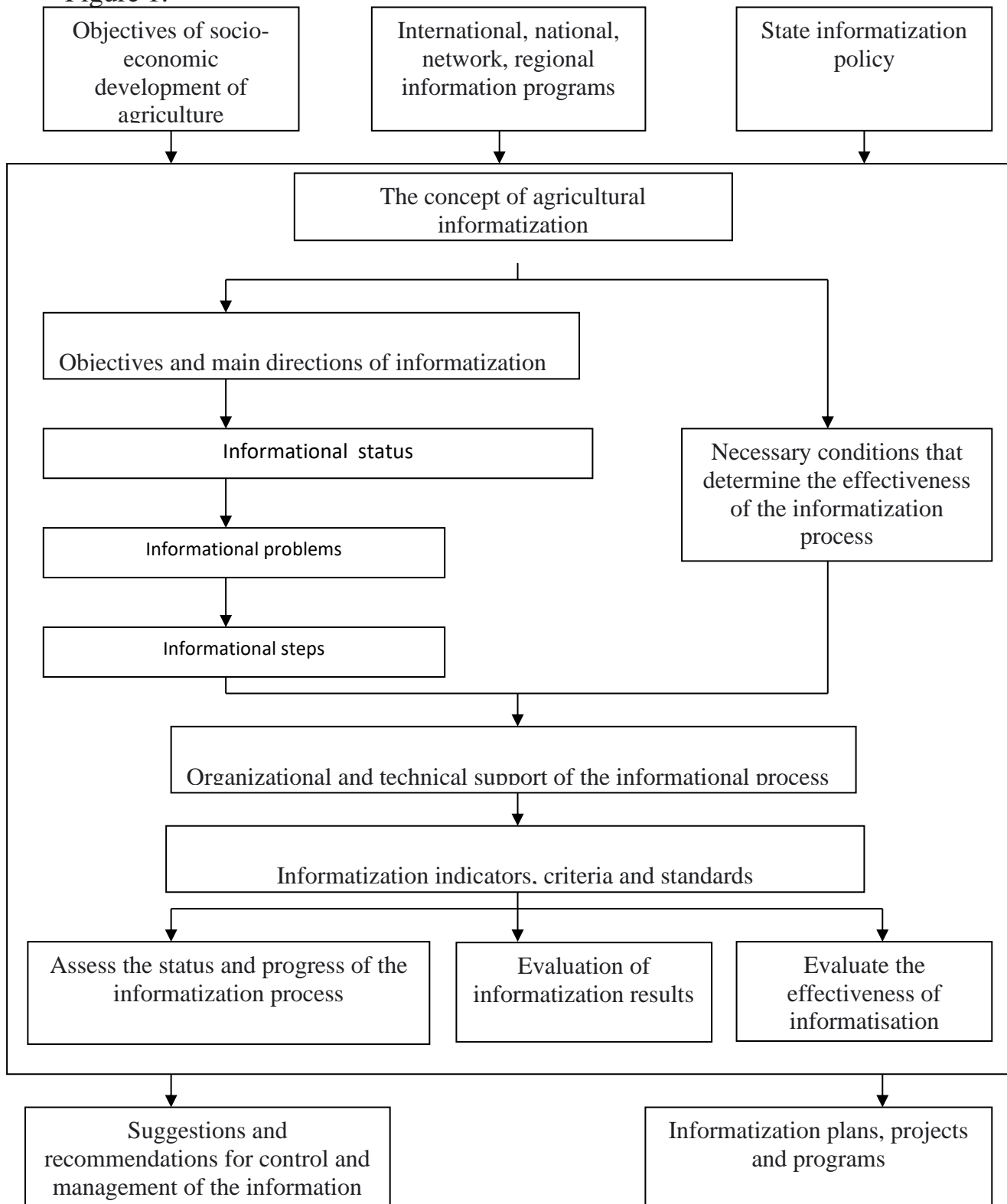
**Introduction.** Agriculture should remain an integral part of the system of agricultural production, such as information supply, electrification, mechanization and chemicalization, and, as in other sectors, have its own scientific supply, technical base, organizational infrastructure and qualified personnel. In the current situation in the network, the Ministry of Agriculture should play the role of a catalyst for changes in the field of information, coordinator of the actions of various actors in society, to create a favorable regulatory and legal framework for the development of the industry.

**Methods:** In the scientific paper, analysis and synthesis, systematic approach, abstract-logical thinking, economic analysis, grouping, expert evaluation and comparison methods were used.

**Results.** An important condition for the development and implementation of science-based state policy on agricultural informatization is the scientifically and methodologically correct implementation of this process, the plans, programs and projects applied at all stages and levels. This process begins with the development and scientific substantiation of information policy and strategy, and ends with the analysis



of the results and consequences of informatization and the development of recommendations for the effective use of these results and the elimination or mitigation of its negative consequences. The scheme of scientific and methodological implementation of informatization of public administration in agriculture is shown in Figure 1.



**Source: Developed by the author**

**Figure 1. The scheme of scientific and methodological implementation of informatization of public administration in agriculture**

**Discussion.** Psychological problems should include, first of all, the problem of preparing information workers to use the results of this process. This problem is caused by a number of factors, including:

- low level of computer literacy of employees of public administration bodies in agriculture;

- Insufficient information needs and lack of desire to develop them;

- delays in the adoption of innovations by the majority of management staff.

Legal problems arise in connection with the need to legally regulate the production, processing and use of information as a result of the fact that agriculture has become a key strategic resource for public administration and the development of society as a whole. Economic problems arise as a result of the transition to another type of economy - the "information society". It should be noted that in Uzbekistan, information has not been the main type of resource from an economic point of view.

Social problems, on the other hand, are characterized by a radical change in a person's lifestyle as a result of the influence of information. These include the exacerbation of traditional information security problems and the emergence of new ones, which in turn are caused by the following factors:

- Information security has become a leading component of national security in the process of informatization;

- Informatization has led to a decrease in the level of information security of individuals, society and the state.

A prerequisite for achieving the expected results of the country, especially in the provision of information to agriculture, is the creation of a highly developed information system and its integration into the global information system. This will be achieved as a result of ensuring the required speed of informatization, taking into account the state and course of the informatization process around the world, pursuing an effective targeted policy of informatization of agriculture in the country.

The formation and implementation of an effective, science-based policy on informatization of the system of agricultural public administration is based on the solution of a number of problems that can be grouped into "problems of information management". This group includes the following activities:

- determine the level of management in the public sector of agriculture and management methods of informatization;

- Establishment of mechanisms and parameters of information management in the system of public administration of agriculture;

- development of indicators and criteria for information management;

- determine the parameters of the informatization process and the level of monitoring to be monitored in the system of public administration of agriculture. It is obvious that the problems of informatization are one of the main obstacles to the development of market relations in the agricultural sector.

Based on the above-mentioned problems of informatization of agriculture in the country, the necessary measures to improve the system of information support of public administration of agriculture in the country are as follows:

- Carrying out fundamental and applied research on informatization;
- strengthening the material and technical base of the information support system;
- development of the software industry;
- development of information infrastructure;
- training of agricultural specialists and the population in informatization;
- Development and continuous improvement of the regulatory framework for agricultural informatization;
- International and interregional cooperation in the field of agricultural informatization, division of labor, etc.

It is known that one of the important factors determining the efficiency of agricultural activities, along with an effective information system, is the level of staffing of the management system. Today, managers need to have specialized knowledge in the fields of economics, business and management, which determines the professional skills of a leader and a specialist. They need to have good legal training, extensive knowledge and skills in the basics of management and psychology that allow them to make management decisions based on team leadership.

In the context of the development of market relations, personnel policy should focus on addressing the following issues:

- First, the formation of a single educational process that provides a universal system of continuing education, taking into account the diversity and flexibility of all forms of education in agriculture;
- secondly, training and retraining of secondary and highly qualified specialists on the basis of integration of education, science and practice;
- Third, the organization of training and retraining of managers and specialists;
- Fourth, the separation of priority agricultural universities, additional educational institutions, the creation of new scientific schools on the basis of informatization of the educational process in accordance with international standards, maintaining the social and economic status of scientific and pedagogical staff.

The management staffing system should be seen as an integral part of the five interconnected subsystems. Therefore, it should be defined as a complex, multi-level socio-economic structure, which includes subsystems for training, distribution, exchange and use of personnel, as well as a management subsystem designed to regulate their activities. Expenditures on professional retraining and advanced training of employees of agricultural management bodies, heads of farms, employees of scientific and educational institutions (maintenance of material base of educational institutions and teachers' salaries) should be financed from the state budget, regardless of their organizational and legal form.

Identifying goals and quality changes in agriculture is the initial stage of the staffing program development scheme. They are the basis for determining the basic requirements for personnel, taking into account the acceleration of scientific and technological progress, the widespread introduction of new methods of management. The current stage and prospects of development of the agricultural sector, their specific

aspects and laws, determine the content and description of the main objectives of staffing in the management system:

- Satisfaction of the needs of agricultural organizations in highly qualified personnel capable of comprehensively solving technical, economic, organizational and social problems;
- Rapidly meet the needs of personnel in all sectors of agriculture, taking into account the acceleration of scientific and technological progress and the transition to new forms of management;
- optimizing the training of specialists with secondary and higher special education, bringing it in line with the real needs of the agricultural sector;
- Ensuring continuous training and retraining of managers and specialists to maintain their knowledge and skills at a level that meets modern requirements of agricultural development. Regional programs should pay special attention to the formation of a system of continuous agrarian education, the organization of agrarian university (academic) complexes on the basis of the integration of educational institutions, scientific, information, industrial and other institutions and organizations at all levels. It is also important to develop information and consulting services, including such centers on the basis of agricultural educational institutions.

Particular attention should be paid to the issues of vocational guidance of rural youth, assistance in directing graduates of rural secondary schools to study in agricultural educational institutions, including targeted and contract training.

A complete solution to the problem of attracting and adapting staff to work in rural areas requires the development and implementation of large-scale measures to improve the financial security of agricultural organizations and the integrated development of rural areas. This approach envisages strengthening the coordinating role of the state in the training, distribution, exchange and use of management personnel, while optimizing the ratio of regulatory support to the personnel system in accordance with market conditions and non-specific.

**Conclusions.** The problem of self-regulation of the personnel supply system can be solved through the establishment of regional structures on a voluntary basis, including agricultural education and research institutions, other organizations involved in training, distribution, exchange and use of personnel. In order to increase the capacity of agricultural personnel and create state mechanisms for state regulation of the processes of its effective use, it is necessary to address the following issues:

- Introduction of mandatory certification of management staff of organizations and enterprises involved in the technological processes of agricultural production, as one of the resources, in order to increase the competitiveness of agricultural products;
- Establishment of licensing institutions for the right to manage enterprises and organizations related to the use of land resources intended for agriculture;
- Introduce the practice of compulsory employment of graduates of agricultural institutions in state agricultural organizations for at least three years at the expense of the state budget or reimburse the budget spent on the education of the graduate (or his employer);
- Ensuring that professional standards in agriculture are updated every five years;



- Development and implementation of state educational standards for higher, secondary and primary agricultural vocational education on the basis of professional standards, in cooperation with the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan;

- Accelerate the work on large-scale development of social infrastructure in rural areas in order to attract skilled workers and specialists to rural areas;

Modernization of agricultural education to achieve an international level of quality, determined by compliance with current and promising areas of sustainable and balanced development of agribusiness in the country by 2030.

At the end of the training process at all levels of the system of continuing education students will be able to apply the strategy of agribusiness development, develop a strategic approach to human resource development and management, encourage innovation in agribusiness and adapt quickly to changes in the external environment. be able to apply and apply international experience in the development and implementation of management strategies.

Consistent implementation of the above measures can serve to increase the level of information and staffing of the agricultural management system, and ultimately to increase the efficiency of the management system.

#### **References:**

- [1]. Appeal from the President of the Republic of Uzbekistan Shavkat Mirziyoev to the Oliy Majlis.T., 22.12.2017.
- [2]. The Decree of the President of the Republic of Uzbekistan dated January 17, 2017 "On Measures to Accelerate the Sale of State-Owned Objects for Entrepreneurship Use and Further Simplification of its Procedures".
- [3]. Decree of the President of the Republic of Uzbekistan of February 1, 2017 "On Additional Measures to Improve Mechanisms for Public Services to Business Entities".
- [4]. Decree of the President of the Republic of Uzbekistan on February 7, 2017 "On the Strategy for the Further Development of the Republic of Uzbekistan" February 8, 2011 // Public Sector.
- [5]. The State Program of the President of the Republic of Uzbekistan "On the implementation of the Strategy of Action on the Five Priorities of Development of the Republic of Uzbekistan in 2017-2021", "Year of Support for Active Business, Innovation Ideas and Technologies" dated January 22.
- [6]. Economy of Uzbekistan. Informational-analytical bulletin 2015 y. Tashkent, 2016.-87p.
- [7]. Nosirov B.Z., Ergashev A.A., Islamova D.T. Development prospects of food markets in Andijan province. // THEORIA: педагогика, экономика, право. 2020. №1 (1). URL: <https://theoria.apni.ru/article/17-development-prospects-of-food-markets>.
- [8]. Ergashov I.I. Factors affecting the efficiency of investment in small business and private entrepreneurship and their characteristics. JournalNX. Issue 77. ISSN: 2581 – 4230. Journal Impact. Factor: 7.223. Volume 6, Issue 11. 4.11.2020

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**NUMERICAL MODELING OF THE PROBLEM OF JOINT  
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**Annotatsiya.** Ushbu maqolada g'ovakli muhitda bir suyuqlikning boshqa suyuqlik bilan porshenli siqilishi jarayonlarining matematik modeli ko'rib chiqiladi, neft-suv filtrlash jarayonining matematik modeli harakatlanuvchi chegarani hisobga olgan holda olib borilgan. Neft va gaz konlarining asosiy ko'rsatkichlarini aniqlash uchun hisoblash algoritmi, shuningdek, sonli natijalarni grafik shaklda hisoblash va vizualizatsiya qilish dasturi ishlab chiqilgan. Suv haydash paytida ikki faza chegarasida rezervuar bosimi va harakatini taqsimlashni o'rganish uchun hisoblash tajribasi o'tkazilgan.

**Kalit so'zlar.** matematik model, hisoblash algoritmi, qatlam o'tkazuvchanligi

**Аннотация.** В этой статье рассматривается математической модели процессов поршневого вытеснения одной жидкости другой в пористых средах усовершенствована математическая модель процесса фильтрации нефть-вода с учетом подвижной границы раздела. Разработаны вычислительный алгоритм для определения основных показателей нефтяных и газовых месторождений, а также программа для расчета и визуализации проведенных численных результатов в графической форме. Проведен вычислительный эксперимент по исследованию распределения пластового давления и движения на границы раздела двух фаз при заводнении.

**Ключевые слова.** математический модель, вычислительный алгоритм, проницаемости пласта

**Annotation.** This article discusses a mathematical model of the process of piston displacement of one liquid by another in porous media, with an improved mathematical model of the oil-water filtration process taking into account the mobile boundary of the phase interface. A computational algorithm was developed to determine the main indicators of oil and gas fields, as well as a program for calculating and visualizing the numerical results in graphical form. A computational experiment was conducted to study the distribution of reservoir pressure and the movement of phase boundaries during flooding.

**Key words.** Mathematical model, computational algorithm, reservoir permeability

**Introduction.** One of the methods for increasing the oil recovery of wells, when the main source of energy is the pressure of marginal water, is the use of a water-driven



mode introduced into the reservoir to quickly and completely compensate for the volume of oil and associated water taken, which leads to the movement of the entire mass of oil [4, p.292-295].

The water drive mode is most applicable to oil deposits brought to infiltration water drive systems, when there is a good hydrodynamic connection of the deposit with the aquifer zone of the reservoir and with the recharge area.

A number of technological processes caused by filtration movement in a porous medium are characterized by the phenomenon of mutual filtration of immiscible liquids (multicomponent systems) [7, p.219]. At the same time, due to the peculiarities of the structure of the porous medium or physical and chemical properties, oil can exhibit the properties of an anomalous liquid, which is reflected in the presence of a limiting pressure gradient [5, p.278]. In view of the poor water wettability of the porous medium, unsatisfactory washing off of oil is often observed and, as a result, the formation of “stagnant zones” - pillars of unfiltered oil [8, p.362].

The work [1, p.16] is devoted to two models of filtration of two immiscible incompressible fluids of different densities separated by a free boundary in a pore-elastic space. The paper presents the results of a numerical solution of the problem for viscoelastic filtration by accurate microscopic models with a free boundary for pore space structures of various geometries [9, p.2].

In [2, p.236-241, 3, p15-145, 6, p.16-18], the process of water advancement in a two-layer field developed by a single grid of wells in the form of a single ring battery was studied. The calculation method is simplified if the rate of water inflow into individual horizons of a multilayer field is predetermined.

**Research methodology.** Distinctive features of the water drive regime are the following features of the dynamics of development indicators: a close relationship between the behavior of dynamic reservoir pressure and the value of the current fluid withdrawal from the reservoir - its relatively small decrease with an increase in extraction, a constant value with a constant selection, an increase with a decrease in extraction, recovery almost to the initial reservoir pressure in case of complete cessation of fluid withdrawal from the reservoir, the area of pressure reduction is usually limited to the reservoir area; practically unchanged throughout the entire development period average values of the field gas factor; achieved high rate of annual oil production during the period of high stable oil production, called stage II - up to 8-10% per year or more of the initial recoverable reserves, extraction for the main development period (for the first three stages) is about 85-90% of recoverable oil reserves; extraction of associated water together with oil during the period of oil production decline, as a result of which, by the end of the development, the ratio of accumulated water and oil withdrawals (water-oil factor - WOR) can reach 0.5 - 1.

Thanks to the water-driven regime, the oil recovery factor can reach values of 0.6-0.7, which is due to the ability of water, especially reservoir mineralized water, to wash oil well and displace it from the voids of the reservoir rock, as well as a combination of exceptionally favorable geological and physical conditions in which the mode in question is in effect.

In arch flooding, water is injected into the wells of one almost straight or ring cutting row, located in the arch of the deposit. Block or cutting and arch flooding are

used based on the geological and physical characteristics of the reservoirs, when the use of cutting is generally favorable. These methods are rational for deposits with a moderate oil-bearing area, with low reservoir permeability or the presence of a screening layer under the reservoir, the need to supplement edge flooding to increase the impact on the central part of the reservoir.

Under these assumptions, the mathematical model of the problem with a moving oil-water interface is described by a system of differential equations of parabolic type:

$$\begin{cases} \frac{\partial}{\partial x} \left( \frac{k}{\mu_1} \frac{\partial P_1}{\partial x} \right) + \frac{\partial}{\partial y} \left( \frac{k}{\mu_1} \frac{\partial P_1}{\partial y} \right) = a\beta_o \frac{\partial P_1}{\partial t} - Q & \text{at } (x, y) \in G_1, \\ \frac{\partial}{\partial x} \left( \frac{k}{\mu_2} \frac{\partial P_2}{\partial x} \right) + \frac{\partial}{\partial y} \left( \frac{k}{\mu_2} \frac{\partial P_2}{\partial y} \right) = (1-a_0)\beta_w \frac{\partial P_2}{\partial t} + Q & \text{at } (x, y) \in G_2. \end{cases} \quad (1)$$

The system of equations (1) is integrated under the following initial, boundary and internal conditions:

$$P_1 = P_2 = P_o(x, y) \text{ at } t = 0, \quad (x, y) \in G_1 + G_2, \quad (2)$$

$$q_{oi_q}(t) = \int_{s_{i_q}} -\frac{k}{\mu_1} \frac{\partial P_1}{\partial n} ds \text{ at } (x, y) \in s_{i_q}, \quad i_q = \overline{1, N_q}, \quad (3)$$

$$q_{wi_q}(t) = \int_{s_{i_q}} \frac{k}{\mu_2} \frac{\partial P_1}{\partial n} ds \text{ at } (x, y) \in s_{i_q}, \quad i_q = \overline{1, M_q}, \quad (4)$$

$$\frac{\partial P_2}{\partial n} = 0 \text{ at } (x, y) \in \Gamma_2, \quad P_1(x, y) = P_2(x, y), \quad \frac{k}{\mu_1} \frac{\partial P_1}{\partial n} = \frac{k}{\mu_2} \frac{\partial P_2}{\partial n} \text{ at } (x, y) \in \Gamma_1, \quad (5)$$

$$\frac{\partial l(x, y, t)}{\partial t} = -\frac{k}{\mu_1 m(a - a_0)} \frac{\partial P_1(x, y, t)}{\partial n}, \quad l(x, y, 0) = \phi(x, y) \text{ at } (x, y) \in \Gamma_1. \quad (6)$$

Here  $P_1, P_2$  -pressure in the field of oil and water;  $k$  -reservoir permeability coefficient;  $\mu_1, \mu_2$  - coefficients of dynamic viscosity of oil and water;  $\beta_o, \beta_w$  - coefficients of dynamic viscosity of oil and water ( $\beta_o = m\beta_{oc} + \beta_c$ ;  $\beta_w = m\beta_{wc} + \beta_c$ );  $\beta_{oc}, \beta_{wc}$  -coefficients of compressibility of oil and water;;  $\beta_c$  -formation compressibility;  $m$  - formation porosity coefficient;  $\Gamma_1$  - contour of the moving oil-water interface  $\Gamma_2$  -the outer contour of the aquifer;  $s_{i_q}$  -contour of the  $i_q$  well;  $q_{oi_q}$  flow rate of the  $i_q$ -th oil well;  $q_{wi_q}$  - flow rate of the  $i_q$ -th water well;  $N_q, M_q$  - the number of wells, respectively, in the field of oil and water content;  $l$  - velocity vector directed along the internal normal;  $a$  - coefficient of oil saturation;  $a_0$  - coefficient of residual oil saturation;  $\phi$  - initial oil-water interface;  $n$  - normal, respectively to the contours.  $s, \Gamma_2$ .



To solve this type of problem, we translate the problem into a dimensionless form. After passing to dimensionless variables in system (1) with the corresponding boundary conditions (2)-(6), the problem is solved numerically using the longitudinal-transverse scheme for the differential-difference problem and the differential sweep method to determine the unknown boundary.

The filtration area  $G_1+G_2$  is covered by  $\Omega_{h_{xy}t_k}$  the grid area formed by a regular grid of coordinate lines:

$$\Omega_{h_{xy}t_k} = \left\{ x_i = i\Delta h, y_j = j\Delta h, \tau_k = k \Delta \tau, i = \overline{1, N_j}, j = \overline{1, M_i}, k = \overline{0, N_\tau}, \Delta \tau = \frac{1}{N_\tau} \right\}.$$

Here  $N_j, M_i$  - the number of nodes on the line  $y_j$  and  $x_i$ , respectively;  $h$  - grid step corresponding to the axes -  $x$  and  $y$ .

We use the algorithmic idea of an implicit scheme of alternating directions (longitudinal-transverse scheme) to obtain a differential-difference problem. The transition from layer  $r$  to layer  $r+1$  is made in two stages with step  $0.5\Delta\tau$ . The resulting system of differential-difference equations is solved by differential sweep along each of the straight lines  $x_i$  with initial conditions known at  $\tau = \tau_k$ , and then along each of the straight lines, where the values  $y_j$  just found corresponding to the  $r+0.5$ -th layer are taken as the initial conditions. On the internal boundaries of a multiply connected region, the conditions of impermeability and continuity of pressure are specified. These conditions are met automatically at the transition of the interface between two phases when applying the differential sweep method. In the process of successively finding the values of  $ui(x)$ ,  $vi(x)$ ,  $wi(x)$  during the transition from one phase to another, the previous values of these functions are used as initial conditions.

The numerical integration of the Cauchy problem is carried out by the Runge-Kutta method using the procedure for normalizing the sweep coefficients and coefficients of this method.

In each iterative step, when calculating the vector  $\vec{u}_{i+1}$ , a normalized vector (where  $\vec{U} = (u, v, w)$  or  $\vec{U} = (\alpha, \beta, \gamma)$ ) is substituted in the right side of the system of equations instead of  $\vec{u}_i$ . The normalization procedure can be omitted if the chosen method consistently solves the Cauchy problem.

**Analysis and results.** Discrete models and modified algorithms for solving this equation were solved using the longitudinal-transverse scheme and the differential sweep method. To solve the problem of filtration with a moving oil-water interface and conduct computational experiments, mathematical and software tools have been developed that allow the visualization of the numerical results of the calculation, the main indicators of the development of oil fields in graphical and animated form.

The calculations were carried out for different values of the parameters. Consider non-stationary oil-water filtration in a porous medium. The reservoir is developed in a water-driven mode by a system of two well banks with predetermined constant flow rates and the initial reservoir pressure is maintained using four injection wells in the aquifer. Calculations were carried out with the following parameter values: formation

length  $L = 10 \text{ km}$ ; formation thickness  $h = 10 \text{ m}$ ; well flow rate in the displaced zone  $q_o = 300 \text{ m}^3 / \text{day}$  and the displacing zone  $q_w = 200 \text{ m}^3 / \text{day}$ . The initial reservoir pressure  $P_o = 150 \text{ atm}$  (in dimensionless units 0.5), and the characteristic reservoir pressure  $P_x = 300 \text{ atm}$ . The remaining parameters are as follows:  $m = 0.1$   $k = 0.1 \text{ Darsi}$ ; number of steps horizontally and vertically  $N = 100$ ;  $M = 100$ ; formation elasticity  $\beta_o = 0.00001 \text{ sm}^2 / \text{kgs}$ ;  $\beta_w = 0.00001 \text{ sm}^2 / \text{kgs}$ .

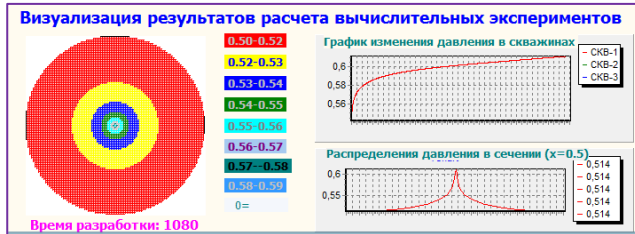


Fig. 1. Dynamics of pressure distribution in a reservoir with a single central injection well ( $\mu_o = 4 \text{ cПз}$ ).



Fig. 2. Change in pressure in an oil reservoir during contour one-sided water flooding

The calculations were carried out at different values of the parameters.

On fig. 1 shows the distribution of pressure in the well, cross section and area. On fig. 2 shows the results of the calculation of the development of an oil reservoir with a one-sided rectangular filtration area during contour flooding. Here, the initial reservoir pressure is maintained by three injection wells in the left side of the reservoir. Calculations show that with an increase in the development time of an oil deposit in the left part of the reservoir, the reservoir pressure rises. These results clearly confirm the graph of areal pressure changes and pressure distribution in sections, as well as wells.

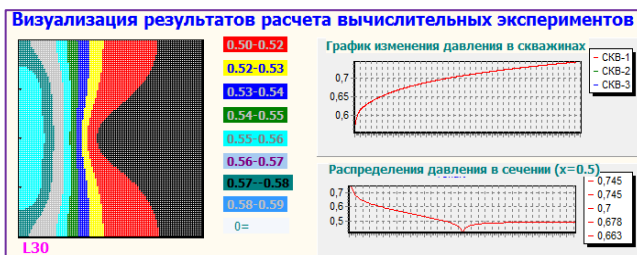


Fig. 3. Development of an oil reservoir with contour one-sided waterflooding

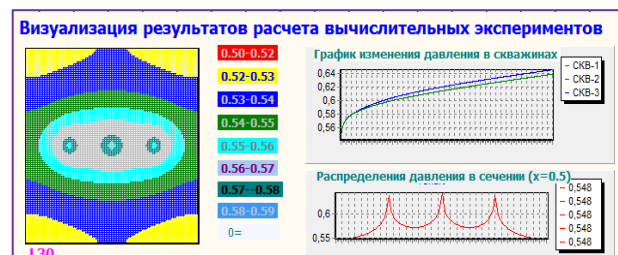


Fig. 4. Pressure distribution in an oil reservoir with axial flooding for a rectangular filtration area

On fig. 3 shows the calculation results for a rectangular filtration area of an oil field with a single central production well and three injection wells that maintain pressure in the left side of the formation. According to these figures, the initial reservoir pressure is almost constant in a certain interval, then drops sharply and reaches its minimum value at the point where the production well is located.

With an increase in the reservoir operation time (with constant oil production from production wells), the pressure drop in the right part of the oil content increases (this part is shown in black on the graph). In the left part of the formation, where three injection wells are located, the pressure increases with time.

On fig. 4 shows the central-axial flooding of an oil reservoir by three injection wells with the same flow rates for round and rectangular filtration areas. All graphs show that the programs give the expected patterns of pressure distribution, which are achieved in the third year of oil field development. Here, also in the center near the injection well, the pressure gradually increases.

**Conclusions.** Based on the mathematical model of the processes of piston displacement of one liquid by another in porous media, the mathematical model of the oil-water filtration process has been improved, taking into account the moving interface.

A computational experiment was carried out to study the distribution of reservoir pressure and movement to the interface between two phases during flooding.

The influence of oil viscosity, reservoir permeability and well flow rates on the development of oil and gas fields with artificial maintenance of reservoir pressure by methods of edge, edge and block water flooding has been studied.

### References

- [1]. Galtsev O.V., Galtseva O.A. Mathematical modeling of the process of filtration of liquids in a porous medium of various geometry // *Mathematical physics, mathematical modeling. Mathematics. Physics.* 2015. - No. 23 (220). – Issue. 41. – pp. 126-127.
- [2]. Zakirov S.N., Lapuk B.B. Design and development of gas fields. – M.: Nauka, 1974. -376 p.
- [3]. Zakirov I.S. Development of the theory and practice of oil field development. – M. – Izhevsk: Institute for Computer Research, Research Center "Regular and Chaotic Dynamics", 2006. -365 p.
- [4]. Nematov A., Nazirova E.Sh. Methods for numerical calculation of the main indicators of the development of two-layer oil fields // *International conference on the importance of information-communication technologies in innovative development of sectors of economy.* April 5-6, 2018. – Tashkent, 2018. pp. 292-295.
- [5]. Slabnov, V.D. Numerical modeling of the displacement of high-viscosity oil by water with a nonlinear filtration law / V.D. Slabnov, R.A. Sultanov // *Uchen. app. Kazan. university Ser. Phys.-Math. Sciences.* 2016. – T. 158, book 2. pp. 276–286.
- [6]. Lopuh N. B., Pyanylo, Ya. D. Numerical analysis of models with fractional derivatives for gas filtration in porous media // *Journal of Coupled Systems and Multiscale Dynamics, American Scientific Publishers.* – vol. 2, № 1, June 2014. pp. 15-19(5).
- [8]. Tretheway D. Effects of absolute pressure and dissolved gases on apparent fluid slip in hydrophobic microchannels / D. Tretheway, S. Stone, C. Meinhardt // *Bulleten of American Physical Society.* 2004. – V. 49. – P. 215 – 223.
- [9]. Quintard M. Two phase flow in heterogeneous porous media: the method of largescale averaging / M. Quintard, S. Whitaker // *Transport in porous media.* 1988, № 3. – P. 357-413.



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## EFFECTIVENESS OF DEVELOPMENT ENVIRONMENTAL COMPETENCIES IN STUDENTS IN LEARNING THE SUBJECT OF LIFE SAFETY

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**Annotatsiya:** Talabalarda ekologik tarbiyaga oid kompetensiyalarni rivojlantirishda mintaqa tarixi, madaniyati, mamlakatimiz tabiati, uning zamonaviy hayotiga, atrofdagi dunyoning qadri, yaxlitligi va xilma-xilligi, undagi o'z o'rnini anglash, jamiyatda samarali va xavfsiz o'zaro munosabatlarni ta'minlash uchun psixologik madaniyat va kompetentsiyani shakllantirishga ilmiy yondoshilgan.

**Kalit so'zlar:** biosfera, texnosfera, xavf, xavfsizlik, atrof-muhit, ekologiya, muhofaza, vizual, kompetensiya, pedagogik.

**Аннотация:** В развитии эколого-педагогических компетенций обучающихся изучается история края, культура, природа нашей страны, ее современная жизнь, ценность, целостность и многообразие окружающего мира, осознание своего места в нем, психологические для обеспечения эффективного и безопасное взаимодействие в обществе научный подход к формированию культуры и компетентности

**Ключевые слова:** биосфера, техносфера, риск, безопасность, окружающая среда, экология, защита, визуальная, компетенция, педагогическая.

**Abstract:** In the development of environmental education competencies in students, the history, culture, nature of our country, its modern life, the value, integrity and diversity of the surrounding world, awareness of one's place in it, ensuring effective and safe interactions in society a scientific approach to the formation of psychological culture and competence for

**Key words:** biosphere, technosphere, risk, safety, environment, ecology, protection, visual, competence, pedagogical.

**Introduction.** The duration of instability in production, economy and social life in world countries leads to a decrease in the survival and life expectancy of a person, a deterioration in the state of the biosphere, the technosphere, the health of the population in society, restrictions on the requirements, interests and needs of the population, the emergence of new previously unknown types of risks. Any state is obliged to solve the strategic task of obtaining a minimum loss or maximum benefit from its activities in conditions of limited resources to ensure security and with an acceptable level of security for society. The pace and scale of changes in the development and economy of society, carried out on the basis of technical, resistance and social factors, tactical and strategic tasks of government and society in conditions of limited resources, depends on the solution of this problem.

The problem of environmental safety comes to the fore in its relevance, when environmental safety becomes one of the components of national security. The current situation constantly requires citizens to be aware of environmental problems, determine

the urgent need for the formation of a new environmental thought, which is impossible without universal environmental education and upbringing.

President Of The Republic Of Uzbekistan Sh.M.Mirziyoyev's speeches focus on such issues as a systematic approach to the problem, critical analysis, raising the work carried out in all areas to a qualitatively new level, improving the efficiency of the existing system, raising the public administration system to the level of qualitatively modern requirements based on today's and tomorrow's requirements, improving the entire system of the working with personnel.[1]

To determine the level of development of students 'competency in ecological education within the framework of the discipline " safety of life activity ", as well as to examine the effectiveness of students outside the audience in studying the relationship of students to ecology, was carried out by the researcher and teachers of the same discipline.

### **The content of experimental work on the development of environmental competencies in students and the methodology for its conduct.**

The purpose of the pilot work was to determine the degree of effective use of pedagogical conditions that allow to develop the competence of future educators on environmental education. In accordance with the stated goal, the following tasks were solved:

- study and generalization of competency levels of students in the educational process on the basis of special comprehensive programs within the framework of the discipline " Safety of life activity " on the principles of unity of e- study and generalization of competency levels of students in the educational process on the basis of special comprehensive programs within the framework of the discipline " Safety of life activity " on the principles of unity of Ecology, consistency, continuity, interdependence and environmental knowledge.
- identification of information on the development of environmental education competencies in the training of students of the educational direction of pedagogy in the field of "Safety of life activity" with the help of questionnaire surveys;
- study using the example of the content of the educational content of the subject "safety of life activities" of students, the topics of forms and methods of teaching and the tasks assigned for independent performance;
- to achieve the formation of competency characteristics related to ecological education on the basis of a competency approach in students of the pedagogical direction of Higher Education.

The pilot work was carried out during the academic years 2020-2023, in which the pilot work was carried out in three stages at Termez State University, Navoi State Pedagogical Institute, Urgench State University and Jizzakh state pedagogical universities:

1. At the stage of the **founding experiment**, pedagogical educational activity was organized, aimed at determining the level of development of competencies related to environmental education based on the teaching of the "Safety of life activity" of students in the process of obtaining special education. In achieving the intended goal, the process of teaching the subject "Safety of life activities" of students studying in the pedagogical educational direction was observed, with which a

conversation was held about the preservation of nature, about the current situation of ecological culture and ecological situations, surveys. These works made it possible to define the direction and program of research. The scientific work of leading scientists and experienced educators in this field on the topic of research was analyzed. Based on the teaching of the subject "Safety of life activity", appropriate problem situations, tasks and methods, forms and means of their implementation were established, based on the characteristics of the development of competencies on the environmental education of students.

2. At the stage of the **forming experiment**, a practical and methodological activity was organized on the basis of teaching the subject of the recommended instruction, instruction, methodological developments and competence of students of the pedagogical educational direction on Environmental Education, 'Safety of life activities'. With the help of practical methods aimed at directly and indirectly pedagogical observation of students' activities, Organization of practical trainings with their participation, identification of their personal attitude to the ecological problems observed today in our nature, in addition to interviews, questionnaire surveys and lessons, knowledge, skills and qualifications, development of competencies related to ecological education, were formed in them. The level of development of competence in environmental education was analyzed on the basis of teaching students the science of "Safety of life activity".

3. The level of development of competencies of students of the pedagogical educational direction in the framework of the discipline "safety of life activities" at the stage of the emphatic experiment was analyzed on the basis of tasks for independently solving ways to eliminate ecological problems and what to rely on to identify the causes of the violation of the Today's ecological environment, as well as ways to find solutions to ecologic problems, as well as the degree of development of their competence on ecologic education in the framework of the science "safety of life activities" were identified in them.

The successful conduct of pilot work was ensured due to the presence of the following objective and subjective factors:

- the creation of methodological conditions aimed at the development of competence in the field of ecological education in the framework of the discipline "safety of life activities" in students of the pedagogical educational direction;
- having sufficient material and technical base in teaching the subject of "risk of life activity" in higher educational institutions;
- the efficient use of modern didactic and technical means and Information Technology in the process of educational and educational work;
- in the process of obtaining competencies on environmental education, environmental thinking in students is gradually formed as the basis of ecological culture and environmental maturity, which in turn is an important component of the formation of an intellectual and spiritual-moral personality;
- the involvement of educators in the field of qualified, highly pedagogical skills in the formation of the levels of development of students' competencies on ecological education within the framework of the teaching of the subject "safety of life activities";

- responsible attitude to the consequences of its activities for environmental safety, human health and safety.

Experimental work on the basis of recommendations, guidelines, which were presented in the scientific work of Yu Karimov [6] and others, were carried out in accordance with state educational standards and educational goals.

In the process of conducting pilot work, special attention was paid to the reflection of the following features in their upbringing in determining the degree of development of their competencies regarding ecological education within the framework of teaching the subject “Safety of life activity” in students:

- 1) the ability to put environmental knowledge into practice in the identification, solution and Prevention of environmental problems, improving the state of the environment, the practical experience of copetension on environmental education, the degree of formation
- 2) presupposes the presence of value orientations, the understanding of the meaning of environmental activity, the understanding of the need to preserve the natural environment as the most important value
- 3) understanding the social and personal importance of Environmental Education, a reliably conscious civic position with its participation in the protection of the living environment
- 4) willingness to actively participate in environmental activities, environmental conditions
- 5) responsibility for the results of its environmental activities, decisions made in the field of environmental change and protection.
- 6) the principles of the formation of competency of students regarding environmental education are established, they connect all the components of the educational process to a holistic system, provide the necessary level of formation of environmental competence and are implemented in pedagogical technology
- 7) the competence in environmental education is the ability of future teachers to make a worthy contribution to the formation of their ecological culture, to develop their interest in nature, to make sure that environmental protection is necessary, to eliminate world environmental problems.[4]

In order to determine the effectiveness of pilot work, respondents were attached to experimental and control groups on an equal basis. In the experimental group, practical activities were established on the basis of the methodology recommended by the dissertation and helping to ensure the development of the competence of students of the pedagogical direction on environmental education in the framework of the discipline “safety of life activities”, while in the control groups, educational work was carried out in the traditional manner.

In the process of substantiating and emphasizing experimental work, on the basis of a competency approach in respondents, a special questionnaire was developed aimed at determining the degree of content of concepts related to the development of environmental competence (table 3.1.1).

The results of the survey using this questionnaire are given in the table below.

**Table 3.1.1**

**The degree of content of the development of environmental educational competencies in students within the framework of the science “safety of life activities”**

Questionnaire questions	Answers to questions	In experimental groups		In control groups	
		At the beginning of the experiment	At the end of the experiment	At the beginning of the experiment	At the end of the experiment
1. How would you interpret the essence of the concept of "Competence in environmental education"?	Positive	82	158	86	90
	Satisfactory	98	112	102	106
	unsatisfactory	142	52	135	127
2. Do you think that environmental culture is of particular importance for achieving sustainable (balanced) development of society and nature?	Positive	84	156	87	91
	Satisfactory	97	113	103	107
	unsatisfactory	141	54	134	128
3. What qualities should be formed for the development of ecological education and ecological culture in various fields of activity?	Positive	85	153	84	94
	Satisfactory	95	111	101	109
	unsatisfactory	140	55	136	126
4. How do you assess the level of competence of students studying pedagogy in environmental education?	Positive	86	152	87	91
	Satisfactory	96	110	102	107
	unsatisfactory	142	53	134	127
5. Do you know what factors play a leading role in the formation of the skills of applying environmental knowledge in life situations related to the performance of typical social roles?	Positive	88	149	81	89
	Satisfactory	93	108	98	103
	unsatisfactory	146	50	143	134
6. What are the problems in the development of ecological education based on the pedagogical approach?	Positive	84	156	87	91
	Satisfactory	97	113	103	107
	unsatisfactory	141	54	134	128
7. Do you know what tools to use in developing a personal attitude to environmental education, moral responsibility for the ecological consequences of one's actions in the environment?	Positive	82	158	86	90
	Satisfactory	98	112	102	106
	unsatisfactory	142	52	135	127
	Positive	85	153	84	94
	Satisfactory	95	111	101	109



8. What do you see as the main reasons for the deterioration of environmental conditions?	unsatisfactory	140	55	136	126
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In the framework of the science of “safety of life activity” in the students of the experimental and control groups, the competence on environmental education was developed and the level of content content of ecological education was as follows according to the results obtained:

- in control groups, 26.67% of students tested positive at the beginning of the experiment, 34.22% achieved positive results at the end of the experiment, while in pilot groups, 24.32% of students tested positive at the beginning of the experiment, and at the end of the experiment, 37.62% of them achieved positive levels.
- the number of students who gave satisfactory answers in control groups initially showed a result of 35.57%, achieved a result of 37.42% at the end of the experiment, while in experimental groups they initially showed a result of 36.41%, and at the end of the experiment they achieved a result of 41.22%.
- the number of students with unsatisfactory indicator (no comment) decreased from 37.76% to 30.36% in control groups, while in pilot groups it decreased from 39.27% to 21.16%.

**Conclusion.** The basis of any pedagogical process is pedagogical States, which, depending on their ordered set, lead to the educational changes envisaged in the formed person, the formation of his scientific worldview.

Material and spiritual needs, directions of values, motivations, incentives, behavioral abilities and habits, qualities and character traits. The pedagogical situation determines the active interaction and unity of all the main components of the pedagogical process - the teacher, the student, the specific historical content, organizational and managerial structures, the pedagogical environment.

Each pedagogical situation reflects the state of the pedagogical process, the laws of upbringing and the principles of pedagogical activity are manifested, the main educational and educational contradictions, their timely identification and resolution determine the main driving force for improving the pedagogical process.

#### References:

- [1]. Mirziyoyev Sh.M. Ensuring the rule of law and human interests is a pledge of the country's development and people's well-being. Tashkent, "Uzbekistan", 2017.
- [2]. Sh. Tursunov, A. T. Butayarov, K. A. Yodgorov. "Safety of Life Activities" Textbook, T-2022. 250 p.
- [3]. E.T Turakulov "Bezaposnost' jiznedeyatel'nosti" Uchebnoe posobie,. Tashkent-year 2023. 210 str.
- [4]. Turdigulov E.A. Environment and man.-T.: Bioecosan, 1996.-28p.
- [5]. Urazaliev A. Ecological education and education in high school and extracurricular work in physics. Avtoref.diss.kand.ped.nauk.- Chelyabinsk, 1989.-p. 16.
- [6]. Karimov H., Ergashev A. Radiation situation in Uzbekistan. Ekologichesky vestnik, No. 1-2, 1999, p. 43-49.



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**PARTICIPATION OF THE NON-INDIGENOUS POPULATION IN  
THE PROCESS OF ECONOMIC TRANSFORMATIONS IN TURKESTAN  
(LATE 19TH CENTURY - EARLY 20TH CENTURY)**

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**Annotatsiya:** Rossiya imperiyasi tomonidan O'rta osiyo hududlari bosib olinganidan keyin o'lka iqtisodiy hayotida Turkistonga imperiyaning turli hudularidan ko'chib kelgan tub bo'lmagan aholi ham faol ishtirok etdi. Maqolda Turkistonda ishlab chiqarish munosabatlardagi o'zgarishlar, yangi zavod va fabrikalarining yo'lga qo'yilishi, yangicha ishlab chiqarish muassasalarining shakllanishi, o'lkada kapitalistik iqtisodiy munosabatlar kirib kelishida tub bo'lmagan aholing roli kabi o'ziga xos jihatlar kabi masalalar tahlil qilinadi.

**Kalit so'zlar:** Rossiya imperiyasi, Turkiston umumiy hukumati, tub bo'lmagan aholi, ko'chirilish, iqtisodiy siyosat, manufaktura.

**Аннотация:** В статье анализируются вопросы, связанные с ролью некоренного населения в таких процессах, как изменение производственных отношений в Туркестане, создание новых заводов и фабрик, формирование новых производственных институтов, внедрение капиталистических экономических отношений в стране.

**Ключевые слова:** Российская империя, Туркестанская генерал-губернаторства, некоренные народы, переселение, экономической политики, мануфактура.

**Abstract:** The article analyzes issues related to the role of the non-indigenous population in such processes as changing production relations in Turkestan, creating new plants and factories, forming new production institutions, and introducing capitalist economic relations in the country.

**Key words:** Russian Empire, Turkestan General Government, non-indigenous peoples, resettlement, economic policy, manufacture.

**Introduction.** However, with all the natural resources of Turkestan, using them is a very slow step, and the reason for this is to a certain extent the insufficiency of the population of Turkestan. The local population was not able to expand the productive forces of Turkestan at that time either in terms of their numbers or in terms of available means. In addition, at that time there was an undesirable resettlement of Turkmens and the local population to Afghanistan and even to India. The resettlement of Russians from European Russia at that time only increased. Therefore, the role of the alien population in changing production relations, creating new plants and factories, and forming new production institutions in Turkestan increased. Along with the population from the European part of Russia, the non-indigenous population, such as Armenians,

Persians, Jews, and Eastern Turkestans, also took an active part in this. Showing their place in these historical processes is one of the topical issues.

**Literature Review.** The general characteristic of the literature of the period under study is that it actively studied economic changes in Turkestan and new economic trends in the interests of the Russian Empire. The main research is devoted to the establishment of economic relations between Russia and Turkestan, the development of cotton growing, agriculture in the interests of production in the region, the penetration of capitalist relations. In general, it should be noted that literature, scientific works and articles on the topic are written in accordance with the spirit of the era and the corresponding ideological challenges. They also noted the participation of non-indigenous people in line with these views. Therefore, it is important to objectively see the process of general economic changes of the non-indigenous population in Turkestan.

**Research methodology.** This article was written based on generally accepted scientific methods – historicity, comparative logical analysis, consistency, principles of objectivity. In addition, when writing the article, such methods as system analysis, the relationship of facts, inductive analysis of the issue under study, generalization of the results obtained, and comparability were used.

**Analysis and Results.** In the economic changes that took place in the late 19th and early 20th century, the participation of non-indigenous people was significant. Although they were mostly residents of the European part of the Russian Empire, other nationalities also took an active part. Among them were the European population who came with the Russians, in particular Germans, European Jews, Armenians and representatives of other nationalities. They, in turn, were close to the ruling class of the empire, and there were representatives of the petty bourgeoisie who wanted to start their own entrepreneurial activities. They aspired to special privileges and rights, occupying a dominant position over the indigenous population of Turkestan. Because of their actions, not only the indigenous population of the country suffered, but also representatives of the non-indigenous population living here for many years. In particular, most of the Bukharian Jews, who were engaged in small crafts and trade, were forced to change their profession and take up other work. This caused a further deterioration in the socio-economic situation of the ordinary stratum, which makes up the majority of the population of Turkestan. As a result, the dominance of Russians in the country has become one of the main factors that led to the aggravation of protest moods against their socio-economic policies. [1]. As discussions in the State Duma show, the Duma majority subordinated the tasks of the economic development of Turkestan to the concept of consolidating the leading economic role of Christian Europeans in the colony, their priority support by the state. In accordance with these changes, the State Duma recognized as correct the rejection of class restrictions during resettlement.

At the end of the 19th century - early 20th century among the Bukharan Jews who lived on the territory of modern Uzbekistan, a small but economically influential layer of large merchants and industrialists appeared. They played a leading role in the cotton trade, invested heavily in the development of the cotton-cleaning and cotton-processing industry of the Turkestan region, which was experiencing a period of rapid

growth at that time (the Bukharan-Jewish families of the Vadiyaevs and Potilakhovs were among the largest cotton manufacturers in the Russian Empire).

At the same time, the influx into the Turkestan region, the Bukhara and Khiva khanates of relatively cheap factory fabrics from Russia led to the ruin and impoverishment of the vast majority of Jewish dyers and weavers. Many of them had to engage in petty trade, including peddling, or seek employment in the service sector (by the beginning of the 20th century, Jews made up a significant part of hairdressers, shoemakers, and shoe shiners in the region) [2].

Trading House Y. Davydov was founded in 1906. The owners of the Trading House "Yusuf Davydov" were 11 people: merchant of the first guild Yusuf Davidovich Davydov, merchant of the second guild Issahar Davidovich Davydov, merchant of the first guild Benyamin Abramovich Abramov; children of Yusuf Davydov - Yuno, Yukhanan, Zion, Rakhmin; children of Issahar Davydov - Abram, Nathan; and Rafael Abramovich Abramov. The Trading House exported to Moscow: cotton, wool, silk, fruits, etc. The Davydov brothers owned 4 cotton processing plants in Tashkent, Pskent, Namangan and Kanibadam; beer factory in Tashkent and warehouses. The main activity of the company was the export of cotton to the Moscow textile region. The trading house actively cooperated with the Danilov Manufactory, borrowed money from the Turkestan branches of commercial banks and the State Bank[3].

Immigrants from Armenia became the first settlers among the Caucasian peoples in Central Asia. These were mainly men who took part in the conquest of the region. They moved both from the Russian Transcaucasia and from the Ottoman Empire. Asia. Tenement houses and restaurants, shops, baths, craft workshops and factories, wineries, baths, hotels, tenement houses opened by Armenians appeared in the cities of the Turkestan region. Major General Boris Litvinov recalled: "Russian troops came, Armenians followed them ... shops opened; more troops arrived ... transport offices, factories, a church, a school and ... Armenians, Armenians and Armenians grew up. The Armenian merchants ousted the Tatar merchants, the Armenian tailors expelled the Jewish tailors, the Armenians - buyers, resellers, keepers of pubs, in a word, a special Armenian quarter was formed.

In view of the absence of convenient lands in Turkestan and especially in culture, resettlement from European Russia has so far been carried out on a very modest scale. In 1911, the settlers were distributed in Turkestan in the following numbers: in the Semirechensk region 12,848 people, in the Syrdarya region 1,692. In total, in 1911, Russian peasants moved to Turkestan 58,600 people with 14,500 households. In 1912, 28 plots of more than 220,000 acres were allocated to immigrants in the Semirechensk region, 28 plots of 195,000 acres in the Akmol region, and 35 plots of 89,000 acres in the Semipalatinsk region.4].

Until 1911, the resettlement of Russians from European Russia to Turkestan was carried out on a very modest scale and mainly due to the lack of irrigated lands in Russian Central Asian possessions [5].

According to the calculations of the main department of land management and agriculture, about one and a half million people could be sent from European Russia to settle free lands in Turkestan. To this end, it is planned to organize in Turkestan about 30,000 individual farms, for which at least 700,000 rubles will have to be spent.

The need for the settlement of Turkestan in general by settlers, mainly Russians, does not have to be particularly extended, since the lack of workers at the present time greatly hinders the development of industry in Turkestan, and the absence of a Russian population in Turkestan !?, as in general in our outskirts. for a long time to leave them not Russian and in case of international complications will cause all the sad consequences that took place in the Russo-Japanese war. The defense of these suburbs from the encroachments of neighbors will always be an extremely difficult matter, until the local population is able to organize the first defense itself at first and is imbued with a general consciousness of the need for communication and communication with European Russia[6].

If we consider it proved that the available number of workers in Turkestan is not enough and that, as a result of this, cotton growing there, despite its increased growth, does not reach the size necessary for Russian industry. Then it is precisely by resettlement from European Russia that, in addition to irrigation and the availability of free land, one can count on an increase in cotton growing in Turkestan. Only with resettlement in Turkestan, in addition to small-scale, horticultural farming, will a plantation cotton-growing economy develop similar to the United States.

Needless to say, the most stable settlement of Russian settlers in Turkestan will give the government and Russian industry such advantages that it will be superfluous to extort the above amounts in the form of taxes not only in the first years of resettlement, but also in subsequent years. The government will receive indirect income from wealthy Russians settlers of Turkestan in much greater numbers than the taxation of 5-15 r. Then, it is impossible not to notice that of the 50,000 Russians in Turkestan indicated in the draft, not all of them will be suitable for agricultural purposes. Retired soldiers, small artisans, merchants, day laborers in general do not represent any advantages over the indigenous farmers, gardeners, gardeners of European Russia. It is desirable to open free access to all the indicated categories of peasants from European Russia to the land in Turkestan newly irrigated by the government, to give these settlers local agronomists for initial guidance, and by such a resettlement of fresh Russian forces. The Russification and enslavement of the Turkestan region will soon be completed, and industry and trade will develop in Turkestan sooner [7].

The State Duma in the fifth session of 1912 expressed a desire to attract private capital for the construction of large hydraulic structures in Turkestan. Private capital should have been Russian, Russian subjects, but also foreigners. Actually, there are few purely Russian capitals working in Russia: the majority of enterprises are in Moscow, St. Petersburg, Riga, Lodz, Blostock, South-Western. The Baku and Donetsk regions are served by far from Russian capitalists. Under the name of many Russian firms and banks, non-Russian capitals are also working in Russia. And there is no particular harm in that; large-scale industry in Russia is developed precisely by these large capitals, but the average mass industrialist in most cases is Russian, and therefore in Turkestan one cannot be afraid that foreigners or non-Russian subjects will represent the main force of Central Asian industry. The next given open action in Russia by Russian and foreign joint-stock companies shows that even in Turkestan, the average

mass Russian industrialists will not let go of profitable enterprises in the Central Asian Russian possessions.

Therefore, the alleged prohibition of Jews, Armenians and foreigners from taking part in the development of cotton growing in Turkestan and in general industry in this region is superfluous. In Turkestan, an influx of private capital is needed, it does not matter, purely Russian, Jewish, Armenian, or foreign. It is only necessary to furnish conditions for all these capitals so that there are no traces of usury, politicking, and so that the average Russian citizen-entrepreneur can also strengthen and increase in numbers, as is observed in most industrial regions of European Russia[8].

Finally, in the interests of the industry and trade of Turkestan, it is impossible not to express the desire that the natural wealth of the Central Asian Russian possessions be as often and in more detail as possible to acquaint a large public with individual brochures or articles in the periodical press, and more enterprising people. Free Russians and, most importantly, foreign capitalists could be aware of where in Russia those places and those conditions under which it would be possible to find something new and interesting for the capital of industrial and commercial labor. And in this regard, Turkestan is more likely to attract attention than any other place in Russia in terms of diversity and natural wealth.

Accelerating the resettlement of Russian peasants from European Russia is a matter of extreme political and industrial importance for Turkestan. Settlers should not be burdened with taxes in the early years, since the Russification of Turkestan and the development of industry in it by newcomers will give the government in the future an incomparably more profitable article than any form of poll, land, water and other types of taxation.

**Conclusion.** In the economic changes that took place in the late 19th and early 20th century, the participation of non-indigenous people was significant. Although they were mostly residents of the European part of the Russian Empire, other nationalities also took an active part. Among them were the European population who came with the Russians, in particular Germans, European Jews, Armenians and representatives of other nationalities. They, in turn, were close to the ruling class of the empire, and there were representatives of the petty bourgeoisie who wanted to start their own entrepreneurial activities. They aspired to special privileges and rights, occupying a dominant position over the indigenous population of Turkestan. Because of their actions, not only the indigenous population of the country suffered, but also representatives of the non-indigenous population living here for many years. In particular, most of the Bukharian Jews, who were engaged in small crafts and trade, were forced to change their profession and take up other work. This caused a further deterioration in the socio-economic situation of the ordinary stratum, which makes up the majority of the population of Turkestan. As a result, the dominance of Russians in the country has become one of the main factors that led to the aggravation of protest moods against their socio-economic policies.

#### **References:**

[1]. Mamaev A.V. Problems of economic development of Turkestan in the work of the IV State Duma // *Clio*. No. 11(143) 2018- P.75,



[2]. Gitlin Semyon Isaakovich European Jews in Russian Turkestan at the turn of the twentieth century // Bulletin of RUDN. Russian history. 2018. No. 2. URL: <https://cyberleninka.ru/article/n/evropeyskie-evrei-v-russkom-turkeстане-na-rubezh-hih-hh-vv> (date of access: 09/17/2022).

[3]. Alimdzhанov B.A. "The collapse" of the Yu. Davydov Trading House: causes and consequences // History. Memory. People: Materials of the IX International Scientific and Practical Conference. September 27, 2018, Almaty. – Almaty, 2019. – P.389.

[4]. Ogloblin V.N. Industry trade of Turkestan. From travel notes. – Moscow, 1914. – P. 24-25; 27; 71.

5. Bunakov E.V. Trends in the development of capitalist relations in Middle ... Uzbekistan at the end of the 19th and beginning of the 20th centuries - Т., Publishing House of the Academy of Sciences of the UzSSR, 1960,.. -P. 37; 46.

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### **IMPLEMENTED REFORMS TO INCREASE WOMEN'S VALUES IN THE NEW UZBEKISTAN**

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**Аннотация:** Ушбу мақолада жамият юксалишида аёл-қизларнинг ўрни, уларнинг жамият ва давлат ишларини бошқаришдаги иштирокини таъминлаш, ҳуқуқ ва имкониятларини кенгайтириш борасида амалга оширилаётган ислохотлар ёритилган. Давлатимизда аёл-қизларга турли соҳа ва тармоқларда ўз қобилият ва имкониятларини рўёбга чиқариш учун шарт-шароит яратиш, оналик ва болаликни ҳар томонлама қўллаб-қувватлаш, оила институтини, қизларнинг билим олиши, уларнинг менталитети, онгу-тафаккурини ривожлантириш борасида амалга оширилаётган ишлар баён этилган.

**Калит сўзлар** – жамиятда аёлнинг ўрни, гендер тенглик, норматив-ҳуқуқий асослар, иқтисодий ва сиёсий фаоллик, тадбиркорлик фаолияти, оила институти, зўравонлик ва тазйиқ, менталитетни шакллантириш, таълим олиш, касб танлаш.

**Abstract.** This article highlights the role of women and girls in the development of society, ensuring their participation in the management of society and state affairs, and the reforms being carried out to expand their rights and opportunities. In our country, the work to be carried out in terms of creating conditions for women and girls to realize their abilities and opportunities in various fields and sectors, providing comprehensive support for motherhood and childhood, developing the family institution, girls' education, their mentality, self-thinking, has been described.

**Keywords** –the role of women in society, gender equality, normative and legal bases, economic and political activity, entrepreneurship, family institution, violence and oppression, formation of mentality, education, career choice.

**Introduction.** In the course of the historical development of humanity, the cultural level and spiritual perfection of any society are determined by the spiritual image of the women living in that country and the efforts aimed at increasing the social activity of women in the state policy.

In our country, women, who make up about half of the population, take their rightful place in life, show their potential, and ensure their full participation in the spiritual-educational, socio-economic, and political reforms implemented in society.

The position of women in society, and their active participation in state and community affairs, has a positive effect on the successful passage of reforms. Without changing the mentality of the population in society, it is impossible to understand the nature of reforms and increase their effectiveness. From this point of view, it is important to observe the changes in the socialization and mentality of women and girls in a scientific and theoretical way.

**Literature review.** Understanding human identity, humanist ideas are reflected in the works of Al-Khorazmi, Abu Rayhan Beruni, Abu Nasr Farabi, Abu Ali Ibn Sina, F. Bacon, R. Descartes, B. Spinoza, I. Kant, G. W. Hegel.

The introduction of the issue of mentality into scientific circulation is associated with the name of the French ethnologist and social anthropologist Lucien Levi-Bruhl [13]. In his work "Primitive Mentality", he uses the concept of mentality as an intellectual and psychological generalization of society.

Several Western and Eastern scientists have studied the issue of mentality. The problem of mentality in the modern philosophical scientific literature of Uzbekistan M.N.Abdullaeva, M.Bekmurodov, A.Begmatov, J.T.Tulenov, F.Turgunboev, N.A.Shermukhamedova, B.T.Toychiev, Sh.O.Madaeva, G. Kh. Rasulova and other scientists studied.

In the encyclopedic dictionary of philosophy: "Mentality" (Latin, "means" - mind, understanding) - is the level of thinking, spiritual potential, power of analysis of the laws of life, the intellectual ability formed in certain social conditions of a society, nation, community or an individual. 14], - is defined as.

During the years of independence in Uzbekistan, changes in the political-economic and social-spiritual spheres of society led to a change in the mentality of women and girls. The share of women and girls in the management system of society, in production and business activities, and social and spiritual life is increasing year by year.

General scientific methods such as theoretical logical systematic analysis, historical and comparative analysis, and generalization were used as the methodological basis of this analysis.

**Discussion and results.** At a time when the pace of life in the world is accelerating, the issue of women is one of the global problems. Even though women make up one-third of the official workforce in the developed countries of the world, ensuring women's political and economic rights and gender equality remains a problem. Therefore, in 1995, at the IV World Conference on the Status of Women, the UN put on the agenda that the issue of women remains one of the main issues that





should be paid attention to in every socio-political era. The Beijing Platform for Action adopted at the conference is significant, and the Beijing Declaration is adopted. The Platform for Action focused on twelve specific areas: Women and poverty; education and professional training of women; women and health care; violence against women; women during armed conflicts; women and the economy; participation of women in management bodies and decision-making; institutional mechanism for improving the status of women; women and human rights; women and the media; women and the environment; girls[11]. It was emphasized that special norms should be adopted by governments and societies in these areas.

After gaining independence, our country has done a lot to protect women's rights and legal interests in society.

Today's results of the efforts made about women are inextricably linked with the fundamental improvement of the institutional foundations in this field. In the first period of independence - the beginning of democratic reforms, the issue of gender equality, and the importance of the role of women in society, a separate state structure - Women's Committee was formed in our country in 1991.

Article 58 of the Constitution of the Republic of Uzbekistan: "Women and men have equal rights. The state provides women and men with equal rights and opportunities in the management of society and state affairs, as well as in other spheres of society and state life" [1].

Uzbekistan joined all the main international documents that protect women from any discrimination and humiliation. This includes the Geneva Convention on Maternity Protection, the New York Convention on the Political Rights of Women and the New York Convention on the Elimination of All Forms of Discrimination against Women, the United Nations Convention against Transnational Organized Crime. International documents such as the Protocol on the Prevention, Suppression and Punishment of Trafficking in Traffic, Especially Women and Children, can be cited as an example.

To occupy a worthy place in the ranks of the international democratic community, to build a civil society that is second to none, to further expand the mindset and worldview of the population, including women, to completely abandon the old remnants and complications, to live harmoniously and in harmony with the demands of the times. is important. Therefore, it is necessary to increase the socio-political and social activity of women, to create conditions for them to realize their abilities and opportunities in various fields and industries, to ensure unconditional observance of their rights and legal interests, to provide comprehensive support for motherhood and childhood, family Decree of the President of the Republic of Uzbekistan Sh.M. Mirziyoev dated February 2, 2018, No. PF-5325 on strengthening the institution "On measures to fundamentally improve activities in the field of supporting women and strengthening the family institution" [2]and by this decree, to further support the Institute of Women and Family, the Cabinet of Ministers made a decision "On the organization of the public fund for women and family support" [3]. The main tasks of this fund are all-round support for women and families, including providing financial assistance to women and families in severe social situations, women with disabilities, women in the family and private entrepreneurship, in the organization of handicrafts, labor assistance

in acquiring knowledge and skills for professions that are in high demand in the market is noted. This confirms the respect and attention of women at the level of state policy.

In our country, all conditions have been created for women to work according to their ability to show their talents. If a woman realizes her place in society as not only a woman, but also as a human being, if she can properly direct the abilities given to her by nature, if she considers that the goal of her life is not only to build a family, but to make a worthy contribution to the development of society with honest work, then this woman will be satisfied with her life.

In recent years, the number of women who know their purpose, who, in addition to being a housewife and mothers of children, are maturing through their profession in various spheres of society's development, is increasing.

Other values of 21st-century women have been formed in addition to child rearing and loyalty to family. This is their desire to find their place in society and to contribute to the development of society through their profession.

According to the Decree of the President of the Republic of Uzbekistan No. PF-87 of March 7, 2022, "The National Program on increasing the activity of women in all aspects of the economic, political and social life of the country in 2022-2026"[6] was adopted. The National Program consists of six chapters. its third chapter defines the priorities of the implementation of the National Program, which are as follows:

Improving the legal basis for protecting the interests of women;

- Ensuring equal rights and opportunities for women and men;

Further strengthening the guarantees of women's labor rights;

Protection of women from oppression and violence;

Supporting women who are kept in penal institutions and educated in specialized educational institutions;

Support of women who went to work abroad, prevention of human trafficking;

Monitoring the implementation of international conventions and national legislative norms adopted on the protection of women's interests, motherhood, and childhood protection;

Ensuring the employment of women, supporting their entrepreneurship;

Further strengthening of the role and status of women in state and community management;

Creating additional conditions for women's education, increasing the role of women in the field of science;

Popularization of sports among women, creation of additional conditions for cultural recreation;

Honoring Nurani mothers, supporting them socially and economically, and increasing their activity;

- Supporting women in need of social protection.

In the comprehensive plan of measures aimed at implementation of the national program in 2022-2023: measures consisting of 6 main areas and 112 items have been developed, and in the second area of the plan- to increase the economic, social, and political activity of women, the following are defined:



Taking measures to employ 140,000 women in 2022 and 150,000 in 2023; 66,000 in 2022, and 74,000 in 2023, supporting their employment by involving them in paid public works;

Allocate subsidies to 17 thousand 62 women in 2022 and 19 thousand 20 women in 2023; organization of the "Dialogue of Leading Women" platform in the republic and regions;

To increase the number of women to 30 percent of the total number of candidates recommended for master's degree in recommending candidates for master's degree at the Academy of Public Administration under the President of the Republic of Uzbekistan; Important issues such as increasing the number of women participating in the "One Million Programmers" project to 30% have been expressed [6].

The implementation of the tasks in the National Program serves to create new opportunities for women to live a truly happy life, and to take a strong place in the family and society as a happy woman.

To increase the professional and intellectual potential of active women working in various fields of public administration, and to prepare them for leadership, it is planned to organize short-term training in the system of the Academy of Public Administration under the President of the Republic of Uzbekistan.

Realizing the nature of the conditions created for women and girls, changes in their mindset in recent years ensure their active participation in the socio-economic, political, and spiritual life of society. As a result of changes in society, transformation processes are also occurring in women's mentality.

In our country, for the first time in the world experience, the position of women's activist was introduced to work separately, comprehensively, and specifically with women's issues to develop entrepreneurship, ensure population employment, and reduce poverty.

The "Women's Entrepreneurship Center" in the region, which helps women develop their entrepreneurship and find their place in society, also serves as a real helper for women who want to engage in entrepreneurship. In the following years, the work carried out to support women entrepreneurs is noteworthy.

In particular, to ensure the employment of women, and to widely involve them in business activities, the practice of allocating preferential loans was launched.

More than 30% of the clients of the microcredit base of commercial banks are women. Loans in the amount of 4.9 trillion sums were allocated to more than 172 thousand women at the expense of commercial banks. As a result, the number of women who started businesses increased by 45,000 in one year.

Starting in 2019, the implementation system of providing employment to the population and creating new jobs based on the state order was launched. The procedure for issuing temporary work permits to self-employed citizens and recording their work experience has been introduced. As a result, the share of women employed in the informal sector reached 27%.

Special attention was also paid to the development of remote areas of the republic, the beautification of villages, and the reduction of poverty by supporting the economic activity of women living in villages. More than 1.5 million women work in various fields of agriculture.



20 percent of business entities, including 7.3 percent of farms, are headed by women [5].

In 2007, the total participation of women in local representative bodies was -16%, and in the Legislative Chamber was 17.5%. Today, 32% of the deputies of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan, the members of the Senate, and nearly 25% of the deputies of the Dzhokorg Council of the Republic of Karakalpakstan and local Councils are women. girls make up.

Women make up 45 percent of the workers and employees working in various industries and sectors in our country. In particular, about 1,400 of our sisters are working in leadership positions in the system of state and public organizations. 17 of them are senators, 16 are deputies of the legislative chamber of the Oliy Majlis, and 1,750 are members of local councils of people's deputies.

Currently, the share of our respectable women working selflessly in our country is 77% in medicine, 74% in education, and 46% in economy and industry.

If in 2017, the share of women in management was 27%, today it has increased to 33%, from 40% to 47% in the ranks of political parties, and from 21% to 37% in entrepreneurship. About 2,000 of our educated, proactive, and active women are in state and public organizations. serving in leadership positions.

For their meritorious services to our country and people, 17 of our women were awarded the highest award - the title of "Hero of Uzbekistan". Among our women, there are 5 academicians, more than 700 doctors of science in higher education institutions, nearly 3 thousand candidates of science, as well as many women who have received the honorary titles of "People's Poet of Uzbekistan", "People's Artist", "People's Teacher" and others. have [9].

The medal "Reputable Woman" was established for women who showed activity and initiative in the life of society and the state, and made a worthy contribution to the formation and well-being of the family, motherhood, and childhood protection with their effective work.

Even though so many things are being done in our country, the fate of women who become victims of violence, who fall into economic difficulties, and the number of family divorces increasing is a sad situation.

On the one hand, this is directly related to the mentality (worldview, knowledge, way of thinking) and is caused by the difficult process of socialization of women and girls. In some families, while all conditions are created for the issues of choosing a profession and studying at a higher educational institution for boys, the issues of choosing a profession and studying at a higher educational institution for girls are neglected.

According to statistics, in 2021, internal affairs bodies received 39,343 complaints about cases of harassment and violence against women and issued protection warrants to protect as many women. When analyzed by groups: 106 sexual, 234 economic, 18,777 mental, 13,658 physical violence, and 7,174 harassment cases were identified. Worst of all, 34,330 cases of violence, or 87% were committed in the family, and suffered by their loved ones [12].

In May 2021, the President of the Republic of Uzbekistan adopted the Decision "On additional measures for the rehabilitation of women who have suffered from violence" aimed at eliminating the consequences. 29 rehabilitation and adjustment centers for



women were established under the Ministry of Neighborhood and Family Support. Until now, rehabilitation centers have been operating as non-governmental non-profit organizations, but now it is decided that their activities will be fully financed from the state budget.

In Resolution No. 145 of March 31, 2022 [7] of the Cabinet of Ministers of the Republic of Uzbekistan on "Measures to further improve the system of studying and solving women's problems" [7], the "Women's Register" was created with women whose social status and living conditions are difficult, who are unemployed and socially inactive. ", special attention is paid to the issues of social-legal, psychological, medical and material support by further improving the work system.

Most of the women who are subjected to violence in the family and society are uneducated women who do not have their profession in life. Many problems that afflict our women today are rooted in their lack of knowledge and inability to adequately demand their rights. Unfortunately, due to differences and disagreements in the family, some women are left homeless, without a place, and are unable to demand money even for the support of their children.

What can society and the state do to prevent this? First of all, great attention should be paid to our girls' education, education, and careers. So, for women to find their place in society, first of all, the attitude of parents plays a big role, and secondly, the opportunity to include them in higher education plays an important role.

This, in turn, requires the consistent application of the rule "To give knowledge to women - to make society knowledgeable, enlightened and capable" [10].

If a girl has a higher education, as much knowledge and potential as she gets, she will responsibly approach the issue of raising children in the future, bringing up a well-rounded generation. The future of the country will be created by mothers with such a worldview.

On March 1, 2022, in the video selector dedicated to the issue of the support system for women and further strengthening of their position in society, with the participation of the President of the Republic of Kazakhstan, several benefits for girls' education were discussed, and starting from the new academic year, the contract money of girls studying at the master's degree will be fully covered from the budget (23 thousand 200 billion soums per girl), to send 50 girls to prestigious foreign universities for bachelor's degree and 10 for master's degree every year, to pay the education contract money of 150 girls who have lost their father or mother (a total of 2.1 thousand) from the local budget, creating conditions for distance learning for female students with young children, allocating a target quota of at least 300 for women in the doctoral program, at least 50% of the quota for female students to be targeted for specific sciences, technology and law, new The introduction of interest-free loans for the first time for 7 years [8] to pay for education contracts for girls studying in universities, technical schools and colleges from the academic year has brought the process of reforms to a higher level.

Indeed, if one girl in the family studies, has a higher education, or a modern profession, the atmosphere in the household changes completely. For this purpose, an important program [6] was adopted to support women's education.

If 6 years ago, 110,000 women studied at universities, now this number has increased by almost 5 times and is 500,000. In this regard, the percentage of our girls reached 50%, which is an unprecedented result in our history.

About 2,000 girls living in needy families, as well as more than 500 women with five years of professional experience, were admitted to universities based on a special quota [9].

To increase the place and influence of women in society, support their dreams and aspirations, and appropriately encourage girls who are becoming an example to young people with their talent and exemplary activities, who are realizing their abilities and opportunities in various fields and sectors, and who are active and proactive in social life. The Republic of Karakalpakstan, regions and Tashkent Since 1999, the talented girls of the city have been awarded the State Prize named after Zulfiya for their excellent character, unique talent, intelligence, initiative, academic success, and special achievements in the fields of education, science, literature, art, sports, and public activities.

The increase in their ranks from year to year is a sign of the growing sense of involvement of women and girls in the reforms implemented in our society, the formation of their mentality, and the rise of their consciousness.

**Conclusion.** To increase the status of women in society, to increase their intellectual potential, to further expand the range of opportunities created in society for the manifestation of their potential - the strengthening of families, the development of society, in addition, to the further rise of the prestige of our country in the international world, the improvement of children's education, women's most of the girls not only for their families, maybe, activation of selfless work for the development of society, for the development of society, will lead to an increase in the participation of women in the process of building a legal democratic society.

#### **References.**

- [1]. Constitution of the Republic of Uzbekistan (2023). Uzbekistan, 24.
- [2]. Decree of the President of the Republic of Uzbekistan "On measures to fundamentally improve activities in the field of supporting women and strengthening the family institution" (2018) No. 5325. // <https://lex.uz>. National database of legal documents.
- [3]. Resolution No. 201 of the Cabinet of Ministers of the Republic of Uzbekistan "On the organization of the activities of the Public Fund for Women and Family Support" (2018). // <https://lex.uz>. National database of legal documents.
- [4]. Decision (2021) of the President of the Republic of Uzbekistan "On additional measures to rehabilitate women victims of violence". // <https://lex.uz/docs/>. National database of legislative information.
- [5]. Strategy for achieving gender equality in the Republic of Uzbekistan until 2030 (2021). Chapter 2. / Resolution No. SQ-297-IV of the Senate of the Oliy Majlis of the Republic of Uzbekistan. // <https://lex.uz/docs/5466673>.
- [6]. Decree of the President of the Republic of Uzbekistan "National Program on increasing the activity of women in all aspects of the country's economic, political and social life in 2022-2026" (2022). // <https://lex.uz/docs>. National database of legislative information.



- [7]. Resolution No. 145 of the Cabinet of Ministers of the Republic of Uzbekistan on "Measures to further improve the system of studying and solving women's problems" (2022). //https://lex.uz/uz/docs/. National database of legislative information.
- [8]. Video selector materials on issues of women's support system and strengthening of their position in society. (2022).// https://xs.uz/uzkr/.
- [9]. Speech of the President of the Republic of Uzbekistan Sh.M. Mirziyoev at the ceremony dedicated to International Women's Day (2023). //https://yuz.uz/news/.
- [10]. Mirziyoev Sh.M. (2022) New Development Strategy of Uzbekistan. -Tashkent: Uzbekistan, 236.
- [11]. Pekinskaya Declaration and Platform Action (1995). Chapter IV- NewYork, OON, Jenshiny.38-223.//https://www.un.org/womenwatch.
- [12]. How the system for protecting women from violence works (2022). //https://kun.uz/news/2022/05/24/
- [13]. Lucien Levy-Brühl (2003). Pervobytny mentality. Kulturnoe nasledie, 228.
- [14]. Encyclopedic Dictionary of Philosophy (2004). East, 257.
- [15]. Kurbaniyazova R. (2023). Transformation processes of women's mentality in Uzbekistan. EPRA International Journal of (SEEO) ISSN: 2348-4101. SJIF Impact Factor (2023):8.153.Volume:10, Issue: 4, April, 43-45.
- [16]. Kurbaniyazova R.K. Impact of changes in society on social mentality. (2022). Tashkent: "Science and Technology Publishing House", 204.

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**THE ROLE OF BAHAUDDIN NAQSHBAND IN THE DEVELOPMENT OF  
CENTRAL ASIAN SUFISM**

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**Annotasiya:** Mazkur maqolada Bahouddin Naqshbandning Markaziy Osiyo tasavvufi va tariqatlari rivojida tutgan o'zni masalasi yoritilgan. O'rta asrlarda shakllangan naqshbandiya tariqati o'zining mazmun-mohiyati jihatidan boshqa tariqatlardan ajralib turgan. Naqshbandiya tariqati Bahouddin Naqshband yaratgan ta'limot g'oyalari orqali komil insonni tarbiyalashni targ'ib qilgan va umumbashariyat tan olgan tariqatdir. Bahouddin Naqshbandning shogirdi bo'lgan Ya'qub Charxiy o'z asarlarida naqshbandiya tariqati va Bahouddin Naqshband borasida qimmatli ma'lumotlarni yozib qoldirgan.

**Kalit so'zlar:** tasavvuf, tariqat, naqshbandiya, uvaysiy.

**Аннотация:** В данной статье отражены роль Бахауддина Накшбанда в развитии тарикаты и суфизма в Центральной Азии. Тарикат Накшбандия сложившаяся в средние века, по своему содержанию отличалась от других тарикатов. Тарикат накшбандия - это, которая способствует воспитанию совершенного человека посредством обучающих идей, созданных Бахауддином

Накшбандом и является общепризнанным. Якуб Чархи, который был учеником Бахауддина Накшбанда и записал в своих произведениях ценные сведения о тарикаты накшбандия и Бахауддином Накшбандом.

**Ключевые слова:** суфизм, тарикат, накшбандия, увайси.

**Abstract:** This article describes the role of Bahauddin Naqshband in the development of Sufism and sects of Central Asia. The Naqshbandi sect, formed in the Middle Ages, differed from other sects in terms of its content. The Naqshbandi sect is a sect that promotes the education of a perfect person through the ideas of teachings created by Bahauddin Naqshband and is universally recognized. Yakub Charkhi, who was a disciple of Bahauddin Naqshband, wrote down valuable information about the Naqshbandi sect and Bahauddin Naqshband in his works.

**Key words:** sufism, tarikat, naqshbandiya, uvaysiy.

**Introduction.** A greater figure who has his place in the history of Sufism and the series of sects, who is the pride of not only Central Asia, but also the people of the East, was born in Bukhara Sharif and through his sect, people until today Sufi-sheikh Muhammad ibn Muhammad Bukhari. Bahouddin Nakshband, who has been living in his heart. Bahouddin Nakshband is seventh pir of Bukhara, the founder of the worldwide Nakshbandi doctrine.

Khaja Bahouddin Nakshband (1318-1389), who is considered a greater representative of the Nakshbandi order, is popularly known as Bahouddin Balogardon, Khojayi Buzruk, Shahi Nakshband. The nickname "Bahouddin" was given to him because of his incomparable services for the strengthening and development of the religion, which means the pride of the religion, priceless. They also honored Nakshband, whose real name was Muhammad, as "Baha ul Haq and religion "[1.B. 65]

Bahouddin Nakshband first learned the lessons from teachers such as Babayi Samosi. Amir Kulol, Mavlon Arif Revhari, Khalil ata, Kusam Sheikh. He lived a strange life and he was engaged in making patterns on copper and kimhob. Bahauddin Nakshband added his three rules and requirements to the eight-point rule of the "Khojagon" series, founded by Abdulkholiq Gijduvani, created his doctrine and perfected the Nakshbandi order. The main information about the way of life and teaching of Bahauddin Nakshband is the book " Anis ut-talibin wa uddat us-salikin " by Salahiddin ibn Mubarak , " Maqamoti Hazrat Khoja Nakshband " by MuhammadBaqir, " Risolayi Qudsiya" by MuhammadPorso, Yaqub Details in sources such as Charkhi's Risolayi unsiya illuminated.

Bahauddin Nakshband was born in the month of Muharram in 718 Hijri. This date corresponds to March 1318 AD. Bahauddin Nakshband was born in the village of Qasri Hinduvon, near the city of Bukhara (now Kogon district of Bukhara province), which was later renamed as Qasri Orifon and still is known and famous by this name .

Bahauddin Naqshband's real name is Muhammad, Bahauddin is a name given in honor of the status and rank achieved. Bahauddin among the embroidered people, Khwaja Bahouddin, Bahauddin Balogardon, Also with the names of Balogardon, Khojayi Buzruk, Shahi Nakshband is famous. In the sources, both father and grandfather of Bahauddin Nakshband were named with the name of Muhammad.



**Research Methodology.** Bahouddin Nakshband's lineage goes back to Hazrat Ali on his father's side and Hazrat Abu Bakr Siddiq on his mother's side. Since he was from the generation of Khoja's, it was customary to use the word Khoja before his name. The word "Bahauddin" means "Light of Religion". This is a proud title given later to Khwaja Nakshband [2.B.3].

In addition, his teacher Sheikh Muhammad Babayi Samosi (died in 1336), who predicted the birth of Bahauddin, said that he would be Balogardon. Sheikh Babayi Samosi Bahouddin said to Nakshband, " You are blessed, the calamity that has been revealed. It will be repelled by your blessings". Bahauddin Nakshband first took lessons from teachers such as Babayi Samosi , Amir Kulol, Maulana Arif Revkali , Kalil Ata Kusam Sheikh

He lived in a strange life and was engaged in making patterns on copper and kimbob. Bahauddin Nakshband added his three rules and requirements to the eight-point rule of the "Khojagon" series founded by Abdukhalik Gijdivani in creating his doctrine and Nakshbandi order. The main information about his life and teaching of Bahauddin Nakshband is the book "Anis ut -talibin wa uddat us salkin", by Salahiddin ibn Mubarak "Maqamoti Hazrat Khwaja Nakshband" by Muhammad Baqir "Risolayi Qudsiya " by Muhammad Porso Yakub Details sources such as Charkhi Risolai unsiya illustrated.

Bahauddin Nakshband was born in the month of Muharram in 718 Hijri. This date corresponds to March 1318 AD. Bahauddin Nakshband was born in village, which is named "Qasri Hinduvon" near the city of Bukhara (now Kocon district of Bukhara province) which was later named Qasri Orifon and is still known and famous by this name.

Bahauddin Nakshband's real name is Muhammad, Bahauddin is a name given in honor of the status and rank achieved. Bahauddin among the embroidered people Khwaja Bahauddin, Bahauddin Balogardon also with the name of Balogardon, Khwojayi Buzruk, Shakhi Nakshband is famous.

In the sources, both father and grandfather sides of Bahauddin Nakshband Hazrat Ali and Hazrat Abu Bakr Siddiq is his mother side.

Since he was from the generation of Khojas, it was customary to use the word Khoja before his name. The word "Bahauddin" means "Light of region". This is a proud title given later to Khwaja Nakshband.

In addition his teacher Sheikh Muhammad Babai Samosi died (1336) who predicted the birth of Bahauddin , said that he would be Balagardon. Sheikh Babai Samosi Bahauddin said to Nakshband "You are blessed the calamity that has been revealed will be repelled by your blessing " . That is why the term " balagardon" e.i the one who repels calamities was applied to Bahauddin Nakshband.

As mentioned the medieval sources Bahauddin Nakshband's spiritual power will be perfected to such an extent that he will be able to ward off calamities and ease difficulties as a result of looking at animals , people and plants and all creatures with the eyes of love and compassion and therefore they refer to it as "Balogardon".

Khwaja Muhammad Babai was the first teacher of Bahouddin in the information is given Fakhruddin Ali Safi's work " Rashohut ul ain al -Hayat "

Muhammad Babai Samosi Bahouddin entrusted his upbringing to Amir Kulol after him.

The nickname Nakshband in Bahauddin Nakshband's name is interpreted in two ways one of them is that Bahauddin Nakshband was given the nickname because he was engaged in the art of embroidering cloth and the other is that Bahauddin Nakshband "has Allah is a pattern in his heart" expressed in. They also glorified with the name "Shakh Nakshband"

About the meaning of the name Nakshband thinker Alisher Navoiys "Hayrat ul - abror" epic definitions are given. At first, Muhammad Samosi was educated by.

Bahauddin Nakshband was also taught by Amir Kulol. In the research of Professor Gulchehra Navruzova, the following sentences of quoted from Amir Kulol's words to Bahauddin Nakshband: "My son Bahauddin I have fully fulfilled what Hazrat Khwaja Muhammad Babai Samosi said about you. I was told that the way I fulfilled up bringing you also put upbringing of my child Bahauddin in the same place. I did the same Amir pointed to his beasts and said "Your prively bird has hatched from egg Of humanity. Your zealous bird has flown high now you are allowed and oermitted to ask from Turkish and Tajik sheikhs who reach your heart. To the goal Don't reach your efforts it fail"

After Bahauddin Nakshband Amir Kulol, Maulana Bahauddin Khwaja Arif Deggarani learned the science of hadith and recognized taht studied for twelve years with Hakim Ata (Sulaiman Bakighani) a representative of the Yassawiya sect.

In addition the sources and studies shows that Bahauddin Nakshband had spiritual faith in Sufism figures such as Uwasi Qarani, Mansur Halloj, Boyazid Bistomi, Junayd Baghdadi and Zainiddin Abu Bakr who was the elder of Sagihbhiron Amir Timur during the second pilgrimage.

It is stated that he met it can be concluded that the ideas of scholars directly played a key role in the formation of Nakshbandi doctrine.

Sources states that Bahauddin Nakshband was an Uwaisian.

"Risolai Qudsiya" by Muhammad Porso a written source of the 15th of century about Bahauddin Nakshband in his work "the ways of our Lord it is noted that it is the way of our Uwaisians. Uwaisians is unique in Sufism Is the path of perfection and it is meaning of the catagory of saints indicates that they are there is no apparent need for a pir of Uwains.

It is considered rare sources that contains valuable information sbout many scholars and scientiests and political leaders who lived in Movaraunnahr. Fakhrddin Ali Safi's work "Rashohst ain al - hayat" contains information about Bahauddin Nakshband. Khoja Muhammad Babai Samossi and the education of the tariqat is under the authority of Amir Kulolliddin so it was pointed out in the Hazrat Hoja Muhammad Baba. But the truth is that the Uwaysi men to take the truth. Hazrat Khwaja Abdulkhalik Gujdivani "they were educated by the priests of Sirruha" From this it can be concluded that Bahauddin Nakshband became a Uwasi based on the fact that he received education from the preisthood of Khwaja Abdulkhamid Gijdivani. Bahauddin Nakshband's teachings on the self-wise words for people of Sufism and those who study Nakshband teachings are mainly in orose and sometimes in verse from. In these

verses, Bahauddin Nakshband mainly interpreted equality between people through fair ideas and emphasized that all servants are equal before Allah

The motto *dil ba yoor u dast ba kor* Let the heart be busy with Allah and the hands be busy with work. Which is the main essence of the Nakshbandi order founded by Bahauddin Nakshband became an acceptable slogan for all people of his time.

A representative of the Nakshbandi sect and Bahauddin Nakshbandi Yaqub Charkhi who was his student talks about it in his "Treatise Unsiya " gave the following information. They said that the passenger are divided into two parts are divided. Some people put their bodies to the test of fussing and its consequence they seek and find and achieve results. And some of them God Almighty they do not see anything but virtue and the tawfiq grace of obedience they also know that it is from the grace of Allah Almighty. That is to say of such people if being in prayer is considered preferable to the deeds of this world. Therefore such people will reach their goal faster. The truth is that a person should abandon his actions (he should stop working day and night) but he should not abandon his daily work (he should devote his efforts ) workship and not should think a lot about his work. Also in the studies "*Dil ba yor u Dast ba kor* " can be interpreted in a similar way that if the goal of the people of Sufism is to reach God's will. Then it is not necessary to renounce the world and enter the path of asceticism but always remember God is in the heart it is possible to achieve while being busy with the work.

**Conclusion/Recommendations.** Bahauddin Nakshband always preached honest living. According to him one should never abandon one's profession and manual labor while connecting one's heart with Allah. It is necessary to live in a poverty not as the expense of the charity but the expense of one's own work. Therefore the ways of Bahauddin Nakshband and his teachings and created are similar to the Sunnah of the Prophet Muhammad

Bahauddin Nakshband lived by farming his own life. Also Bahauddin Nakshband who spent his own life in poverty Bahauddin Nakshband with his hard work and strength. He liked to make a living he gave his earned property to orphans and widows. He always tried to keep himself away from the rulers and never accepted a bribe from them. In one word the Nakshbandi some of the invariable rules that were in practice in the mystical directions and adapted them to everyday life. This, in turn ensured that the Nakshbandi order entered the mass of the population. Also the Nakshbandi sect is important in the socio - political and spiritual life of the peoples' in the Central Asia. Yusuf Hamadani is great like Abdulkhalik Gijdivani who scholar contributed to the development of the Bahauddin Nakshbandi sect.

#### **Reference:**

- [1] Navruzova G. Nakshbandiya Sufi teaching and education of mature person. T: Fan 2007
- [2] Abul Muhsin Muhammad Bakir "Authority of Hazrat Khwaja Bahauddin Nakshbandi " Bukhara Sharif: 1327 H
- [3] Alisher Navoi. A complete collection of words. Ten volumes. The six volumes. Hamsa. Hayrat ul - abrar. Tashkent. Publishing house named after Gafur Ghulam 2011.
- [4] Navruzova G. Zoyorov E. Seven forefather of Bukhara Sharif. Tashkent Muharrir publishing house. 2018.



- [5] Alisher Navoi. A complete collection of wprds. Ten volumes. Six volumes. Hamsa. Hayrat ul abrar. Tashkent. Publishing house named Gafyr Ghulam. 2011.
- [6] "Rashahot ain al -hayat" by Fakhruddin Ali Safi. Tashkent Abu Ali ibn Sina 2003. B. 78
- [7] Yakub Charkhi "Treatise on Unsia " ( friendly conversation) translation and comments authored by Sm Rahmonov . Samarkhand. Sam DChTi publishing house. 2022. B 77.

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**INTERRELATIONSHIP IN THE SOCIO-PHILOSOPHICAL VIEWS OF ABDURAHMAN TASHKANDI AND ABDULLA AVLONI, ENLIGHTENERS OF THE NATIONAL RENAISSANCE PERIOD**

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<sup>3</sup>  
**Annotatsiya:** Mamlakatimizda yoshlar tarbiyasi, ayniqsa, ma'naviy-axloqiy tarbiya jarayoni dolzarb, muhim bo'lib, hatto davlat siyosati darajasiga ko'tarildi. 20-asr milliy uyg'onish davri g'oyalarini rivojlantirishda yosh avlod tarbiyasida axloqiy fazilatlarni shakllantirish katta ahamiyatga ega bo'ldi.

**Kalit so'zlar:** Toshkent jadidchiligi, "Al-Isloh", tanqidiy nutqlar, musulmonlar xayriya jamiyati, "panislamizm" yoki "millatchilik", yangi usul maktabi.

**Аннотация:** Процесс воспитания молодежи в нашей стране, особенно духовное воспитание, стал актуальным, важным и даже поднят на уровень государственной политики. Формирование нравственных качеств в воспитании молодого поколения имело большое значение в развитии идей периода национального Возрождения в XX веке.

**Ключевые слова:** Ташкентский джадидизм, «Аль-Ислах», критические дискурсы, мусульманское благотворительное общество, «панисламизм» или «национализм», новая методическая школа.

**Annotation:** The process of youth education in our country, especially spiritual education, has become relevant, important and even raised to the level of state policy. The formation of moral qualities in the upbringing of the young generation was of great importance in the development of the ideas of the national renaissance period in the 20th century.

**Key words:** Tashkent's Jadidism, "Al-Islah", critical discourses, Muslim charity society, "Panislamism" or "nationalism", new school of method.

**Introduction.** Tashkent was the largest center of martial arts activities. Its publishing industry was the largest, and its schools of the new method were the most blind in Turkestan.

Abdurahman Sayyoh and Abdulla Avloni were blind in the same way as their colleagues. Also, they were born in a cultured family. Both of them studied at madrasas in Tashkent. By this time, schools of the new method were widespread in Tashkent, and their owners were an important nucleus of modernism. Nevertheless, his views

came from the old cultural elite. “They started thinking about old superstitions, reforming madrasahs, people's lives, civilization and changes in society” [1.15].

Abdurahman Tashkandi's roots are firmly rooted in the traditions of Muslim science taught in the madrasa, and he was well-connected in the cultural community, so he was able to use all available resources[2.60]. In fact, the number of young people who left the Russian cultural elite is amazing. One of the most prominent Jadids was the ulama. It should also not be forgotten that the scholars did not keep their mouths shut, as it seems to be depicted. For example, Edward Allworth describes the ancients as “the very conservative bureaucrats and scribes, governed by strict customs and strict traditions, could not imagine enjoying the ideas of these cultural and social thinkers” [3.430]. In practice, the lines separating the Jadids from their rivals were much sharper. Other activists of the Jadidism movement are also more closely connected with the madrassa[4.4].

Other scholars in Tashkent and other places were engaged in various forms of reform. For example, Abdurahman Sayyah fits the definition of a blind fighter: he traveled blind, was a rich writer and publisher, and in 1915 published the magazine “Al-Islah” (“reform” in Arabic). started to But he was not enthusiastic about the new teaching method.

The difference between such renaissance ulama and jadids is very important because it indicates an important feature of jadidism. So, in short, it is worth making a difference. A number of Western scholars, one of them John William Drarer, tried to justify Jadidism as a fundamental reform of Muslim traditions[5.345].

Abdurahman Sayyoh and Abdulla Avloni used modernist theology developed elsewhere. Jadidism's trajectory places him in the changes in Central Asian society brought about by the Russian occupation as a modern “response” to the modernity that the whole world, including Islam, seeks to rebuild. If in the 19th century there were wide debates in Tashkent on the issues of taqlid and returning to holy Islam, its successors were not the Jadids, but the reawakened layer of scholars who published Al-Islah.

The relations between the Jadids and the Tashkent elite were two-sided. In 1909, the first Muslim charity society was established in Tashkent, its founders were Munavvar Qori and Avloni.

**Research Methodology.** The Jadids and the new elite (Central Asian Jadids) were part of the same phenomenon, namely the transformation of the Central Asian economy under Russian rule, but both social communities were to have different interests in the future. As a new cultural elite, Abdurahman Sayyoh and Abdulla Avloni believed that it was necessary to change the cultural traditions inherited by them in order to cope with new conditions. On the other hand, representatives of the trade sector (traders, etc.) achieved good results under the new regime, and most of them were satisfied with the new opportunities and did not consider the need to rush reforms.

Jadids came from different strata of society. They are united by a desire to change and a cultural heritage. It encouraged them to think about cultural reforms, and a little comfort, which they most blindly enjoyed in their lives, allowed them to spend their money. After all, Abdurahman Sayyoh and Abdulla Avloni formed a group as a

result of their critical speeches. Their sense of unity comes from their common vision for the future, as well as their participation in common events.

The main institution of Abdulla Avloni's reform was the new style school. These schools were the battlefield for the hearts and minds of the future generation. Through them, Avloni spread a way of knowing that was completely different from the school and thus created a group in the society that accepted their ideas.

These schools were also important in the social reproduction of the movement. While the first New Methodist schools were founded by a few dedicated individuals, by 1917 the New Methodist schools were apparently staffed by their own graduates[6.35]. Avloni enthusiastically embraced new forms of society, such as the benevolent society.

Abdurahman Sayyah probably represented the conservative work of the Jadidal secretary. Archival documents show that his closest associates were scholars who were not associated with the idea of Jadidshi, and that his works remained the most traditional in terms of genre and content. Other jadidshis criticized the old system and the role of the scholars in it much more passionately. In fact, by 1910, the second generation of Jadids could be seen in Turkestan. Younger and less rooted in madrasah traditions, they were more impatient with the current state of their society and harsher in their judgments.

The Jadids of Turkestan were closer to Islamic cultural traditions than the Jadids of other regions of the Russian Empire. But despite this, their youth was a remarkable feature. Abdurahman Tashkandi was only twenty-thirty years old when he started his public service, and Avloni started writing poetry at the age of sixteen.

The youth of Abdurahman Sayyoh and Abdulla Avloni was the source of their great talent and seemingly inexhaustible enthusiasm, but it was their biggest obstacle in a society where age itself is a cultural charity. They also differed from the few moderns in Central Asia in that they received a modern, secular Russian education. Abdurahman Sayyoh and Abdulla Avloni modernized the Muslim cultural traditions of Central Asia, they were well versed in the rhetoric of European thought. Both intellectuals talked with the Muslim society about making cultural changes, and they fought with the Russian state and Russian society about making political changes.

The project of Abdurahman Sayyoh and Abdulla Avloni was based on a new perception of the world and the place of Central Asia in it. The basis of this outlook was to master the idea of development. Jadids clearly understood that their age is different from that of others. "If in the past one science or craft was used for the development of that time, in this century all sciences and crafts will develop together. This is the age of science and progress. "Science in this century sees something that no one has ever seen," it was written in the "Jadid" textbook"[7.17]. Science has developed its influence, and as a result, the term "Progress" has acquired a semantic range that includes "development", "growth" and "ascension". It was noted that the importance of progress in the project of the Jadids is that the term most used by themselves and others to describe them as a group is progressing, "advanced". This development was a universal phenomenon, and everyone was in love with the growth of knowledge.

How new the idea of continuous development and change was in historical times is evident from the efforts of Abdurahman Sayyoh to explain this concept from the first principles in his article on showing the goals of life. At the beginning of creation, humanity was weak, lacking in knowledge and skills, but gradually overcame the elements: “The changes made by humans in the world cannot be denied. Are these changes progress or decline? That is, has mankind moved forward or backward from creation to the present day? Of course, forward, that is, they moved forward, and they did not stop at one point like today. For example, a few years ago we considered the railway to be the main type of transport. But after a while, the power of human knowledge invented the airplane and proved us wrong. Thus, it is known that mankind has progressed from creation to the present day, and that it will continue to progress even after our time, that is, it will move forward”. Then Abdurahman Sayyoh connects his topic with the topic of religion, but the concept of development is felt there as well. God has been guiding mankind for centuries, but earlier leaders brought God's message to specific groups. Humanity was ready for God's final message only when it reached a certain level. Thus, Abdurahman Sayyah integrates Islam into the evolutionary view of history. However, from our point of view, this article is important because it sees history as evidence of human progress.

Abdurahman Sayyoh and Abdulla Avloni tried to re-evaluate the most important cultural values in accordance with their modern reality with the help of new knowledge. They did not deal with abstract ideas such as “Islamicism” or “nationalism”, but used these concepts to manage social struggles throughout Central Asia. Without salting the books, there would be no war. Abdurahman Sayyoh and Abdulla Avloni were famous for their ability to produce newspapers and printed publications. It was necessary to spread knowledge and enlighten people. That is why their publishing and publishing of books and newspapers was an important activity. This was in stark contrast to the situation before the Russian conquest, where the acquisition and transmission of knowledge in Central Asia was largely oral among scholars. Knowledge was transmitted through personal communication between people. Acquiring knowledge provided a moral and cultural level that determined a person's position and prestige in society. The advent of the printing press, the railroad, the telegraph, and the modern postal system changed these cultural patterns and allowed the moderns to predetermine the direction of cultural development in their society.

In conclusion, it should be said that the belief of Abdurahman Sayyoh and Abdulla Avloni in the ability of human intelligence to solve world problems is closely related to the concept of development, which served to deepen their worldview.

**Conclusion/Recommendations.** There was no conflict between the concept of progress and their belief in Islam. In fact, only knowledge could allow Muslims to understand Islam correctly, and Islam itself was the best guarantee of development. At the core of the social criticism of the Jadids of that time lay new understandings and knowledge about religion, history and politics. Abdurahman Sayyoh and Abdulla Avloni's criticism of the society was related to the chaos they saw in it. The school was run by illiterate teachers who did not follow the rules of sanitation and hygiene and did not have editorial knowledge, the school inspection system, school organizing organizations, and charity work of the rich were not organized. Abdulla Avloni's efforts

to overcome this crisis in society are the main feature of their reform project. As reformers, they believe in the effectiveness of the system and look at the situation with a modern perspective.

In the Muslim society of Central Asia, representatives of Jadid, Abdurahman Sayyoh and Abdulla Avloni, had a certain advantage over their opponents, the ancients, in creating the current institutional forms. In addition, a new public space was created for the interpretation of Central Asian culture and Islam itself, in which the ancients were the traditional bearers of Islam. The process of institutionalization was neither easy nor uneventful, as material difficulties combined with the resistance of the ancients and the difficulty of communication in the colonial state. Undoubtedly, there was a big difference between the aspirations of the Jadids and their achievements.

### References:

- [1] Rajabov S. Founder of Uzbek pedagogical thought. // Uzbek language and literature, 1989, no. 5, p. 15.
- [2] Edward Allworth, The Modern Uzbeks: A Cultural History. Stanford, 1990. R. 120.
- [3] Ayina, 1 June 1915, p. 430.
- [4] Begali Kasimov, Tavallo (1882-1939), Tashkent, 1993. -p. 411.
- [5] Edward J. Lazzerini, The Revival of Islamic Culture in Pre-Revolutionary Russia: Or, Why a Prosopography of the Tatar Ulema? " in the book Ch. Lemercier Quelquejay et al., eds., Passé turco-tatar, présent soviétique: études offertes à Alexandre Bennigsen (Paris, 1986), 367-372.
- [6] Begali Kasimov, Mirmuhsin Shermuhamedov (Thought) and his literary environment" (candid. diss., Tashkent. 1967); OSE, VII: 274, s.v. Shermuhamedov, Mirmuhsin.
- [7] Kamshad H. Modern Persian Prose Literature. Cambridge, 1966. P. 98
- [8] Abrorxon Asatulloevich Asatulloev (2021). Abdurahmon Sayyoh Toshkandiyning Al-isloh jurnalida ilgari surgan axloqiy fikrlari ("Me'yor ul-axloq" (axloq me'yorlari) asari tasnifida). Oriental renaissance: Innovative, educational, natural and social sciences, 1 (2), 138-146.
- [9] Asatulloev Abrorkhon Asatulloevich (2021). The ideas put forward of enlightener Muhammad Sadiq Toshkandi's work of "meyor ul-ahlok" in the Turkistan national media in the beginning of the XX century. Oriental renaissance: Innovative, educational, natural and social sciences, 1 (4), 550-555.
- [10] Abrorkhon Asatulloev, Kendjaev Shavkatdjon, Ravshanova Gulkhayo. In the twentieth century, Turkestan national media outreach ideas published by Abdurakhmon Sayyoh Tashkenty, entitled "Rule of Law". International journal of advanced science and technology. 2020, vol. 29, No. 5. Pp. 1781-1784 <http://sersc.org/journals/index.php/IJAST/article/view/10308>