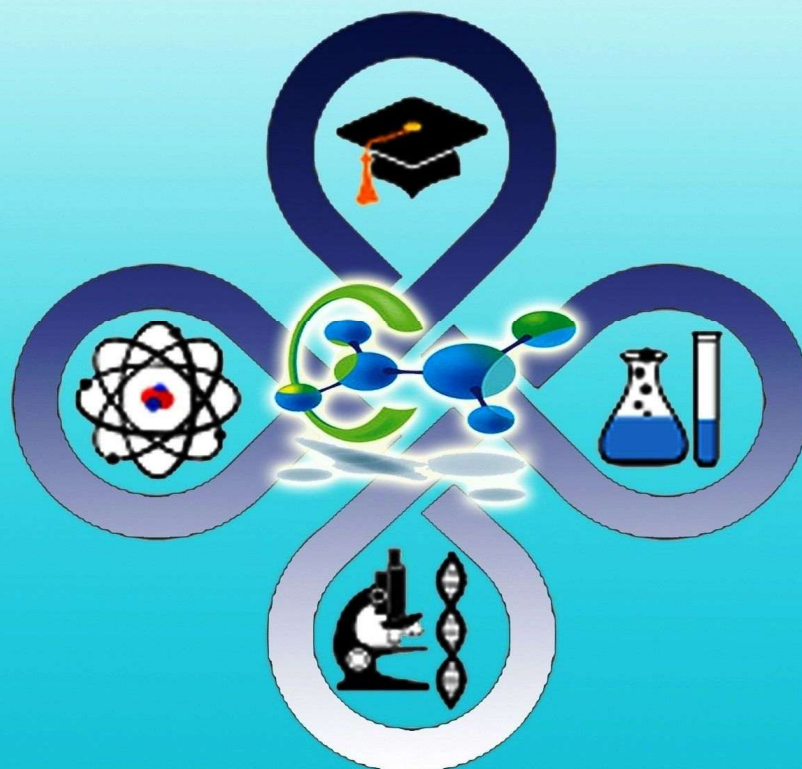




**ZAMONAVIY FAN, TA'LIM VA TARBIYANING DOLZARB
MUAMMOLARI**

**АКТУАЛЬНЫЕ ВОПРОСЫ СОВРЕМЕННОЙ НАУКИ,
ОБРАЗОВАНИЯ И ВОСПИТАНИЯ**

**ACTUAL PROBLEMS OF MODERN SCIENCE,
EDUCATION AND TRAINING**





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**METHOD FOR DETERMINING HYDRAULIC RESISTANCE DURING
FLUID FLOW IN PIPES**

**Navruzov Kuralbay,
Professor, Department of
“Applied mathematics and mathematic physics”
Urgench State University**

**Shukurov Zoxid Kuchkarovich,
independent researcher, Department of
“Applied mathematics and mathematic physics”
Urgench State University**

**Begjanov Amirbek Shixnazarovich,
phd student, Department of
“Applied mathematics and mathematic physics”
Urgench State University
E-mail: amirbek_beg@mail.ru**

ABSTRACT: In the article, pulsating fluid flows in tubes with changing walls, which are of great importance in biological mechanics, in particular, in the flow of blood in the arterial vessel, are investigated. The solution of the problem obtained formulas for the distribution of pressure gradient, velocity and flow rate. Impedance method analyzed the increase in hydraulic resistance depending on the frequency of oscillation. It was found that with large values α^2 of hydraulic resistance grow with growth α^2 . For crowding out the same flow rates, for small and with large values of the vibrational number or frequency, the energy input is different. Since for small values of the oscillatory number, fluctuations in the flow rate of the fluid fluctuate in the same phase with the oscillation of the pressure gradient, and for large values of this number, the oscillation of the phase of the fluid flow is shifted by 90° degrees



than fluctuations in the pressure gradient. In addition, for large values of the vibrational number, a tenfold size increases the maximum amplitude of the pressure gradient, relatively, than at low frequencies. This feature leads to an increase in the energy cost of pumping fluid due to wall oscillation.

Keywords: Pipe, fluid, flow, biomechanics, arterial, blood vessels, blood , pressure, gradient, fluid flow, Impedance, hydraulic resistance, power consumption.

АННОТАЦИЯ: В статье, исследовано пульсирующие течения жидкости в трубах с изменяющимися стенками, которые имеют большое значение в биологической механике, в частности, в течениях крови в артериальном стволе. Решением задачи получены формулы для распределения градиента давления, скорости и расхода жидкости. Импедансным методом анализировано увеличение гидравлического сопротивления в зависимости частоты колебания. При этом выявлено, что при больших значениях α^2 гидравлического сопротивления растут с ростом α^2 . Для вытеснения, одинаковых расходов, при малых и при больших значениях колебательного числа или частоты, затрат энергии различны. Так как при малых значениях колебательного числа, колебания расхода жидкости, колеблется в одной фазе с колебанием градиента давления, а при больших значениях этого числа, колебания фазы расхода жидкости сдвинуты 90° градусов, чем колебания градиента давления. Кроме этого при больших значениях колебательного числа, десяти кратном размере растут максимальная амплитуда градиента давления, сравнительно, чем при низких частотах. Это особенность приводит к увеличению затрат энергии перекачки жидкости за счет колебаний стенки.

Ключевые слова: труба, жидкость, поток, биомеханика, артериал, кровеносные сосуды, кровь, давление, градиент, расход жидкости, Импеданс, гидравлическое сопротивление, потребление энергии.

АННОТАЦИЯ: Мақолада девори ўзгарувчан қувурларда суюқликнинг пульсацион оқими тадқиқ қилинади. Бундай масалалар биомеханиканинг артериал томирдаги қоннинг оқимини ўрганишда муҳим аҳамиятга эга бўлади.



Масалани ечиш натижасида босим градиенти тақсимланиши, тезлик ва суюқлик сарфларини аниқлаш учун формулалар олинган. Импеданс усули ёрдамида гидравлик қаршиликнинг тебраниш частотасига боғлиқ равишда ошиши кўрсатилган. Тебраниш частотасининг кичик ва катта қийматларида бир хил суюқлик сарфини сиқиб чиқаришда кетадиган энергия сарфи ҳар хил бўлиб, тебраниш частотасининг кичик қийматларида босим градиенти билан суюқлик сарфи бир хил фазода тебранади, тебраниш частотасининг катта қийматларида эса босим градиенти билан суюқлик сарфи тебранишлари 90 градусга силжиган бўлади. Бу эса тизимда босим градиентининг амплитудаси ўнлаб микдорда ўсишига сабабчи бўлади. Бу хусусият деворнинг тебраниши натижасида суюқликни ҳайдашда катта микдордаги энергияни сарфлашга тўғри келади.

Калит сўзлар: Қувур, суюқлик, оқим, биомеханика, артериал, қон томир, қон, босим, градиент, суюқлик сарфи, импеданс, гидравлик қаршилик, энергия сарфи.

Introduction

During the contraction of the heart, a pressure wave propagates through the walls of the blood vessels, which is called the pulse wave. This wave gradually weakens with distance from the heart and practically dies out in the capillaries. The speed of propagation of a pulse wave depends on many factors, among which we can note, for example, the elastic-viscous properties of the vessel wall, blood pressure, its density, viscosity, wall permeability, active modified vessels. In the majority of works [1-6], the main attention is paid to the determination of the propagation of a pressure pulse wave taking into account the elasticity of the vessel wall, and its active change has never been taken into account. However, the active change in the wall significantly affects the propagation of the pressure pulse wave and its attenuation. In [1-6], problems for pulsating fluid flow in tubes with varying walls with a low frequency are solved. In works [11–14], the impedance method analyzed the decrease

in hydraulic resistance in pipes with permeable walls. This article solves the problem in a generalized form, where the oscillatory parameter can be significant.

Research Methodology

Using those techniques, as in [7–9], after some transformations of the quantities, the Navier – Stokes system of equations and the continuity equations are written in dimensionless form, which contain, with boundary conditions, two dimensionless quantities. Among these values, the relative amplitude (the ratio of the maximum deflection of wall δ_m to the width of pipe h_0 , $\ell = \frac{\delta_m}{h_0}$) was chosen as the main parameter; the remaining values are expressed in terms of the positive degrees of the main small parameter using ratios

$$\varepsilon = \varepsilon_0 \ell^n, \quad n \geq 1. \quad (1)$$

Below, using this method, we solve the Navier-Stokes equations and the continuity equations by the perturbation method. We search for unknown longitudinal and transverse velocities and pressures in the form of expansion in powers of the main small parameter ℓ

$$u = \sum_{m=0}^{\infty} u_m \ell^m, \quad v = \sum_{m=0}^{\infty} v_m \ell^m, \quad p = \sum_{m=0}^{\infty} p_m \ell^m. \quad (2)$$

Substituting (1) in view of equality (2) into the system of Navier-Stokes equations and the equations of continuity [1], and comparing the same degrees of a small parameter, we obtain a sequence of systems. The resulting system of equations differs from [7-10], so that, there is saved a member containing parameter α^2 . In addition to the zero approximation, the other equations depend on a small parameter. Therefore, we can express the following approximations, through the previous ones. To determine u_i, v_i, p_i in all approximations we write

$$\begin{aligned} \frac{\partial^2 u_i}{\partial r^2} + \frac{1}{r} \frac{\partial u_i}{\partial r} &= \frac{\partial p_i}{\partial x} + \alpha^2 \frac{\partial u_i}{\partial t} + \varphi_i(x, y, t), \\ \frac{\partial p_i}{\partial r} &= \psi(x, y, t), \quad \frac{\partial u_i}{\partial x} + \frac{\partial v_i}{\partial r} + \frac{v_i}{r} = 0 \end{aligned} \quad (3)$$

Where $\varphi_i(x,y,t)$ and $\psi_i(x,y,t)$ are determined using the previous approximations. All accepted designations here correspond to the notation [1]. The boundary conditions take the following form

$$\begin{aligned} \frac{\partial u_i}{\partial r} = 0, \quad v_i = 0 \quad \text{at } r = 0 \\ u_i = u_{wi}(x,y,t), \quad v_i = v_{wi}(x,y,t) \quad \text{at } r = 1 \end{aligned} \quad (4)$$

Here $u_{wi}(x,y,t)$, $v_{wi}(x,y,t)$ is located by decomposing unknown functions u_i , v_i into a Taylor series in a neighborhood of $r = 1$. Since the perturbation parameter ℓ is explicitly and implicitly included in the boundary conditions, it is impossible here to directly equate to zero terms with different powers of ℓ . Therefore, one can preliminarily decompose them into Taylor series in order to obtain their explicit dependence on ℓ . If we assume that functions u_{wi} , v_{wi} are analytic with respect to $r = 1$, then they can be expanded into Taylor series near $r = 1$

$$\begin{aligned} u_{wi}(x, 1 + \ell f, t) = u_{w0}(x, 1, t) + \left(u_{w1} + f \left(\frac{\partial u_{w0}}{\partial r} \right)_{r=1} \right) \ell + \dots = 0 \\ v_{wi}(x, 1 + \ell f, t) = v_{w0}(x, 1, t) + \left(v_{w1} + f \left(\frac{\partial v_{w0}}{\partial y} \right)_{y=1} \right) \ell + \dots = \ell \frac{\partial f}{\partial t} \end{aligned} \quad (5)$$

For the zero, first, and second approximations (5) should be assumed.

$$\begin{aligned} u_{w0} = 0, \quad u_{w1} = -f \left(\frac{\partial u_{w0}}{\partial y} \right)_{y=1}, \quad u_{w2} = -f \left(\frac{\partial u_{w1}}{\partial y} \right)_{y=1} - \frac{f^2}{2} \left(\frac{\partial^2 u_{w0}}{\partial y^2} \right)_{y=1}, \\ v_{w0} = 0, \quad v_{w1} = -f \left(\frac{\partial v_{w0}}{\partial y} \right)_{y=1} + \frac{\partial f}{\partial t}, \quad v_{w2} = -f \left(\frac{\partial v_{w1}}{\partial y} \right)_{y=1} - \frac{f^2}{2} \left(\frac{\partial^2 v_{w0}}{\partial y^2} \right)_{y=1}. \end{aligned} \quad (6)$$

Above it was said that the flow of fluid is carried out only due to periodic oscillations of the wall, therefore, $\frac{\partial p_0}{\partial x} = 0$ and, therefore, $u_0 = 0$, $v_0 = 0$, and the remaining quantities are determined after simple calculations from the system of equations (3) and boundary conditions (6).

$$u_1 = \frac{1}{i\alpha^2} \left(-\frac{\partial p_1}{\partial x} \right) \left[1 - \frac{ch\sqrt{i}\alpha y}{ch\sqrt{i}\alpha} \right],$$

$$v_1 = -\frac{1}{i\alpha^2} \left(-\frac{\partial^2 p_1}{\partial x^2} \right) \left[y - \frac{sh\sqrt{i}\alpha y}{\sqrt{i}\alpha ch\sqrt{i}\alpha} \right], \quad (7)$$

Analys and Results

Integrating the resulting formula (7) from 0 to 1, the longitudinal velocity u_1, u_2 , we find the flow rate of the flowing fluid over sections x

$$Q = \ell Q_1 + \ell^2 Q_2; \quad \ell = \frac{\delta_m}{h_0}, \quad Q = -\frac{\partial f}{\partial t} x, \quad Q_2 = 0. \quad (8)$$

Thus, here only Q_1 is an expense non-zero, the remaining expenses are equal to zero. Therefore, the total volumetric flow rate is determined from the formula.

$$Q = -\delta_m \frac{\partial f}{\partial t} x. \quad (9)$$

The results obtained in this case also prove the assertion that the costs inserted by moving the pipe walls are equal to the sum of the longitudinal costs flowing through the sections $x = -L, x = L$.

Indeed, the displaced transverse costs are determined by integrating the transverse velocities on the walls from $-L$ to L along the longitudinal coordinates

$$Q_{transvers.} = \int_{-L}^L [\delta_m v_1 + \delta_m^2 v_2] dx = 2\delta_m \frac{\partial f}{\partial t} L, \quad (10)$$

and the amount of longitudinal costs will be equal to the amount of expenses in sections $x = L, x = -L$ in absolute values

$$Q_{longitudinal.} = |Q_{x=-L}| + |Q_{x=L}| = 2\delta_m \frac{\partial f}{\partial t} L. \quad (11)$$

from formulas (10) and (11) it is clear that

$$Q_{longitudinal.} = Q_{transvers.} \quad (12)$$

Now we define the relationship of the pressure gradient to the fluid flow

$$\frac{(-\frac{\partial p}{\partial x})}{Q} = \frac{i\alpha^2}{2(1 - \frac{1}{\sqrt{i}\alpha} th\sqrt{i}\alpha)} = R + Li \quad (13)$$

The real part (13) determines the hydraulic resistance of the flow imaginary part of the attenuation of the wave. At lower values of α^2 hydraulic resistance is determined by the following formula.

$$R = \frac{3\mu}{2h^3}, \quad L = 0 \quad (14)$$

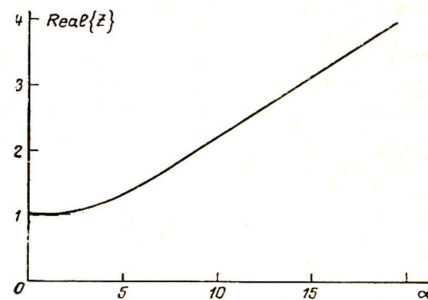


Fig. 1.

The dependence of the hydraulic resistance of the flow $Re al \{Z\}$ from the parameter α .

Conclusion

From Fig.1. it is seen that for large values of α^2 hydraulic resistance increase with an increase of α^2 . For crowding out the same flow rates, for small and with large values of the vibrational number or frequency, the energy input is different. Since for small values of the vibrational number, fluctuations in the flow rate of the fluid fluctuate in the same phase with the oscillation of the pressure gradient, and for large values of this number, the fluctuations of the flow rate of the fluid flow are shifted 90° degrees than fluctuations in the pressure gradient [11-14]. In addition, for large values of the vibrational number, a tenfold size increases the maximum amplitude of the pressure gradient, relatively, than at low frequencies. This feature leads to an increase in the energy cost of pumping fluid due to wall oscillation.

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**STRUCTURAL FEATURES OF SOLID SOLUTIONS $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ FILMS
GROWN FROM A LIQUID PHASE ON GaAs SUBSTRATES AND SOME
PHOTOELECTRIC PROPERTIES OF HETEROSTRUCTURES ON THEIR
BASIS**

**Saidov Amin Safarbayevich,
Professor, Starodubtsev
Physical–Technical Institute,
National Academy of Sciences of Uzbekistan**

**Usmonov Shukrullo Negmatovich,
Doctor of sciences Physics and
Mathematics, Starodubtsev
Physical–Technical Institute,
National Academy of Sciences of Uzbekistan**

**Asatova Umida Palvanovna,
Ph.D student, Department of “Physics”
Urgench State University
E-mail: [umida72 @rambler.ru](mailto:umida72@rambler.ru)**

**Tolmas Ishniyazov
research assistant Starodubtsev
Physical–Technical Institute,
National Academy of Sciences of Uzbekistan**

ABSTRACT: Layers of solid solutions $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ on (100) GaAs and (100) GaP substrates were grown by liquid phase epitaxy from an indium melt solution. The solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) had a mono-crystal structure with the orientation (100), constant of the lattice $a_{\text{s.s.}} = 6.486 \text{ \AA}$ and the hole conductivity type. The spectral dependence of the absorption coefficient was used to estimate the band gap of the epitaxial layer of the solid solution, which was 0.11 eV. The spectral photosensitivity of n-GaAs–p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ and n-GaP–p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ heterostructures covers the wavelength range from 1.0 to 5.3 μm .



Keywords: solid solution, liquid-phase epitaxy, band gap energy, carrier concentration, heterostructure, spectral dependence of the absorption coefficient, spectral dependences of the photosensitivity.

АННОТАЦИЯ: Методом жидкофазной эпитаксии из индиевого раствора расплава выращены слои твердых растворов $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ на GaAs(100) и GaP(100) подложках. Твердый раствор $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) имел монокристаллическую структуру с ориентацией (100), с параметром решетки $a_{\text{s.s.}} = 6.486 \text{ \AA}$ и дырочной проводимости. Для оценки ширины запрещенной зоны эпитаксиального слоя твердого раствора, которая составляла 0,11 эВ, использовалась спектральная зависимость коэффициента поглощения. Спектральная фоточувствительность гетероструктур n-GaAs-p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ и n-GaP-p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ охватывает диапазон длин волн от 1,0 до 5,3 мкм.

Ключевые слова: твердый раствор, жидкофазная эпитаксия, энергия запрещенной зоны, носители заряда, гетероструктура, спектральная зависимость коэффициента поглощения, спектральная зависимость фоточувствительности.

АННОТАЦИЯ: Суюк фазали эпитаксия усули билан индийли эритмадан GaAs(100) ва GaP(100) тагликларида $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ қаттиқ қотишманинг қатламлари ўстирилди. $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) қаттиқ қотишма (100) ориентацияли, $a_{\text{s.s.}} = 6.486 \text{ \AA}$ панжара доимийли монокристалл, ковакли ўтказувчанликли структурага эга. Қаттиқ қотишманинг эпитаксиал қатламларини 0,11 эВ га тенг тақиқланган зонасини кенглигини баҳолаш учун ютилиш коэффициентини спектрал боғланишидан фойдаланилди. n-GaAs-p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ва n-GaP-p- $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ гетероструктураларни спектрал фотосезгирлиги тўлқин узунлигининг 1,0 дан 5,3 мкм гача бўлган диапазонини эгаллайди.

Калит сўзлар: қаттиқ қотишма, суюк фазали эпитаксия, тақиқланган зона энергияси, заряд ташувчилар, гетероструктура, ютилиш коэффициентининг спектрал боғланиши, фотосезгирликни спектрал боғланиши.



Introduction

Narrow-gap solid solutions obtained on the basis of elemental semiconductors and binary compounds III-V are promising semiconductor materials for the creation of various optoelectronic devices operating in the middle and far infrared (IR) emission spectrum. On the basis of GaSb and its GaInAsSb, AlGaAsSb solid solutions, efficient light emitting diodes [1] and high-speed photodiodes [2] were created. They operate in the spectral range 1.5–4.8 μm , which have absorption lines for water vapor, CO₂, and nitrogen-containing molecules (H₂O, NO₂, NH₃), hydrocarbon molecules, etc. and, therefore, can be used for environmental and technological control of the environment [3]; they can be used in medicine, as well as in fiber optical communication lines. On the basis of InAsSb/InAsSbP heterostructures grown on InAs substrates [4], spontaneous emission sources were created, that operate in the long-wavelength IR region of the spectrum in the wavelength range of 3–5 μm . The InAs_{1-x-y}Sb_xBi_y epitaxial layers ($x = 0.82$ and $y = 0.0018$) with the long-wavelength edge of the intrinsic optical absorption of 8.9 μm at 77 K were obtained by the method of liquid-phase epitaxy on InSb substrates with 5.9 μm at 77 K [5]. According to calculated estimates [6], the creation of elastically strained heterocompositions of the InAs_{1-x-y}Sb_xBi_y/InSb type can significantly decrease the band gap of solid solutions and displace the edge of intrinsic optical absorption at 77 K to 12–14 μm . The thickness of the epitaxial layers forming such heterocompositions should not exceed the limit corresponding to the transition of the elastically strained state to relaxed one with the formation of misfit dislocations, and in most cases lie in the range from units to hundreds of nm, which complicates the process of growing such heterostructures.

Despite the great success of research and development of various optoelectronic devices based on III-V semiconductor compounds, at present only some of them have found practical application. This is due to the relative complexity of their cleaning and growing crystals, which makes them still quite expensive compared to elemental semiconductor materials, such as germanium and silicon.



This paper presents the results of experimental studies of the growth and some electrophysical, photovoltaic properties of n-GaAs–p-(InSb)_{1-x}(Sn₂)_x heterostructures. Since solid solutions (InSb)_{1-x}(Sn₂)_x are narrow-gap materials, optoelectronic devices operating in the far-IR region of the spectrum in the wavelength range from 6 to 14 μm can be developed on their basis.

Research Methodology

1. Features of liquid-phase epitaxy of films of solid solutions (InSb)_{1-x}(Sn₂)_x on GaAs substrates.

To substantiate the possibility of forming solid solutions of elemental semiconductors and binary compounds III-V, we proceed from the thermodynamic principle of crystal chemistry, which is that in any physicochemical system, whose components are chemical elements, there is a chemical interaction between atoms (or ions) for all their quantitative ratios. At low temperatures atoms tend to be positioned in relation to each other in such a way as to produce the largest possible advantage of energy with given effective charges and atomic sizes. This arrangement of atoms is hindered by structural possibilities, and at high temperatures by thermal motions too [7]. Note that even if the structural possibilities exclude the formation of solid solutions by the mutual substitution of atoms (or molecules) of components, under favorable thermal conditions. It is possible the formation of solid solutions for the substitution of compounds (groups of the same atoms or different ones) structurally and energetically, since displace entropy causes the thermodynamic potential system decreases.

Growing mono-crystals of compound III-V and solid solutions based on them by the method of liquid phase epitaxy is based on the direct interaction of the elements or molecules of the solution of the forming components and their crystallization from the melt solution. These compounds at temperatures close to the melting point, disproportionate by reaction





moreover, depending on volatility, some elements of group V can easily pass into the gas phase, but elements of group III have low vapor pressure and can remain in a liquid state, resulting in a disproportionation of the compound, and this makes it difficult to synthesize and grow mono- crystals from solution - melt at high temperatures close to the melting point. It should be noted that compounds III-V as compared with elements of group IV have a lower melting point. Such a relative lowering of the melting point in these compounds occurs due to a certain amount of ionicity in the bond. Consequently, the temperature is very significant for the growth of epitaxial layers based on compound III-V.

Under certain thermodynamic conditions the possibility of the formation of a solid solution of substitution of Group IV and III-V compounds is determined by the type of crystal lattices of the components forming the solution, their charge states and geometrical sizes [8]:

$$\Delta z = (z_{IV} + z_{IV}) - (z_{III} + z_V) = 0, \quad (2)$$

$$\begin{aligned} |\Delta r| &= |(r_{IV} + r_{IV}) - (r_{III} + r_V)| \leq 0.1 \cdot (r_{IV} + r_{IV}) \\ |\Delta r| &= |(r_{IV} + r_{IV}) - (r_{III} + r_V)| \leq 0.1 \cdot (r_{III} + r_V) \end{aligned} \quad (3)$$

where z_{III} , z_{IV} and z_V are valencies; r_{III} , r_{IV} and r_V are the covalent radii of atoms of the chemical elements of groups III, IV and V, respectively. Condition (2) provides for the electroneutrality of the dissolved chemical elements or compounds in the solvent semiconductor material; it is fulfilled when the dissolved elements are isovalent in relation to the solvent semiconductor. Condition (3) provides for the proximity of the geometric parameters of the solvent compound (m) and the soluble compound (n), excluding the occurrence of significant distortions of the crystal lattice in solid solutions. The smaller $|\Delta r|$, the lower the energy of the elastic distortions of the crystal lattice, therefore, the greater the crystalline perfection of the solid substitution solution and the greater the solubility n in m. When the difference between the sum of the covalent radii of the atoms of the molecules of the



components forming solution is more than 10%, the formation of the solid solution from these components is insignificant.

The sum of the valences of atoms of Sn_2 molecules ($z_{\text{Sn}} + z_{\text{Sn}} = 8$) and InSb ($z_{\text{In}} + z_{\text{Sb}} = 8$), as well as the covalent radii $r_{\text{Sn}} + r_{\text{Sn}} = 2,80 \text{ \AA}$ and $r_{\text{In}} + r_{\text{Sb}} = 2,80 \text{ \AA}$ are equal, therefore, these molecules satisfy conditions for the formation of solid solution substitution (2) and (3). Wot replacing Sn_2 molecules with InSb molecules, the deformation of the crystal lattice will be insignificant, the energy of elastic distortions of the crystal lattice will be minimal. It is known that the forbidden zone of semiconductor tin has the value 0.08 eV, and indium antimonide - 0.18 eV, therefore, solid solutions based on them are perspective materials for optoelectronic devices operating in the infrared range of the emission spectrum with the wavelength longer than 6 microns.

Analys and Results

Solid solutions $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ were grown by liquid phase epitaxy from a limited volume of indium melt in an atmosphere of hydrogen purified by palladium in technological installation with a vertical reactor. In the graphite cassette of the reactor, horizontally positioned substrates were fixed, they were separated from each other by graphite supports. A liquid solution-melt was poured into the space between the two upper and lower substrates through the side slots of the cassette. The distance between the upper and lower substrates was varied from 0.25 to 2.5 mm. This regulated the volume of the solution-melt. Polished GaAs wafers with the diameter of 20 mm, with the crystallographic orientation of (100), n-type conductivity with the carrier density of $(4-7) \cdot 10^{17} \text{ cm}^{-3}$ served as substrates.

The technological conditions allowed the following parameters to be varied: the component composition of the solution-melt; distance between upper and lower supports; the beginning and end of the crystallization temperature of the grown layer; speed of forced cooling of the melt solution.

When we choose a metal solvent for the preparation of a liquid solution-melt, we studied the solubility of InSb in various metal solvents. The most acceptable



solvent for technological reasons was In. The solubility of InSb was determined in the temperature range of 220–450 ° C by the method of weight loss of indium antimonide samples placed in liquid indium and kept in it until the solution was saturated. The effect of Sn on the solubility of InSb was taken into account. The composition of the In–InSb–Sn-melt solution was calculated on the basis of literature data [9] and the results of preliminary experiments, taking into account the solubility of binary components.

The growth of epitaxial layers was carried out by varying the temperature of the beginning of crystallization from 300 to 400 ° C, the speed of forced cooling from 0.5 to 3 grad/min. Depending on mode of the growth, the thickness of the epitaxial layers changed within 4–15 μm. Specially not doped layers had conductivity of p-type. The mode of optimal growth had the following parameters: the temperature range of growth was 325–250 ° C, the solution-melt thickness was 1 mm, the cooling rate was 1 grad/min. At the initial moment of growth, InSb crystallizes from the solution-melt, since at the selected epitaxy temperature the solution is saturated in relation to InSb. At lower temperatures, conditions are created for growing the solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$, since at these temperatures the solution-melt becomes supersaturated by indium antimonide and tin. Under these conditions, we were able to obtain crystal-perfect, mirror-smooth epitaxial films of the $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ solid solution on GaAs substrates.

Since the periods of the crystal lattices of GaAs (5.653 Å) and InSb (6.475 Å) are different, growing InSb on arsenide gallium substrates without a buffer layer or without a graded-gap $(\text{GaAs})_{1-x}(\text{InSb})_x$ ($0 \leq x \leq 1$) layer seems to be will be very difficult [10, 11]. The melt solution was not diluted with gallium arsenide; consequently, after the contact the substrate with indium melt- solution at the given temperature a slight dissolution of the substrate occurs and at the initial moment dissolved GaAs molecules will be present in the solution at the crystallization front. Based on the principle of similarity, i.e. the similar dissolve in the similar, it can be assumed that at the initial moment of growth crystallization of the graded-gap layer

of the substitution solid solution $(\text{GaAs})_{1-x}(\text{InSb})_x$ with varying composition occurs. The tetrahedral lattices of the such layer are shown in Fig.1.

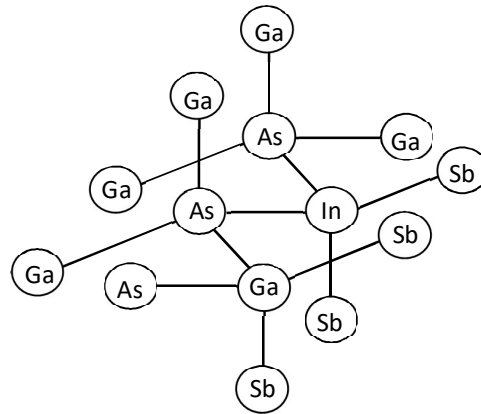


Fig.1.

Tetrahedral lattices of the substitution solid solution $(\text{GaAs})_{1-x}(\text{InSb})_x$.

As can be seen from Fig. 1, the tetrahedral lattices of the $(\text{GaAs})_{1-x}(\text{InSb})_x$ solid solution have both Ga-As, In-Sb, and Ga-Sb, In-As bonds. Difference of covalent radii of atoms of GaAs and InSb molecules:

$$\Delta r = |(r_{\text{Ga}} + r_{\text{As}}) - (r_{\text{In}} + r_{\text{Sb}})| = 0,36 \text{ \AA}, \quad (4)$$

is more than 12%. However, the difference between the covalent radii of the atoms of the molecules GaAs and GaSb, GaAs and InAs, as well as InSb and GaSb, InSb and InAs:

$$\begin{aligned} \Delta r &= |(r_{\text{Ga}} + r_{\text{As}}) - (r_{\text{Ga}} + r_{\text{Sb}})| = 0,18 \text{ \AA}, \\ \Delta r &= |(r_{\text{Ga}} + r_{\text{As}}) - (r_{\text{In}} + r_{\text{As}})| = 0,18 \text{ \AA}, \\ \Delta r &= (r_{\text{In}} + r_{\text{Sb}}) - (r_{\text{Ga}} + r_{\text{Sb}}) = 0,18 \text{ \AA}, \\ \Delta r &= (r_{\text{In}} + r_{\text{Sb}}) - (r_{\text{In}} + r_{\text{As}}) = 0,18 \text{ \AA}, \end{aligned} \quad (5)$$

is less than 7.4%; Consequently, these molecules satisfy conditions (2), (3) and, under certain thermodynamic conditions, they form solid substitution solutions, just as noted in [12] for $(\text{GaSb})_{1-x-y}(\text{Si}_2)_x(\text{GaAs})_y$ solid solution y. It should be noted that



the lattice parameters of GaSb (6.095 Å) and InAs (6.058 Å) have an intermediate value between GaAs and InSb. Thus, the transition region is a layer with varying composition. This layer, providing a smooth transition from GaAs to InSb, reduces the mechanical stress in the transition region between substrate and film and the negative role of the mismatch of the lattice parameters gradually decreases.

Research Methodology

2. Structural and photoelectric measurements of parameters of n-(GaAs)-p-(InSb)_{1-x}(Sn₂)_x (0 ≤ x ≤ 0.05) - heterostructures

2.1. Structural studies of epitaxial layers of (InSb)_{1-x}(Sn₂)_x (0 ≤ x ≤ 0.05) solid solutions grown on GaAs substrates.

The structural study of the obtained epitaxial layers was carried out on a DRON-UM1 X-ray diffractometer. Diffraction spectra were recorded by continuous recording on the radiation of the copper anode ($\lambda_{\alpha} = 1.5418$ Å, $\lambda_{\beta} = 1.3922$ Å) using the Θ - 2Θ scheme in the step-by-step scanning mode. The voltage and current of the anode were 30 kV and 10 mA, respectively. The exposure time varied in the range of 1–3 hours.

Figure 2 shows the diffraction patterns of the epitaxial layer of the solid solution (InSb)_{1-x}(Sn₂)_x (0 ≤ x ≤ 0.05). It can be seen that in the diffraction pattern of the epitaxial layer there are two pronounced selective structural reflexes with a very large intensity and a small one. The analysis showed that the most intense narrow reflex at $2\theta = 41.97^\circ$ is due to the scattering of X-ray quanta from the base planes of the {300} InSb series of the film lattice and has a width of $\omega \approx 1.62 \cdot 10^{-3}$ rad. The less intense narrow reflex at $2\theta = 41.85^\circ$ is due to the scattering of X-rays from the planes of the (InSb)_{1-x}(Sn₂)_x solid solution lattice and has a width of $\omega \approx 8.61 \cdot 10^{-4}$ rad. The narrow width of the peaks and the absence of other peaks in the diffractogram indicates a high degree of perfection of the crystal lattice of the epitaxial layer, that is, the grown films are mono-crystal. However, the shape of the peak at $2\theta = 41.97^\circ$ is singlet and has some asymmetry on the side of a large scattering angle, that is, there

is no complete splitting by α_1 and α_2 radiations. This indicates the presence of residual elastic microstrains of a growth character in the crystal lattice of the studied film [13]. We assume that in this case the regions with elastic microstresses in the lattice of the epitaxial layer are mainly caused by different covalent radii of atoms of the substrate molecules ($r_{\text{Ga}} + r_{\text{As}} = 2.44 \text{ \AA}$) and solid solution ($r_{\text{In}} + r_{\text{Sb}} = 2.80 \text{ \AA}$, $r_{\text{Sn}} + r_{\text{Sb}} = 2.80 \text{ \AA}$).

Analys and Results

Based on the data of diffraction patterns the lattice parameter of the film was determined from the expression $a = d_{hkl} \sqrt{h^2 + k^2 + l^2}$ [14], where d_{hkl} is the distance between atomic planes with indices hkl . The condition of x-ray diffraction at atomic interplanar distances is described by the Wulff-Bragg equation, which has the form $\lambda = 2d_{hkl} \cdot \sin \theta$ (θ is the angle of reflection of X-rays, or Bragg angle, λ is the wavelength of the used radiation). The lattice parameters of the InSb epitaxial layer and the $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ solid solution were $a_{\text{InSb}} = 6.475 \text{ \AA}$ and $a_{\text{s.s.}} = 6.486 \text{ \AA}$ respectively.

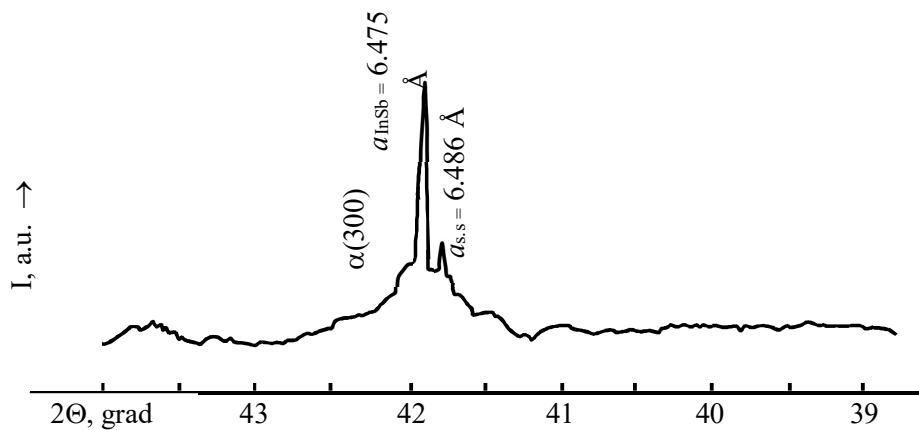


Fig.2.

The diffraction pattern of n-(GaAs)-p-(InSb)_{1-x}(Sn₂)_x ($0 \leq x \leq 0.05$) - heterostructures.

Studies of the chemical composition of the surface and cut of the grown epitaxial layers $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ were carried out on a Jeol JSM 5910 LV-Japan x-ray

microanalyzer. The results of X-ray microanalysis and raster pictures on the cup and on the surface showed that the epitaxial layers do not contain metallic inclusions and the distribution of components on the surface of the epitaxial layer is uniform and in the volume of the solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ it varies within $0 \leq x \leq 0.05$. The entire surface of the substrate was covered with a overall film firmly connected to it, and the surface of the layer was mirrored

Research Methodology

2.2. Current-voltage characteristics of $\text{n-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) heterostructures.

To study the current-voltage characteristics (CVC) of $\text{n-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) heterostructures, ohmic contacts were created by sputtering silver in vacuum. The CVC presented in Fig. 3 was researched at room temperature.

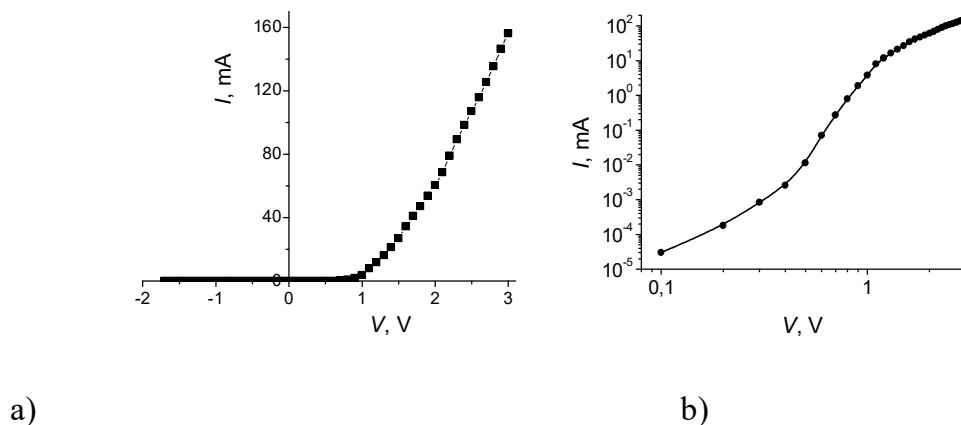


Fig.3.

Volt – ampere characteristic of $\text{n-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) heterostructure (a) and its straight branch on logarithmic scales.

Analys and Results

The initial part of the CVC characteristic (up to 0.7 V) is well described by the well-known exponential dependence obtained by V.I. Stafeev [15] for p-n- diode structures with an ohmic rear contact:

$$I = I_0 \exp\left(\frac{qV}{ckT}\right), \quad (6)$$

and refined in [16] for p-i-n structures. The values of the exponent “c” in the exponent and the preexponential factor - I_0 , calculated from the experimental data, of the current–voltage characteristics were $c = 7.75$ and $I_0 = 7.7$ nA, respectively.

Dependence (6) is characteristic of the so-called “long” p-n- diode, i.e. when $d/L_n > 1$, where d is the base length, $L_n = \sqrt{D_n \tau_n}$ is the diffusion length of minority carriers. Electronic processes due to charge modulation when a current passes through the structure are mainly determined by the transition layer and the p-(InSb)_{1-x}(Sn₂)_x solid solution. Therefore, the thickness of the epitaxial layer, which was $d \approx 15$ μm, was taken as the base thickness.

The exponent “c” in the exponent is described by the expression [16]:

$$c = \frac{2b + ch\left(\frac{d}{L_n}\right) + 1}{b + 1}, \quad (7)$$

where $b = \mu_n/\mu_p$ is the ratio of electron and hole mobilities. For undoped InSb, the ratio μ_n/μ_p is $b \approx 21$ [17]. When the concentration of dopants increases, carrier mobility decreases rapidly. Taking this fact into account, in order to estimate the parameters of the p-(InSb)_{1-x}(Sn₂)_x ($0 \leq x \leq 0.05$) solid solution, we took $b = 15$. Then, using expression (7), we can determine d/L_n , which takes the value 5.24. Then you can find the diffusion length of minority carriers $L_n = 2,9$ microns.

An analysis of the direct branch of the CVM characteristic (Fig. 3b) shows that exponential dependence is followed by power-law portions — $I \sim V^m$ with different values of the exponent depending on the applied voltage. In the voltage range from 0.7 to 1.1 V, a dependence is observed - $I \sim V^{7,4}$, then at voltages (1.1-1.9) V - $I \sim V^{3,8}$, and at (2.2- 3,0) B - quadratic dependence $I \sim V^2$.

Research Methodology

2.3. The spectral dependence of the absorption coefficient of the epitaxial layer of solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$)

The spectral dependences of the absorption coefficient (α) of the epitaxial layer of the solid solution $(\text{InSb})_{1-y}(\text{Sn}_2)_y$ ($0 \leq y \leq 0.05$), grown on GaAs substrates (Fig. 4) were studied. The layer thickness was $d \approx 15 \mu\text{m}$. The absorption coefficient was estimated based on the Bouguer-Lambert law [18]:

$$I(\lambda) = (1 - R(\lambda))^2 \cdot I_0(\lambda) \cdot e^{-\alpha(\lambda) \cdot d}, \quad (8)$$

where $R(\lambda)$ is the reflection coefficient of electromagnetic radiation from the film surface, $I_0(\lambda)$ and $I(\lambda)$ are the intensities of monochromatic electromagnetic radiation incident on the sample and transmitted through the sample, respectively. Taking into account that the $(\text{InSb})_{1-y}(\text{Sn}_2)_y$ studied sample is a narrow-gap semiconductor, the $\alpha = \alpha(\lambda)$ dependence was determined by the optical absorption method in the deep infrared region of the emission spectrum on the two-channel compensation spectrophotometer SPECORD-71 IR. As can be seen from fig. 4 the absorption coefficient of the solid solution $(\text{InSb})_{1-y}(\text{Sn}_2)_y$ ($0 \leq y \leq 0.05$) covers a wide range of wavelengths in the deep IR spectral range and reaches $\sim 14 \mu\text{m}$. For the long-wave edge, the dependences $\alpha = \alpha(\lambda)$ the band gap of the solid solution ($E_{g, \text{InSbSn}}$) was estimated. It was $E_{g, \text{InSbSn}} \approx 0.11 \text{ eV}$, which is less than the width of the band gap of the InSb compound - $E_{g, \text{InSb}} = 0.18 \text{ eV}$. ($E_{g, \text{Sn}} = 0.08 \text{ eV}$).

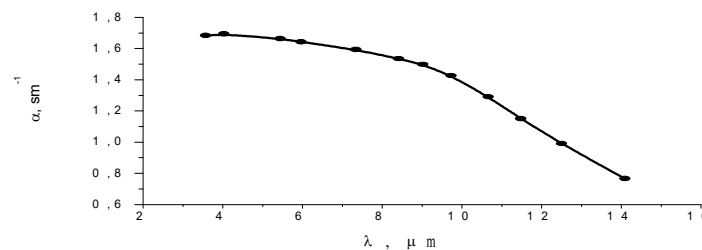


Fig. 4.

The spectral dependence of the absorption coefficient of the epitaxial layer of solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$).

2.4. Spectral dependences of the photosensitivity of $n\text{-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$, $n\text{-GaP-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ heterostructures.

The spectral dependences of the photosensitivity of heterostructures based on an $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ solid solution were studied. For this purpose $n\text{-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ and $n\text{-GaP-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ heterostructures were made, growing from the liquid phase of the epitaxial layer of the solid solution on various substrates ($n\text{-GaAs}$ and $n\text{-GaP}$). The composition of the transition layer varies along film thickness; closer to the substrate the wide-gap component, InSb , prevails, and as the film grows, the molar content of Sn increases and reaches 5 mol.% on the surface of the epitaxial film. To clarify the role of the components of the solid solution in the photovoltaic process that occurs in the studied heterostructures, their spectral photosensitivity was investigated experimentally using an infrared spectrometer IKS-21. The measurement results are shown in Fig.5.

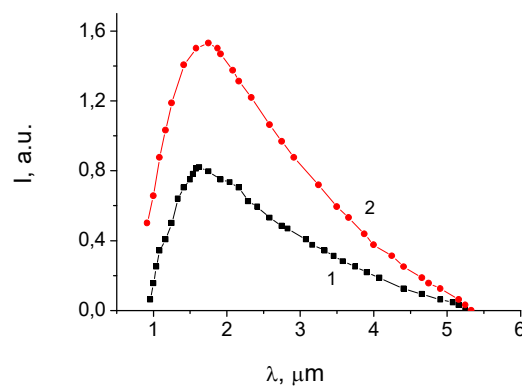


Fig. 5.

Spectral dependences of the photosensitivity of $n\text{-GaAs-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ (1) and $n\text{-GaP-p-(InSb)}_{1-x}(\text{Sn}_2)_x$ (2) heterostructures



Analys and Results

From figure 5 it can be seen that the photosensitivity of both structures is identical and covers a wide range of wavelengths - from 1.0 to 5.3 μm with a maximum at 1.65 μm . The photosensitivity of both structures in the long-wavelength range of the spectrum is limited to the wavelength of 5.3 μm . The lack of completeness of the absorption of the layer of the solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ in the long-wavelength range is caused by the fineness of the upper sublayer of the solid solution enriched by tin. The decrease of photosensitivity in the short wavelength range is due to the depth of the separation barrier of the p–n junction, which in our case is $\sim 15 \mu\text{m}$, which is greater than the diffusion length of minority carriers $L_n \approx 2,9 \mu\text{m}$. Consequently, photocarriers generated by photons with a wavelength of $\lambda < 1 \mu\text{m}$ do not reach the separating barrier of the p–n junction and do not contribute to the photocurrent.

Conclusion

Thus, the possibility of obtaining a perfect mono-crystal epitaxial layer of the solid solution $(\text{InSb})_{1-x}(\text{Sn}_2)_x$ ($0 \leq x \leq 0.05$) with the crystallographic orientation (100) and hole type conductivity by liquid phase epitaxy from In-melt solution on GaAs and GaP substrates at temperatures below the melting point of the components of the solid solution. The spectral dependences of the absorption coefficient and photosensitivity of heterostructures based on the obtained solid solution were determined experimentally.

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MODERN PROBLEMS OF TECHNICAL SCIENCES

UDC: 2500-1272

DEVELOPMENT OF THE THICKENER COMPOSITION WITH LOCAL RAW-MATERIALS FOR PRINTING BLENDED FABRICS COTTON-SILK

Qurbonova Feruza Nurullayevna
assistant, Chemistry Department,
Natural sciences of
Bukhara State University,
E-mail:
qurbonova_feruza@mail.ru

Gulnora Akmalovna Ixtiyarova
Head of the department,
Candidate of chemistry, professor
Tashkent State Technical
University

Hulkar Haydarova
Student of Chemistry Department,
Natural sciences of
Bukhara State University

Savriyeva Nigina
Student of Department Chemistry,
Natural sciences of
Bukhara State University

Annotatsiya: Maqolada paxta-ipak tolali matolarga gul bosish uchun karbosimetilkraxmal, uzxitan va gidrolizlangan akril emulsiya asosidagi yangi quyuqlovchi ishlab chiqildi. An'anaviy va yaratilgan quyuqlovchi bilan gulfosilgan matoning koloristik xossalari o'rganilgan.

Kalit so'zlar: xitozan, quyuqlovchi, paxta-ipak, emulsiya, kompozitsiya.

Аннотация: Разработан новый состав загустителя на основе карбоксиметилкрахмала, узхитана и гидролизованной акриловой эмульсии



печатания смесовой ткани хлопох - шелк. Изучены хлористические свойства набивных тканей с разработанным загустителем по сравнению традиционным загустителем.

Ключевые слова: хитозан, загустителя, хлопох - шелк, эмульсия, композиция.

Abstract: In the following article the developed new thickener are studied based on hydrolyzed acrylic emulsion (HAE), uzchitan and carboxymethyl starch for printing mixed fabrics cotton-silk. Investigated coloristic property printed fabrics.

Keywords: uzchitan, thickener, cotton-silk, emulsion, composition.

Introduction

The need for printed fabrics is growing every year and now they occupy a large share of the manufactured fabrics market. In the foreign textile industry, the first place in the production of printed fabrics is occupied by materials from cellulose fibers, as well as blended fabrics based on natural fibers[1]. In this case, the main process of finishing is printing. Printing is a patterned coloring of fabrics, obtaining a pattern on it with one or more colorants. For printing of blended fabrics the colorants, that give the most durable and bright colors: active, pigments, dispersed and other colorants are used.

The production of printed textile materials increases every year. Such distribution determines the balance of consumption of colorants by class: pigments come to the first place, active colorants to the second, and disperse colorants to the third.

Currently, chitosan is used for dyeing and printing of cotton fabrics, and on the basis of cotton-silk, cotton-polyester, cotton-nitron, naturally mixed thickeners on the basis of natural and synthetic polymers can be used [2]. Existing experimental studies show that the search and development of new types of water-soluble mixed thickening agents for blended fabrics on the basis of carboxymethyl starch, with specially selected biopolymers [3], produced in Uzbekistan, is timely and relevant.

The purpose of this study was to develop cost-effective thickening compounds and assessment of the suitability of using printing inks on the basis of biodegradable



polymers of *Bombyx mori* Uzhkhan, synthesized under the guidance of S.Sh. Rashidova [4-6] with the addition of acrylic emulsion produced by Navoiyazot OJSC, as well as sodium salt of carboxymethyl starch for printing cotton-silk fabric (Table 1).

Table 1

Printing ink composition

Ingredients, g/kg	A	B	C
Active dye	30	30	30
DGT	30	-	-
Carboxymethyl starch (CMS)	-	60	40
Uzhkhan	-	*	20
*HAE (30%)	-		10
Urea	150	150	100
Ludigol	10	10	10
Sodium sulphate	15	15	5
Water	770	785	815
Total	1000	1000	1000

Objects and methods of research. Methods for determining the degree of fixation of active dyes.

To determine the degree of fixation of the dyes, the Sokolov method was used, which based on the dissolution of the printed fabric in concentrated sulfuric acid, followed by dilution and colorimetry of the resulting hydrosols. A weighed portion of a printed tissue of 0.1-0.2 g., weighted with an accuracy of up to 0.0001 g., is crushed and placed in a glass beaker with a capacity of up to 50 ml. Then 15-20 ml of chemically pure concentrated sulfuric acid ($\rho = 1.84 \text{ g / ml}$) are poured into a glass and dissolved upon cooling for 50-60 minutes. The resulting solution is poured into a measuring flask with a capacity of 250 ml, in which 100 ml 2% of solution of the nonionic substance of OP-10 type are poured. The solution is cooled, adjusted to the mark with distilled water and is measured. The concentration of the dye on the fabric is calculated according to the calibration graph. The degree of fixation of active dyes



(DoF,%) is calculated by the formula:

$$\text{DoF} = C_1 / C_2 * 100; (8)$$

whereas: C_1 - the concentration of the dye printed tissue after washing,

C_2 - the concentration of the dye of the printed fabric before washing.

Methodology for determining the intensity of printed fabrics. The ICE International Colorimetric System provides the possibility of expressing color with three color coordinates or two chromaticity coordinates and lightness. The coordinates of the colors, as well as the coordinates of the chromaticity, are determined by calculation on the basis of the spectrophotometric characteristics of colored bodies or by using measuring instruments using the XYZ color graph. The color characteristics of the dyed fabrics were evaluated on a Minolta CM-3600d spectrophotometer (Japan) from Orintex, the calculations were performed on a computer using a special program.

Results and Discussion

It was of interest to study the regularity of alkaline hydrolysis of acrylic emulsion (AE) on the reaction conditions [7-8], since the acrylic emulsion is not a water-soluble polymer. Water solubility and high viscosity are the main requirements for thickeners.

Since hydroxyl-containing starch interacts with active dyes, we carried out the esterification of corn starch with sodium monochloroacetic acid salt (NaMCAA) (in the molar ratio 1:1.6) in an alkaline medium in the solid phase for 1 hour at a temperature of 35-45 ° C to obtain carboxymethyl starch (CMS) [6]. Rheological and thixotropic properties of thickeners on the basis of CMS, Uzkhitan and synthetic polymers are studied in the work [9-10].

In November 2017, at the Bukhara-China joint enterprise "Bukhara Brilliant Silk-BBS", the production tests of the new thickeners, developed by the colleagues of the "General chemistry" department of TSTU and "Chemistry of the polymers" department of UzMU were carried out, for the purpose of printing of blended fabrics cotton-silk in the ratio 64:36. Thickeners are obtained with the use of local raw



material on the basis of the hydrolized acrylic emulsion (HAE), Uzkhitan and sodium salt of carboxymethyl starch (Na-CMS). The effect of thickeners on the intensity, washability (improvement of the surface) and the printing-technical properties of printed fabrics with active dyes were studied.

During the tests, the following procedure for preparing the thickener was observed: cold water of 30 liter volume is poured into the reactor and Uzkhitan: Na-CMS: HAE (mass ratio 2.0: 4.0: 1.0) is charged. To dissolve the dry thickener, continuous mixing for 30 minutes is performed, after which urea, sodium carbonate and sodium sulfate are added to the finished composite thickener. The resulting mass is pumped into the supply tank, and then the process is carried out according to the existing technology. The thickener obtained by the above method was used in printing cotton-silk fabric. Under the conditions of the enterprise, about 200 p.m of cotton-silk fabric was printed and the coloristic properties of printed fabrics were studied. Table2

As can be seen from the table. 2, coloristic and printing-technical properties of cotton-silk printed fabrics are improved, and the fabric stiffness is decreased. The intensity of the printed pattern obtained by the use of composite thickener is higher than when using thickeners on the basis of imported DGT.

Table2

Coloristic indicators and printing-technical properties of printed fabrics cotton-silk

Components included in the thickener	Color hue, 1 home, Nm	The rigidity of the fabric. micron cm ²	Color intensity. K / S	Unevenness of coloring Average.max
Alginate	488	8324	20.2	0.06 ¹
DGT	466	10150	16.8	0.18
Uzkhitan: Na-CMS: HAE	484	8450	19.8	0.09



(mass ratio. 2.0: 4.0: 1.0)				
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Further, the degree of fixation of various active dyes in comparison with the traditional thickener were studied (Table 3).

As can be seen from the table. 3, developed mixed thickeners on the basis of CMS (carboxymethyl starch), Uzkhitan and HAE, provide high intensity and dye degree of fixation.

The results of industrial approbation of printed blended fabrics led to the following conclusions.

The brightness of the printed pattern obtained using the proposed thickener exceeds the brightness of the printed pattern obtained using imported DGT thickener.

Printing with a new thickener for durability to wet treatments is not inferior to printing with imported DGT thickeners made in China.

The use of new thickener when printing on the flannel allows obtaining a softer surface of fabric and a high degree of fixation compared with samples printed with imported thickener.

The washability of the thickener when printing with the proposed thickener is higher than when printing with a running thickener.

During the tests no technical complications associated with the equipment and the preparation procedure for thickeners were figured out.

Conclusion:

Thus, a synthetic polymer (HAE) and Uzkhitan reduce the content of Na-CMS in printed compositions with an improvement in the quality of printing cotton-silk fabric. The printed-technical properties of the mixed thickeners of the CMS, HAE and Uzkhitan composition, show good results in comparison with imported DGT thickener. Composite mixed thickeners exhibit the greatest efficiency in terms of the degree of beneficial use of active dyes and coloristic indicators of dyes in steaming one-stage methods of printing cotton-silk fabric.



The work is carried out according to the applied project OT-A-12-11, which is part of the state scientific and technical program on the theme “Development of laboratory technology for the production of polymeric nanocomposite textile materials based on polyacrylates, chitosan and its derivatives”.

Table 3

Printed-technical properties of printed fabrics

Thickener, dye	Degree of fixation %	Intensity, K / S	The rigidity of the fabric, $\mu\text{N} \cdot \text{cm}^2$
Developed Uzhitan-HAE-CMS			
Active red 6C	72.1	22.3	8450
Active orange 5K	68,8	21.4	9387
Bright blue CT	76.3	19.8	9450 "1
Traditional, DGT			
Active red 6C	62.7	18.5	8824
Active orange 5K	58.1	17,5	9780
Bright blue CT	64.0	16.8	10150



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UDC 656.225

AN ANALYSIS OF THE WORK OF PASSENGERS TRAINS ON TWO-ZONE SECTIONS AND THEIR ALERT AUTOMATION

Tokhirov Nosirjon Sobirjon ugli
Lecturer, The Tashkent institute of
railway transport engineers,
Organization of transportation and transport
logistics faculty,
E-mail: nosirtohirov@gmail.com

Annotatsiya: “O‘zbekiston temir yo‘llari” AJda hozirgi kunda yo‘lovchi tashishda ularning xavfsizligiga e‘tibor juda katta. Yo‘lovchi poyezdlari yo‘lovchilarni yaqin hamda kelesizda yo‘lovchilar oqimini miqdoriga ta‘sir etuvchi bir qancha omillarni hisobga olgan holda amalga oshiriladi. Shuning uchun yo‘lovchi poyezdlariga yo‘l xo‘jaligi xodimlari, elektr ta‘minoti, signalizatsiya va aloqa xodimlari qolaversa bekat navbatchisi, poyezd dispetcheri tomonidan beriladigan ogohlantirishlarni aniq va bexato bo‘lishini taqazo etadi. Ushbu maqolada poyezdlarga beriladigan ogohlantirishlarni avtomatlashtirish va ikkita zonali uchastkalardagi poyezdlarning harakatini tashkil qilish haqida bayon etilgan.

Kalit so‘zlar: Yo‘lovchi poyezdlari, yo‘l xo‘jaligi xodimlari, elektr ta‘minoti, signalizatsiya va aloqa xodimlari, bekat navbatchisi, poyezd dispetcheri, zona, ogohlantirishlar, poyezdlarning harakati.

Аннотация: АО «Узбекистон темир йуллари» внесло большой вклад в безопасность перевозок пассажиров. Ожидается, что пассажирские поезда будут иметь ряд факторов, влияющих на большой пассажиропоток в ближайшие дни и буду в будущем. Вот почему пассажирские поезда требуют, чтобы выдача предупреждений со стороны работников путевого хозяйства, электроснабжения, сигнализации и связи, а также дежурных по станции диспетчерами, были точными и безошибочными. В этой статье описывается



автоматизация выдачи предупреждений на поезда и работа поездов на двух зонных участках.

Ключевые слова: Пассажирские поезд, работников путевого хозяйства, электроснабжения, сигнализации и связи, дежурных по станции, диспетчер, предупреждений, движения поездов.

Summary: Company "Uzbekistan railways" has made a great contribution to the safety of passenger traffic. It is expected that passenger trains will have a number of factors affecting the large passenger traffic in the coming days and will be in the future. That is why passenger trains require that the issuance of warnings from workers of the running facilities, electricity, signaling and communications, as well as station attendants at the station by dispatchers, be accurate and error free. This article describes the automation of issuing warnings for trains and trains at two zones.

Keywords: Passenger trains, workers of the running facilities, electricity, signaling and communications, station attendants, dispatchers, warnings, movement of trains.

Introduction

The current conditions in the area surrounding the city are likely to be reflected in statistical data that has been reported by the trains. As well as, by studying the approximate amount of passengers' traffic on the main stations at major railroad tracks, by determining the number of passengers arriving and leaving the station at the clock or by hour of the day.

This information should be reviewed for holidays and working days.as well as the process of distribution of passengers' flow over the clock hours for these days

Passenger trains are carried out taking into account a number of factors influencing the flow of passengers in the near future as well as the flow of passengers in the future

The socioeconomic factors such as the material and cultural level of the population, the organization of work and rest, the development of recreational facilities in passenger trains, the development of economic and production capacities



in the areas of passenger trains, and the reduction of passenger travel costs are taken into account .

In addition, it is important to emphasize the factors connected with the reconstruction of lines, namely the operation of multilevel lines, the introduction of relative intelligence, the use of automobiles, diesel trains in passenger trains, electrification of pedestrian train sections or transferring them to a new type of recycling, improving the processing technology of stations, train stations and stopping points.

In any case, the main focus should be on reducing travel time and costs of passengers.

In addition, it is necessary to develop the use of other types of transport, which are also involved in passenger transportation, in parallel with passenger trains.

Technical equipment of other types of vehicles, improvement of working lines of passenger lines will allow them to determine the level of passengers train passengers.

In addition, we are working hard to improve the passenger traffic and increase the flow of tourists, as well as to improve the quality of passenger trains and mitigate the burden of passengers. From the above, it implies automation of warnings for passenger trains. The warnings given to the passengers' safety are invaluable

How to fill the DU-61 with one yellow line on the diagonal, which is currently a stimulant blank. The traffic officer sends the warnings received by the traffic inspector, ie the telegram to the officer on the road and the duty officer submits the warnings to the train machinist according to the time of their registration.

As you can see, the average time spent on the DU-61 alert machine to the machinist is 2-3 hours. If the program is designed to fill the DU-61 electronic form, it will be possible to reduce the time spent on the program and to retain the warnings and send it to the next train in that direction. For example:

Form DU-61 PAPER OF WARNING



The warning to train №__ received «__» __ 20__ year.

Machinist (assistant of machinist) _____

Cutting line

Station _____ (stamp)

F. DU-61

«__» __ 20__ year.

Notice to train № _____

Kilometres	Warning time	speed no more km/hour	Stop at the red signal and if not follow with speed. No more km/hour	Other special conditions of following trains
1	2	3	4	5
15	<i>Before negation</i>	25		
28	8-16	15		
123	8-14		2	
172-175	8-16			<i>orks</i>
				<i>dilly</i>
				<i>Stop for</i>
				<i>Disembarking doctor</i>
186	10-12	<i>Installed</i>		

Station duty officer _____ Haydarov

(blank white with a yellow stripe diagonally)

The amount of movement of passenger trains is determined by the following formula based on the volume of passengers' flow in each zone and the acceptance capacity of the passenger train:

The number of dots can be found by the following formula:



$$K = \Pi \sqrt{\frac{A_{cp} \tau}{a_p}} \quad \text{zones}$$

It is Π –the number of intermediate points and stopping points in the block.

$$\Pi = 23$$

A_{cp} –Average passenger turnover in a busy timeframe or intermediate station .

$$A_{cym}^{cp} = \frac{A_{np} \cdot \gamma}{100 \cdot \Pi} \text{passenger}$$

$$A_{cym}^{cp} = \frac{7500 \cdot 25}{100 \cdot 23} = 82 \text{ passenger}$$

It is γ – Daily passenger turnover in%

τ -.the time to stop, accelerate and slow down at each stop of the train.

$$\tau = \tau_R + \tau_{ST} + \tau_Z$$

$$\tau = \tau_R + \tau_{ST} + \tau_Z = 0.5 + 2 + 0.5 = 3 \text{ minutes} = 0,05 \text{ hour}$$

a_r –the logical capacity of the train

$$a_r = \frac{a_{\min} + a_{\max}}{2} \text{passenger}$$

$a_{\min}$ – number of seats on the train

$a_{\max}$ –number of passengers on the train, except for the number of seats in the train

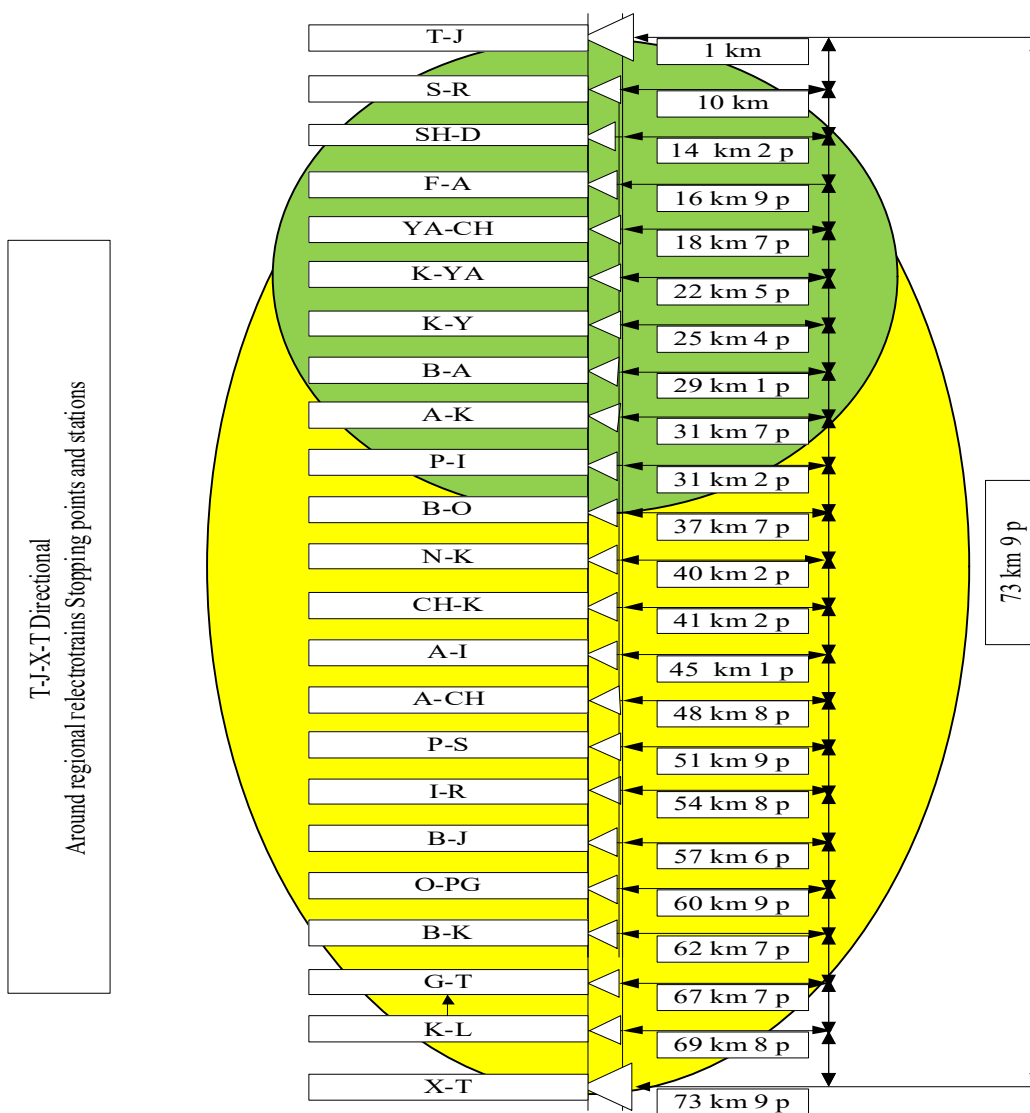
$$a_r = \frac{520 + 1000}{2} = 760 \text{ passenger}$$

From the following:

$$K = 23 \sqrt{\frac{82 \cdot 0,05}{760}} = 1,68 \approx 2 \text{ zones}$$

The outcome of the calculations and the boundaries of zones are given in

Figure 1:



1-figure. Boundaries of defined zones.

Analysis and results

It should be noted, however, that the amount of trains identified should be used efficiently by the train capability, and at the same time to comply with a certain frequency of movement.

Required navigational capacity of the train passenger train is determined by the existing passage capacity of the passenger train track, the passenger traffic, the volume of passenger flows and the daily traffic.

In conclusion, it is possible to say that if the movement of the train from Tashkent to Khodjikit-Tashkent and the distances between them are divided into



sections II, it is necessary to reduce the time of train from Tashkent to Hojjikent station and use the services of railway transport for passengers to secure a safe and timely arrival.

For example, it leaves Tashkent at 07:36 and arrives at Khodjикent at 09:46, ie it is 2 hours and 10 minutes, and if it's too long then the time spent on the car will be 1 hour. Another reason for the increase in time consumption is the widespread urban electricity train and the low number of electric trains. In order to increase the passenger flow and develop the economy of Uzbekistan Railways it is desirable to divide the Tashkent-Khodjикent-Tashkent train into two zones for the purchase of new electric trains and reducing the time of their arrival.

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**PRINCIPLES OF AUTOMATION OF PROCESS ACCOUNTING AND
CONTROL DEVICES OF RAILWAY AUTOMATICS AND
TELEMECHANICS**

Baratov Dilshod Khamidullaevich
Ph.D., Tashkent institute of railways engineers,
Tashkent, Uzbekistan,
Email: baratovdx@yandex.ru

Annotatsiya. Maqolada temir yo'llarni avtomatlashtirish va masofadan turib boshqarish (signalizatsiya, markazlashtirish va blokirovka) qurilmalarini hisobga olish va nazorat qilishning avtomatlashtirilgan tizimini ishlab chiqishni funksional ta'minoti masalalari yoritilgan; tizimning elektron-ijro etuvchi qismlarining komponentlari ko'rsatilgan; kontseptual model taklif etilgan va ishlab chiqilgan avtomatlashtirilgan tizimni loyihalashning xususiyatlari tavsiflangan.

Kalit so'zlar: temir yo'llarni avtomatlashtirish va masofadan nazorat qilish tizimlari, signalizatsiya, markazlashtirish va blokirovka qurilmalari, elektron ijro etuvchi qismning komponentlari, kontseptual model va avtomatlashtirilgan hisobga olish va nazorat qilish qurilmalarini loyihalash.

Аннотация. В статье рассмотрены вопросы функционального обеспечения автоматизированной системы учета и контроля устройств железнодорожной автоматики и телемеханики: сигнализации, централизации и блокировки; представлены компоненты электронно-исполнительной части системы; предложена концептуальная модель и описаны особенности проектирование разработанной автоматизированной системы.

Ключевые слова: система железнодорожной автоматики и телемеханика, устройства сигнализации, централизации и блокировки, компоненты электронно-исполнительной части, концептуальная модель и проектирование автоматизированной системы учета и контроля устройств.



Annotation. The article deals with the issues of functional support of the automated system of accounting and control of railway automation and telemechanics devices: signaling, centralization and blocking; the components of the electronic Executive part of the system are presented; the conceptual model is proposed and the design features of the developed automated system are described.

Keywords: system of railway automation and telemechanics, signaling devices, centralization and blocking, components of electronic Executive part, conceptual model and design of automated system of accounting and control of devices.

Introduction

The introduction of advanced information technologies for the digitalization of the entire transport system, the development and implementation of long-term development strategies is one of the main tasks of the transport system [1].

The widespread introduction of computing tools in railway automation systems of telemechanics (RAST), providing a significant increase in the volume of transmitted and processed information, the development of the functional possibilities of systems requires the use of new approaches to the organization of document management of technical documentation.

The application in devices of signaling, centralization and blocking (SCB) of various types of automated workplaces, automated control systems, as well as elements of increased reliability, schemes of their backup and duplication in signaling creates prerequisites and is the conditions for the transition to the repair-recovery technology of maintenance in which the work is done: regulations, as [2-3]. The use of repair and restoration technologies for certain types of SCB equipment will allow: to improve the safety of train traffic and the efficiency of traffic management based on the high reliability of the serviced devices; to ensure the implementation of additional organizational and technical measures to improve the safety of train traffic



by reducing the specific labor intensity of maintenance and increasing productivity [4-6].

Further automation of control parameters of devices using digital and analog signals will allow to switch to the recovery technology of service of almost all elements of the technical means of the SCB. At the same time, an important place will be given to the reservation and use of highly reliable elements with extended service lives equal to or close to the service life of electric centralization systems, automatic blocking, dispatching centralization, etc.

Currently, part of the technical means has developed a service life or is approaching it (in SCB devices this is about a quarter of the existing ones). In order to prevent further aging of devices, employees of signaling and communication have to significantly increase the pace of modernization of technical means in the coming years. At the same time, should be introduced newly developed domestic and foreign systems of electric centralization, automatic blocking, dispatching centralization on a microprocessor basis.

At the same time, it is necessary to switch to new modern service technologies. The task is to automate the maintenance of devices as much as possible due to technical progress, to minimize the probability of the negative impact of the human factor on the process of ensuring the failure-free operation of technical means and, as a consequence, on the state of train safety [7]. Given the fact that it is currently impossible to 100% complete the production of highly qualified and responsible performers, the task is to ensure the centralization of control over the state of the technical means and the correctness of the actions of the performers.

Specialists of signaling and communication play a special role in improving the efficiency of the industry and ensuring the safety of train traffic. The successful solution of problems will be facilitated by the creative interaction of the workers of this most complex production and technological complex.



For the organization of the accounting of devices of railway automation and telemechanics, tracking of their movement and operational identification it is offered to use the automated system of the account and control of devices of SCB.

1. Description of the automated system of accounting and control of devices RAST

Automated system of accounting and control devices is intended for automation of accounting and control devices of railway automatics and telemechanics, as well as for planning works of the repairing-technology area (RTA) or control-measuring point (CMP).

The creation of ASA-CDRAT is aimed to improve the quality and efficiency of work on the replacement and repair of SCB devices, the validity of decision-making by specialists and managers of the distance of signaling and communication SHCH, the administration of signaling and communication SH, and laboratory automation and telemechanics SHL by automating the processes of planning, optimization and control of execution of works.

The automated system is used in distances of automation and telemechanics of the railway. Main functions of the automated system:

- creating and maintaining the database, including the passport of the specific instrument and information about the location of their installation;
- escort of displacement of devices in connection with periodic replacements, disposals, acquisitions, etc.;
- planning the replacement of instrument with issuing technologically necessary information;
- the monitoring of implementation of plans of replacement devices;
- failure analysis of devices of signaling, centralization and blocking;
- work planning the repair-process areas;
- issuing of the output documents, search capability of the devices in the database according to arbitrary queries.

The tasks and functions performed by ASA-CDRAT are given in table 1.

Table 1

The tasks and functions performed by ASA-CDRAT

Functions	Content	Periodicity
1 task. The initial data entry about devices.		
1.1. Input data	The initial data entry about devices with the decomposition by stations, tracks, locomotives, employees	During installation
1.2. Formation of references	Review and printing of operational informations about the location of the devices.	On demand
2 task. Accounting and control of movement of devices and their technological condition		
2.1. Accounting for the receipt of new devices at a distance	The entry in the database of ASA-CDRAT data about devices, newly entered the distance (in exchange fund RTA).	Upon the event
2.2. Accounting write-off of the devices	Data input on the write-off of the devices with the formation documents for the cancellation (from exchange fund RTA).	Upon the event
2.3. Accounting for the output of devices from the repair	The fixation data about performance works of the verification and repair devices taking into account fulfillment of plan tasks by the workers RTA. Formation of data about reclamations in the case of checking the newly received devices.	Daily



2.4. The account of planned replacements of devices	Fixation of data in the database about movements of devices from RTA to the line and back on the basis of information of the brigades of complex replacement or linear mechanics.	Upon the event
2.5. An accounting of replacement by the failure	Fixation of operational information about failures of devices with the formation of data.	Upon the event
2.6. Inventory replenishment accounting	Fixation of information about the movement of devices from the RTA to the stock.	Of necessity
2.7. Account of preservation of devices	Fixing the temporary withdrawal of the instrument from the work and returning them to normal production cycle.	Of necessity
2.8. The account of dismantling of devices	Fixation of dismantling of devices and (or) places of their placement.	Of necessity
2.9. Accounting for the movement of devices between the exchange fund and the warehouse	Fixation of input of devices long-term storage in the technology replacement through the exchange fund and the reverse procedure.	Of necessity
3 task. The planning of works of RTA		
3.1. The formation of plans	Formation of plans for a month, year or arbitrary period taking into account calendar terms of replacement or actually worked out resources (on the basis of simulation modeling).	According to the regulations and request
3.2. Optimization of plans	The formation of the optimal plans for	According to



	the replacement of devices.	the regulations and request
3.3. Adjustment of plans	Manual adjustment of plans for replacement of devices.	According to the regulations and request
3.4 Getting the output of documents on plans	Receipt of documents and their archives according to plans.	According to the regulations and request
3.5. Formation of plans for repair and inspection of devices in the RTA	Formation of plans for repair and inspection of devices, taking into account the plans, completeness of the replacement, the availability of staff of the RTA and the exchange fund.	According to the regulations and request
3.5.1. Optimization of plans for the repair and inspection devices	Formation of the optimal plan for repair and inspection of devices in the RTA, taking into account the technology of inspection, qualification of employees, unscheduled works, etc.	According to the regulations and request
3.5.2. Adjustment of plans for repair and inspection of devices	Manual adjustment of individual planning tasks by the employees of RTA for repairing and inspection of devices.	According to the regulations and request
3.5.3. Obtaining output documents by individual planning tasks	Obtaining documents from archives for individual planning tasks for repairing and inspection of devices.	According to the regulations and request
4 task. Formation of normative documents and documents of arbitrary form for users of the distance of signalling and communication SHCH, management of the signalling and communication SH and the laboratory of automation and		



telemechanics SHL		
4.1. The formation of queries	The formation of user queries on the data reception and response to facilitate the exchange of data between databases of different levels of management (SHCH,SH, SHL).	Daily
4.2. Formation of documents of the established form	Balance data and its derivatives.	On request
4.3. Formation of documents of an arbitrary form.	Formation of documents and screen forms with the set of columns selected by the user on a variety of data about the devices stored in the database ASA-CDRAT on the road and distance levels.	On request
4.4. Formation of documents for failure analysis	The formation of the technical conclusions of failure analysis.	Upon the event and on request
5 task. Service support of the complex		
5.1. Maintain and view of catalogs	Work with reference books: types of devices, employees of RTA, distance objects, stock composition, force restart all the manuals.	On request
5.3. SOFTWARE configuration, help	Editing user settings for working with the program. Show help for the program. Work with open windows in SOFTWARE. Provides the ability to view user access rights to SOFTWARE functions. Calls the	On request



	automatic update of the SOFTWARE version.	
5.4. Working with duplicates devices	Provides functionality to detect duplicates of devices in the database.	On request

For the functioning of the ASA-CDRAT requires a personal computer with the following characteristics:

- IBM - compatible personal computer at least Pentium III 550;
- RAM / operation memory / at least 128MB;
- Free HDD /hard disk space/ at least 30 MB;
- Local or network

2. Components of the electronic Executive part of the system

The functioning of ASA-CDRAT based on the use of the special program — server document-flow. The server performs the main functions that ensure the work of users: search for equipment from the database, report on the number of devices, read the QR code. Until the main program is launched, user interaction with the document management system and work with documents is impossible.

Program-server of ASA-CDRAT is performed on the computer connected to the network signaling and communications, which is also referred to as a server. It is possible to allocate a separate computer for the server or use one of the network workstations. It should be noted, however, that the registration of new equipment and the creation of the tasks and reports which are related to the instruments, lead to an increase in the size of the database and increase the disk space occupied by it, therefore, it is necessary to ensure sufficient capacity of hard disks, taking into account the prospects of growth of the information flow.

Administrative part of the program. A system which work many users with, should have centralized management [8-10]. This function is performed by a specially dedicated employee or employees who implement a single consistent policy



of configuration and management of the system, which are called administrators of systems.

The responsibilities of the system administrator include, in particular, the following:

- reflection of the current structure of the organization in the system;
- registration of users;
- view system messages and error messages;
- updating database tables.

In addition to these functions, the system administrator also provides the start and stop of the server ASA-CDRAT, configuration and maintenance of the system, creating backups of the system databases and restore the system in case of failures.

User part. Employees of the signaling distance and communication which registered in the system, determined by their official duties are called users of the system. Depending on the type of activity the system user is assigned by the administrator the rights to perform certain actions and access to certain functions.

By the users of the system can assign the following rights:

- Maintain the new section
- Maintain of new equipment
- Maintain information about repairing
- Maintain information about the inventory
- Print QR code
- Read QR code.

3. The conceptual model of the automated system of accounting for and control of devices of SCB

When introducing new equipment of users, included in one of the lists, by default, receive the appropriate rights - view or edit the document.

During registration to the documents added several semantic parts, which in turn occupy the corresponding places in various database tables.



The conceptual model and structure of data processing of the automated system of accounting and control of SCB devices are presented in Fig.1 and Fig.2.

The model consists of three levels. In the first level of management SH and distance SHCH has access authorization, equipment search, report on requests, user registration.

In the second level, the engineer of the RTA (CMP) has access to the maintenance of a new section, new equipment, information about the repair of devices, information about stocks, printing the QR code of the device and its scanning.

In the third level, the electrician of the SCB has access to authorization, equipment search, equipment replacement, report on requests, and reading the QR code.

User automated systems connected to the server software, which is directly connected to the database. The server software is, configured by the administrator. It also has access to the database, changing or adding a new user.

4. The choice of programming language

Creation of the project took place in the programming language "C#" in the environment "VisualStudio 2010", using NetFramework 4.0 version. The "C#" language is flexible and convenient, allowing you to create decent software products in the shortest possible time. The memory tools built into the language also facilitate the work of the programmer" [11]. But there are also disadvantages of this language, expressed in the slow operation of applications on weak computers.

The program consists of two main parts: user and server. The server connects to the database, and users, in turn, connect to this server to exchange information, receive and record data. The MSSQL system is chosen as the database.

The connecting users to the server is done via TCP/IP to avoid loss of important data. In addition, network technologies allow the use of high-speed communication channels for relatively small financial investments. The fall in prices for



telecommunications equipment is widely associated with scientific and technological progress.

In this scheme, the database and the server part of the electronic document management program can be located on the same server. This allows to reduce hardware requirements and reduce the load on the individual nodes of the network infrastructure.

The database consists of a number of necessary tables, such as the system users table (Users), the device table (Device), the instrument parameters table (Parameter), and other tables.

Each device is assigned several details during registration, allowing quickly finding them by searching in the database.

The system design. Since the system is a window option, during process has a transition from one window to another. The program also has a database in the form of a user-server.

The program-server performs several functions:

- processing user requests;
- output of necessary information;
- serves as an intermediary between the user and the database;
- carries out the user registration procedure.

Block diagram of the functioning of the automated system of accounting for and control of the SCB is shown in Fig.3.

Requests to the server program should be received via TCP/IP, as the data should not be lost along the way. As the data transmission software was decided to use a set of low-level Socket classes allowing to work with managed connections. Since there can be several users in this system (there should be no restrictions in the number of users; their number is limited by the network bandwidth

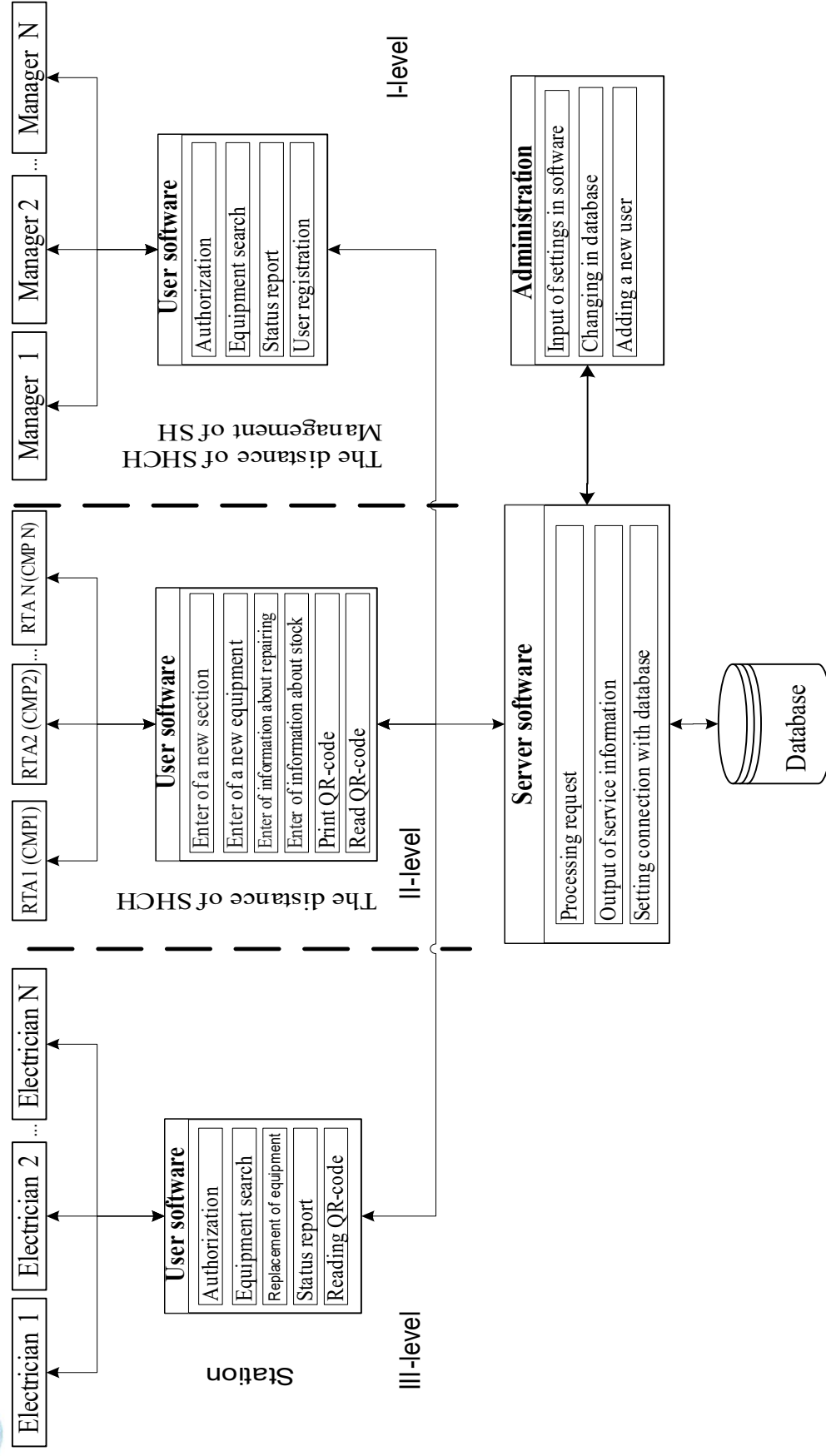


Figure 1. A conceptual model of the automated system of accounting for and controlling of devices of SCB

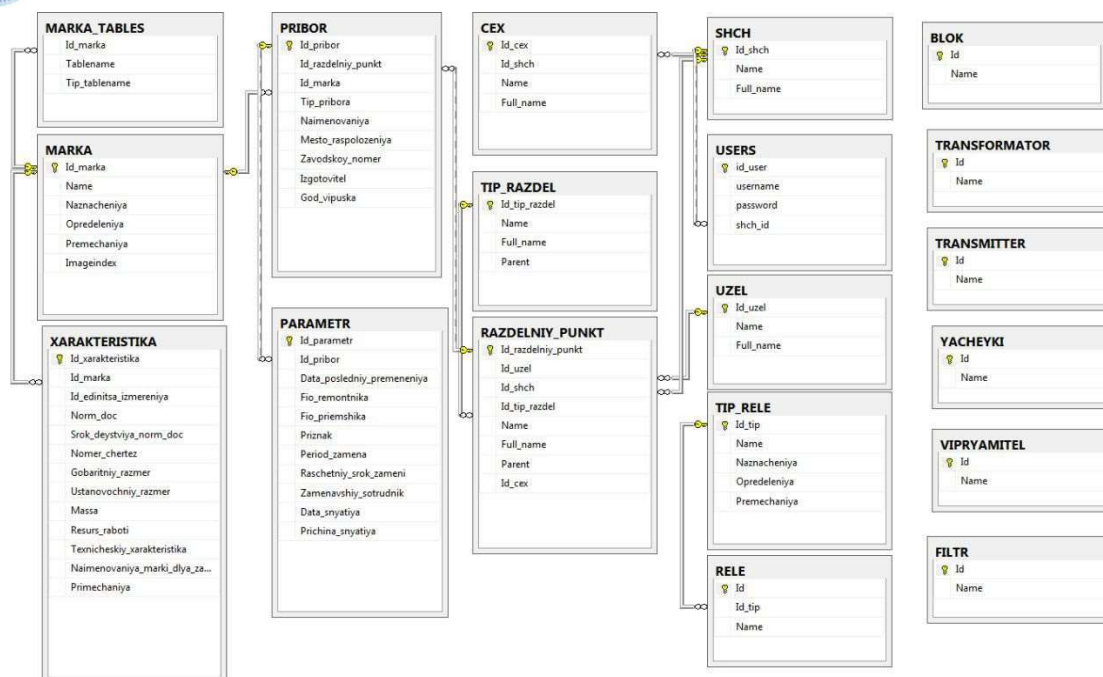


Figure2. The structure of the data processing of automated system of accounting for and controlling of devices SCB

and hardware performance), the program-server should work with them separately. Thus, it is planned to allocate users in independent streams which will be born at reception of a signal on new connection and to be closed at disconnection of the user. it is necessary to create several possible types of network requests that allow you to work in different modes of data transfer: sending, receiving, sending and receiving at the same time.

To comply with the principles of object-oriented programming is required to divide the code on semantic grounds in separate classes. Based on the functions performed by the program-server, there are three main classes:

- interface class for user interaction;
- class of network interaction with users;
- class with communicating the database.

All these classes are interrelated and serve to process user commands. First, the program is initialized, then the specified main classes are included. The network class



receives commands from the user, uses an auxiliary database interaction class to execute them, if necessary, sends a response to the user and reflects the results of its work on the user interface. Additional structural links can also be used. With this division into classes is realized encapsulation is a programming mechanism that combines data and code in one block, protecting them from external interference.

"Encapsulation allows you to combine data and code into an object and hide the implementation of the object from the user. In this case, the user is provided with only the specification (interface) of the object. The user can interact with the object only through this interface"[12].

To determine the status of the server and the correct execution of user requests, you must use the component to record service information in real time. This replenishing list, the so-called event log or log, should be located in the main window of the program-server in order to reflect the information for the system administrator in the most convenient way.

This should mainly include the results of database query processing, as this is a very vulnerable point in the system, especially if the program-server and the data warehouse are physically on different computers.

To reduce the number of additional programs into the server interface, it is necessary to embed the tool of the system user registration. The username (login or pseudonym), real name, surname and

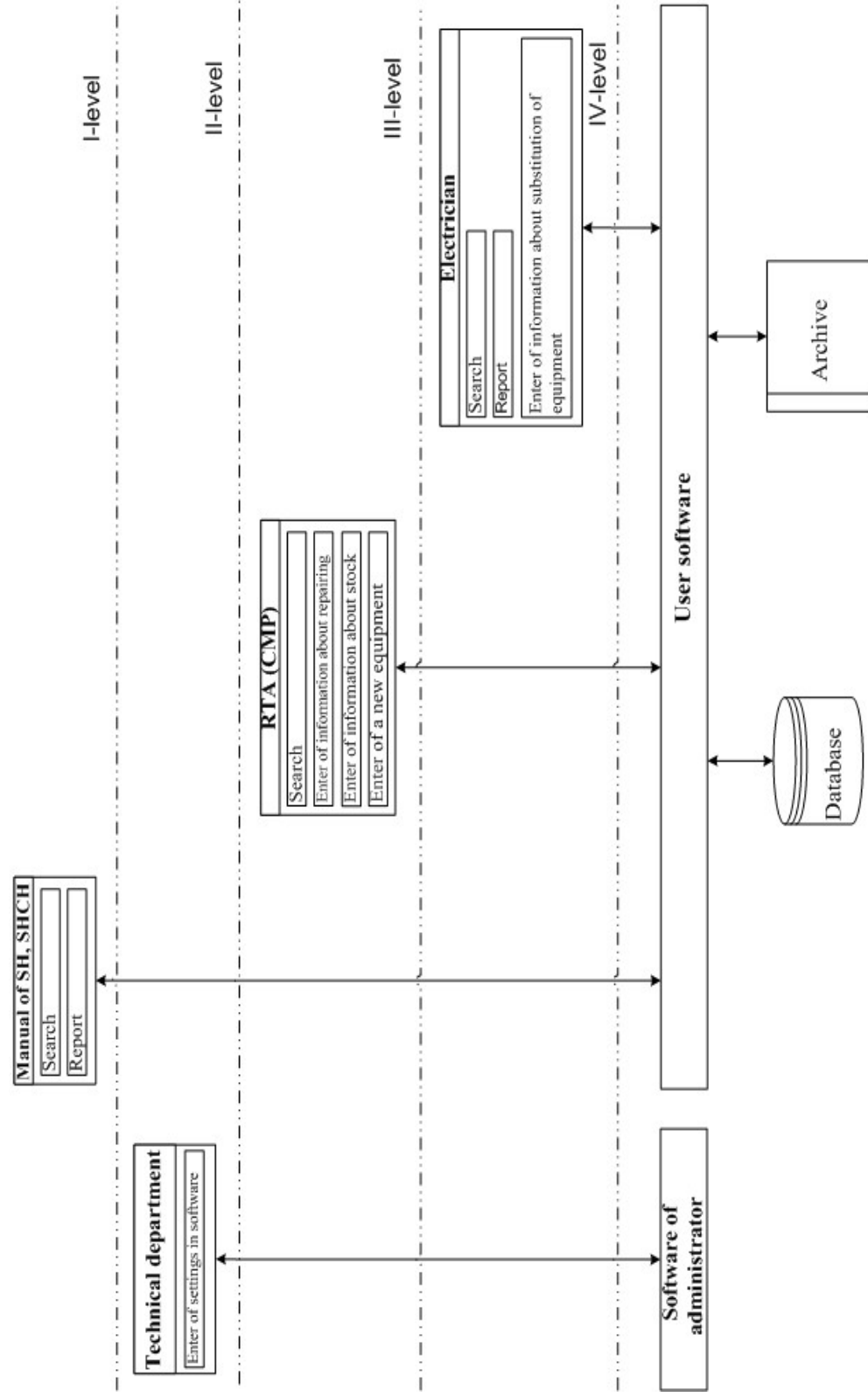


Fig 3. The scheme of functioning of the automated system of accounting for and controlling of devices SCB



patronymic, as well as password should be entered as the main identification data. It is also necessary to take into account additional user IDs in the organization: phone number, address and email. To increase system security, the password must be stored encrypted in the database.

The last but not the least important element in the server is the configuration parameters of the database connection and its starting deployment. To enable the server to use an arbitrary available host as a data source, it is necessary to enable the administrator to specify the connection parameters to the database server. The connection parameters include the IP address of the computer containing the database, the name of the database itself, the username and password of the user who has access to perform procedures for reading, writing and updating database tables. Also, a utility should be attached to the server for the initial creation of tables in the database and filling them with the necessary values.

This will allow without the help of third-party programs (perhaps even paid) and knowledge of the SQL language to prepare this system of document-flow for work.

Conclusions

Electronic document management on the basis of full functional support and development of electronic executive part of the system for control and accounting of railway automation and telemechanics devices in the form of ASA-CDRAT can significantly improve the efficiency of control and distances of signaling and communication, as well as enterprises associated with the processing of technical documentation.

In the article is given the description of the main components of the ASA-CDRAT. The structure of data processing, the conceptual model, the scheme of functioning, features of design of the developed automated system of the account and control are presented.

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**DEVELOPMENT OF INGIBITOR COMPOSITION OF CORROSION FOR
PROTECTION OF STEEL ARMATURE**

Jumaniyazova Dilnoza Maxsudovna

Chemistry Technology Department.

Urgench State University.

E-mail: jumaniyazovadilnoza3008@jmail.com.

Zakirov Baxtiyor Sabirjanovich,

doctor of chemistry sciences, prof.

Director Institute of General and

Inorganic Chemistry of Uzbekistan

E-mail: ionxanruz@mail.ru

Jumaniyazov Maxsud Jabbiyevich,

doctor of technical sciences, prof.

Urgench State University.

E-mail: [ximtex @rambler.ru](mailto:ximtex@rambler.ru)

Abstract.. For over 150 years, reinforced concrete structures have been used in construction. A long-term study of the durability of reinforced concrete structures in various operating conditions shows that dangerous damages caused by the development of reinforcement corrosion, which pose a threat to public health, are often encountered. Corrosion of reinforcement is usually caused by exposure to reinforced concrete by atmospheric chemical factors caused by the presence of aggressive components in concrete, such as sulfates, carbonates, chlorides. Today in domestic practice there are over 100 different compositions for inhibiting the corrosion of reinforcing steel. The disadvantages of the existing anticorrosive materials are their high cost and low accessibility, as well as the impossibility of using them to combat multicomponent salt and acid corrosion.



In the conditions of the Aral Sea region, in the production of reinforced concrete products, highly saline water and quartz sand are used, which contain chloride and sulphate salts of calcium, magnesium and sodium in various amounts (Table 1). With the presence of the listed salts in the composition of reinforced concrete products, steel reinforcement is subjected to severe corrosion. Therefore, one of the important tasks is the protection of steel reinforcement in concrete products produced in the conditions of the Khorezm region and the Republic of Karakalpakstan.

Аннотация. На протяжении более 150 лет железобетонные конструкции применяются в строительстве. Многолетнее изучение стойкости железобетонных конструкций в различных условиях эксплуатации показывает, что часто встречаются опасные повреждения, вызываемые развитием коррозии арматуры, которые создают угрозу здоровью населения. Коррозия арматуры вызвана, как правило, воздействием на железобетон атмосферно-химических факторов, обусловленных содержанием в бетоне агрессивными компонентами, как сульфаты, карбонаты, хлориды. Сегодня в отечественной практике насчитывается свыше 100 различных композиций для ингибирования коррозии арматурной стали. Недостатками существующих антикоррозионных материалов является дороговизна и малодоступность, а также невозможность их применения для борьбы с многокомпонентной солевой и кислотной коррозией.

В условиях Приаралья при производстве железобетонных изделий применяются сильнозасоленные воды и кварцевые пески которые в своем составе содержат в различных количествах хлоридные и сульфатные соли кальция, магния и натрия (табл. 1). При наличие перечисленных солей в составе железобетонных изделий, стальная арматура подвергается сильной коррозии. По этому, одно из важной задачей является защита стальной арматуры в железобетонных изделиях производимых в условиях Хорезмской области и Республики Каракалпакстан.



Аннотация. Темир-бетон конструкциялар 150 йилдан бери қурилишда ишлатилиб келинмоқда. Кўп йиллик тадқиқотлар кўрсатишича, ушбу конструкциялардаги арматуранинг занглаши оқибатидаги бузилишлардан ҳаёт учун ҳавфли ҳолатлар учрамоқда. Арматуранинг занглаши атмосфера-кимёвий факторлар, сульфатлар, карбонатлар, хлоридлар каби агрессив компонентлар таъсири оқибатида бўлади. Бугунги кунларда 100 дан ортиқ арматура занглашига қарши ингибиторлар мавжуд. Уларнинг асосий камчиликлари таннархининг қимматлигида ва камномалигида, ҳамда кўп тузли, кислотали системаларда самарасининг пастлигидадир. Орол бўйи регионида темир-бетон буюмлар ишлаб чиқаришда кучли тузланган сувлар ва кварц қумлари ишлатилади. Маҳсулотда ушбу тузларнинг бўлиши арматуранинг кучли коррозияга учрашига олиб келади. Шу сабабли Хоразм вилояти ва Қорақалпоқ Республикасида тайёрланаётган темир-бетон конструкцияларнинг пўлат арматурасини ҳимоялаш масаласи ўта долзарбдир.

Keywords: reinforced concrete construction, steel reinforcement, corrosion, gossypol resin, modified lignin, hexamethylenetetramine, degree of protection

Ключевые слова: железобетонная конструкция, стальная арматура, коррозия, госсиполовая смола, модифицированный лигнин, гексаметиленetetрамин, степень защиты

Калит сўзлар: темир-бетон конструкция, пўлат арматура, коррозия, госсипол смоласи, модифицирланган лигнин, гексаметилентетрамин, ҳимоя даражаси

Methodology. Experimental studies were performed using modern physicochemical methods, such as X-ray phase, IR spectroscopic, elemental analysis.

Методология. Экспериментальные исследования выполнялись с применением современных физико-химических методов, таких как рентгенофазовый, ИК-спектроскопический, элементный анализ.

Scientific novelty. As a result of the interaction of modified gossypolovoy resin, oxidative destruction of lignin and hexamethylene-amine, inhibitors of corrosion of reinforcement in the Priaralie reinforced concrete structure were obtained for the first



time. According to the physicommechanical properties of the composition meets the requirements of all standards.

Научная новизна. В результате взаимодействия модифицированной госсиполовой смолы, окислительной деструкции лигнина и гексаметилентетрамина впервые получены ингибиторы коррозии арматуры в железобетонной конструкции Приаралья. По данным физико-механических свойств композиция отвечает по всем требованиям стандартов

The resulting data. Inhibitor compositions based on gossypol resin from the oil and fat industry and lignin waste from the hydrolysis industry were synthesized and tested, the mechanism of action of which is characterized by barrier type of protection with the acquisition of rust modifying properties.

Полученные данные. Синтезированы и испытаны ингибиторные композиции на основе госсиполовой смолы-отхода масложировой промышленности и лигнина-отхода гидролизной промышленности, механизм действия которых характеризуется барьерным типом защиты с приобретением свойств модификаторов ржавчины.

Features

- easy to get;
- technology of preparation and use is simple;
- high physical and mechanical properties;
- high degree of protection and adhesive properties;
- wide temperature range of plasticity, increased heat and frost resistance;
- low cost.

Особенности:

- легко доступны;
- технология приготовления и использования проста;
- высокие физико-механические показатели;
- высокая степень защиты и адгезионные свойства;



- широкий температурный интервал пластичности, повышенное теплоиморозостойкость;
- низкий себестоимости.

Introduction

The basis of any corrosion damage is an electrochemical process that proceeds according to a complex mechanism. To prevent corrosion of reinforcement, we consider the use of a mixture of inhibitors, which has a so-called synergistic effect. Concrete corrosion is the main enemy of all concrete and reinforced concrete structures. The most serious problem is the influence of the chemical factor, the influence of aggressive substances (carbonates, sulfates, chlorides). Protection of reinforced concrete structures from corrosion is the most important task in the design, construction and operation. Protection of reinforcement in reinforced concrete construction is absolutely relevant for all types of buildings, structures and facilities. The features of modern high-strength reinforcing steel and their stress state in structures make the consequences of their corrosion very dangerous. For a possible increase in their corrosion resistance under voltage, it is necessary to thoroughly study the conditions and areas of safe use of the structures reinforced by them. It is also necessary to carefully examine the protective properties of concrete in relation to steel reinforcement and their changes over time.

It is known that oxidized products of gossypol resin and lignin are weak corrosion inhibitors [2-6]. This is most likely due to the fact that they are poorly or not completely soluble, or the appropriate solvent has not been selected to completely transfer them to the solution. The use of technical hydrolytic lignin and its modifications as the basis of the rust converter is related to the fact that it contains phenol, hydroxyl and carboxyl groups that interact with corrosion products and bind iron ions into complex compounds of chelate structure [7, 8, 9].

Despite harsh acid treatment, a significant amount of reactive free and esterified phenolic and aliphatic hydroxyls and unsubstituted positions of the aromatic core of phenylpropane lignin structural units are present in hydrolyzed lignin, which causes



its ability to further modify and degrade under the influence of various chemical reagents, as a result go into water-and alkaline-soluble state with the formation of a number of organic carboxylic and polycarb new acid [10].

In this work, hydrolytic lignin is considered from the point of view of its use in the production of anti-corrosion materials. For this purpose, lignin from the Yangiyul biochemical plant was used for laboratory experiments. The elemental composition of hydrolytic lignin% per absolutely dry substance is as follows, mass%: C –17.34, H - 6.43, O - 43.50. The content of functional groups, mass%: phenolic (OH) - 5.06, OCH₃ - 3.06, COOH - 1.18, total acid groups 6.24. The moisture content of the lignin used is 60–65%, the ash content is 4.12–2.74%.

The use of cheap gossypolovoy resin-waste industry as the basis of anti-corrosion coating is due to the fact that it contains phenolic, hydroxyl and carboxyl groups that interact with corrosion products and bind iron ions into complex compounds of chelate structure [11,12].

From this position, gossypol resin can be an effective material against corrosion, only on condition that appropriate solvents and another synergistic inhibitor are selected. For this purpose, we used hexamethylenetetramine (CH₂)₆N₄, which is one of the most well-known representatives of acid corrosion inhibitors [11, 12].

Methods and materials. Studies were performed using modern chemical, physico-chemical methods. Modified lignin of gossypol resin and hexamethylenetetramine were used for inhibitor synthesis. Results and discussion. The development of corrosion in reinforced concrete structures begins with reinforcement, when concrete does not have sufficient protective properties, i.e. collapses under the influence of an environment that is aggressive towards it. Typically, this kind of destruction is exacerbated by the action of humid air and is characteristic of a humid climate. Rust formed during the oxidation of steel reinforcement increases its volume, increases internal pressure and leads to fracture of concrete and exposure of the reinforcement. As a result, the bare bars of the reinforcement are destroyed more rapidly, which leads to rapid wear of the concrete. In the chemical composition of the water



resources of Urgench, used in the production of building materials, increased rates of sulphates (437 mg / l) and chlorides (402 mg / l) (Table 1). Exposure to sulfates may also lead to the destruction of reinforced concrete structures. Sulfates react with other chemical components that form various products, which leads to an increase in volume, which leads to the formation of cracks in the concrete and subsequent fracture of the structure. Another important reason for the destruction of concrete in the conditions of the Aral Sea region are chloride ions. Chlorides cause corrosion of the reinforcement, destroying the oxidized iron layer, which leads to further oxidation. These salts destroy both steel reinforcement and concrete itself. The destruction caused by calcium chloride, accelerate the corrosion of reinforcement. Salts, reacting with calcium hydrate, which is in concrete, forms an oxidized calcium hydrate, which is in concrete, forms an oxidized calcium hydrate, followed by an increase in volume.

To prevent corrosion, various expensive inhibitors are added to the concrete mix, however, the actions of these components are served from time to time.

In order to improve the performance properties, a competitive anti-corrosion coating technology has been developed for valves. Based on the use of waste oil and hydrolysis industry, i.e. cheap and affordable raw materials, the production of anti-corrosion coatings has a high level of organization of technological processes and relatively high economic efficiency.

From this point of view, the products of oxidative degradation of lignin and gossypol resin can be effective corrosion inhibitors, provided that the appropriate solvents and other inhibitors that enhance synergy are selected. This implies the need to enhance the inhibitory ability of nitrolignin, adding to it a gossypol resin, which, after modification, will become reactive with high complexing properties. Hexamethylenetetramine was also used to enhance the protective properties.

Conducted numerous studies to determine the optimal proportions of the composition of the proportion of positive results. According to the experiments, the following ratio of components are optimal, wt%:



gossypolovy pitch (GS): 48,5 - 49, 5

nitrolignin (NL): 49.5 - 50.0

Hexamethylenetetramine (HMTA): 0.5 - 1.0

The composition is capable of converting iron oxide to non-corrosive compounds with excellent adhesion to reinforcement. The conversion process takes place in neutral media (pH 5.0-6.0). Improves the functional properties of concrete and prolongs their life. Provides adhesion strength, corrosion resistance and weather resistance of the anti-corrosion coating system

A distinctive feature of the inhibitor composition is that its components are easily accessible, the technology of preparation and use is simple. In this composition, the components of the mixture, separately or together as an intermediate complex, can change the nature of the interaction of the surface of metals with the surrounding corrosive medium and, thereby, enhance the protective effect of inhibitors. This technique is of particular relevance for the protection against corrosion of metal structures in contact with multicomponent media, i.e., suitable in the Aral Sea region

The main factors of the proposed composition affecting the state of the reinforcement in concrete: environmental features, density of concrete and thickness of the protective layer, type of binder and mode of hardening of concrete, various additives introduced into the concrete mix, as well as cracks formed in the concrete during the operation of structures. Practical recommendations should be based on in-depth theoretical and thorough experimental research. Recommendations should undergo a long-term review. Therefore, for testing, the corrosion behavior of reinforcing steel in concrete was evaluated by accelerated corrosion testing using electrochemical methods of research on samples made of cement-sand (1: 3) solution from Urgench, 40x40x160 mm in size, longitudinally reinforced with a steel rod 6 in diameter mm, 120 mm long.

The tests were carried out on samples reinforced with reinforcement without corrosive lesions (standard), with corrosive lesions (thickness of corrosion products



from 150 to 300 μm), with corrosive lesions of the same thickness, treated with the developed composition. Sample preparation for testing was carried out in accordance with the standard of the CMEA 4421-83. The prepared sample was installed in an electrochemical cell and the magnitude of the stationary potential was determined. Then, using a potentiostat, changing the potential in the automatic mode, the current density was measured. Electrochemical tests were carried out after exposure of the concrete samples to corrosive media: carbonization to the depth of the reinforcement and subsequent wetting in water and drying, as well as alternating wetting in a saline solution (3% NaCl solution) and drying. The tests were carried out on three twin samples in three periods: after collection of brand strength by the samples, and also after 90 and 180 days of incubation in the above media. The corrosion state of the reinforcement in the cement-sand samples was evaluated by the nature of the anodic polarization curves.

Table 1.

The chemical composition of the water resources of Urgench, used in the production of building materials

№	Indicators	Water sources	
		Shavat channel	ChakkakulZahkash
1	Suspended substances, mg / l	63	70
2	pH	6,7	7,65
3	Dry residue, mg / l	1718	2178
4	Hardness, mg / l	14,5	20,5
5	Chlorides, mg / l	402	553
6	Sulfates, mg / l	437	599
7	PO_4^{3-} , mg/l	13,3	19,0
8	Ca^{2+} , mg/l	1,2	1,5
9	Mg^{2+} , mg/l	-	250



For experimental comparison of the inhibitory activity of the composition (GS + NL + HMTA), sodium nitrite was used. The data obtained are presented in tables 2,3.

From the data of table 2, we can conclude that it is quite acceptable reliability of protection of reinforcement in concrete prepared on sand-cement mixture in the Aral Sea conditions, can be achieved by using as anti-corrosion composition, which contains nitrolignin (49.50-50.50%), gossypol resin (48.5 - 49, 5) and hexamethylenetetramine (0.5-1.0).

The data in Table 2 show the possibility of achieving reliable protection of the reinforcement in the processing of nitrolignin (49.5%), gossypolovoy resin (49.5.1%) and hexamethylenetetramine (1%) with its composition. This confirms the possibility of practical use of the phenomenon of synergism in the interaction of the components.

The data of table 3 indicate that the introduction of the concrete solution, discussed in tables 2, inhibitory composition does not adversely affect the strength of concrete. The strength of concrete even increases markedly.

Thus, the results of bench tests of reinforced concrete samples prepared on sand-cement mortar in conditions of Priaralie treated with the proposed composition given in Tables 2–3 confirm the validity of the conclusions made on this issue based on electrochemical measurements.

Table 2.

Comparative bench test of reinforcement bars on corrosion resistance in concrete in the absence and presence of inhibitor additives

№	The difference in the mass of rods, g (day)			Corrosion rate, g / m ² , 10 ⁻³ hours (day)			Protective effect,% (days)			Appearance rod
	7	28	90	7	28	90	7	28	90	
Without anti-corrosion treatment										
1	0,0105	0,0567	0,069	44,47	56,16	22,08	-	-	-	Strong corrosion



			6							
	Sodium nitrate									
2	0,0010	0,0089	0,013 9	4,03	9,22	4,35	90,6	84,3	80,1	Traces corrosion
3	0,0014	0,0067	0,014 2	5,91	7,13	4,48	86,4	88,2	79,6	Small corrosion
4	0,0001	0,0005	0,000 9	0,41	0,46	0,29	99,0	99,2	98,2	clean
	NL (49.50%) + HS (48.5%) + HMTA (0.5%)									
5	0,0028	0,0027	0,005 9	2,08	2,83	0,49	98,3	98,2	97,0	Traces corrosion
	NL (50.0%) + HS (49.5%) + HMTA (0.5%).									
6	0,0015	0,0073	0,000 1	2,89	1,35	0,39	98,7	98,1	97,5	Traces corrosion
	NL (49.5%) + HS (49.5%) + HMTA (1.0%)									
7	0,009	0,0009	0,000 4	0,37	0,47	0,24	99,6	98,9	98,7	clean

Table 3

Bench test for concrete strength in the absence and presence of inhibitor additives

№ samples	Additive% by weight of concrete	The tensile strength of concrete samples under compression depending on the duration of the test, MPa, (day)		
		7	28	90
1	without treatment	22,6	23,4	25,9
	Sodium nitrite			
2	1,0	22,5	24,3	25,8
3	1,5	25,0	25,9	25,9



4	2,0	25,5	25,9	26,0
The armature treated with the composition of the NL + HS + GMT				
8	49,5+50,0+0,5	23,5	24,3	25,7
9	50,5+48,5+1,0	24,0	24,9	25,8
10	49,5+49,5+1,0	24,5	25,8	25,9

However, these data are of direct practical interest, since they can be directly used in the technology of concrete production in the Aral Sea region.

The results of the tests performed show the possibility of achieving reliable protection of the reinforcement when processing its anticorrosive composition of nitrolignin, gossypol resin and HMTA. In these conditions, the effect of synergy. Such a composition allows to solve an important production problem - the fight against corrosion in the conditions of the Aral Sea region.

The effectiveness of the inhibitory effect of the products of oxidative destruction of hydrolytic lignin, gossypol resin, in particular, with hexamethylenetetramine on the process of corrosion of reinforcing steel in an aqueous extract medium from a concrete solution, has been established and gives the same inhibitory effect, which is used in reinforced concrete products 1.0-2.0% sodium nitrite . According to our recommendation, an experimental batch of reinforced concrete products was produced at the Urgench House-Building Plant for its large-scale testing in various construction sectors.

Thus, summing up the above, it should be noted that:

- large-scale waste of hydrolysis and biochemical plants - hydrolyzed lignin in combination with gossypol resin can be used as raw material for the production of anticorrosive materials for steel reinforcement of concrete on its basis;
- high anion-, cation-exchange and complex-forming ability of modified derivatives of nitrolignin and gossypolovoy resin, which we proved in the process of experiments, is the main factor in the synthesis of anticorrosive materials, compounds of complex action with synergistic properties;



- as a result of bench tests of the corrosion resistance of metal reinforcement in concrete, the optimal composition of an anticorrosive composition, consisting of nitrolignin, gossypol resin, and HMTA, was revealed in a ratio of 1: 1: 0.01
- developed inhibitor compositions and anti-corrosion agents were tested with a positive result in the conditions of the Aral Sea region, where the water and raw materials used in reinforced concrete structures are highly saline. The result was obtained on the basis of in-depth theoretical studies and large-scale scientific experiments, received confirmation at the Urgench house-building plant, and a pilot batch of reinforced concrete products was issued for extensive tests in various construction sites.

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**MATHEMATICAL MODELS OF MULTI-COORDINATE
ELECTROMECHATRONIC SYSTEMS OF INTELLECTUAL ROBOTS**

Nazarov Hayriddin Nuriddinovich
Doctor of Philosophy of Mechatronics and
Robotics Department, Tashkent state technical
university named after Islom Karimov
E-mail: nazarov_hayriddin@bk.ru

Temurbek Rakhimov Omonboyevich
Teacher in 'Telecommunication Engineering'
department of Urgench branch of Tashkent
University of Information Technologies named
after Muhammad al-Khwarizmi
E-mail: rahimov_timur@bk.ru

Abstract: In the article mathematic description of mechatronic module in intelligent robots and robotic systems are observed. To display the structure of mechatronic modules, which consist of interrelated different electrical, magnetic and



mechatron components, mathematic models by the help of multiplication theory based on relations and visualising lines and points are designed. Analytical explanation of mechatronic modele in intelligent robots is provided.

Keywords: robotic systems, mechatronic modele, mathematic models, intelligent robots.

Аннотация: В статье приведено математическое описание мехатронного модуля в интеллектуальных роботах и роботизированных системах. Для отображения структуры мехатронных модулей, которые состоят из различных взаимосвязанных электрических, магнитных и мехатронных компонентов, с помощью теории умножения, основанной на отношениях и визуализации линий и точек, разработаны математические модели. Дано аналитическое объяснение мехатронной модели в интеллектуальных роботах.

Ключевые слова: Робототехнических системы, мехатронные модели, математические модели, интеллектуальные роботы.

Аннотация: Maqolada intellektual robot va robototexnik tizimlarida mexatronik modulning matematik ta'rifi keltirilgan. Mexatronik modullarning strukturasini bir-biriga bog'liq bo'lgan turli xil elektr, magnit va mexatron komponentlardan tashkil etish uchun o'zaro tahlillarga asoslangan multipleksiya nazariyasi yordamida va matematik chiziqlarni va nuqtalarni ko'rsatish orqali matematik modellar ishlab chiqilgan. Intellektual robotlarda mexatronik modelni analitik tahlil qilish ko'rib chiqilgan.

Калит so'zlar:robototexnik tizimlar, mexatronik modellar, matematik modellar, intellektual robotlar.

Introduction

The mathematical description of multicoordinate mechatronic modules (MMM) is the most important stage of the theoretical analysis and synthesis of modules of intelligent robots and robotic systems. At present, the absence of models suitable for a detailed description of the structures of such systems precludes the possibility of automating the design of specific structures.

An element of MMM can be identified with a system that has the properties of material reproducibility and repeatability; therefore, it is naturally possible to define a formal theory of MMM and its model in the language of set theory, as is customary in systems theory.

Literature Review

To display the structures of MMM, consisting of interconnected heterogeneous electrical, magnetic and mechanical components, in the work there are set-theoretic models operating with the following concepts: relations, mappings, unified relation, lines and points:

$$S = \langle L, P, R_L, \pi, R_{L\pi} \rangle,$$

$$S^{-1} = \langle P, L, R_L, \pi, R_{\pi L} \rangle,$$

where L, P - many lines and points; R_L - equivalence relation given in the set L ; π - combined relation given in the set P ; $R_{L\pi}$ - mapping of the set L in the set π .

Combined relations in the work are called the combination of binary and ternary relations.

S, S^{-1} models are transformed into other forms depending on the properties of the relations R_L, π of $IRL\pi$ mappings and the goals of the problem:

$$S_1 = \langle L, P, \mathcal{L}, P, \Gamma \rangle;$$

$$S^{-1} = \langle P, L, P, \mathcal{L}, \Gamma^{-1} \rangle;$$

$$T = \langle L, P, P, C, \Gamma \rangle;$$

$$T^{-1} = \langle P, L, P, C^{-1}, \Gamma^{-1} \rangle;$$

where $\mathcal{L}, P$ - families of classes of lines and points, respectively,

$$L_i \in L, P_i \in P \text{ для } i = 1, n, \quad j = 1, m;$$

C - family of properties. C^{-1} - reverse family of properties; C_i - many properties,

$$C_i = \{ \{ C_{iki}^j \} \}, k = \overline{1, l_{ki}}, j = \overline{1, p_{ki}};$$

C_{iki}^j - many private properties,

$$C_{iki}^j = C_{iki}^0 \cap P_i;$$



C_{iki}^0 - original line property l_{iki} .

Γ, Γ^{-1} - structural and inverse structural sets, respectively;

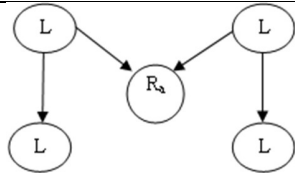
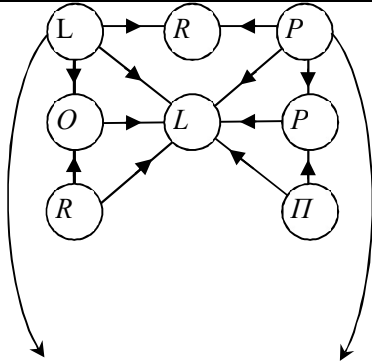
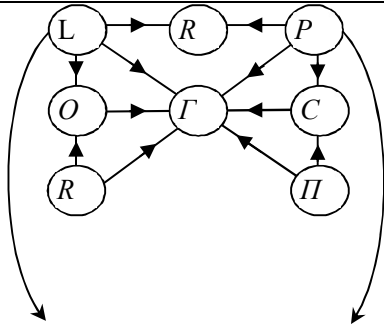
$$\Gamma = \{\Gamma_i\}, i = \overline{1, l}; \Gamma_i - \text{structural class}$$

$$\Gamma_i = \{\Gamma_{iri}\}, k = \overline{1, l},$$

$$\Gamma_{iri} - \text{structural element}; \Gamma_{iri} = \frac{\{c_{iki}\}}{l_{iki}}, j = \overline{1, P_{ki}}.$$

Three pairs of forms of models (S, S-1, T, T-1) are equivalent in the semantic content of the information presented by them about the system element and differ from each other only in the ways of representation. When operating with models, the interchangeability of components becomes important, which determines the possibility of excluding from consideration certain components of a model at various stages of its use. The latter becomes possible if the necessary part of information about the deleted components of the model is saved in the remaining ones. In models S, S1, T information about the set L is completely contained in the sets PL, RL π , Γ , $\mathbb{E}$; information about the set of P- in the sets π R π L, G-1, P; information about RL is contained entirely in the sets $\mathbb{E}$, Γ , and partly in sets C. Information on RL π is partially contained in the sets Γ and C. This is shown in Table 1 by graphs whose vertices indicate the amount of information about the components inscribed at the vertices. Solid arcs indicate the complete inclusion of information about a component located at the beginning of the arc. Dotted arcs indicate partial inclusion of information. From Table 1 it can be seen that the exclusion of the component G from the model S1, the components RL π from the model of type T is impossible, since in this case the remaining parts of the models lose connectivity.

Table 1

№	Types of models	Model graphs
1	S $\langle K, P, R_L, \Pi, R_{L\Pi} \rangle$	
2	S _I $\langle L, P, \xi, P, L \rangle$	
3	T $\langle L, P, \xi, C, L \rangle$	

Research Methodology

Comparison of models shows a great flexibility of the type T model, which keeps the remaining parts connected even if the component T is removed with the largest amount (number of incoming arcs) of information, which is impossible in other models. This property of the model allows, in the intermediate calculations, to temporarily exclude some of its components and easily transform the structural set Γ , the family of the line ξ or the family of properties C by removing one of the floors in the expression of the structural element. Based on these considerations, in the work of the model T and T-1 taken as the basis and called structural models.

Analysis of the models showed that all information about the components $L, \mathcal{L}, C$ (components $P, P, C-1$) of the structural model T (models $T-1$) is completely contained in the structural set G (structural inverse set $G-1$). This allows us to uniquely find the expression of the components $L, \mathcal{L}, C$ ($P, P, C-1$) of the structural model by the expression of the structural (reverse structural) set and reduce the task of representing the structural model to the representation of the structural set.

Definition The partition of the linear (point) property corresponding to the partition of $\mathcal{L}$ (partition of P) is called the colored linear (point) property. Structural sets Γ can be linearly colored (Γ^Δ), point-colored Γ_T and linearly point-colored ($\Gamma^\Delta T$) depending on the partitions ξ and P . Linearly - pointwise (LT) colored MMM structural sets have the form:

$$\Gamma^{\Delta T} = \{\Gamma_{\mathcal{E}}^{\Delta T}, \Gamma_M^{\Delta T}, \Gamma_{MX}^{\Delta T}, \Gamma_{B3}^{\Delta T}\}$$

where, $\Gamma_{\mathcal{E}}^{\Delta T}, \Gamma_M^{\Delta T}, \Gamma_{MX}^{\Delta T}$ - colored structures of the electrical, magnetic, and mechanical subsystems, respectively; $\Gamma_{B3}^{\Delta T}$ - colored structural sets of the relationship subsystem, which are represented as

$$\begin{aligned}\Gamma_{\mathcal{E}}^{\Delta T} &= \{\Gamma_{\mathcal{E}1}^{\Delta T}, \dots, \Gamma_{\mathcal{E}2}^{\Delta T}, \dots, \Gamma_{\mathcal{E}K}^{\Delta T} \dots \Gamma_{\mathcal{E}C}^{\Delta T}\} \\ \Gamma_M^{\Delta T} &= \{\Gamma_{M1}^{\Delta T}, \Gamma_{M2}^{\Delta T}, \dots, \Gamma_{MK}^{\Delta T}, \dots, \Gamma_{MC}^{\Delta T}\} \\ \Gamma_{MX}^{\Delta T} &= \{\Gamma_{MX1}^{\Delta T}, \dots, \Gamma_{MX2}^{\Delta T}, \dots, \Gamma_{MXK}^{\Delta T} \dots \Gamma_{MXL}^{\Delta T}\} \\ \Gamma_{l3}^{\Delta T} &= \{\Gamma_{l31}^{\Delta T}, \Gamma_{l32}^{\Delta T} \dots \Gamma_{l3K}^{\Delta T}, \dots, \Gamma_{l3c}^{\Delta T}\}\end{aligned}$$

$\Gamma_{\mathcal{E}K}^{\Delta T}, \Gamma_{MK}^{\Delta T}, \Gamma_{MXK}^{\Delta T}$ - colored structural elements of the electrical, magnetic and mechanical subsystems, respectively;

$\Gamma_{l3K}^{\Delta T}$ - the painted structural element of the relationship subsystem is represented as

$$\Gamma_{\mathcal{E}K}^{\Delta T} = \frac{C_{\mathcal{E}K}}{\ell_{\mathcal{E}K}}, \quad \Gamma_{MK}^{\Delta T} = \frac{C_{MK}}{\ell_{MK}}, \quad \Gamma_{MXK}^{\Delta T} = \frac{C_{MXK}}{\ell_{MXK}}, \quad \Gamma_{l3K}^{\Delta T} = \frac{C_{l3K}}{\ell_{l3K}}$$

Here $C_{\mathcal{E}K}, C_{MK}, C_{MXK}$ - a family of properties of the electrical, magnetic, and mechanical subsystems, respectively. C_{l3K} - family of properties of the relationship subsystem.

$$C_{\mathfrak{ZK}} = \{C_{\mathfrak{ZK}}^1, \dots, C_{\mathfrak{ZK}}^2 \dots C_{\mathfrak{ZK}}^j \dots C_{\mathfrak{ZK}}^{P_{\mathfrak{ZK}}}\}$$

$$C_{MK} = \{C_{MK}^1, \dots, C_{MK}^2 \dots C_{MK}^j \dots C_{MK}^{P_{MK}}\}$$

$$C_{MXK} = \{C_{MXK}^1, \dots, C_{MXK}^2 \dots C_{MXK}^j \dots C_{MXK}^{P_{\mathfrak{ZK}}}\}$$

$$C_{l3K} = \{C_{l3K}^1, \dots, C_{l3K}^2 \dots C_{l3K}^j \dots C_{l3K}^{P_{l3K}}\}$$

In them $C_{\mathfrak{ZK}}^j, C_{MK}^j, C_{MXK}^j$ - family of particular properties of the electrical, magnetic, and mechanical subsystems, respectively; C_{l3K}^j - family of private properties of the relationship subsystem:

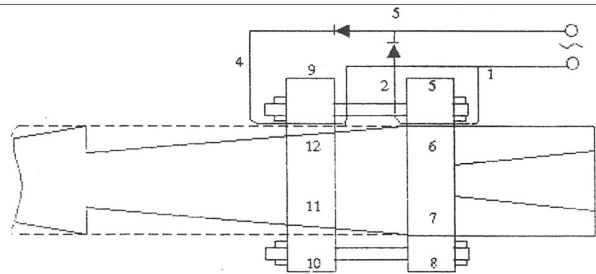
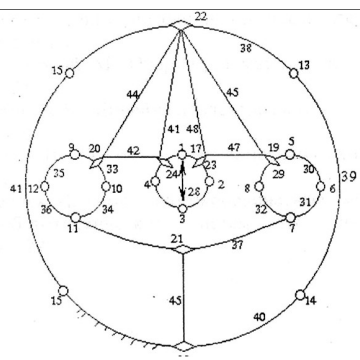
$$C_{\mathfrak{ZK}}^j = \{P_{\mathfrak{ZK}j}^1, \dots, P_{\mathfrak{ZK}j}^2 \dots P_{\mathfrak{ZK}j}^l, \dots, P_{\mathfrak{ZK}j}^{P_{\mathfrak{ZK}j}}\}$$

$$C_{MK}^j = \{P_{MKj}^1, \dots, P_{MKj}^2 \dots P_{MKj}^l, \dots, P_{MKj}^{P_{\mathfrak{ZK}j}}\}$$

$$C_{MXK}^j = \{P_{MXKj}^1, \dots, P_{MXKj}^2 \dots P_{MXKj}^l, \dots, P_{MXKj}^{P_{\mathfrak{ZK}j}}\}$$

$$C_{l3K}^j = \{P_{l3Kj}^1, P_{l3Kj}^2, \dots, P_{l3Kj}^l, \dots, P_{l3Kj}^{P_{MXKj}}\}$$

Table 2

Mechatronic module	1	
Topological image	2	

Analytical description	3	$\left[\frac{1/4/D18}{24}, \frac{1/2/D17}{25}, \frac{2/3}{26}, \frac{3/4}{27}, \frac{1/8}{28} \right];$ $\left[\frac{8/5/D19}{29}, \frac{5/6}{30}, \frac{6/1}{31}, \frac{1/8}{32}, \frac{9/10/D20}{33}, \frac{10/11}{34}, \frac{12/9}{36}, \frac{11/12}{35}, \frac{1/11/D21}{37} \right];$ $\left[\frac{16/13/D22}{38}, \frac{13/14}{39}, \frac{14/15/D23}{40}, \frac{15/16}{41} \right];$ $\left[\frac{D18/D20}{42}, \frac{D17/D19}{43}, \frac{D20/D22}{44}, \frac{D19/D22}{45}, \frac{D21/D23}{46}, \frac{D18/D22}{47}, \frac{D17/D22}{48} \right].$
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Here $P_{\mathfrak{K}j}^l$, P_{MKj}^l , P_{MXKj}^l - colored sets of points of the electrical, magnetic and mechanical subsystems, respectively;

P_{l3kj}^l - ΛT colored set of interconnection subsystem points:

$$P_{\mathfrak{K}j}^l = \{P_{\mathfrak{K}1}, P_{\mathfrak{K}2}, \dots, P_{\mathfrak{K}n}, \dots, P_{[\mathfrak{K}P]}\}$$

$$P_{MKj}^l = \{P_{M1}, P_{M2}, \dots, P_{Mn}, \dots, P_{[MP]}\}$$

$$P_{MXKj}^l = \{P_{MX1}, \dots, P_{MX2}, \dots, P_{MXn}, \dots, P_{[MXP]}\}$$

$$P_{l3kj}^l = \{P_{B31}, \dots, P_{B32}, \dots, P_{B3n}, \dots, P_{[B3p]}\}$$

$$P_{\mathfrak{K}j}^l = \{P_{\mathfrak{K}1}, P_{\mathfrak{K}2}, \dots, P_{\mathfrak{K}n}, \dots, P_{[\mathfrak{K}p]}\},$$

$$P_{MKj}^l = \{P_{M1}, P_{M2}, \dots, P_{Mn}, \dots, P_{[Mp]}\},$$

$$P_{MXKj}^l = \{P_{MX1}, P_{MX2}, \dots, P_{MXn}, \dots, P_{[Mxp]}\},$$

$$P_{l3j}^l = \{P_{B31}, P_{B32}, \dots, P_{B3n}, \dots, P_{[B3p]}\}.$$

In them $P_{\mathfrak{K}n}$, P_{Mn} , P_{MXn} points of electrical, magnetic and mechanical - subsystems, respectively; P_{B3n} - interconnection subsystem point; $l_{\mathfrak{K}}$, l_{MK} , l_{MXK} - lines of electrical, magnetic and mechanical subsystems, respectively; l_{B3K} - interconnection subsystem line.

Table 2 shows the LD structural sets of a particular mechatronic module [3], which are compiled according to its topological image. In this case, the topological image of MMM is constructed using the abstract concepts of "line" and "dot".

In contrast to the usual ways of displaying MMM graphs of schemes (for example, pole graphs) [4], which do not allow to indicate the entire topology of



interconnections, the latter are described in terms by graphs with two- and three-dimensional points. The MMM graph (Table 2) contains mentally divided four subgraphs: electrical, magnetic, mechanical, and interconnections. Winding on the magnetic core in the MMM column corresponds to the line (25) connecting one-dimensional points (1 and 2)., At the same time. (No. 1-4) - points of the electrical subsystem; (№5-12) - points of the magnetic subsystem; (# 12-16) - points of the mechanical subsystem; (№17-18) - interconnection points (two-dimensional) of the electrical subsystem; (№ 19-21) - points of interrelations of the magnetic subsystem; (№22-23) - interconnection points of the mechanical subsystem; (№24-28), (№29-36), (№37-41) - lines of the electrical, magnetic, mechanical subsystem; (№42-48) - interconnection subsystem lines.

Conclusion

The set-theoretic description of the structures of multi-axis mechatronic modules of intelligent robots and robotic systems allows displaying structures from interconnected physical heterogeneous systems and determining the set of possible structures of modules.

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DEVELOPMENT OF LINEAR MATHEMATICAL MODELS OF THE TECHNOLOGICAL PROCESS OF CRUSHING SEEDS CRUSHING

**Yusupov Firnafas senior lecturer
Urgench branch of Tashkent university
of information technologies named after
Muhammad Al-Khwarizmi.**

**Kim Tatyana Yurevna assistant
Urgench branch of Tashkent university
of information technologies named after
Muhammad Al-Khwarizmi
E-mail:tatyana_kim92@mail.ru**

**Nurmetova Bonuraxon Baxromovna
assistant, Urgench branch of Tashkent
university of information technologies
named after Muhammad Al-Khwarizmi**

**Xojibayev Jonibek Maxmudjonovich
assistant, Urgench branch of Tashkent
university of information technologies
named after Muhammad Al-Khwarizmi**

Annotatsiya – Yogʻ ekstraksiyasi zavodidagi paxta chigitini yanchish texnologik jarayonini tajribali-statistik izlanishlar asosida mazkur jarayonning soddalashgan chiziqli statistik modeli tajribani rejalashtirish metodidan foydalanib qurildi. Tajriba-statistik maʼlumotlar dispersiyasini bir jinsliligi, chiziqli modelning koeffitsientlarini ishonchliligi va modelning jarayonga adekvatligi tahlil qilindi.

Abstract - The simplified statistical linear model of the object under study is developed on the basis of experimental and statistical studies of the technological process of crushing the cottonseed of an oil extraction plant using the experimental



design method. The analysis of the homogeneity of the dispersion, the significance of the coefficients of the linear model and the adequacy of the resulting model.

Аннотация - На основе экспериментально-статистических исследований технологического процесса дробления семени хлопчатника маслоэкстракционного производства разрабатывается упрощенная статистическая линейной модель исследуемого объекта с помощью метода планирования эксперимента. Проведен анализ однородности дисперсии, значимости коэффициентов линейной модели и адекватность полученной модели.

Kalitso'zlar – jarayonitahlil qilish, korrelyatsiyavaregressiya, paxtachigitinimaydalash, chiziqliregressiya, dispersiyflarningbirjinsliligi, modelningadekvatliligi.

Keywords - technician process analysis, correlation and regression, cottonseed crushing, linear regression, dispersion homogeneity, model adequacy.

Ключевые слова - анализ процесса, корреляция и регрессия, дробление семени хлопка, линейная регрессия, равномерность дисперсии, адекватность модели.

INTRODUCTION: The statistical models of the technological process of grain crushing built in this paper can be the basis for the development of many models of deterministic, dynamic and stochastic models for planning and controlling the production process using fuzzy logic. To create a multi-level hierarchy of optimization algorithms for an oil extraction plant with a discrete-continuous nature of production, it is necessary to study the structural organization of the production and technological process and build a mathematical model of the control object.



LITERATURE REVIEW

Firstly, we give a qualitative description of the object, which then allows you to go to the analytical representation of the object model.

The object under study will be considered as a complex consisting of some set of technological installations (equipment) for processing cottonseed, warehouses of various types of raw materials and final products, intermediate storage of semi-finished products [1]. The input of the control object is a set of modifications of the initial raw material - cottonseed of various types of harvest and varieties. The output of the control object is a variety of end products - cottonseed oil, husks, meal, soap, etc., various types of waste. The main material flows in the studied enterprise with discrete-continuous technological processes are the flows of raw materials, intermediate and final products of processing cottonseeds.

The manufactured products of the preparatory workshop of the oil extraction plant, consisting of a seed warehouse, seed cleaning, peeling and separating workshops and roller section, are cotton mint.

The final product of the preparatory workshop is mainly cotton mint - it is a product obtained by grinding cottonseed kernels on roller machines. The grinding of the kernel of cottonseeds is carried out in order to achieve the maximum possible opening of the cells of the kernel of cottonseeds. It is allowed to add husk to the crushed kernel - the mint, bringing the total content of the husk in the mint obtained from a mixture of seeds of various varieties to 15-17%. The thickness of the petal of the mint determines the quality of grinding, it can be from 0.1 to 1.0 mm. The thinner the petal, the more opened cells.

When shelling (peeling) of cottonseeds, a whisker is obtained, consisting of a mixture of kernels, husks and whole seeds. The process of rushanka separation has



the goal of obtaining a kernel with a minimum content of husk with the lowest oil content.

Research methodology The number of whole seeds in a small hook after the first breaking (peeling) should be no more than 30%, after the second - no more than 0.8%. During the separation (separation) of the rushanka, two fractions are formed - the husk and the core.

The husk is a product whose content in seeds is 39-43%. Oil dust is finely crushed particles of the core contained in a whisker or husk. Usually, these particles are no larger than 1 mm.

The cottonseed kernel is a product that is subject to further processing to extract oil from it, so long-term storage is not recommended because it is devoid of a shell and the acid number of the oil quickly increases, destructive processes are observed, leading to loss of oil and reducing its output.

For the purpose of operational management of the production process, a simplified mathematical model of the technological process of crushing cottonseeds is being developed. The technological process of crushing cottonseeds consists of a number of technological installations (equipment), control and regulation devices, warehouses of various types of raw materials (modification of cottonseeds: a selection of cottonseeds, industrial variety, type of harvest, cottonseeds grade, contamination, humidity and etc) and intermediate products, semi-finished products (the core of cottonseeds, husks, unbroken seeds, etc.).

The developed mathematical model for creating algorithms for controlling the technological process of crushing cottonseeds is a formalized description of the structure of the technological process and characterizing its parameters.



The technological process of crushing cottonseeds consists of the following main technological operations: seed loosening, conveyor, drying, cleaning, crushing, seed peeling, the sieve of various sizes [1].

The purpose of this work is an experimental statistical study of the technological process of crushing cottonseed, as well as the construction of a simplified statistical linear model of the process under study. The technological process of crushing cottonseeds, as a control object, has dynamic properties, which imposes a number of difficulties in mathematical formalization. The effect of the object dynamics on the accuracy of the statistical model will be minimal in the case when the moments of data recording at the object input and output are separated by a time interval equal to the maximum shift of the mutual correlation function between the process parameters considered.

Statistical examination of the process of crushing cottonseeds also requires a preliminary assessment of the required number of observations. The amount of necessary statistical data can be determined by the method described in [2,3].

According to the considered methodology for collecting experimental data under conditions of the normal functioning of the technological process of crushing cottonseeds, the parameters of the crushing processes were recorded, considering the time shifts and the data collection interval calculated from the results of the preliminary experiment.

In this case, the readings of the recording and indicating instruments and the data of express analyzes specially organized in the laboratories (nuclei yield, husk, non-shredded seeds) were used.

All collected statistical material is presented in the form of tables of initial data (Table 1 and 2). The obtained experimental data were an approximate equivalent of



the object and were used in mathematical modelling of the technological process of crushing cottonseeds using the experiment planning method.

Based on the analysis of existing methods for constructing models of complex dynamic objects, for the technological process, experimental statistical methods of identification based on the methods of correlation and regression analysis are most acceptable [4,5].

A preliminary study of the crushing of cottonseeds, as well as an analysis of a priori information about the processes contained in the practical experience of technologists and specialists, made it possible to identify technological parameters telling the greatest influence on the process of crushing cottonseeds.

The entire set of parameters determining the current state of the technological process of crushing cottonseeds can be divided into two groups of parameters [6].

I. The set of primary (input) process parameters characterizing the quality and quantity of the initial processes:

a) input parameters of raw materials of cottonseeds for the crushing process $X = \{x_1, x_2, x_3\}$;

where x_1 - cottonseed contamination, in%;

x_2 - cottonseed damage, in%;

x_3 - cottonseed moisture, %.

b) The set of secondary (output) process parameters, characterizing those generalized technical and economic indicators that assess the quality and economic efficiency of the process of crushing cottonseeds $Y = \{y_1, y_2\}$,

где y_1 – yield kernel of cottonseeds (crushed seeds), in%;



y_2 – the output of the husk, seed seeds and cottonseeds not chopped, in%;

The levels of the factors $X = \{x_1, x_2, x_3\}$ were chosen in such a way that they covered the assumed range of optimal values of the factors, which follows from the table. 1.

Table 1.

The levels of the factors X

Factor's levels	designation	B %	B %	B %
		x_1	x_2	x_3
Main	0	6	7	11
The range of variation in	Δx	3	4	3
Upper	+1	9	11	14
Lower	- 1	3	3	8

Analysis and results

It was chosen that $X = \{x_1, x_2, x_3\}$ were the levels of the factors. one.

The coded value of the factors z_1, z_2, z_3 was determined by the known formulas [7].

As a mathematical model of the object of study, choose a first-order polynomial that is linear in all variables:

$$\hat{y}_2 = b_0 + b_1 z_1 + b_2 z_2 + b_3 z_3 + b_{12} z_1 z_2 + b_{13} z_1 z_3 + b_{23} z_2 z_3 + b_{123} z_1 z_2 z_3 \quad (8)$$

where z_1, z_2, z_3 — coded values of factors; b_0 - free member; b_1, b_2, b_3 - coefficients showing the degree of influence of each factor on the optimization



parameter; $b_{12}, b_{13}, b_{23}, b_{123}$ are coefficients showing the degree of influence of the interaction of the relevant factors on the optimization parameter.

Table 2

Planning matrix 2^3

The real importance of the factors				The coordinates of the factors without a unit				Output
The number of experiments	x_1	x_2	x_3	z_0	z_1	z_2	z_3	y_2
1	4	4	7	+1	-1	-1	-1	31.6
2	8	4	7	+1	+1	-1	-1	31.2
3	4	10	7	+1	-1	+1	-1	30.6
4	8	10	7	+1	+1	+1	-1	29.8
5	4	4	13	+1	-1	-1	+1	30.4
6	8	4	13	+1	+1	-1	+1	29.8
7	4	10	13	+1	-1	+1	+1	29.1
8	8	10	13	+1	+1	+1	+1	28.9

We calculate the average values of y_2 in each row of the planning matrix, for this, we carried out additional experiments.

$$m (m = 3) \text{ times: } \overline{y}_i = \frac{\sum_{j=1}^m y_{ji}}{m}.$$

$$\overline{y}_1 = 30.9, \overline{y}_2 = 30.9, \overline{y}_3 = 30.2, \overline{y}_4 = 30, \\ \overline{y}_5 = 30.06, \overline{y}_6 = 29.7, \overline{y}_7 = 29.4, \overline{y}_8 = 29.1.$$

Then the line dispersions were calculated by the formula

$$s_i^2 = \frac{\sum_{j=1}^m (y_{ji} - \overline{y}_j)^2}{m-1} \cdot s_1^2 = 0.24, s_2^2 = 0.04, s_3^2 = 0.08, s_4^2 = 0.02,$$

$$s_5^2 = 0.05, s_6^2 = 0.005, s_7^2 = 0.045, s_8^2 = 0.125.$$

Next, the experimental value of the Cochren criterion is calculated by the formula

$$\sigma_{pacu} = \frac{s_{i\max}^2}{\sum_{i=1}^n s_i^2} \cdot \sigma_{pacu} = 0.206.$$

At $f_1 = m-1$ and $f_1 = n$ from the reference tables [9], the value was taken to be 0.516. Since the line-by-line dispersions should be considered homogeneous, and the reproducibility of the experiment — satisfactory.

The variance of the optimization parameter in accordance with the formula is equal to:

$$s_y^2 = \frac{\sum_{i=1}^n s_i^2}{n} \cdot s_y^2 = 0.075, s_y = 0.273$$

According to the corresponding formulas [3,4], the coefficients of the regression equation were calculated:

$$b_0 = 8.34, b_1 = -3.86, b_2 = -3.86, b_3 = -3.775, b_{12} = 0.35, b_{13} = 0.15,$$



$$b_{23}=0,35, b_{123} = 0.$$

The regression equations took the form

$$\hat{y}_2 = 8,34 - 3,86 z_1 - 3,86 z_2 - 3,775 z_3 + 0.35 z_1 z_3 + 0,15 z_2 z_3 + 0.35 z_1 z_2 z_3 \quad (5)$$

The dispersion of the coefficients of the regression equation in accordance with the formula was:

$$s_{b_j} = \frac{s_y}{\sqrt{NM}} , \quad s_{b_j} = 0.055 .$$

The experimental value of student's criterion is equal to:

$$t_j = \frac{|b_j|}{s_{b_j}} . \quad t_{p_0} = 151.27 , \quad t_{p_1} = 70.18 , \quad t_{p_2} = 70.18 , \quad t_{p_3} = 68.63 , \quad t_{p_{12}} = 6,36 ,$$

$$t_{p_{13}} = 2.45 , \quad t_{p_{23}} = 6,36 , \quad t_{p_{123}} = 0 .$$

When $f_1 = n(m-1) = 16$ and $\alpha = 0.05$, the table value is $t_{tabl} = 3.24$ with the number of degrees of freedom equal to 16 [10,11]. Comparing t_{ras} with t_{tabl} showed that ($t_{ras} > t_{tabl}$) only coefficients are statistically significant

b_1, b_3, b_{12}, b_{23} . Therefore, the final regression equation is:

$$\hat{y}_2 = 8,34 - 3,86 z_1 - 3,86 z_2 - 3,775 z_3 + 0.35 z_1 z_3 + 0.35 z_1 z_2 z_3 \quad (3)$$

Check the adequacy of the model. The variance of adequacy calculated by the

formula $s_{ad}^2 = \frac{m \sum_{j=1}^m \left(\bar{y}_j - \hat{y}_j \right)^2}{n - q}$, where q is the number of members of the regression

equation ($q = 6$) remaining after checking the significance of the coefficients b_j ; - line-by-line values of the optimization parameter, calculated by the final type of the mathematical model [12, 13].

To test the adequacy of the finally adopted mathematical model (3), the Fisher criterion was calculated using the formula

$$F = \frac{s_{ad}^2}{s_y^2}, F_{pacu} = 3,75$$

When $f_1 = n - q = 2$, $f_2 = n(m-1) = 16$ and $\alpha = 0.05$, the table value $F_{tabl} = 4.49$ [2]. Since $F_{ras} < F_{tabl}$, we can assume that equation (6) adequately describes the technological process of crushing cottonseed. From this equation, it follows that, only the coefficients have a significant effect on the parameter y_1 . The coefficients $b_{12}, b_{13}, b_{23}, b_{123}$ on the technological process in the studied intervals on the indicator y_2 have no significant effect.

The results obtained can be applied:

- a) to select the optimal technological mode;
- b) in case of machine simulation for the purpose of checking and evaluating the process control algorithms for crushing cottonseeds, as well as for creating a process control system;
- c) to select an effective plan for the main production process of cottonseed processing based on simplified linear mathematical models.

CONCLUSION

Based on theoretical and experimental studies, the developed models and algorithms of the technological process of crushing cottonseeds (grains of various materials) by the production processes of cotton oil production will help to increase the efficiency of functioning under conditions of integrated systems of automated control of oil extraction enterprises.



As a result, the following results were obtained:

1. The analysis of the state of scientific and practical developments on the materials of the open press in the field of automation and construction of mathematical models of the technological process of crushing cottonseeds (grain of various materials), industrial control systems of oil extraction enterprises;

2. A linear and non-linear statistical model was developed by the least squares method and the model was analyzed for adequacy.

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ACTUAL PROBLEMS OF NATURAL SCIENCES

UDC:633.11

OPPORTUNITIES OF IMPROVING RESISTANCE METHODS TO TERMITSBASED ON DATA REGARDING THEIR BEHAVIOUR

Mardona Bektursunova
Student. Department of Soil Science,
Faculty of Natural science
Urganch State University
E-mail: mardonab@mail.ru

Rasul Ro'zmetov
PhD student
Urganch State University
E-mail: tupnik@mail.ru

Аннотация: Мазкур мақолада табиатда тарқалган термитлар ҳамда уларнинг биоэкологик хусусиятлари, уларнинг тарқалиш ареалининг кенгайиши уларни ўрганишни термитларга қарши курашда қўллаш, такомиллшаган кураш усуллари ишлаб чиқиш усуллари келтирилган

Калит сўзлар: термитлар, ер остидан тарқалиши, ҳаво кўтарилиб тарқалиши, термитлар колонияси, ишчилар, нимфалар.

Annotation: This article highlights the information on termites highly distributed in nature and their bioecological features, the areal extent of their distribution, the usage of studying them in taking measures to resist them, and developing the improvement ways of fighting against them.

Key words: termites, underground distribution, airborne distribution, colony of termites, workers, nymphs.



Аннотация: В данной статье освещается информация о термитах, широко распространенных в природе, и их биоэкологических особенностях, ареальной степени их распространения, использовании их изучения при принятии мер противодействия им и разработке способов борьбы с ними.

Keywords: термиты, подземное распространение, воздушное распространение, колония термитов, рабочие, нимфы.

Introduction There is no insecticide as termites that harms the premises, structures, and objects in atropogenic conditions. Even though about 3,000 species of termites have been found in the world, nearly 10% of them damage various buildings and structures. 20 of these are seriously dangerous pests among them. In Central Asia, four types of termites have been recorded. Termites are causing serious damage to the national economy. The main reason for the earthquake in Ashgabat, the capital of Turkmenistan, in 1948 was also termites. The issue of termites is one of the major problems in the world. Because they are causing considerable damage to buildings and structures. For example, only America's damage caused by termites in 1982 was 1 billion 170 million. dollar [1,2,3]. It should be strongly noted that The Turkiston termite is causing a great damage in premises, historical monuments, wooden parts of buildings and other structures. They are common in Khorezm region- Khiva city, Khiva, Kushkupir, Shovot, Yangiariq, Khararasp and Hanka. Although bioecological features of the Turkistan termite were studied in some areas of the Khorezm region, however, they have not been studied sufficiently in the distribution of termites and their lifestyle, although methods and means have been developed to prevent and alleviate the effects of them at different times. The recommended methods and tools resisting process have been eliminated or have been removed from the production because of the adverse effects of the recommended major chemicals for humans, as well as on greenhouses and the environment. These facts and motives



proves the fact that the deepening of fundamental, scientific and applied research on termites in the Khorezm oasis is an urgent issue.

Literature review. Thorough the study of termites' actions is essential to improving the methods of combating against them. Termites are community-living insects that their distribution motives have been virtually not studied. Information on the distribution of winged forms of termite species belonging to *Anacanthotermes* Jacobson generation, spread throughout Central Asia, is cited in the works of G. G. Jacobson (1901) and Luppova (1954).

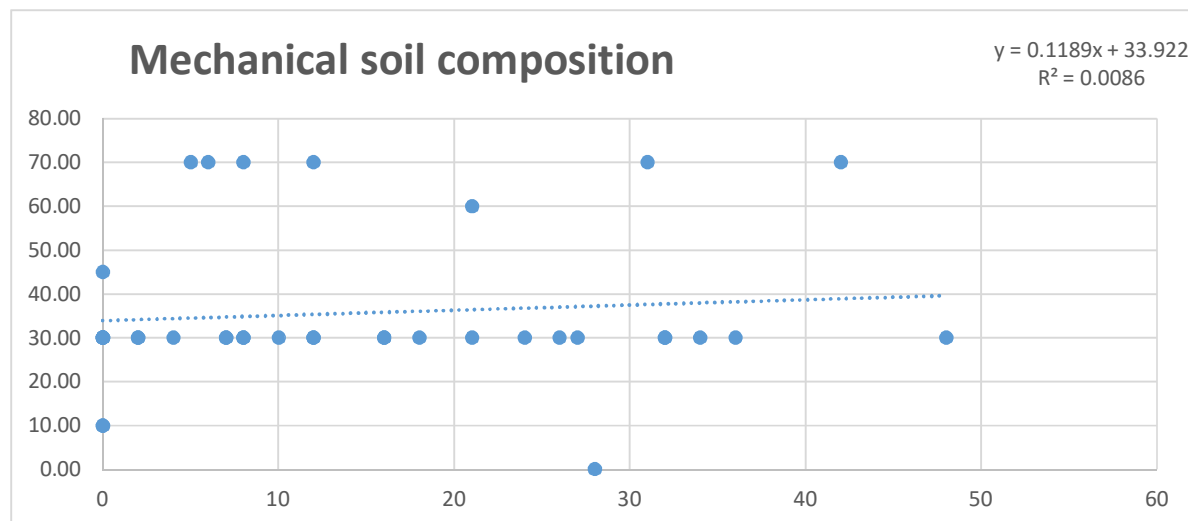
Their experiments show that the Turkistan termites fly out of their nests once a year during the rainy season, when air is moist, and leave the wings to find a pair on the ground surface and start digging nests out of the soil.

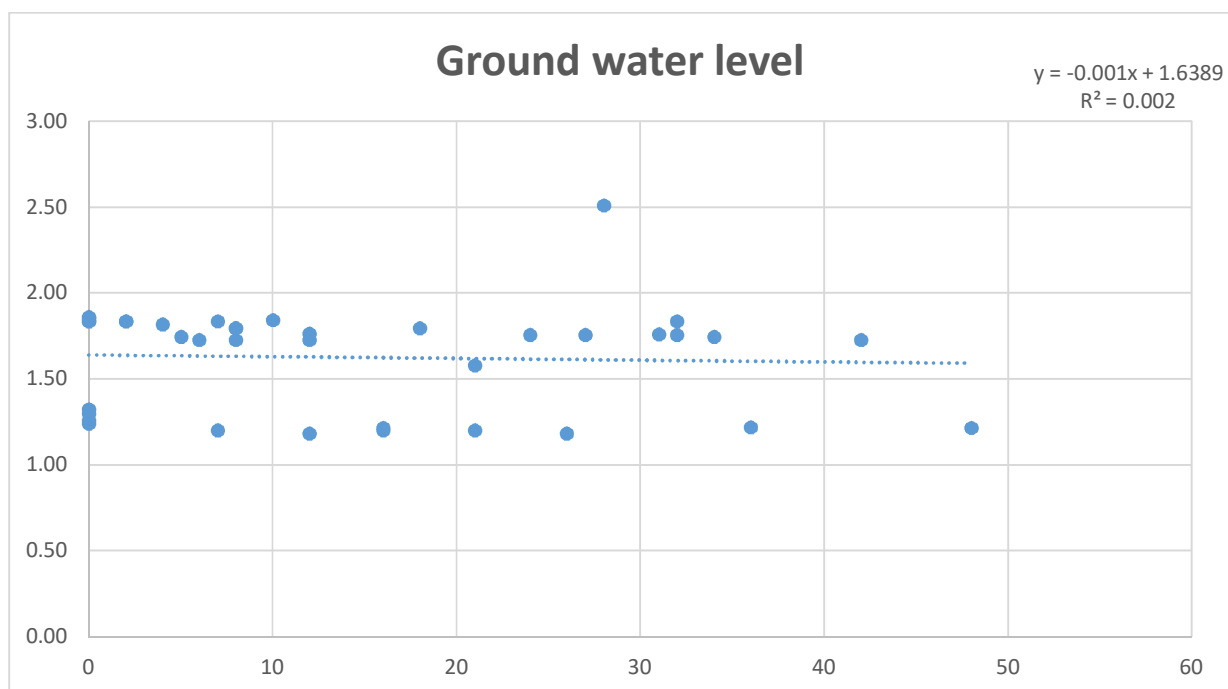
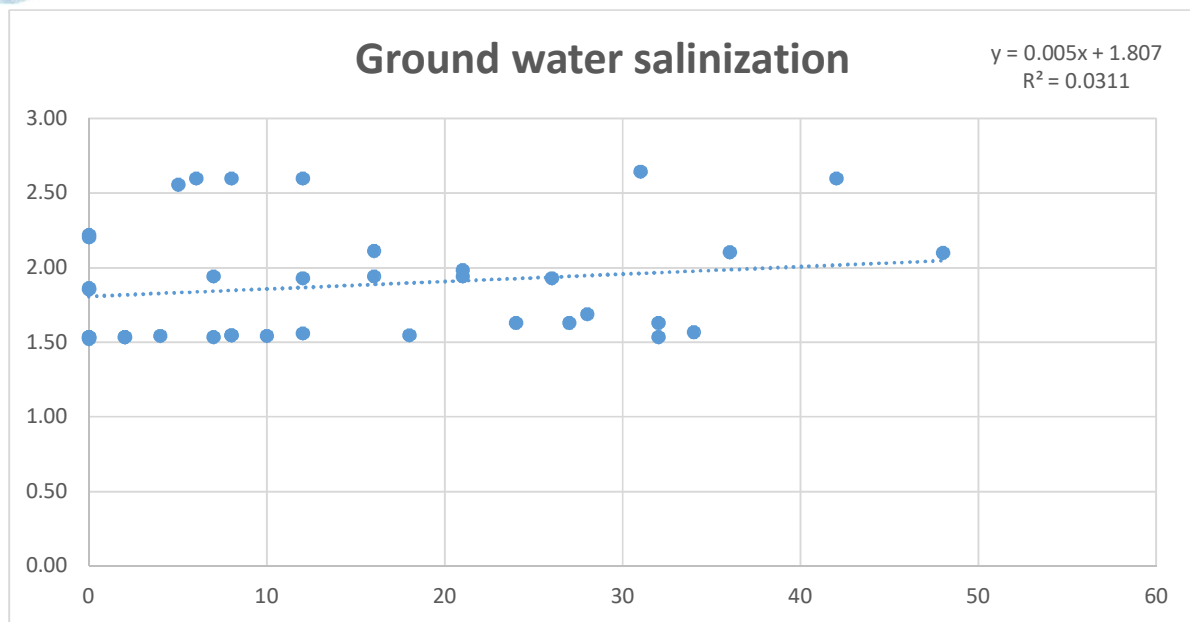
The following results have been obtained from the experiments conducted on the average-windy and non-windy days. In both cases, the initial movement of the termites was quite complex, and they were unevenly distributed in every direction, and they began to wave their flies occasionally. Frequently moving termites reached 1-3m distance. After the distance, their flight was significantly faster, and some began to fly. As a result of the blowing wind, the major part of the termite fled to several meters away. One of them even fled about 200 m away. Other termites fled to 8-15m away and tried to stop again. Windless day experiments showed that the termites did not fly far away, but they dropped to 2-3m above the air, flying up to 5-10m and landed again, and continued their efforts. If there were any obstacles or bigger clays on the way to the moving and running, they tried to hide under those objects. At the same time, ants attacked to the termites, which are slowly moving or hiding uncompletely. It has been discovered that almost all of the termites falling under these conditions could be destroyed by ants.

Termites are not as perfect as any other flying insects, so they have a limited ability to find a pair and produce a family in a new environment.

The species termites belonging to *Anacanthotermes* generation and distributed in Uzbekistan, perform vertical and horizontal movements near their nests and their surroundings, depending on the weather and soil temperature throughout the year. Including, their colony spends the winter under the depth of 2-2.5 m underground in the cold season, and again in the spring, return to their surface cells. On the hot summer days, their colony can move to 40-50 cm depth vertical migrations. However, up to now, the daily temperature change of the termite hole and their vertical migration due to this have not been studied yet [4,5,6].

We (GIS) by means of geographic information systems, have guessed the areal of termite distribution in the Khorezm region. For this process, the coordinates of the termite distributed area were measured with the help of GPS and the results, the level and depth of groundwater, and soil mechanic analysis compared through the Arc GIS program with the ZEF Bonn University database.





There was not a high level of contact between the level and depth of groundwater, mechanical soil composition and the houses that termites distributed.

Research Methodology. In the fight against termites, it is important to know the day-to-day changes in air and soil temperature and daily migratory movements of working termite feedstock. Experiments were carried out on June 25-31. In 4 quarters of the



day, $\frac{1}{4}$ of the holes were drilled and their temperature was determined. At the same time, the distribution of termites along the holes was also studied.

The experimental results show that the temperature of termite holes changed dramatically from $24,8^{\circ}\text{C}$ to $36,7^{\circ}\text{C}$ along the vertical section at 16^{00} - 16^{30} o'clock at the regions we have conducted experiments. The lowest temperature at the 5 cm depth of holes was $27,9^{\circ}\text{C}$ early in the morning at 06^{00} - 6^{30} and the highest temperature occurred at 16^{00} - 16^{30} in the evening. At this time of the summer, the termite colony can gather 40-50 cm depth in the hole and even to a lesser extent. We can conclude from this that the optimum temperature for the termite generation is $27\text{-}30^{\circ}\text{C}$ (expressed in italics at the table).

In this case, we found in the hole all the development stages of the termite species - egg, larva, worker, soldier, nymph. In the morning, we watched an active migratory of older workers' activity on the soil surface from early 06^{00} - 6^{30} . Even the temperature of the air sometimes reaches $35,7^{\circ}\text{C}$, termite workers go out of the soil to collect food and stock up.

Conclusion . Based on collected data, we can conclude that the expansion of the range of the termites' region is mainly due to the inner movement of termites. Their opportunity for spreading through their flies can be up to 10%.

Based on the information above, it is possible to conclude that in the fight against termites insecticides should be used. Measurements against termites have been developed and are used against termites at the top of the premises. A device that utilizes poisonous and entomopathogenic factors have also been developed. However, foreign scientists have developed a device based on the biological active substance found in the ground, and nourishes termites [7,8,9,10]. In this method, the likelihood of termites to find food is somewhat lower. Nowadays, it is necessary to prevent the occurrence of termites and to develop methods of insecticides, which are based on expulsion from the premises and the destruction of buildings.



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**THE INFLUENCE OF FERTILIZER STANDARDS ON THE GRAIN
QUALITY OF FRESH AND PERSPECTIVE WHEAT SORTS**

Babajanova Sanabar Yuldashboyevna

**Lecturer Faculty of Natural Science,
Department of Ecology and safety of life
activity, Urgench State University**

Matkarimov Nizomjon Baxtiyorovich

**Lecturer The Faculty of Natural Science,
Department of Ecology and safety of life
activity, Urgench State University**

Email: nizomjonmatkarimov@gmail.com

Ibadullyeva Saida Maxmudjanovna

**Master of Chemical technology faculty,
Urgench State University**

АННОТАЦИЯ. Кузги буғдой хосилига минерал ўғитлар меъёрларининг таъсири ўрганилди. Маъданли ўғит меъёри N-200; P-120; K-120кг бўлган вариантда кузги буғдой навларининг биометрик кўрсаткичлари юқори бўлгани аниқланди.

KALIT SO'ZLAR. Kuzgibug'doynavlari, mineral o'g'itlar, biometric ko'rsatkich, naychalash, gullash, hosil.

АННОТАЦИЯ. В этой статье подчеркивается влияние минеральных удобрений на урожайность озимой пшеницы. Установлено, что биометрические



данные сортов озимой пшеницы были высокими, когда нормы минеральных удобрений были в вариантах N-200; P-120; K-120кг.

КЛЮЧЕВЫЕ СЛОВА. Сорта озимой пшеницы, минеральные удобрения, биометрические показатели, дренаж, цветение, урожайность.

ANNOTATION. In this article the influence of mineral fertilizers on the winter wheat yields is highlighted. It was determined that biometric data of winter wheat sorts were high when the norms of mineral fertilizers were in variants of N-200; P-120; K-120kg.

KEY WORDS. Fall wheat varieties, mineral fertilizers, biometric indicators, tubing, flowering, yield.

Introduction In today's fast space of time, a considerable attention is being paid to the increase of grain yields and grain quality in irrigated lands of our Republic. Different sorts of new and perspective winter wheat are being regionalized in diverse districts of the country. Crucial factors of obtaining stable, abundant and high quality grains from new and perspective wheat sorts in irrigated lands include sowing period, sowing norm, the order of irrigation, amount of mineral fertilizers, and implementation of high-agrotechnologies. Agrotechnical measures used in the cultivated fields are among the main factors of high yield and high quality grain harvesting. In order to obtain high quality harvest of winter wheat, high agrotechnologies should be used to maximize its potentially productive yield.

LITERATURE REVIEW. R. Siddikov writes about the importance of grainy plants in cultivating quality and high yields in Uzbekistan. The information given by V.F.Sanko, A.V.Pukorskiy, V.N.Remeslo, E.D.Adinyayev, N.Hamidov and others, the scientists of the Krasnodar grainy plants Institution, N.Kh.Khalilov, T.Khujakulov and others, N.R.Shonov, N.G.Malyuga, Kh.Sheraliyev and others,



I.Najmiddionov, J.Khudoykulov, R.Siddikov and other specialists shows that in order to yield high quality crops, we should create, sow and care for grain sorts taking into the consideration the soil-climate conditions and their biologic peculiarities[1].

The quality of grain yield depends on soil fertility, applied fertilizer and water regime. According to A.A.Sozinov, I.A. Maximov and other prominent physiologists, high-quality grains can be grown only when there is sufficient nitrogen, phosphorus and potassium in the content of the soil. Scientists G. Jeleeva and V.N Nesteretst stated that in their experiments they could not obtain high quality yields by using phosphorus and potassium, and only the additional usage of nitrogen increased protein in the grain content[3].

Z.Ziyadillayev, G. Uzakov and Sh.Ismatov have written about the effect of irrigation norms to the quality of winter wheat seeds, as follows: We can produce 40.3 c/ha yield with IDK 111 from “Tanya” sort if we irrigate them 3 times, on average 1100m³/ha. In Jayhun sort, the result was much higher- 47,3 c/ha IDK – 94,5 ha; the best variant is produced when we irrigate Jayhun sort 5 times, on average 810 m³/ha water. We can produce 59 c/ha harvest with IDK-99[10].

K.Sindarov and T.Mukimov have researched the importance of grainy and legume crops in irrigated lands, when they are sown in a mixed way[5].

T.Jalolov and A.Mansurov have written about the effect of winter wheat sowing norms to the seed quality and high yields. Dj.Umarov and Kh.Adilov, N. Isroilov have written about the state of the hard wheat in the hybrid. Scientific researchers have been carried about the influence of wet irrigation on the wheat harvest, the effect of repeatedly sown plants and mineral fertilizers to the harvest of winter wheat[7].



B.Jurakulov and A.Z.Ortikov have developed the way of economical irrigation in order to produce high quality yields from winter wheat in Surkhandarya[4].

R.Siddikov have concluded his scientific researches as follows:

1. The sort is considered as the main factor in producing high quality crops from winter wheat.

2. It is important to irrigate Kroshka and Polovchanka sorts 4 times in practice, totally 2600-2650 m³/ha and Mars sorts 3 times, totally 2210-2240 m³/ha

3. the winter wheat fields should be fertilized as N-180, P-90, K-60 in grassy soils, N-210, P-90, K-6kg/ha in brown soils; phosphorus and potassium fertilizers should be applied before sowing and nitrogen fertilizers should be used 15% in autumn, 25% in early spring, 45% in branching period and 15% in graining period. All of them have conducted researches on irrigational agriculture[6].

RESEARCH METHODOLOGY. Nowadays farmers in different regions are cultivating winter wheat varieties that meet various climatic conditions. However, while fertilizing winter wheat sorts with minerals, the same principle of fertilizers is used without considering that the autumn wheat varieties are an independent genotype and they have diverse demands for substances. This leads to excessive consumption of mineral fertilizers or less than required, resulting in lower economic efficiency.

Taking into the consideration that today's demand for grains and the increase in their productivity, in our scientific researches for 2017-2018, we have examined the new and perspective wheat varieties imported from Russia to the Khorezm region in terms of soil fertility and water supply requirements, and our main task is to recommend distinguishing features between the reciprocal and optimal soft wheat varieties and produce high yields with good quality.



We have studied the effect of mineral fertilizers in different ratios and norms on the productivity of new and promising varieties of wheat varieties in irrigated meadow alluvial soils of the Khorezm region. In particular, the effect of 3 fertilizer backgrounds: N-150; P-90; K-90kg, N-200; P-120; K-120kg, N-250; P-140; K-140kg to the yield structure of the winter wheat varieties was investigated.

Experiments were conducted at the Gulistan Farmers Association of Urgench district, in 2017-2018 on a series of new and promising winter wheat varieties "Krasnodar-99", "Pamyat", "Tanya", "Polovchanka".

In field experiments 4 repeated 120 square meters margins were placed in the same yaros. The new and promising wheat varieties were irrigated 3-5 times during the growth period. In our research, the moisture content of the soil before irrigation was kept average 70-70-70 percent according to the wetness capacity of bordered field of the feeding variants. This process, as usual, involves leaving, spitting, tubing, graining, flowering and ripening (milk, wax, fully ripening) periods.

Before the plowing of the land, mineral fertilizers were given in the amount of 100% of potassium fertilizers, 60% of phosphorous fertilizers, during the spitting period 40% of phosphorus fertilizers, 60% of nitrogen fertilizers, during the tubing period 20% of nitrogen fertilizers, during the graining period 10%, and during the ripening period 10%. Feeding of nitrogen fertilizers during graining and ripening periods is also done through the leaves, together with roots.

However, it should be noted that excess application of nitrogen fertilizer has led to the reduction of starch in the grain.

Table 1 below describes the technological parameters of new and perspective wheat varieties in terms of the amount of fertilizer.



In our experiments, the fertilizer level and the refractometer index in the "Polovchanka" type is studied according to the phase of wheat growth. According to this, the irrigation, which is done when the sweet concentration on the leaves reach 7.5 to 9%, leads to an increase in grain yield. The same situation was repeated in "Krasnodar-99", "Pamyat" and "Tanya" wheat varieties. In this way, the grain's transparency, protein content and gluten has also increased. It should be noted that the "Krasnodar-99" wheat grade is the first in terms of transparency of grain and protein content. The high concentration of fertilizer of "Pamyat" sorts was also high in protein and gluten content.

"Polovchanka" wheat varieties are of the 2nd grade, while the second and third variants of "Krasnodar-99" wheat will meet the first grade.

In the "Tanya" wheat sorts, this can be observed in the second variant of the experiment. Thus, the highest quality and most reliable crop is grown on "Krasnodar-99" wheat (Table-1). (This table is defined on page 117).

CONCLUSION. In summary, under the conditions of grassy alluvial soils of the Khorezm region, annual norms of fertilizers should be N-200; P-120; K-120kg. This provides a yield of 70.4t in "Krasnodar-99", 65.5t in "Pamyat", and 60, 2t in "Tanya" sorts. It is possible to get abundant and high yields and achieve high economic efficiency by accurately identifying the harvesting principle.

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Table 1

**The influence of the mineral fertilizers standards on the quality indicators
of the perspective wheat varieties**

№	The standards of mineral fertilizers, kg/ha	The nature of the grain, g.l.	Transparen- cy, %	The mount of protein	Gluten	
					amount %	Quality group (IDK)
The control Polovchanka						
1	N150 P90 K90	727	58,5	11,8	26,6	II
2	N200 P120 K120	755	60,2	12,0	27,3	II
3	N250 P140 K140	757	64,8	13,0	28,6	II
Krasnodar-99						
4	N150 P90 K90	770	70,1	14,2	28,1	II
5	N200 P120 K120	785	75,6	14,6	28,6	I
6	N250 P140 K140	790	80,2	14,9	29,1	I
Pamyat						
7	N150 P90 K90	765	65,1	13,0	27,1	II
8	N200 P120 K120	768	73,5	14,1	28,3	I
9	N250 P140 K140	775	77,5	14,5	29,1	II
Tanya						
10	N150 P90 K90	768	64,9	14,0	27,3	II
11	N200 P120 K120	776	71,6	14,1	28,1	I
12	N250 P140 K140	778	75,8	14,2	28,6	II



UDC: 502.64

THEORETICAL AND SCIENTIFIC CONCEPTS REGARDING GEOECOLOGY

Matsaidova Sayyora Khudayberganova
Candidate of pedagogical sciences,
Geodesy, cartography, cadastre, geography,
Faculty of Natural Sciences,
Urgench State University

Aminov Bexzod Baxrom Ugli
Student, Department of geodesy,
cartography, cadaster and geography,
Faculty of Natural Sciences,
Urgench State University
E-mail: bexzodaminov97@gmail.com

Annotatsiya: Ushbu maqolada geoekologiya fanining bugungi kundagi ahamiyati, bu fanning metodologik asoslari hamda yurtimizda bu fanga qaratilgan e'tibor haqida so'z boradi. Bundan tashqari, geoekologiya fanining maqsadi, vazifasi hamda jahon tajribasida bu fanning rivojlanish uslublari haqida ham bayon etib o'tilgan.

Kalit so'zlar: geoekologiya, atrof-muhit, geotizim, chora-tadbirlar, fanning maqsadi

Аннотация: В этой статье рассматриваются важность геоэкологии сегодня, методологические основы этого предмета и акцент на науке в нашей стране. Кроме того, описаны цель и предмет геоэкологии, стили развития этого предмета в мировой практике.

Ключевые слова: геоэкология, окружающая среда, геосистема, меры, цель науки



Annotation: This article deals with the importance of geoecology today, the methodological foundations of this subject, and the emphasis on science in our country. In addition, the purpose and subject of the geoecology, the developing styles of this subject in world practice are also described.

Key words: geoecology, environment, geo-system, measures, the purpose of science

INTRODUCTION. Since the early days of independence, Uzbekistan has paid a lot of attention to the environmental protection, environmental science, education, culture and the nature. The only way to achieve sustainable development in the Republic, which has become an active part of the international community, is to create a secure and sustainable, environmentally friendly, economically viable and united life society. In addition, events and phenomena that are going on in the rapidly changing nature have involved the attentions of the administrative boundaries.

Therefore, environmental security and the rational use of natural resources indicate that it should be carried out within the framework of certain natural geo-systems, not by district, region and republic. The solution to this problem is consistent with geographical ecology, that is, the purpose and mission of geoecological research. Because this science studies the changes occurring in nature as a result of the influence of human activity on certain geo-systems and develops appropriate measures. The essence of this is to protect the environment, rational use of its resources, and the restoration of disturbed natural complexes. In the five priority areas of development of the Republic of Uzbekistan for 2017-2021, paragraph 5.1 and paragraph 4 of the Action Strategy have been raised to the level of public policy as the issue of "Prevention of ecological problems that threaten the environment, population health and gene fone". To achieve this goal, the task of further improving the education and training system of geo-ecological aspects of



sustainable development universally recognized by the whole world community and the wide dissemination of geo-ecological knowledge are extremely important.

LITERATURE REVIEW. Before moving to our topic, we should define the term geoecology. Different sources give diverse definitions of this concept. Geoecology is an integrated approach to environmental science and targets environmental issues. The term "Geoecology" signals an interdisciplinary approach and coincides with "Earth System Science". Geoecologists aim at a deeper and complex understanding of environmental and planetary functions and processes, particularly related to finding solutions for anthropogenically-induced challenges.

Geoecologists are "specialists for complex issues". To cater to the intricacies of this field, geoecology study programs have been setup at various German universities since 1978. Every one of these programs has its individual profile and specialisations, which are relevant for your career decision as of the Master level. [5]

Another source gives different definition, as geology plays a fundamental role in shaping the biotic world around us. Geologic history (plate tectonics and orogenic or mountain-building activity), landforms (geomorphology), and lithology (parent material and substrate) influence ecological and evolutionary processes and contribute to both macro- and micro-scale patterns of biogeography.[6]

However, we consider that geoecology is an interdisciplinary and multidisciplinary science that integrates the geosciences with the life sciences, focusing on the myriad influences of geological processes on historical and contemporary patterns of biogeography, including the causes and consequences of geodaphics on biota at all temporal and spatial scales. At the same time, geoecology examines the role biota play in a range of geodaphic processes, including in weathering and pedogenesis, thereby altering the chemical and physical composition of the Earth's surface and its patterns of biodiversity. Geobiology (geobotany and



geozoology), biogeography, and biogeochemistry are important subfields within geoecology.[7]

RESEARCH METHODOLOGY. As in other subjects, Geoecology also puts forward a specific goal. The goal is to get it from the definition given to it. The goal of geo-technology is to provide environmental safety in certain geo-systems, to optimize the relationships between the organisms and the surrounding elements, which are derived from the relationship between nature and society. Optimization is the most viable alternative to personality activities by holding or bringing it to the same state.

Depending on the purpose of Geoecology, it puts the following tasks:

- Development of scientific and theoretical foundations of Geoecology and bringing it into a universally recognized state;
- Creation of scientific, methodological and legal foundations of geoecological assessment, cadastral, monitoring and examination;
- Explains the peculiarities of practical geo-ecology and its introduction into the economy;
- geoecological training and retraining;
- Definition and application of geoecological education content and essence;
- Geochemical, global, regional and national scale
- zoning and cartography;
- Identification and popularization of geo-ecological features of sustainable development;
- Development and legalization of tactical plans and strategic programs of states and international community on Geoecology;
- Expanding research on Geoecological spirituality and enlightenment, etc.

At present, one of the main tasks of Geoecology is to develop its scientific and theoretical foundations and bring it to the universally recognized status. Because



many studies in geographical and ecological disciplines still return geoecological research or conduct close research to it. There is such parallelism in Geoecology and "General Ecology". For example: geoecological monitoring and ecological monitoring, geoecological assessment and ecological assessment, geoecological forecasting and ecological forecasting, geo-ecological observation and environmental observation, etc. This subject involves ecosystems (geosystems), including biosphere, at the top level of ecology. Geoecology is called landscape ecology, biogeocenology. At present, living organisms - plant, animal world, and human environment - are increasingly widespread due to the accelerated development of science and technology, and the earlier natural equilibrium is worsening in some places and, in some countries, breaking down, dangerous, even deadly ecological situation. The interaction between man and nature is essentially ecological, but it is also geographically a problem in a particular place, on the basis of various geographical and natural and socio-economic geographical laws. From this point of view, the ecological problem can be considered as a "geoecological problem".

Geoecological problem is a complex of systematic, many simple problems that are constantly changing and evolving.

As human nature explicitly diminishes its impact on the natural environment, the effects of nature can multiply as much as it can. This is an example of the ecological and socio-economic consequences of the Aral Sea.

The Aral Sea is the largest geo-ecological problem. The accumulation of salt in the dried up stream is accelerating.

The decline in the Aral Sea level, the lack of regular water supplies to the Amudarya and Syrdarya Delta, and the most horrendous increase in water scarcity, as well as the increased desertification process in the Aral Sea area due to pollution by toxic waste.



Because this problem is extremely scary and tragic, it needs to be quickly and positively resolved. For this purpose, not only our republic, but also many public organizations, a number of boards and congresses aimed to normalize the situation in the Aral Sea basin, take measures to protect the environment, to pay special attention to the implementation of measures to assist the displaced population.

ANALYSIS AND RESULTS. Before clarifying these issues, it is important to emphasize the following aspects of Geoecology as its independent science. In geo-technology, geo-systems are regarded as living organisms. Therefore, the object of geo-technology is geosystems. It is desirable for geographical research to be studied within these geo-systems. The main difference between geographical research and geoecological research is that. For geo-ecological complexes, objects of natural geographical zoning, as well as smaller taxonomic units - to the region, landscape, area, land, and fats are very crucial. However, the development of science and technology necessitates the study of geo-ecological objects into smaller geographical areas rather than regions. The organisms are divided not only to the flora and fauna, but also to humans, microorganisms and nanotubes (10 to 9 and smaller).

CONCLUSION. Geoecology is the study of the multifaceted relationships that exist between substrate and biota. Parent materials, climate, topography, and time determine the kind of substrate that becomes available for colonization by biota, and their habitation further influences the nature of the substrate upon which plants grow and animals and microbes dwell. Humans have long observed the special associations between organisms and their substrate, and such knowledge has served as the foundation of biogeoprospecting, the use of organisms as indicators of minerals and chemical elements found within geologic material.[3]

All in all we can conclude that the development of geoecology is closely dependent on today's science innovations, mutual relationships between the countries and social reforms. Because, all the living people are bounded to each other in the



way they live, they breath the same air, they eat the same things, therefore, the today's state of the environment is of great importance for all the people in the world.

In this direction, the State Committee for Ecology and Nature Protection of the Republic of Uzbekistan is responsible for energy saving, renewable sources, waste technology. Moreover, a short-term and long-term state programs on the development and implementation of new methods of energy production and on the basis of secondary resources and wastes have been adopted and are being implemented.

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CONTINUOUS, YEAR ROUND USE OF IRRIGATED LANDS IN SOUTHERN ZONE OF UZBEKISTAN

Mirzoolim Avazovich Avliyakov
(DSc in Agricultural Sciences, senior researcher) Head
of department in Cotton breeding, Seed Production
and Agro-technologies Research Institute
Email: mirzoolim89@gmail.com

**Durdiev Normat Khasanovich (PhD in Agricultural
Sciences) Senior researcher in Cotton breeding, Seed
Production and Agro-technologies**

Gopporov Farrukhzhon Farkhodzhon ogli
PhD student in Cotton breeding, Seed Production and
Agro-technologies

**Yakhyoeva Nafisa Nuriddinovna Junior researcher in
Cotton breeding, Seed Production and Agro-
technologies**

Abstract: The paper indicates scientifically substantiated continuous, year-round use of irrigated lands in Surkhan-Sherabad valley, southern zone of Uzbekistan. In research, scientifically substantiated production agrotechnology of crops in one agricultural system were investigated, where the crops were grown as a main crop, summer crop and after winter wheat and barley harvesting. The following yields were obtained winter wheat variety “Chillaki” 4.89 to 5.65 t ha⁻¹, barley variety “Bolgali” 5.44 to 6.03 t ha⁻¹, after winter wheat and barley harvesting: maize variety “Uzbekistan-306 AMB” 4.60 to 5.28 t ha⁻¹ grain, variety “Nart” 4.27 to 5.19 t ha⁻¹ grain, cabbage variety “Sharkiya” 44.8 to 53.5 t ha⁻¹, variety “Uzbekistan-133” 45.7



to 54.0 t ha⁻¹, upland cotton varieties “Bukhara-6” and “Bukhara-8” 2.85 to 3.21 t ha⁻¹ and 2.89 to 3.24 t ha⁻¹ respectively.

Key words: year round use of irrigated lands, production agrotechnology, takyr soils, Surkhan-Sherabad valley.

Аннотация: Ушбу мақолада Ўзбекистоннинг жанубий минтақаси Сурхон-Шеробод воҳаси суғориладиган ерларидан йил давомида узлуксиз, илмий асосда фойдаланиш бўйича маълумотлар келтирилган. Тадқиқотларда қишлоқ хўжалиги экинларини бир деҳқончилик тизимига жамлаган ҳолда илмий асосда етиштиришишлаб чиқилган бўлиб, экинлар асосий, такрорий ва кузги буғдой ҳамда арпа анғизида парваришланган. Экин турлари бўйича қуйидаги ҳосилдорликлар олинган: кузги буғдойнинг “Чиллаки” навидан 48,9-55,5 ц/га, арпанинг “Болғали” навидан 54,4-60,3 ц/га, кузги буғдой ва арпа анғизидаги маккажўхорининг “Ўзбекистон-306АМВ” навидан 46,0-52,8 ц/га дон ҳосили, “Нарт” навидан 42,7-51,9 ц/га дон ҳосили, оқбош қарамнинг “Шарқия” навидан 448-535 ц/га, “Ўзбекистон-133” навидан 457-540 ц/га, ўрта толали ғўзанинг “Бухоро-6” ва “Бухоро-8” навларидантегишлича 28,5-32,1 ц/га ва 28,9-32,4 ц/га ҳосил олинган.

Калит сўзлар: суғориладиган ерлардан йил давомида фойдаланиш, етиштириш агротехникаси, тақирсимон тупроқ, Сурхон-Шеробод воҳаси.

Аннотация: В статье приведены данные по непрерывному круглогодичному научно-обоснованному использованию орошаемых земель Сурхан-Шерабадской долины южной зоны Узбекистана. В исследованиях была разработана агротехника возделывания сельскохозяйственных культур в системе земледелия, где культуры выращивались в качестве основных, повторных и пожнивных после зерноколосовых. Получены следующие урожаи



по культурам: 48,9-56,5 ц/га зерна с сорта озимой пшеницы «Чиллаки», 54,4-60,3 ц/га, зерна с сорта ячменя «Болгали», 46,0-52,8 ц/га зерна с сорта кукурузы «Узбекистан-306 АМВ», 42,7-51,9 ц/га зерна с сорта «Нарт» в качестве пожнивной культуры после уборки озимой пшеницы и ячменя, 448-535 ц/га урожая с сорта белокачанной капусты «Шаркия», 457-540 ц/га урожая с сорта белокачанной капусты «Узбекистан-133», 28,5-32,1 и 28,9-32,4 ц/га хлопксырца соответственно с средневолокнистых сортов хлопчатника «Бухара-6» и «Бухара-8».

Ключевые слова: круглогодичное использование орошаемых земель, агротехника возделывания, такыровидные почвы, Сурхан-Шерабадская долина.

Introduction: According to United Nations projection, a world population has to exceed 9 billion people in 2050. Statistical information shows that every 15 years the world population increases for one billion. Doubling population of Central Asia since 1980 increased demand for food, which escalated demand for land and water resources. The two major river systems Amudarya and Syrdarya supply water for irrigation, hydropower and domestic use in Central Asian countries including Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. In Uzbekistan, all water resources in both main above mentioned river basins are fully allocated between water users. Uzbekistan is facing not only limited water resource issue but also there are environmental problems such as waterlogging and salinization where the half portions of the country's irrigated lands are affected with different level of salinization. Recent years, irrigated lands distribution decreased from 0.20 ha to 0.14 ha per person. It caused appearing the food security challenges.

Literature review: Considerable research has been done on water-use efficiency and mineral fertilizer applications. Many papers and reviews have been written. In irrigation, efficiency was first defined by Israelsen [7].



Several papers suggested that in many irrigation schemes only about 45% of water diverted for irrigation actually reaches the crops [9].

Howell and Irmak et al.[5] reported the attainable application efficiencies for different irrigation methods, assuming irrigations are applied to meet the crops' water needs. While evaluating WUE, this study looks for both, introducing low water demanding crop and improving irrigation practices of farmers.

Irrigation systems have been under pressure to produce more with lower supplies of water. Various innovative practices can gain an economic advantage while also reducing environmental burdens such as water abstraction, energy use, pollutants, etc.[4].

Policy mostly place great expectations upon technologies to improve water use efficiency. While, policies seek to lower water usage, and river basin managers try to allocate limited supplies, yet water saving is not a priority for most farmers[10]. They manage labour and other inputs to get better economic gains [12]. Yet even WP remains distant from farmers' perspectives. They generally perceive 'irrigation efficiency' as maximizing net revenue rather than saving water [8]. Some experiences indicate that water pricing have induced farmers to adapt appropriate practices for conserving water[1].

After becoming the independent country, Uzbekistan reoriented the focus of agricultural policy on food independency and prioritized food security. In recent independent years, cotton growing fields have reduced due to the expansion of fields to grow cereals and other vegetable crops. At the present time, main cropping sequence is cotton/winter wheat (1:1) that has replaced cotton/alfalfa (7:3) crop rotation on the irrigated lands of Uzbekistan. Winter wheat (*Triticum aestivum* L.) is the most important cereal grown for making bread in Central Asia. Whereas



worldwide about 65 % of the produced wheat originates from irrigated agriculture, in Uzbekistan more than 90 % of winter wheat is cultivated on irrigated land [3]. During the past 24 years, the area under irrigated cereals increased more than seven times from 221,000 ha to about 1.6556 million ha, and gross yields rose from 1.54 in 1991 to 4.53 t ha⁻¹ in 2014 [13].

This significant increasing the area under winter wheat resulted in grain self-sufficiency of the state, however at the same time it reduced opportunity for farmers to grow other crops and diversify their products to be able to meet the growing market needs. Farmers, under such conditions, have two choices, first is concentrating market oriented food crops on their household plots and the second is cultivate the crops after winter wheat harvesting.

Under this situation, there is limited number of ways to increase food crop production in the region. In this domain, continuous, intensive, year round use of irrigated lands can be one of the effective measures of converting evaporation losses from fallow land into useful crop transpiration as well as this can be scientific solution to food security challenges. Growing period of winter wheat in Surkhan-Sherabad valley is from September-October to mid-June, around 245-255 days, when sum of positive temperatures has to exceed 3000 °C. The harvesting period of winter wheat is in mid-June when high temperature causes high evaporation rate. After winter wheat harvesting, there is still 120-140 days until autumn with sum of temperatures 2600 °C, if it is planned to grow cotton next year on the period from 25 March 05 April then there is around 250 days to grow more than 40 crops including upland cotton varieties, legumes, cereals, vegetables, melons, oil plants and e.t.c. thus providing effective, intensive, year round use of irrigated lands in southern zones, particularly in Surkhan-Sherabad valley and gaining harvest 2-3 times in a year. *This*



will ensure food security of population and raw materials for industry. The solution to this problem is very prominent not only for Uzbekistan but also for the worldwide.

Materials and Methods: The field experiment was conducted from 2007 to 2013 at the Surkhandarya branch of Cotton Breeding, Seed Production and Agrotechnologies Research Institute (CBSPARI) on takyr soils where the depth of groundwater table is 2.0-3.0 meters. The research was conducted on the base of the “Methods of field experimentation” UzCRI (2007) [11]. In research the following crops were studied: upland cotton varieties; winter wheat, barley, maize and cabbage varieties. The experimental layout was a complete randomized block design. Each crop consisted of 5 treatments in three replications with two irrigation scheduling Fc and two split applications of fertilizers.

The Surkhan-Sherabad valley is located in southern zone of Uzbekistan (37°39'N, 68°67'E, elevation of 450 m a.s.l.) within the Amudarya river basin. According to USSR soil classification, which is still in use in Uzbekistan, the main soil type in the region is takyr soil covering about 50% of the area. The soil is characterized by low organic matter (OM) content (0.4 to 1.6%), and high gypsum content, prone to salinity. The analyses of soil's mechanical composition, humus, movable forms of NPK annually in the laboratories of the CBSPARI.

Results and discussions: According to results of cotton field, conducting irrigation 3-4 times at irrigation scheduling 65-65-65 % Fc with the irrigation scheme of 1-2-1, 0-2-1 where the growth stages were divided into three parts such as till flowering, flowering – yield accumulation and maturation phases. Variation the norms for each irrigation observed with rates of 800 to 1200 m³ ha⁻¹ and the norms of seasonal irrigation made up 3940 to 4030 m³ ha⁻¹. In irrigation scheduling 70-75-65 % Fc, irrigation was conducted 4-5 times by 1-3-1, 0-3-1 schemes, variation for each irrigation event during vegetation period constituted 800 to 1040 m³ ha⁻¹ and the



norms of seasonal irrigations equalled from 4620 to 4650 m³ ha⁻¹. The reason for the less number of irrigations on experimental plot is explained with the location of ground water level at 2.0-3.0 m depth. Water productivity of crops in m³ t⁻¹ were as follows: barley variety Bolgali – 464 to 493, winter wheat variety Chillaki – 496 to 551, maize variety Nart and Uzbekistan-306AMV 908 to 1015 and 847 to 936, cabbage varieties Sharkiya and Uzbekistan-133 – 75 to 86 and 75 to 83, upland cotton variety Bukhara-6 and Bukhara-8 – 1232 to 1563 and 1222 to 1524 (table 1).

Table 1

Water requirement, yield and water productivity of cereals under the year-round use of irrigated takyr soils (2007-2013 years)

Irrigation scheduling Fc, %	Mineral fertilizer (NPK) rate, kg ha ⁻¹	Irrigation scheme	Irrigation rates m ³ ha ⁻¹		Yield, t ha ⁻¹	Water productivity, m ³ t ⁻¹
			Irrigation for each event	Seasonal irrigation		
Winter wheat variety “Chillaki”, barley variety “Bolgali”						
75-75-70	180:126:90	1-3-1	390-650	2640-2720	4.89	551
					5.44	493
75-75-70	180:108:72				5.46	496
					5.80	464
75-75-70	180:90:54				5.36	503
					5.61	479
80-80-70	180:108:72	1-4-1	330-550	2810-2930	5.65	513
					6.03	471



80-80-70	180:90:54				5.53	525
					5.92	482
Summer crop maize “Nart”, “Uzbekistan-306AMV” varieties						
70-70-60	220:154:110	0-2-1	850-1120	3960-4090	4.45	909
					4.61	881
70-70-60	220:132:88				4.45	908
					4.78	847
70-70-60	220:110:66				4.27	966
					4.60	881
75-75-60	220:132:88	1-2-1	790-1030	4740-4840	5.19	929
					5.28	911
75-75-60	220:110:66				4.74	1015
					5.12	936
Cabbage varieties “Sharkiya”, “Uzbekistan-133” after maize						
75-75-70	200:140:100	5-2-2	360-530	3740-3800	44.8	86
					45.7	83
75-75-70	200:120:80				50.7	75
					51.1	75
75-75-70	200:100:60				50.3	75
					51.0	75
80-80-70	200:120:80	6-3-2	290-470	4150-4180	53.5	77
					54.0	79



80-80-70	200:100:60				53.0	78
					53.3	80
Cotton varieties “Bukhara-6”, “Bukhara-8” after cabbage						
65-65-65	220:154:110	1-2-1	810-1200	3940-4030	2.85	1389
					2.89	1369
65-65-65	220:132:88				3.21	1232
					3.24	1222
65-65-65	220:110:66				3.13	1264
					3.21	1231
70-75-65	220:132:88	1-3-1	770-1040	4620-4650	3.03	1541
					3.12	1491
70-75-65	220:110:66				2.99	1563
					3.05	1524

Conclusions and recommendations

Based on research on the development of optimal agro-technologies for the effective, year round use of takyr soils with the groundwater level of 2 to 3 m and obtaining two to three crops yields per year, recommendations are as follows:

for winter wheat variety Chillaki and barley variety Bolgali, the recommended fertilizer application is N180, P108, K72 kg ha⁻¹, plant density is 220-240 plants m⁻², optimal irrigation scheduling is 80-80-70% Fc with irrigation scheme of 1-4-1 of six irrigation events, each irrigation make up - 330-520 m³ ha⁻¹, and seasonal irrigation rate ranges from 3690 to 5000 m³ ha⁻¹.



For maize varieties Uzbekistan-306AMV and Nart which were grown as a summer crop after winter wheat and barley harvest, the recommended fertilizer rate is N220P132K88 kg ha⁻¹, plant density is 65-67 thousand plants ha⁻¹, optimal irrigation scheduling is 75-75-60% Fc with irrigation scheme of 1-2-1, each irrigation event makes up from 790 to 1030 m³ ha⁻¹, seasonal irrigation ranges from 4740 to 4840 m³ ha⁻¹.

For cabbage varieties Sharkiya and Uzbekistan-133 which were grown following the maize, the recommended fertilizer application is N200P120K80 kg ha⁻¹, plant density is 45-50 thousand plants ha⁻¹, optimal irrigation scheduling is 80-80-70% Fc with irrigation scheme of 6-3-2 and eleven irrigations, each irrigation event makes up - 290-470 m³ ha⁻¹, and seasonal irrigation norms ranges from 4150 to 4180 m³ ha⁻¹.

for upland cotton varieties “Bukhara-6” and “Bukhara-8” it is recommended to apply N220P132K88 kg ha⁻¹ of mineral fertilizer, optimal irrigation scheduling is 65-65-65% Fc with irrigation scheme of (0)1-2-1 providing 3-4 irrigation events, each irrigation event makes up - 780-1200 m³ ha⁻¹, and seasonal irrigation norms make up - 3940-4030 m³ ha⁻¹.

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UDC 577.19

THE IMPORTANCE OF PISTIA IN PURIFYING RUNNING WATER.

(in the example of Andijan city, Uzbekistan)

Cholpona Kuchkarova
PhD student., Andijan Machine
Building Institute
E-mail: Cholpanoy89@mail.ru

Annotatsiya: Mazkur tadqiqot ishida “Andijon shahar Suv Oqova tozalash inshooti” aksiyadorlik jamiyatida asosiy tozalashga kelayotgan shahar kommunal oqova suvlarini biologik tozalash usullarini takomillashtirish maqsadida, yuksak suv o’simliklaridan Pistia Telezorovidni qo’llash oqova suvlarni tarkibini zararsizlantirishda samara berishi bo’yicha takliflar berilgan.

Kalit so’zlar: Biologik tozalash, oqova suv, suv o’ti, pistia, biomassa, suv inshooti

Annotation

In current article the methods of purifying of sewage grey water plants with pistia telezorovid are given. The methods of efficient ways of analyzing in laboratory conditions are highlighted. The chemical and physical features of pistia plant are given.

Key words: biological purifying, dyke, grey water, water plant, pistia, irrigation.

Introduction

President of the Republic of Uzbekistan Sh. Mirziyoyev on the improvement of the ecological situation and protection of the environment in the Republic of Uzbekistan for 2017-2021 five priority areas of development ACTION STRATEGY IN 4.3. In accordance with paragraph Increasing public utility services, construction of new wastewater networks, modern, efficient and efficient technologies step-by-



step introduction in rural areas clean drinking water of the population and to improve their accessibility.

The regular observation or control of industrial and domestic grey water should be done according the list of program sources of polluting natural environment. Nowadays the content of harmful elements in gutter and sewage grey water are increasing regularly. In its turn it brings to several serious problems.

Large scale development of different industrial branches, increasing number of urban objects for citizens, appearing new towns also increases demand pf pure drinking water. That's ways in the purpose of rational usage of drinking a lot of irrigational channels are built for field and problems of providing with pure drinking water the citizens are solving. (P. Sultonov)

Even though a lot of unique measures are taken in Uzbekistan for protecting the natural environment the most urgent problems of current day still stays building special equipment which will provide more effective ways of purifying canalization waters. It takes much time and effort the cleaning of sewage grey water from different harmful wastes. During the purifying grey water different methods are used. Such as: mechanical, physical, chemical and biological methods.

Any changes occurring in environment influences to natural conditions. The most important of all natural resources is water. The level of pollution and number of canalization grey water which flows into natural water depends on kind of tired and content of additions, stage of technological processes. Kind of substances polluting more than 150 thousand in duct water but only 250-300 of them can be neutralized or disposed by modern methods of detecting and neutralizing. (Ergashev)

Material and research methods

In cleaning of canalization grey water by biological methods often used method of enrichening duct water will green water plants (green algae). By using biological methods at about 80% of organic substances can neutralized.



Taking into account the climate conditions of Republic of Uzbekistan the level of cleaning duct water with biological methods using different water plants which have high structure can be increased for 90-99%.(Shoyoqubov R.SH)

Except that the role of water is great in different industrial enterprises, in agriculture and domestic-sanitation branches. For example, only urban citizens of Andijan city spend at about 250 liters of water in a day and it will be 0.2 km³ of pure water in a year. In current days one of the priority ways of cleaning of water is purifying by different biological methods and using them in irrigation of agricultural plants and their conditions are required by norms. For purifying duct water of manufacturing enterprises and domestic canalization waters in our research we use the water plant *Pistia stratiotes*.

The scientist R. SH. Shoyakubov and his staff created biotechnological methods of cleaning grey from pig-breeding farms, poultry farms and flax reprocessing industry by means of a plant *Pistia*. (1987). In this process, the system, biology, morphology, anatomy of the plant *Pistia* and methods of its growing, usage in economy industry. The methods of biological purifying grey waters from industrial and domestic canalization in condition of Fergana valley, especially in Andijan district were not analyzed enough. That's why the scientific research on learning grey waters from manufactured plants of Andijan district is one of the urgent problems in protection of natural environment.

Results and discussion

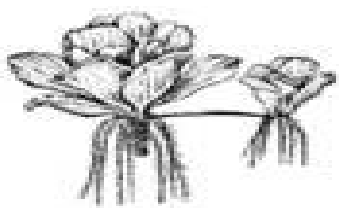
The main goal of scientific research to create the technology of growing algae plant *Pistia* in domestic canalization grey waters of Andijan city and purify it from organic and mineral substances. By means of hydrobiont living on biological water plants, microorganisms and zoo plantations in their living process produce special chemical substances which destroy pathogenetic bacteria spreading different diseases in grey waters.



Deep and surface plants on biological basins have great role except microorganisms. At the result of photosynthetic activity addition to enriching water with oxygen they also participate in dividing substance by filtering they adopt formed mineral substances and accelerate the process of purifying of grey water.(Vinberg and others).The natural ways of spreading the water algae pictia and systematic place.

Pictia refers to the to the family of water cabbage and street flowers (pictia stratiotes) and is perennial plant, floating on the surface of water and forms water wine. Pictia is one of the ancient plants. Its remains are found in the South of France and in North America. (Angler, 1924). Current time it grows in Asia, Africa, Australia and Europe(Wolf, Malayeva 1966...). The fruit of pictia are dry in the form of unicellular capsule and it has several seeds. The crust of the capsule becomes thinner and gets light brown color. At last the capsule breaks down when the seeds are ripen and go off. One part sinks in the bottom of the water basin and others attach the roots of the pictia. The full ripen seeds are brown color but unripe one are green color, seeds have long cylindrical shape and of a size of 1.5 -2.0 mm. The weight of 1000 seeds is 2.2gr. The calm period of pictia seeds in introduction period as in natural conditions are very short. In favorable conditions (when the temperature of water is 25-26 °C and enough sunlight) the seeds after going out of capsule begin sprouting and growing. The critical factor in growing of pictia has the light, as far as in dark place they will not grow even the temperature of the water is normal. The seeds of pictia are persistent to long (till 60 days) cold temperature (3-5 °C), begins growing in 14-16-days. In laboratory conditions (in aqua distillate the temperature 26-28 and especially the light is needed) the sprouting of seeds consist 72%. In botanic Parks the pictia is planted as decorative (Paramanova, 1961) and aquarium (Jdanov 1973). However biomass of pictia is used as a food for pig breeding (wolf.1969). Pictia is grown as a food for kettle of animals, grey water from domestic canalization and flax reprocessing industry, industry of producing mineral fertilizers,

biochemical plants, silk producing industry, and meat reprocessing plants city enterprises of social – domestic services. (R.Shoyoqubov) According to the opinion of some scholars the Growth only content of basic environment and kind of a water plant algae but also from the density of planted seeds of primary. The density of primary seed sprouts should be 1m^2 depending from food concentration of canalization grey water 1-3 kg on the surface of 1m^2 grey water “in separate conditions 5 kg\m wet biomass. Pictia is grown efficiently on the grey water of pig breeding and poultry breeding farms. The harvest of biomass in such conditions for 1m^2 surface of grey water is 1400 grams of green wet biomass. (R.S.Shoyaqubov .1993-1997).Following is the photo of pictia plant. (1)



At the result of multiyear scientific researches the most efficient methods of purifying of agricultural gray waters were worked out. They are pictia stratotesz, eyhoriya (azolla carolina wild).

Conclusion

The growing and multiplication of process of algae pictia from seeds in laboratory conditions in the small water basins covered surface with plastic transparent material.

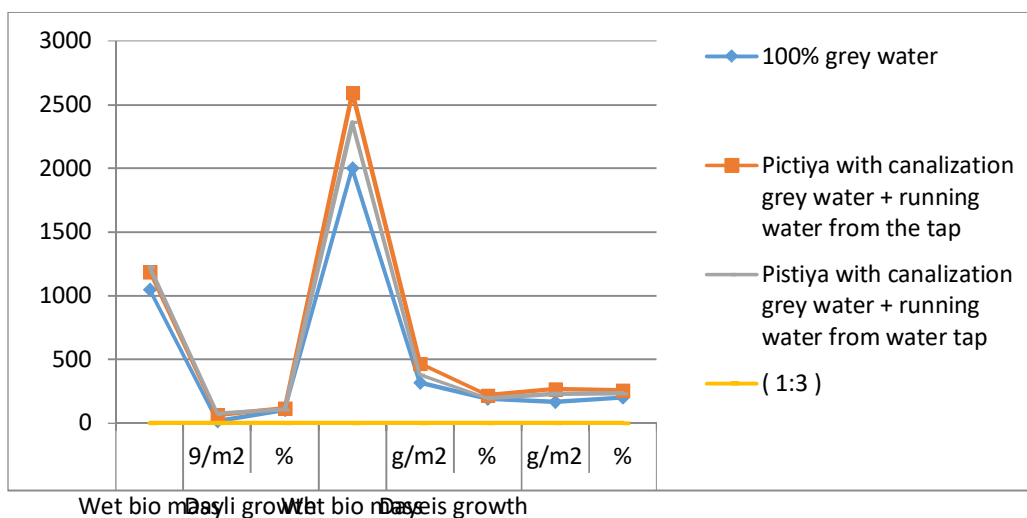
The goal of our current research is to use the water plant pictiya for purifying the grey water in different concentrations (25%, 50%, and 100%) of liquid and experimenting its growths and crop yield.

Crop yield of pictia on the canalization grey water of Andijan city.



Experiment variants	Biomass g/m ^a						The growth of mass at the end of experiment	
	In three days			At the end of research				
	Wet bio mass	Daily growth		Wet bio mass	Daily growth			
		g/m ²	%		g/m ²	%	g/m ²	%
100% grey water	1045	15,0	101,5	2000	318,3	191,3	166,7	200
Pictia with canalization grey water + running water from the tap	1190	63,3	116,3	2595	468,3	218,0	265,8	259,5
Pictia with canalization grey water + running water from water tap (1:3)	1225	75,0	107,5	2365	380,0	193,0	227,5	236,5

At the end of our experiments coming from its results we come to conclusion that the crop yield of the algae pictia was in 25% suitable habitat consists 237,5 gr/m² , in 50% grey, habitat 265,8 gr/m² , and in 100% -166,7 gr/m² and the most suitable version is-50%.



Pictia on the canalization grey water of Andijan city .(Figure 1)

An analysis it gives us confidence to say that pictia can be grown in grey domestic canalization waters of Andijan city and it gives the opportunity of purifying the grey waters. In its turn it will protect environment by saving microflora in open water basins.

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**THE BENEFITS OF UTILIZING VIRTUAL EDUCATIONAL
TECHNOLOGIES IN THE DEVELOPMENT OF STUDENTS' SKILLS
IN MICROBIOLOGY**

Bakhodirova Umida Bakhodirovna
A Master's Degree Holder in Biology, A Lecturer,
The Faculty of natural Sciences,
Department of Biology teaching methods,
Navoi State Pedagogical Institute,
Navoi, Uzbekistan
E-mail: baxodirova.83@mail.ru

Annotation: The article discusses the benefits and prospects of virtual teaching technologies in the development of necessary learners' skills in microbiology.

Key words: Biology, microbiology, internet, virtual educational technologies, computer, skill, formation, individual, differential etc.

Аннотация: В этой статье обсуждаются вопросы и преимущества пользования технологиями виртуального образования в формировании понятий у студентов по предмету микробиологии

Ключевые слова: Биология, микробиология, интернет, технологии виртуального обучения, компьютер, способность, образование, индивидуал, дифференциал.



Аннотация: Ушбу мақолада талабаларнинг микробиология фанидан кўникмаларни шакллантиришда виртуал таълим технологияларидан фойдаланиш имкониятлари, уларнинг афзалликлари ҳақида фикр юритилган.

Калит сўзлар: Биология, микробиология, интернет, виртуал таълим технологиялари, компьютер, кўникма, шакллантириш, индивидуал, дифференциал.

Introduction: Microbiology is a part of biology which explores the relations of microorganisms with the environment and its development, as well as the microorganisms' properties, diseases they cause and microorganisms in the environment [1,2]. Therefore, profound learning of this subject and the formation of learners' skills are one of the topical issues of modern microbiology education. One of the ways to solve this problem is to create virtual microbiology platform for the global Internet by providing it with virtual science-related technology and implementing it widely in microbiology instruction.

Learners can achieve high efficiency and progress in their expertise, e.g., the knowledge and skills gained in microbiology via virtual educational technologies. Virtual educational technologies, considered as the product of creativity, are extremely effective for both teachers and students to develop their professional skills in their virtual world. The source of virtual learning creates a great deal of convenience equally for instructors and students in the learning process such as saving time and making independent work [3].

Virtual educational technologies designed for the global Internet are educational and scientific information tools integrated into the global Internet in electronic form to effectively organize the instructive atmosphere and complement good teaching methods. So, the use of virtual educational technologies in microbiology is an important measurement of the knowledge and skills of HE teachers such as having access to modern information resources and communication



tools, processing the information, creating personal information space and the integration of necessary information in higher educational establishments[4].

When applying virtual educational technologies to the teaching process of microbiology, it supports not only cognitive activity, but also learners' motivational, emotional and communicative environment.

According to the results of the research, students who deal with the required microbiology concepts will achieve great efficiency in the specific pedagogical technology, specificity, system of the parties, methods, factors and pedagogical conditions. Consequently, these factors will have a positive effect on their behavior, code of conduct, mentality, mindset and the way of thinking.

So, the question arises here, how students can develop the necessary skills for microbiology? Who creates the basis for the formation of skills in microbiology?

Based on the outcomes of our research, it was found out that the students' experience in microbiology is a key factor in education and upbringing of pedagogical and technological mechanisms, as well as their experiences in solving various oral, written, creative and technical issues of microbiology. Microbiology should constantly analyze the changes in the field of education [5]. At the pedagogical higher education institutions, the following tasks and requirements are to be put in front of the professors and students in order to form and develop their required skills in microbiology: training highly qualified personnel in the field of biology, demonstrating creative abilities in the developing society; preparing and training teachers of biology, that is, getting them all involved in modern teaching and learning processes of microbiology and being prepared for new developments in certain educational institutions; forming of the professional world of the future biological teachers; involving students in the process of formation as a person in the field of education; providing students with the accurate information about the main principles of microbiology and new technologies in the field of information



technology; strengthening students' theoretical and practical knowledge of their specialties, forming skills and abilities for independent work in solving basic pedagogical and creative problems; generalizing and classifying knowledge, skills, qualifications; implementing the gained knowledge in biological processes, organizing and designing the special courses on biology; forming and developing the required skills for biology and preparing students for independent work and activity in HEIs etc[6,7].

Literature review: V.A. Krasilnikova expressed her positive opinions towards the computer technology as a means of modern communication and a new system aiming at modern didactic teaching methods which enable a new system of learning processes.

There are two ways helpful for students to develop their required skills in microbiology:

1. Individual - The study is unique to individual courses of all forms.
2. Differentiational - work in various groups based on opportunities, abilities, interests etc.

The content of individual student is simplified by the use of virtual educational technologies. Taking into account the individuality of the virtual educational technologies, the specific information should be selected in order to collect information units and form the students' content skills. Due to the fact that students have different interests it can help to find the optimum norm. The goal is revealed independently, providing additional insight into the collection of information and independent thinking in solving problems, seeking the necessary information, and presenting the results of work[8]. The program information should be oriented to the learners' ability to perceive themselves independently. Created virtual educational technologies serve not only as additional training in education, but also as the main learning tool to help further improvement of the quality of education.



Today, universities are equipped with different computer technologies connected to the global Internet network, and have the opportunity to organize lessons using virtual educational technologies and assess students' knowledge online. In order to develop students' knowledge in microbiology, these three-dimensional virtual educational technologies should be developed and introduced into biological education.

M.Kazaryan and M.A. Shakhramanyan thought that 3D modeling is the most up-to-date and promising technology and a modern tool for providing educational resources with 3D visuals [9].

Research Methodology: One of the most advanced types of innovative pedagogical technologies in higher education institutions is the introduction of 3D virtual educational technologies. Virtual education should be truly informative and developing. Introduction of 3D systematic virtual educational technologies in microbiology is a significant tool in building students' skills.

At the same time, modern computer technologies cover all aspects of human activity, including microbiology, and have contributed to modern education. One of these modern teaching methods is the three-dimensional virtual educational technology, with the following advantages: positive learning motivation; rational organization of the educational process; formation of independent research; effective organization of students' ongoing, mid-term and final assessments; increase the interest of students towards the teaching process[8].

The scientific-methodological data on microbiology are learned independently, if necessary, consulted with teachers and get acquainted with the results of individual knowledge. The use of virtual educational technologies does not imply writing, but it teaches students to explore different objects, understand the principles of process overviews, search and work with relevant information.



Students' information accepted through virtual educational technologies depends on students' responses and reactions. High-efficiency can be achieved by providing students with the necessary information without overloading it. In this way, a new feature of virtual educational technologies appears - the ability of a student to accept it individually. The key to creating it is to unite the support and make sure that students receive the information from the source. Virtual educational technologies between a student and a subject create an active "dialogue". The type, method and content should be relevant to the individual needs and characteristics of every student[10].

The most important task of virtual educational technology in microbiology is to create interactive scientific-methodical materials, which will contribute to the effectiveness of the learning process. The use of virtual science technology in this subject is a new stage in the use of computers for today's educational and training systems, therefore modern educational platforms for traditional and distance learning systems have been created and used. This creates enormous opportunities for independent learning of biology, as well as arranging effective communication between learners in the field.

Virtual educational technologies include didactic, technical, and organizational considerations, enabling the diversification of infinite pedagogical effects, as they involve the transmission of various types of electronic information (images, drawings, tables, diagrams, audio and video files, virtual presentations).

The most significant task of the teaching staff of HEIs is to form students' skills in microbiology. For students, educational resources on the global online education platform can be packed with graphics, animations, pictures, sound effects, and text items. In other words, the platform of virtual learning reflects the combination of different means of information united in one content. Sharing or merging of texts, graphics, video, audio presentations enable the transmission of



educational information in the most explicit and easy-to-understand format. The presentation provides motivation, communication skills, new knowledge and skills[8].

One of the ways in which microbiology can help shape students' skills is through the use of independent learning. The use of virtual educational platforms, which is placed on the global Internet network, is a good way to create independent learning. One of the vital aspects of networking is that students monitor their personal electronic portfolio reflecting the educational resources as a forum for their independent work and can make timely pedagogical changes.

Based on the virtual educational technologies, the student-oriented education is provided by day-to-day faculty or independent learning system, and designed to produce different forms of education, based on a well-defined curriculum, independent learning process which is carried out under the guidance of teachers.

Conclusion: In summary, in the pedagogical higher education institutions, the importance of microbiology education and the educational potential of students are enormous. In the microbiology lessons, students will be able to develop a science-based skill on the basis of virtual educational technologies, their diversity in nature, their role in the food industry, agriculture, pharmaceuticals, medicine, their proteins, physiological active substances, enzymes, vitamins and various organic substances etc.

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EXPERIMENTAL INVESTIGATION OF THE THERMOPHYSICAL CHARACTERISTICS OF THE MELATIC MEAT

Iskandarov Zafar
Doctor of Technical Sciences,
Professor of Tashkent State
Agrarian University
Email:zafarisk@mail.ru

Abdieva Gulmira
PhD student of Tashkent State
Agrarian University

Saidkhujaeva Nafisa
Docent of Tashkent Institute of Irrigation
and agriculture mechanization engineers
e-mail:nafisa_said@mail.ru

KarimullaevaMarziya
Assistant of Nukus branch of Tashkent
State Agrarian University

Matyakubov Maqsad
undergraduate student in Tashkent
State Agrarian University

Annotatsiya: Ushbu maqolada qovunlarni issiqlik-fizik hossalarni aniqlash bo'yicha tajriba sinovlarning ba'zi natijalari keltirilgan. 20⁰C dan 70⁰C gacha bo'lgan harorat diapazonidagi turli navli qovunlar etining issiqlik-fizik hossalari aniqlangan. Aniqlanishicha, issiqlik o'tkazuvchanlik va harorat o'tkazuvchanlik harorat ortib borishi mobaynida deyarli chiziqli qonuniyatlar asosida o'zgaradi. Issiqlik o'tkazuvchanlik va harorat o'tkazuvchanlik koeffitsientlari uchun empirik (tajribaga



asoslangan) ifodalar keltirilgan. Ushbu ma'lumotlar qovun qoqisini ishlab chiqarishda quritish uskunalarini issiqlik-texnik hisobini bajarishda foydali bo'ladi.

Kalit so'zlar: qovun, harorat, koeffitsientlari, issiqlik-fizik, tajriba, tadqiqot, .

Аннотация: В данной статье приведены некоторые результаты экспериментальных исследований теплофизических характеристик мякоти дыни. Определены теплофизические характеристики мякоти дынь разных сортов в диапазоне температур от 20° до 70 °С. Установлено что теплопроводность и температуропроводность увеличивается с ростом температуры почти по линейным законам. Получены эмпирические выражения для коэффициентов теплопроводности и температуропроводности. Эти данные будут полезны при теплотехническом расчете сушильных установок при производстве вяленой дыни.

Ключевые слова: дыня, температура, коэффициент, теплофизик, исследование, эксперимент.

Abstract: This article presents some results of experimental studies of the thermophysical characteristics of melon pulp. The thermophysical characteristics of the pulp of melons of different varieties in the temperature range from 20 ° to 70 °C are determined. It has been established that thermal conductivity and thermal diffusivity increases with increasing temperature almost linearly. Empirical expressions for the coefficients of thermal conductivity and thermal diffusivity are obtained. These data will be useful in the thermal calculation of drying installations in the production of dried melon.

Key words: melon, temperature, coefficient, thermophysical, investigation, experiment.

Introduction: The thermophysical characteristics of the melon pulp characterize its heat storage capacity, the inertia of the temperature field distribution during heating,



and has a significant impact on the dehydration process. Knowledge of the thermophysical characteristics of the melon is necessary for analyzing the movement of heat and moisture inside the pulp and when choosing the optimal drying conditions. To calculate the heat and mass transfer process, generalize the results in the criterial form and mathematical modeling of the melon pulp drying process, it is necessary to have real data on its thermal conductivity (λ), thermal diffusivity (α), heat capacity (C) and density (ρ).

The object and methodology of research: The object of the study are some varieties of Karakalpak melons recommended for drying: Ich-kyzil, Non-gusht, Shakar-palak, Ak-Kaun [1].

The method for studying the thermophysical characteristics of the pulp is based on the use of an integrated rapid method developed by A.S. Panin and V.D.Skverchak and which allows to obtain the values of the thermophysical characteristics in the process of heating the samples [2].

The theoretical basis of the method is the solution of the boundary-value problem of heating a spherical solid placed in the test medium. This method is universal and makes it possible to obtain reliable data at once on the three characteristics of the material under investigation: density (ρ), thermal diffusivity (α) and heat capacity (C).

The express method is based on the use of the heat-inducing properties of a thermocouple sensor, structurally made in the form of a chromel-copelled pointed probe. In the course of the experiment, the thermocouple sensor at $t = 0$ °C quickly fits into the material under study and records its heating over time using a secondary recording device (automatic millivoltmeter with color indication of readings).

Practical implementation: To implement this method, we have made an experimental laboratory setup that provides a quick entry of a thermocouple sensor into a melon pulp sample under investigation (Fig. 1).

The experimental laboratory setup consists of a table-top 2 installed on platform 1, under which a heat-insulated container 3 is placed, where the sample of melon pulp 4 in volume of 3 cm³ is placed. The container is heated by an induction coil 5 through a laboratory autotransformer 6 and has an external thermal insulation coating 7. A container 8 with thermal insulation is located on the table top and is equipped along the axis with a pipe 9 for passing the thermocouple sensor 10. The latter is connected to an automatic millivoltmeter 11, the scale of which is otted in degrees Celsius (°C).

The principle of operation is as follows. The melon pulp sample is placed in the container 3 and the toggle switch 12 switches on the general power supply of the installation, then locking the clamp 13 and the thermocouple sensor 10 under the action of the load 14 rush down the pipe 15 and when the edge of the central pipe 9 reaches, the contactors 16 of the heating circuit of the thermally insulated container 3 turn on. the motion sensor breaks through the paper partitions 17 and pierces the melon sample under investigation to a certain depth. At the moment of sensor insertion, the cold ends of thermocouples are thermostated, since they were located in pipe 15, which is in water with melting ice. As the sample warms up, the millivoltmeter starts to show the temperature change over time.

Thus, four samples of melons in five repetitions were examined.

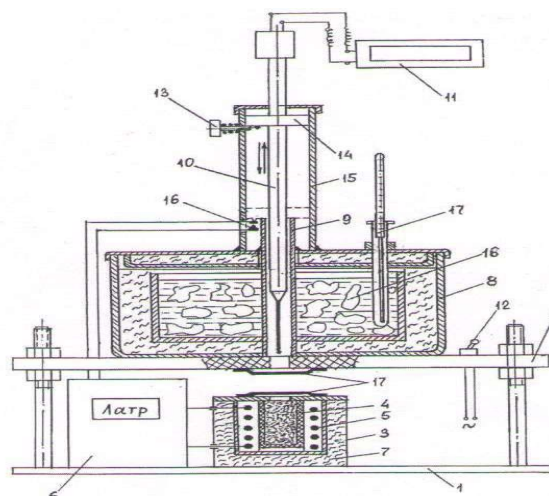




Fig. one. Experimental laboratory setup for determining the thermophysical characteristics of the melon pulp.

1-platform; 2-table top; 3-insulated container; 4-investigated sample melon pulp volume of 3 cm³; 5-induction coil; 6-laboratory autotransformer; 7-heat-insulating coating; 8-tank with thermal insulation; 9-pipe for the passage of the thermocouple sensor;

10- thermocouple sensor; 11-automatic millivoltmeter; 12 toggle switch; 13-clamp; 14-load; 15-pipe; 16-contactors; 17-paper dividers 17.

Results and discussion:The processing of the obtained experimental data and the analytical calculation of the thermophysical characteristics were carried out according to the method described in [2], using the least squares method [3].

The values of thermal conductivity λ , thermal diffusivity α and heat capacity C for four types of melons in the temperature range 20 °C-80 °C were experimentally determined and are summarized in Table 1.

Since the obtained calculated values of thermophysical characteristics for melons with white pulp (Non-Gusht, Shakar-Palak and Ak-Kaun) differ slightly, for these sorts of melons one can generalize the dependence of the thermophysical characteristics on temperature in the form of curves shown in Figure 2. At this sample was dried to standard humidity $W = 20\text{-}21\%$.

Table 1. Estimates of the coefficients α , λ and C for different types of melons

Estimated characteristics	Pulp of melons	Range of heating temperature, °C						
		20	30	40	50	60	70	80
Coefficient of thermal conductivity $\lambda, \left(\frac{\text{Вт}}{\text{м} \times \text{К}}\right)$	Ich-kyzil	0,085	0,09	0,098	0,011	0,012	0,013	0,13
	Non-gusht,	0,08	0,09	0,095	0,0108	0,0113	0,0125	0,13
	Shakar-palak,	0,082	0,084	0,088	0,011	0,0115	0,0126	0,1
	Ak-Kaun	0,081	0,083	0,085	0,011	0,0116	0,013	0,12
Thermal diffusivity,	Ich-kyzil	0,7	0,74	0,78	0,86	0,92	1,07	1,08
	Non-gusht,	0,7	0,75	0,8	0,87	0,9	1,05	1,17

$\alpha, (\text{m}^2 \times 10^{-7} / \text{c}^2)$	Shakar-palak,	0,695	0,76	0,79	0,88	0,91	1,055	1,172
	Ak-Kaun	0,67	0,765	0,76	0,87	0,9	1,04	1,18
Heat capacity coefficient,	Ich-kyzil	0,12	0,195	0,96	0,1	0,1	0,098	0,095
$C, (\frac{\text{kJ}}{\text{m}^3 \times \text{K}})$	Non-gusht,	0,1125	0,12	0,094	0,1	0,098	0,097	0,097
	Shakar-palak,	0,113	0,125	0,095	0,11	0,11	0,1	0,1
	Ak-Kaun	0,115	0,12	0,092	0,95	0,95	0,92	0,92

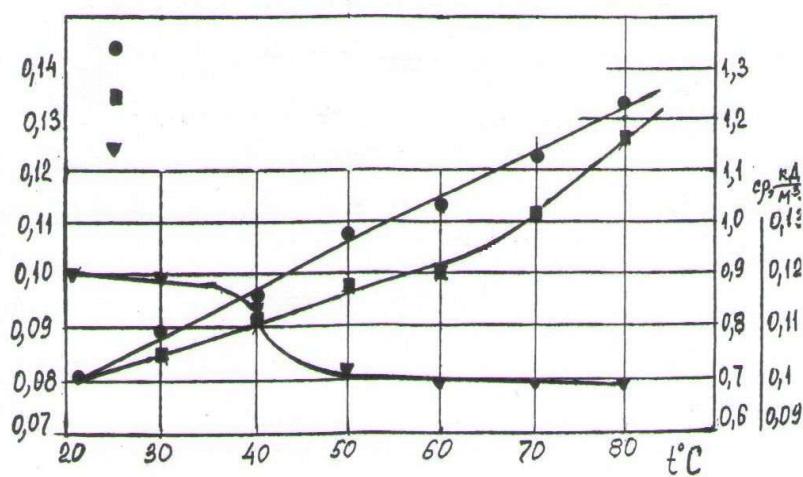


Fig.2. The average dependence of the thermophysical characteristics of melon pulp varieties Ak-Kaun, Non-Gusht and Shakar-Palak.

● – thermal diffusivity $\alpha, (\text{m}^2 \times 10^{-7} / \text{c}^2)$

■ – coefficient of thermal conductivity $\lambda, (\frac{\text{BT}}{\text{M} \times \text{K}})$

▼ - volumetric coefficient of heat capacity (C), $(\frac{\text{kJ}}{\text{M}^3 \times \text{K}})$

Analysis of the curves shows that with heating the samples up to 600 C, the values of α and λ linearly increase, which can be approximated by the following functions:

$$\lambda = 0,072 + [(t-20) 7,24 \times 10^{-4}] \pm 2 \times 10^{-3} \quad (1)$$

and

$$\alpha = [6,36 - (t-20) \times 0,107] \times 10^{-8} \quad (2)$$



The volumetric coefficient of heat capacity at temperatures $t = 20 \dots 40^{\circ}\text{C}$ varies slightly and equals $c_p = 100\text{-}1150 \text{ KJ} / \text{m}^3 \text{ K}$, decreases sharply with increasing temperature from 40°C to 55°C and keeps to 80°C linearly, i.e. $c_p = 1000 \text{ KJ} / \text{m}^3 \text{ K}$.

Thus, it can be stated that the thermophysical characteristics of the pulp for many melon varieties depend on the heating temperature, which must be taken into account when carrying out the drying process.

Conclusion: 1. The thermophysical characteristics of the pulp of melons of different varieties are determined in the temperature range from 20°C to 70°C . It has been established that thermal conductivity and thermal diffusivity increases with increasing temperature almost linearly.

2. Empirical expressions for the coefficients of thermal conductivity and thermal diffusivity are obtained.

3. These data will be useful in the calculation of heat drying plants in the production of dried melon.

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ACTUAL PROBLEMS OF MEDICINE

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THE IMPORTANCE OF INTERACTIVE TEACHING METHODS IN IMPROVING THE LEVEL OF CLINICAL KNOWLEDGE OF STUDENTS

Mirzaeva Dilorom Boltaevna
assistant, department of
propaedeutics of internal diseases,
Bukhara State Medical Institute,
Bukhara, Uzbekistan,
Email: dilorommirzaeva@mail.ru

Abdullaeva Umida Kurbanovna
Junior researcher, department of
propaedeutics of internal diseases,
Bukhara State Medical Institute,
Bukhara, Uzbekistan,
Email: kardioas1@mail.ru

Boboeva Rano Rakhimovna Junior
researcher, Department of ENT,
dentistry, ophthalmology, Bukhara
State Medical Institute, Bukhara,
Uzbekistan,
Email: ranoboboeva@mail.ru

Annotatsiya. Ushbu maqola ichki kasalliklar propedevtikasi bo'yicha "miya bo'roni" va "akademik polemika" ni o'qitishning interaktiv usullaridan foydalanish natijalarini taqdim etadi. "Miya bo'roni" ni o'rganishning interaktiv yo'li asosan I (tanishish) va II (nusxa) bilim darajasini yaxshilashga yordam berdi. Shu bilan birga, "akademik polemika" ta'lim o'yinlari orqali erishilgan bilimlar juda ham mukammal va III (bilim-malaka), hatto IV (bilim-transformatsiya) darajalariga mos. O'quv-klinik o'yin



davomida "akademik polemika" analitik fikrlashning salohiyatini ancha tezroq kuchaytirdi, bu esa ushbu o'qitish uslubining muhim va ayni paytda o'ziga xos ustunligi hisoblanadi.

Kalit so'zlar: o'rgatish, interaktiv usul, miya bo'roni, akademik polemika, klinik bilimlar

Аннотация. В настоящей работе приводятся результаты применения интерактивных способов обучения «мозговой штурм» и «академическая полемика» по предмету пропедевтики внутренних болезней. Интерактивный способ обучения «мозговой штурм» способствовал преимущественному совершенствованию I(знакомство) и II (копия) уровней знания. В то же время знания, полученные с помощью учебной игры «академическая полемика», были гораздо более совершенными и соответствовали – III (знание-умение), а то и IV (знание - трансформация) уровням. Примечательным является то, что по ходу проведения учебно-клинической игры- «академическая полемика» гораздо быстрее укреплял потенциал аналитического мышления, что является важным и в то же время отличительным превосходством данного способа обучения.

Ключевые слова: обучение, интерактивный метод, мозговой штурм, академическая полемика, клиническое знание

Abstract. The article discusses the results of application of interactive ways of training «brain storming» and «the academic polemic» in a subject of propaedeutic of internal illnesses are resulted. The interactive way of training «brain storming» promoted primary perfection I (acquaintance) and II (copy) levels of knowledge. At the same time the knowledge received by means of educational game «the academic polemic», was much more perfect and corresponded - III (knowledge-ability), and even IV (knowledge - transformation) to levels. That on a course of carrying out of educational-clinical game - «the academic polemic» the potential of analytical



thinking was much fast integrated that is important and at the same time distinctive superiority of the given way of training is remarkable.

Key words: education, an interactive method, brain storming, the academic polemic, clinical knowledge

Introduction. A traceable new development in streamlining the learning process is undoubtedly related to the growing interest of teachers in the forms of interactive learning, which play the role of a ladder conducive to the progression of students' knowledge potential (6, 7, 8). The interactive teaching methods (ITM) include those that require students to independently extract, process and implement the information presented in a didactic form. This type of training, in contrast to traditional ones, significantly enriches the bank of knowledge with a simultaneous increase in the potential of creative thinking of students (9).

It is established that the used interactive learning methods have a different impact on the formation of levels of knowledge. The long-term goal-oriented work of the institute's team to study the strength of learning and skills of students formed in the learning process and their results, as well as the desire to make teaching interesting, rich and, most importantly, effective, change the training methodology, introduce a special style of pedagogical communication student development and optimize the learning process (11).

Literature review. Interactive forms of education can be divided into imitational and non-imitational. Simulation methods, which include educational clinical games (ECG), immerse students in an atmosphere very close to the practical work of a doctor. Moreover, they form and maintain the emotional intensity of the participants and increase the sense of responsibility for the fate of the patient, at least to her intellectual level. ECG allow systematic monitoring of the improvement in the quality of students' training and play the role of a barrier to their passage to the bedside of the patient, allowing only trained students to pass to patients (1, 2, 4, 5).



Given the above, this work was done, the purpose of which was a comparative assessment of the level of clinical knowledge of students acquired through interactive forms of training "brainstorming" and "academic controversy."

It should be pointed out that the "three-step interview" ultrashort study caused a heightened interest among students. The knowledge gained through this type of educational game was much more perfect and corresponded to III (knowledge - ability), and even IV (knowledge - transformation) levels. More than half of the participants in the game clearly formed the elements of III (knowledge - ability), and the rest of the IV level (knowledge-creativity) knowledge. At the same time, the bank of clinical thinking was enriched much faster, which is an important and distinctive superiority of this method of education.

Research Methodology. For the implementation of the tasks in practical classes on the subject of propedeutics of internal diseases (PID), the ITM-ECG ("academic controversy" and "brainstorming") were purposefully used for a number of years. The control served as the rating indicators of students, obtained using traditional methods of assessing knowledge. Groups of students involved in the study were representative of the number of students, stages and types of knowledge assessment, as well as their individual rating. The level of knowledge was systematically tested from assignments in the course of ongoing, intermediate and final tests. An interactive brainstorming game was used in a modified version, the essence of which was as follows: questions were divided according to the level of complexity into easy (L1), medium (L2) and complex (L3). Their ratio in the general bank of questions was 1: 2: 1. The magnitude of points allocated and the time available for the correct answers depended on the degree of complexity of the question and increased as the latter grew.

The value of brainstorming is that it unites the group. Each participant is given to feel that his proposal is worth it to write. This allows you to turn a solution to a



problem not into a competition (when participants claim that their own ideas are accepted), but into teamwork, when the main opponent becomes the problem itself and not another member of the group.

Analysis and results. In the course of the research the following results were obtained. It has been established that, in contrast to traditional ones, ICG generally more effectively influences the process of mastering a complex of clinical knowledge. In addition, they clearly differed in the individuality of the nature of the action on the formation of well-known levels of knowledge. So, if traditional teaching methods have influenced the development of mainly primary I (knowledge-acquaintance) and II (knowledge-copy) levels, then ICG has influenced more advanced III (knowledge-ability) and IV (knowledge-creativity) their forms.

The classes conducted with the use of the brainstorming training game were distinguished by the high activity of the participants, which is partly explained by the condition of its conduct, requiring the indispensable participation of all members of the group. At the same time, the possibilities of this game in terms of improving certain levels of knowledge turned out to be far unequal. According to the results of the ICG, “brainstorming” contributed to the improvement of the I (acquaintance) and II (copy) levels of knowledge. The formation of more advanced levels (W - skill and IV - creativity), it is not particularly affected. The latter significantly limits the use of brainstorming training games. To achieve the desired result, the choice of this educational game must be differentiated according to the specifics of a particular occupation. For the level of knowledge acquired with its help, especially from the private section of the subject of the propaedeutic of internal diseases, may end up being low.

The results obtained from the use of ultra short disciplines, “academic controversy” turned out to be somewhat excellent. This ITM has contributed to a significant increase in the baggage of both theoretical and practical knowledge of



students, maximum understanding of the meaning of the doctor's dialogue with the patient and the development of clinical thinking, as well as the ability to use theoretical knowledge in a timely manner. practical activities. It should be emphasized that for the successful conduct of an "academic controversy" a sufficiently large amount of knowledge in fundamental medical disciplines is required, as well as possession of a wide range of manipulations. This was obliged by the condition of collecting subjective and objective information, which is closest to the real clinical situation.

Another positive quality of the academic game "academic controversy" was also traced. Among the participants, the "players," the number of individuals with physical research methods increased steadily, and most importantly, the quality of their implementation improved, which corresponded to the goals and objectives of the subject of propaedeutic therapy (3.10). The only drawback that was noted is the lack of active participation of all members of the group.

The department developed scenarios of various clinical situations with a clear definition of the range of responsibilities of each participant in the educational game. Along with this, special conditions have been created with the equipment necessary for conducting an ultrashort pulse. The teacher keeps an eye on the course of the educational game, controls every action of the participant. In cases of tolerance slip meticulously corrects it. At the request of the situation, he often brings additional information that complicates the clinical situation. In the course of the participant's educational game, it is allowed to discuss the role of each symptom in the diagnosis of this disease, the plan for the upcoming examination of such patients. Summing up the lesson, the teacher gives an objective assessment of the actions of each participant in the game, comments on the answers, corrects the compiled survey plan. Speaking as an arbitrator, he dwells in detail on the admitted miscalculations and failures of students - "players" and advises ways to eliminate them.



On the basis of the conducted research, it can be concluded that the ISO “brainstorming” and “academic controversy” do not equally influence the formation of individual levels of knowledge. So, if the first of them contributed to the predominant growth of I and II, then the second - III and IV levels of knowledge. Taking into account the latter, the choice of the educational game method should be carried out in accordance with the goal and objective of each class, we consider it expedient to use the interactive game “brainstorming” in the course of learning the general classes, and the “academic debate” of the special part of the PID.

Thus, the use of USPs in the process of teaching the subject of internal disease propaedeutics substantially develops the baggage of clinical knowledge while simultaneously increasing the cognitive ability of students, gives them creative independence, expands and strengthens the range of acquired practical skills. The main thing is that they are not perceived by students. All this ultimately contributes to the assimilation of new theoretical and practical knowledge, improves the quality of training of future general practitioners.

Conclusion. 1. Interactive ways of learning "brainstorming" and "academic controversy" differentially affect the formation of individual levels of knowledge.
2. The choice of the type of educational game should be carried out depending on the specific topic of practical training.
3. The interactive game “brainstorming” turned out to be more effective in the course of learning the general, “academic controversy” - a special part of the subject of PID.

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ACTUAL PROBLEMS OF HISTORY AND PHILOSOPHY

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SPIRITUAL AND MORAL DEVELOPMENT OF THE PERSON IN MODERN WORLD

Absattorov Bakhtiyor Mamarasulovich

Researcher, Navoi State Pedagogical Institute,

E-mail: mr.absattorov@mail.ru

Аннотация: Мазкур мақолада инсоннинг ахлоқий-маънавий фазилатларини юксалтиришга қаратилган мезонлар, таълим ва тарбиянинг шакллари ва методларини қўллаган ҳолда мавжуд ахлоқий салоҳиятдан унумли фойдаланиш ва уни янги мазмун билан бойитишни талаб этувчи инсоннинг ахлоқий-маънавий ривожланиши масалалари кўриб чиқилган.

Калит сўзлар: ахлоқ, маънавият, шахс ривожланиши.

Аннотация: В данной статье рассмотрены вопросы духовного развития личности человека, которые требуют использовать весь имеющийся этический потенциал, обогатить его новым содержанием, применяя такие формы и методы обучения и воспитания, которые бы создавали внутренние предпосылки для саморазвития, прежде всего нравственных и духовных качеств человека.

Ключевые слова: нравственность, духовность, развитие личности.

Annatation: The article deals with the issues of the spiritual development of the person's personality are considered, which require the use of all available ethical potential, enrich it with new content, using such forms and methods of education and upbringing that would create internal prerequisites for self-development, above all moral and spiritual qualities of a person.

Keywords: morality, spirituality, personality development.



Introduction: Today, the socio-moral portrait of a modern young man has completely new characteristics, strikingly different from those even ten years ago. Everything becomes more clear in this portrait of the features of both moral and immoral - the features, in fact, that filled in the child from an early age by all of its surroundings: the society, parents, and educators. And it's no secret that sometimes in this portrait there is not the highest, but the lower nature of man with its unbridled emotions, conceit, cruelty, selfishness.

The modern problems that we are now reaping so abundantly (ecological, economic, and social, etc.) - in fact, all have roots in the so-called human factor. It is no longer necessary to prove this, because all of them are recognized (science, philosophy, and religion) as the boundary of one global spiritual and ecological crisis.

At present, most scientists realize and admit that upbringing and development of the spiritual and moral culture of teachers and students should be given priority.

It should be emphasized that we are not sufficiently engaged in the special preparation of a teacher of secondary school, as well as a teacher of higher school, for a purposeful and systematic spiritual and moral upbringing of students, which is one of the acute problems not only of the education system but also of modern society.

It is recognized today that the search for a solution to the whole complex of these problems lies on the path of spiritual revival of man and society. In this regard, I would like to emphasize that the future of the Russian youth in general, in our view, is directly related to the success or failure of this search.

The problem of the spiritual and moral formation of a modern young man named in the title is designated as socio-pedagogical not in vain. In the modern world, the social impact on the younger generation, in comparison with the pedagogical one, in many cases turns out to be dominant. We all know the content



and intensity of such an impact. It seems that many are aware of the direction of such an impact: the strengthening and nourishment of the same inferior (animal) nature of man.

Literature review: Youth is called by psychologists the age of love. For love in adolescence is characterized by the idealization of the object of love, which in itself is even good. However, often young people take interest for love, and sometimes even just a sexual attraction, which they want to immediately satisfy.

So, very often today we can face the substitution of the word "love" for the word "sex" which is artificially introduced into our speech. But "sex" in a meaningful translation means: carnal lust, lust, fornication, sin. It is illiterate and not harmless for the meaning to confuse it with the word "love". "To love" in Russian means a feeling that has not a carnal, but a spiritual beginning. And it enters into such a semantic range: regret, reverence, worship, etc. Those who cease to understand this, gradually degenerate spiritually, imperceptibly "become human" in their attitude to love and to life, "the doctor of philological sciences V. Troitsky states this with great pain [6, p. 15].

According to the results of the research of the Scientific Center of Mental Health of the RAMS on the formation of maternal behavior and its influence on the mental development of young children - from the pregnancy stage to the child's age of 4 years - the behavior of only a small part of mothers can be called truly maternal.

Unfortunately, the amount of aggression towards children is such that one can confidently say that society is going through a critical period. There is a mass humiliation and desecration of the purest and holy that is given to man, - Love, Beauty, Truth.



"... Shamelessness and ruthlessness fundamentally undermine his moral character ... Shame and conscience speak different languages and on different occasions, but the meaning of what they say is the same: it's not good, it should not, it's unworthy" [5, Part 1, Ch. 1. II, IV, VI].

Currently, biological, psychological reasons, leading to a sharp decrease in the age of entering into intimate relations, were supplemented by social ones, greatly exacerbating this always existed for the youth problem. A significant role in this was played by the development of the media and communications. As a result, a flood of low-quality products that propagate violence, crime, etc., falls upon children.

The cultural progress of a society is measured and determined by the scale of the human personality that it creates, and therefore culture must contain the true standards of health and beauty. Modern society, unfortunately, is full of various negative and harmful cultural phenomena.

Ethical and aesthetic ideal is affirmed over time by one or another peoples, ethnoses, classes. It can be imagined as a certain standard of beauty and health, to which people aspire.

Research Methodology: According to the WHO Constitution, health is a state of complete physical, spiritual and social well-being, and not only the absence of disease and physical defects. In this regard, the role of spirituality is evident for the formation of a prosperous society, consisting of healthy individuals.

The given problem is social. However, it is also pedagogical, since it is the educator who is primarily called upon to "sow the reasonable, eternal, good".

The formulation of the spiritual and moral formation of man implies the synthesis of two components that are integral to human formation and development: spirituality and morality, each of which has its own characteristics. In addition, the



isolation and definition of the spiritual component to the forefront is due to the dominant role in the formation of man by man, the formation of spirituality.

The anthropological approach, which takes its place more and more confidently in the methodology of pedagogical science, provides for the isolation of system-forming internal characteristics of a person that determine its essential nature and qualitative uniqueness.

Hence, the structure of man is the peculiar triune of his biological, social and spiritual principles, or, in the language of Christian anthropology, the body, soul and spirit. Recognition of the spiritual principle in man as a modern pedagogical science makes it possible to look at both on the person himself and on the tasks of his upbringing and education, in particular, and on the problem of the spiritual and moral formation of man.

The study, analysis and subsequent synthesis of knowledge on this issue (in works on philosophy, religion, in the heritage of Christian ascetics and mystics of the East, spiritual teachings and works of modern science) make it possible to conclude that spirituality and morality are non-identical phenomena.

Morality in the encyclopedic pedagogical dictionary is treated as a term used, as a rule, as a synonym for the term morality, less often - ethics. Just as the concept of "ethics" in Greek, "morality" in Latin, the Russian word "morality" etymologically goes back to the word "temper" (character) and is lexically fixed in the Dictionary of the Academy of the Russian (1793).

In general, it can be said that morality characterizes a person's personality, its social essence. To some extent, it can be attributed to the human soul, which manifests itself in the physical world through our personality. And if we define a kind of spatial orientation of morality, then these are "horizontal" connections, that is,



social ones. Morality is a kind of measure of acceptance, appropriation of social norms and values by a person, and therefore it can be raised to a certain extent.

Spirituality is manifestation of higher human feelings, which sometimes cannot be explained or, being explainable, lose their uniqueness, their secret. Love for one's neighbor, love for the teacher, love for what you do, all are manifestations, and hence the development of spirituality.

Views on the essence of this concept by representatives of different spheres of knowledge (philosophy, science and religion) are largely identical. Spirituality is inextricably linked with the spirit of man; with the action of the Holy Spirit, with Grace; with the finest, supreme energy in man; with the consciousness of man; with openness and kindling of the heart and spirit; with the divine energy of Love.

Consonant with these views and thoughts of I.A. Ilyina: "... Speaking of spirituality or spirit, one should not imagine a kind of impenetrable metaphysics or an intricately-incomprehensible philosophy ... The spirit is neither a ghost nor an illusion. He is a real reality, and moreover a precious reality, - the most precious of all ... Spirit is the breath of God in nature and man; the inner light in all existing things; the beginning, in all life-giving, comprehending and purifying. He sanctifies life so that it does not turn into a dead, unbearable desert, into a chaos of dust and into a whirlwind of anger; but he also informs all beings of the power necessary to join the spirit and become spiritual "[3, v. 3].

Spirituality is often seen as a state of moral experience, manifestation of moral qualities.

When it comes to improving the education of modern youth, to developing the spirituality of the individual it is required to use all available ethical potential, enrich



it with new ethical content, using such forms and methods of education and upbringing that would create internal prerequisites for self-development, primarily moral and spiritual qualities rights.

Conclusion : The ascent of man to spirituality, although being difficult, but a real task, if it is purposefully solved with our youth by: deep reflection on the ultimate destiny of man; education of cordiality, conscientiousness, responsiveness, stimulation in our children and disciples of good-heartedness in deeds and thoughts; encourage self-awareness, self-improvement, self-development, self-realization; overcoming frivolous, superficial, one-dimensional thinking; the development of a sense of inner freedom and, at the same time, responsibility; clarification and display of false values, protection from bad taste, vulgarity and ignorance; showing the achievements of science and technology through the prism of humane goals and values; admission to spirituality through admission to art in all its forms and forms at all stages of education and upbringing. [2,7]

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SOME REMARKS ON THE MONUMENTS OF THE PREHISTORIC COMMUNIST SYSTEM IN THE KHOREZM OAZIS

Allaberganov Ollabergan Arslanbekovich

Second-year master student

Urgench state university

The faculty of History

E-mail: ollabergan.allaberganov@mail.ru

Annotation. This article covers the history of archaeological monuments of Khorezm oasis in the territory of the Khorezm oasis. It was also mentioned that AI Terenozhkin and S. Tolstov, who made a great contribution to archaeological study of the monuments of the ancient complex of the Khorezm region.

Key words: Khorezm, archaeological monuments, the primitive collective system, the Stone Age, Bronze Age and Iron Age, Ancient Society, Ancient Khorezm

Annotatsiya: Ushbu maqolada Xorazm vohasi hududidagi ibtidoiy jamoa tuzumi davri arxeologik yodgorliklarining o'rganilish tarixi yoritilgan bo'lib. Xorazm vohasidagi ibtidoiy jamoa tuzumi davri yodgorliklarining arxeologik jihatdan o'rganilishida katta hissa qo'shgan A.I.Terenojkin va S.P.Tolstovlarning faoliyatiga ham alohida to'xtalangan.

Kalit so'zlar: Xorazm, arxeologik yodgorliklar, Ibtidoiy jamoa tuzumi, Tosh, Bronza va Temir asri, Qadimgi jamiyat, Qadimgi Xorazm

Аннотация. В данной статье освещается история археологических памятников Хорезмского оазиса на территории Хорезмского оазиса, а также упоминались А.И. Тереножкин и С. Толстов, которые внесли большой вклад в археологическое изучение памятников древнего комплекса Хорезмской области.



Ключевые слова: Хорезм, археологические памятники, первобытная коллективная система, каменный век, бронзовый век и железный век, древнее общество, древний хорезм.

INTRODUCTION: It covers primitive, the primitive collective system, from the time when mankind began to appear, began a great historical era in the primeval gala, the seed, the seed system, the collapse of the seed system, the inheritance of the inheritance. The primitive collective regime is determined by the simplicity of labor tools and, by reason of their low production capability, relative to all subsequent periods. At the time of the primitive communal system, people had very simple weapons made of stone, wood, bone, and other items. They have accumulated what they have on the ground, and have been hunting and living with them. During this period, the "Stone, Bronze Age and Iron Age" systems were developed, based on the preparation of all the labor weapon needed for their own needs from any kind of raw materials. Lewis Henry Morgan, an American scientist, described the primitive community order in his Old Manuscript (1977) in more detail. The Khorezm archaeological expedition (archeological-ethnographic expedition since 1945) was a great event in the Central Asian scientific life, and this process took place in the 30s of the last century, in the archeological study of the monumental monuments of the primitive collective system of Khorezm, was closely linked with the purpose of gathering new archeological data in solving the problem of studying the history of the people of the region.

Literature Review: The work of the Khorezm expedition started with the first archeological researches. These works were carried out by AI Terenozhin in 1937. Over the next three years, the world's archeology has been invented by famous monuments - Jonbos 4, Kuzaliqir, Jonbosqal, Taqrakal, and so on (Neolith, Bronze, Iron Age, antique period). The monographs of S.P. Tolstov "Drevniy Xorazm" ("Ancient Khorezm") for the first time (published in 1964, supplemented with the



title "Ancient Khorezm Culture Search") published. The monographs were described a large number of materials for the first time that are unknown to the science of ancient Khorezm culture, crafts, architecture, and art. The views on socio-economic and political history of the Khorezm oasis were also noted and the archeological monuments studied were divided into the following periods as separate cultural complexes:

I. Primitive Khorezm:

1. Kaltaminor culture - IV-III millennium BC
2. The culture of Tazabaghyub - mil.. II millennium
3. Culture of Amirabad - mil. 1st millennium BC

II. Ancient Khorezm:

1. Cultures of "Cities That Live in Caves". The Ahamonids era mil VI-IV centuries
2. The culture of Qinghai. IV century - 1st century AD.
3. Culture of Kushan. The Roman Period. II-III centuries AD.
4. Culture of Kushan-Aphyrists. III-V Centuries. Crisis of Khorezm ancient culture.

III. Medieval times Khorezm.

Research Methodology: At the time of the primitive community of Central Asia, the Neolithic communities of hunting, fishing, and martial arts lived in the northern and central regions. The monuments of this period were discovered by ST Tolstov in the 30-40th years of the XX century in the lower basin of the Amu Darya and were introduced into science in the name of Kaltaminor culture. The monument is named after the Amu Darya River because of the ancient Caltaminar canal that flows through the Akhadarya River. In some sources, Kalta minor culture IV millennium BC. Kaltaminor culture (7-3 thousand years BC) is widely spread in the western and north-western parts of Central Asia. Its northwestern boundary extends to the middle and lower streams of the Ural River, the western border to the Caspian Sea. In the south it borders the Karakum and Kizilkum basins, and in the east - to the lower



Syrdarya in the north, east and south of the Aral Sea. Kaltaminor culture is quite common in the Kyzylkum and the Ustyurt Plateau.

Analyses and Results: During the study of Kalta minor culture scientists (1939-1940 and Khorezm archeology and ethnography expedition) discovered its development stages - Daryolisoy (VI-IV millennium BC), Jonbos (IV- III millennium BC) and Saxophon (III millennium BC - beginning of the Third millennium BC).

Numerous monuments of calming culture are found in the Akhadarya basin. The cultural layer of 3-4 settlements is preserved without damage. These are Jonbas-4, Qavat-7, Tolstov, Tumek Kichigik cemetery.

Daryolisoy monuments, dating back to Kaltaminor culture, are the sites found on the ancient coast of the ancient Zarafshan River - Daryolisoy. The first neolithic pens, scavengers, leaflets and traps were found on the banks of Daryolisoy. From here, there were found unique pagan traps that are not specific to anywhere else. Particles of ceramics were found in the ceilings. The people of the Neolithic era acted as fishermen and hunting in the river bank.¹

The monuments of the Neolithic period were found in the Chinkeldi, Kyzylkum, Echkiliksoy, Khoja Gumbaz, and Khorakum. Archaeological sources found in these places are similar to the finds of Daryolisoy, which is included in the list of the first neolithic monuments of the Dariolis type.

Another monument related to Kaltaminor culture is the Jonbos 4 space and is located on the shores of the Akhadarya River. It was learned by members of the Khorezm archaeological expedition led by S. Tolstov. The sting has been found in the area, along with worktops, ceramics, animal and fish bones. There was a fire in the Neolithic era. It was left under the thick mud.

The latest neolithic spear pens, grass, arrowheads and stone weapons were found in Jonbos 4 space.



Two neolithic tombstones were found in the surroundings of Jonbos- The dead were buried, with their arms and legs buried. Different jewelry, inflammable weaponry, ceramic plates and red paint residues were found in different places of the graves. These findings were specific to the Kaltaminor culture.

A.Vinogradov's address to Tolstov was found near Jonbosch-4 and named Tolstov's Zone in honor of S. Tolstov. As a result of the research, the site was characterized by the growing neolithic period and the mil. IV millennium BC.

Two rooms have been found in the area, one of them is 110-120 sq.m. The roof of the room was first covered with reed, then covered with wooden crust. The remains of the room and the furnace traces were detected. The similarities between the weapons at the Tolstov site and the Darvozagir I, II and Big Tuscan sites were identified. It is worth noting in the Jonbos 31 monument of the Neolithic era called "Tolstov's space", to study of a 13x9 m hous.

In the social development of Kaltaminor culture, the matriarchate was formed by couples. More than 100 small hotbed found in the Jonbos-4 space. At the same time, the Kalta minors were completely dependent on nature in their work. They built their dwelling places on the banks of rivers and lakes. When the rivers change their axis, they have also changed their place of residence.

At present, the traces of Kaltaminor culture are found in the lower stream of the Syrdarya River, the inner regions of Kyzylkum and the lower basins of Zarafshan.

The small-sized cemetery Tumek Kichidjik is an important monument to the Neolithic era, which was discovered in 1972 in the lower reaches of the Amudarya River. The research was conducted in 1973-1974. During the excavations 27 graves were discovered and explored. Those buried in the grave were laid to the back, and their heads were mainly laid in the north-east and buried in their heads. On the skelotons, jewelry was preserved. Stone pieces and pieces of ceramics are placed. The bones in the grave have red marks. It was related to their religious beliefs.



The monuments of Eneolithic period on the territory of Uzbekistan on the territory of the Amudarya river are represented by S.P. Tolstov, the lower Zarafshan region. Gulomov, A. Askarov, O ' . Islamov's research.

The Eneolithic Age of primitive community system in Uzbekistan is primarily studied in the primitive community system. However, it is possible to identify the directions of socio-economic development of the eneolithic era on the basis of existing archeological sources. During this period in the northern parts of Uzbekistan, still the primitive communities of the Neolithic community - the Kaltaminor culture community - lived. But their relationship with the southern regions has changed their economic lives. In the end of the 3 millennium, they acquainted with metal, the first animal husbandry and farming farms began to emerge. These developments have created a basis for the dynamic development of socio-economic life in the Bronze Age in Uzbekistan.

The discovery of the bronze led to great changes in the primitive community. It has made radical transformations not only in the economic life of humanity, but also in its political, cultural, and spiritual life. S. Tolstov, V.Masson, Ya. Gulyamov, A.Askarov, B.A. Litvinsky, M.A.Itina, Yu.A. Zadneprovskiy, V.Shshyshhevsky, T.Shirinov, B.Matboboev, B.Abdullayev and others are remarkable.

In particular, Tozabagyob culture of Bronze Age monuments was discovered by S. Tolstov on the Tozabogyob canal at the Akhadarya riverbed in the Amu Darya River basin in 1938.²

The culture of Tozabagyab dates back to the second half of the II millennium BC in the ancient Khorezm region. The inhabitants of this culture mostly lived in cellars and dwellings, and had been engaged in livestock and partial shelter. Tozabogyob hollows are built in half-grooved, with an average area of 12-18 square meters. In the center of the center there was a furnace. Cottage was designed for a family. But



among the huts are about 100-120 sq.m., which were designed for a seed collective. The result of archaeological research shows that S. Tolstov and B.V.Andrianov originally connected the formation of bronze eras in the Khorezmian region to primitive irrigation farming forms. It is also worth mentioning that the influence of Srub and Andronova cultures on the formation of the culture of Tozabagyob was great. But the economic and cultural life of the Tozabaghiob culture has its own peculiarities. In the Tozabogyabian tribes, farming was highly developed. Mil.avv Irrigation facilities of the second half of the II millennium were well-researched by B.V.Andryanov.

The Tazaboghivian Cemetery is the Kukcha 3 cemetery, which was discovered in 1954 in the eastern part of the Sultan Uvays Range in the ancient Khorezm region. There were over 100 graves and rich archeological material. Forty-four skeletons were found from different graves at different levels. There was one skeleton in each tomb, even more skeletons buried at a time or different times. There are also cases of burying women and children, burying men and women in a grave. The dead are buried in the right or left hand, with their arms and legs bent. Each graveyard has one or more ceramic bottles, bronze items in the men's grave, and bronze jewelry in women's graves.

Anthropological types of people of Tozabaghyv cultures are of two, one of which is a protoevropoid type for the Andronov tribes, and the ancient population of Central Asia gives the eastern Mediterranean Sea type. Also among the species are cultivated species of Eastern Europe.

S.P. Tolstov Monuments of Tozabagyob culture - Blue Birka 1, Kukcha 3, Akhadarya side small irrigation canals - canals are removed and the area is 2.2 - 3x3.5 - 4.6 m (Ogorodnye uchastkyi) he wrote. Therefore, the Bronze Age cultivation in the oasis was estimated to be extensively developed.



The Amirabad culture is an epic bronze epoch of the Amirabad River basin in the Amu Darya River basin in 1940. By the 1950s, several monuments of Amirabad culture were discovered. The monument, which is one of the best-preserved and rich archaeological materials, is unique in the area of Parkon 2. About 20 basement huts were found during the excavation.

The area and the surrounding area were full of grain pits, warehouses, ovens, fossils, ceramic tiles, stone trunks, bronze knives, sickle, bigger and many animal bones. There were a furnace in the middle of each hut. They show that they belong to a couple.

Surroundings of Amirabad monuments include a lot of irrigation traces and ancient crop areas. This indicates that their livelihood, along with livestock breeding, has developed in their lives.

The Amirabad culture dates back to the X-VIII centuries, when socioeconomic inequalities emerged between livestock tribes.

About the culture of Amirabad, YAGGulomov argued that the Bronze Age farming began with the use of the Akhadarya arable land, and the emergence of channels during the Amirabad culture was the continuation of the primitive dehkan. This suggests that the primitive community arrangement would guarantee the use of new farming methods.

Summary: In conclusion, it should be noted that the Khorezm oasis, one of the first civilizational centers, is rich in material cultural monuments of different historical periods. The study of many monuments from the long history of our people (including the primitive collective system) began in the last quarter of the 19th century. While many archaeological investigations have been carried out in the Khorezm oasis during the Soviet period, in-depth research and analysis of archaeological research and material cultural monuments dates back to independence.



The wide-ranging archeology has led to the discovery of numerous cultural monuments during the primeval collective system of the Khorezm oasis, one of the oldest cultural centers. These include: Kaltaminor culture, Tozabagyab culture, Amirabad culture, Daryolisoy monuments, Jonbos 4, Jonbas-4, Kavat-7, Tolstov settlement, Tumek Kichiggi cemetery.

Based on the above archeological findings, we can see how far the history of the Khurzman oasis dates back to the past.

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ERICH FROMM'S THEORY ON ALIENATION

Asatulloev Inomjon

Lecturer, The Faculty of History,

Department of Philosophy,

Fergana state university

E-mail: asatulloev88@mail.ru

Аннотация: Ушбу мақолада Эрих Фромм фалсафасида бегоналашув масаласи таҳлил қилинган. Шунингдек, капитализм ривожланиши жамиятда сиёсий, иқтисодий ва маънавий муносабатларни ўзгартириши, инсонни жамиятдан узоқлашуви ва бегоналашуви сабаблари ҳамда ундан халос бўлиш йўллари кўрсатиб берилган.

Калит сўзлар: озодлик, капитализм, бегоналашув, ёлғизлик, тушкунлик, махсус инсонлар, эътиқод, дин, жамият, ижтимоий муносабатлар.

Резюме: В данной статье анализируются проблемы отчуждения в философии Эриха Фромма. А также, развитие капитализма изменило политические, экономические и духовные отношения в обществе, причины отделения и отчуждения человека от общества и способы избавления от него.

Ключевые слова: свобода, капитализм, отчуждение, одиночество, депрессия, особые люди, убеждения, религия, общество, социальные отношения.

Annotation: In this article is analyzed the issues of alienation in the philosophy of Erich Fromm. The development of capitalism has changed the political, economic, and spiritual relationships in the society, and depression, misery, helplessness and solidarity are increasing in people. The philosopher has shown the causes of separation and alienation from the society and ways to get rid of it.

Key words: liberty, capitalism, alienation, loneliness, depression, special people, beliefs, religion, society, social relations.



Introduction: Western philosophy of the twentieth century has had a strong impact on the formation of new thinking and outlook, deep-seated minds and great-hearted people. From this point of view, the functioning of creativity, especially of Erich Fromm, plays an important role. In the creation of Erich Fromm, issues such as high moral qualities of human values – ethics, freedom, brotherhood, perfect humanity-were promoted.

The modern capitalist society freed people from the boundaries of the Middle Ages, but the problems of those who had been liberated continued to grow. Freedom from Fromm is deeply rooted conception of modern society, and it removes human beings from the society, even if it is the will of expressing “liberty from something” – the mental, emotional, inward, and freedom of the people. In addressing the problems that arise in the industrialized and capitalist society, Fromm’s concept of alienation is important and we aim to cover it.

Literature review: The work of Erich Fromm in scientific literatures, for example, in philosophy-historical literatures was analyzed with distinctive style and deserved way to his era by great West philosophers. We can give more examples for this and can find answers which can answer today’s demands from their brilliant ideas.

In particular, researchers from the Erich Fromm philosophy, I.V.Egorova [1], Hasan Atsız [2], Mustafa Güner [3], M.Kortina [4], J.O’Conor [5], B.Raymond [6] , KarioriMiamoto [7], Marianne XorneyEskardt [8], Rainer Funk [9] and others, examples, studies, pamphlets, articles. These studies reflect the philosophy of the great thinker, philosophical anthropology, ethical views, teachings about man, and socio-ethical heritage.

In Uzbekistan, the study of the concept of heart in the philosophy of Erich Fromm has not been undertaken. Professor G. Ruzmatova [10] also analyzed the views of Erich Fromm in psychological analysis. The philosopher V. Alimasov [11]



also publishes an article titled "Human Defiance (Read Erich Fromm)", which reflects the views of the thinkers.

There are works which brought a great ambitious to Fromm such as "Escape from freedom" (1941), "Man for himself"(1947), "Forgotten language"(1951) "The art of love"(1956), "The heart of man" (1964), "The revolution of hopes"(1968), "To have or to be"(1976) which can be essential source for research.

Research methodology: The study emerged the idea of scientific and philosophical principles, such as systematics, theoretical and deductive conclusions, analysis and synthesis, historical and logical analysis, hermeneutical analysis, inheritance, universalism and nationality, comparative analysis and the idea of development.

Results and discussion: The development of capitalism changed political, economic, and spiritual relationships, and liberated society from its moral bondage. Many states have their own electoral system and the principle that the electorate has the right to be free and equal, irrespective of their sex, occupation or status. During the feudal period, a farmer was born in a farmer's family and had to become a servant when he was born in slave family. Women today are also leaders in large corporations and states. Due to the rapid social and economic development, family ties and family values began to diminish in the eighteenth century. Concepts related to family, such as obedience, piety, and commitment to life, have lost true meaning [12]. After the first and second world wars, young people do not care for their parents and can do whatever they want. In the Middle Ages, the family was condemned to betrayal and disobedience. It is hard to control family members, children are free, and parents and children are in a bad situation. Children do not worry about the need to care for old parents, but divorce is becoming easier [13].

As Fromm put it forward, people have created their own world, houses, factories. It produces cars and clothes. Science and technology have greatly increased



people's productivity. This has led to a further rise in urbanization and industrialization. Nevertheless, as a result of the use of technology, productivity, labor, history and people have been under the control of modern society. Hence, the way people live is connected with the change in society, and the human being considers it natural phenomenon. The balance of life of the people depends on the brand and the exchange. If a company falls in bankruptcy, the life of a worker is in danger, but the worker cannot do anything. That is, society's activities are contrary to humanity, and in this case, man abuses his work. According to Fromm, the attitude of the workers to themselves and to others in the capitalist environment is very widespread and close personal relationships are not developed. For example, a worker, working with the other, does not care about his partner's privacy and emotions but does his job well. He rejoices to know that if he gets upset, he will stop him from raising his partner. These incidents cause a rise in alienation among people. Fromm is based on the ideas of modern society. The competition unites people, but alienate them from each other. It combines human beings physically, that is, people work in factories and study in educational institutions. But they are emotionally and spiritually unrelated, and the heart becomes strangers. Fromm said that the competition would cause fraudulent smile on the market. Children and young people are forced to participate in competitions required for economic development of the country. How many of them read what they are reading and why they are reading? How many of them believe in the life of the reader? "Alienation", which is the enemy of modern people, is a form of industrialization. Many fraudulent tariffs, points of view, and science research are available, and Ignaz Feirlytts argues that the essence of alienation is based on distancing itself. In other tariffs, this world refers to despair, difficulty, misery, helplessness, indecision, and sometimes separation. According to Fromm, man will consider himself as the centre of the world and the creator of the process. This idea is the central point of modern society. The relative



kinship is an automated alienation, each one approaching the team, ensuring its own safety, but not one of them. As a result, he feels lonely and disturbed.

According to Fromm, a person who is alienated to a society does not feel loneliness at all, but as a result of the alienation, a person is also alienated from his own emotions. According to the intellectuals, human beings firstly alienated themselves from their own identity, and the alienation based on the development of technology has become a new historical phenomenon; Secondly, they are alienated from society. Alienation from society was dependent on specific culture and socio-economic situation; Thirdly, he was alienated from God.

From the above considerations, Fromm's philosophy is a) a social system study of industrial society; b) a characteristic of the production of goods; c) technologic psychology; d) human nature; e) alienation; f) analysis and review of the political system of the totalitarion state.

The views of Fromm about the phenomenon of alienation in society are different from that of Carl Mark. Mark points out that social change is a step toward socialism, and Fromm emphasizes that social change is not going to leave socialism, but to the opposite. Although Fromm Freud has revised and perfected human psychology, he does not focus on the sophisticated economic foundation developed by Mark. The Fromm concept of alienation is based on Mark and its description of capitalist society is important in understanding the phenomenon of alienation. It is therefore desirable to analyze the basis of Mark's views. According to Marx, modern society is characterized by the character of each person as a commodity exchange. Human relations are important in terms of commodity and exchange, and emotional and aspects fall to the fall to the second. Although there is a complete barrier to economic factors, human relationships can be interrupted or stopped at any time for economic reasons. Marx emphasizes that commodity turnover can strengthen selfishness and make people cheat. In addition, creating new needs requires more



effort, and only self-centered thinking in the pursuit of the goal will further aggravate. People sacrifice humanely beautiful relationships and feelings to satisfy their selfish needs. Marx stresses that value based on money and commodity turnover is a power that changes the relationship between people and society. He changes loyalty to the treachery, love to hatred, goodness to evil, and wisdom to foolishness. Money also changes personality and sheds human relationships. Fromm believes that in a society where market relations are formed, it is difficult to be kind and responsible. A solution to the problem of alienation in the conditions of capitalism is the solution of the brotherhood. Fromm emphasizes that modern society's people should love and adapt themselves to liberate themselves from loneliness. He believes that selfishness in a person who develops his ability to love. Fromm compares the appearance, positive and negative aspects of freedom in the medieval and modern society, created the idea of a fictional society that has been criticized by many. As we have already pointed out, it is urgent to form a society that is based on brotherhood, instead of the present-day society. The basic idea of the Apostles in the issue of alienation is the idea of freedom. The capitalist society has set men free in economic and political spheres, but has become spiritually dependent, alienated, and transformed into a lonely people. Fromm, modern man has not been able to free himself. It is a reflection of his emotional and intellectual power. Humanity has freed its religious outlook and has lost its inner faith even though it has formed a new faith. Modern man does not believe anything without proof. Incompatible with science paradigms, emotional and intuitive beliefs are denied. Although humanity has achieved freedom of expression, most of its commendations are those that are thought-provoking and speaking, that is, through their own thinking, and the freedom of thought has not been given to them. According to Fromm, the reason for this is the existence of anonymous power over public opinion and common sentiment. The media, along with information delivery, also disseminates the same ideas.



It is manipulator of the intellectual power of modern society. Fromm says that today's humanity has achieved only the negative side of freedom, and has not gained a positive freedom. "Capitalism should not be liberated from the traditional bondage of humanity, but to active, creative, and positive liberty"[14]. Today, people have demonstrated their freedom in social activities and in different political activities. There is a choice for people to work in the area they are looking for, and they do not have to spend all their lives on what they have done, whatever their ancestors did. In society, they also enjoyed the negative feelings of comfort and security. Students need to learn a lot, so there is no time left to think. From this side of the world, human beings have either been naturally victimized or have been liberated more negatively. Fromm believes that the solution to the problem of loneliness in a highly developed society is that it is impossible to have psychoanalytic treatment with everyone, and that capitalist society needs to be rebuilt. He recommends to name "the construction of an abandoned and isolated problem of loneliness and the name of humanitarian collective socialism". Socialist society will be designing on the basis of creative activity that creates economic freedom. Fromm says which kind of society to build, he does not say how to build a society. Sociologist A.S.Garbuzov explains Fromm's views as follows. "Those who have been able to overcome the feeling of alienation begin to shape the need for collective socialism. It means that without gradual division, humanist socialism is replaced by revolutionary capitalism."[15]. According to Garbuzov, each of those who have overcome alienation is "new people" who have internal freedom and happiness. Fromm's view of the society is that instead of capitalism social relations are built on the basis of sincerity and brotherly love. But from criticizes people trying to "escape" the present problems.

He was hoping for humanity. He cares about human capabilities for growth and development of man and fights against the destructive tendencies.



It emphasizes the need to change some social and psychological perspectives for the formation of a spiritually mature person by studying the link between social behaviors and violence. Fromm believes that a new human being, who combines harmonious qualities, can create a new society.

From Fromm's book "The art of love" states that love is a solution to alienation, emphasizing that "love is a satisfactory and only logical answer to the question of human existence." How can love solve the problem of alienation? "From Fromm to question, it emerges from the need to overcome loneliness and leads to integrity." Love can help a person feel united with other people and the world, and releases his alienation.

Fromm differentiates several kinds of love, emphasizing that the love of brotherhood is important to society. Brotherhood is based on responsibility, care, and respect. This kind of love is based on the idea that all people should love each other because they have the same essence, history, and homosexual feelings[16].

Conclusion: In a capitalistic society, no one is interested in one's own interests. In this society, the desire to abandon all the things that a person might possess, the feeling of greed and greed is diminished. Is it possible to build a pure brotherhood in a capitalistic society? The first thing to do is to build self-love, to release self-esteem. Because self-love and love of others are invisible.

If a person loves himself, he can love others. So, if you love someone, you will be able to love all mankind. In the process of egoism and self-exacerbation in a capitalist society, it is still an urgent task to form a brotherly love.

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DIFFERENT OPINIONS ON “FIRDAWS AL-IQBAL” AND THE ILLUSTRATION OF THE PERIOD OF MUHAMMAD RAHIMKHAN I IN THIS WORK

Saparbayev Bunyodbek Khurramovich
A Master's Degree Holder in History,
Lecturer The Faculty of History,
Department of History,
Urgench State University
E-mail: bunyod.saparbayev@gmail.com

Annotation: The article discusses the different views and opinions expressed on the works of the great representatives of the 19th century Khorezm's historiography Shermuhammad Munis and Muhammadriza Agahi “Firdaws al-iqbal” and the era of Muhammad Rahimkhan I. True and critical thoughts about this historical work and the epoch of Muhammad Rahimkhan I of such scholars compared to Russian scientists are compared V.V.Bartold, B.V.Lunin, P.Ivanov, from Uzbek K.Munirov, G.Karimov, S.Dolimov, Ya.Gulyamov, from Karakalpak M.Nurmuhamedov, S.Kamalov, N.Djapakov and come to certain conclusions.

Key words: the work “Firdaws al-iqbal”, Shermuhammad Munis, Muhammadriza Agahi, Muhammad Rahimkhan I, V. V. Bartold, P. P.Ivanov, M.Nurmuhamedov, N.Djapakov.

Аннотация: В статье рассматриваются различные взгляды и мнения высказанные, о произведении великих представителей историографии Хорезма XIX-го века Шермухаммада Муниса и Мухаммадриза Агахи “Фирдавс ул-икбал” и эпохи Мухаммада Рахимхана I. Сравниваются истинные и



критические мысли об этом историческом произведении и об эпохи правления Мухаммада Рахимхана I таких ученых как из русских В.В.Бартольда, Б.В.Лунина, П.Иванова, из узбекских К.Мунирова, Г.Каримова, С.Долимова, Я.Гулямова, из каракалпакских М.Нурмухамедова, С.Камалова, Н. Джапакова и приходят к определенным выводам.

Ключевые слова: произведение “Фирдавс ул–икбал”, Шермухаммад Мунис, Мухаммадриза Агахи, Мухаммад Рахимхан I, В.В.Бартольд, П.П.Иванов, М.Нурмухамедов, Н.Жапаков.

Аннотация: Мақолада XIX аср Хоразм тарихнавислигининг йирик вакиллари Шермухаммад Мунис ва Мухаммадризо Огахийларнинг “Фирдавс ул–икбол” асари ва Мухаммад Раҳимхон I даври тўғрисида баён қилинган турлича фикрларга муносабат билдирилади. Рус олимларидан В.В.Бартольд, Б.В.Лунин, П.П.Иванов, ўзбек олимларидан Қ.Муниров, Ғ.Каримов, С.Долимов, Я.Ғуломов, қорақалпоқ олимларидан М.Нурмухамедов, С.Камолов, Н.Жапаков каби олимларнинг ушбу тарихий асар ва Мухаммад Раҳимхон I даври ҳақидаги ҳаққоний ва танқидий фикрлари қиёс қилиниб, муайян хулосаларга келинади.

Калит сўзлар: “Фирдавс ул–икбол” асари, Шермухаммад Мунис, Мухаммадризо Огахий, Мухаммад Раҳимхон I, В.В.Бартольд, П.П.Иванов, М.Нурмухамедов, Н.Жапаков.

Introduction: The great figures of the Khorezm history, Shermuhammad Munis and MuhammadrizaAgahi, along with their charming poetry, have given great historical artifacts to our people.

These historical works include the socio-economic life of the Uzbek, Turkmen, Karakalpak and Kazakh peoples inhabiting the territory of the Khiva Khanate,



relations of khanate with neighboring countries, mutual warfare, trade relations with western countries, and ethnographic life of the population.

A great Russian scientist, V.V. Bartold highly rated the works of these historians and wrote: "Regardless of the shortcomings of the literary and historical works created by Munis and Agahi, in the history of Kokand and Bukhara, leave behind all the works that have come to our aid in terms of the description of history and the great amount of testimonial facts" [1].

When Shermuhammad Munis promoted Khorezm's history to a new stage with "Firdaws al-iqbal", "The great son of Khorezm, MuhammadrzaAgahi, a prominent figure in classical literature" who was a great writer, who continued the great work of the former" [2]. He is a well-known scientist and creator of Khiva khanate's history related to the 19th century and state and public figure who played an important role in the life of society [3].

After continuing the work of "Firdaws al-iqbal", written by his uncle Munis, and moving Muhammad Rahimkhan's to the first epoch of history, Agahi created five more perfect historical works. These are "Riyozud-davla" related to the period of Ollakulikhan (1825-1843), "Zubdatut-tavorikh" related to the period of Rahimqulikhan (1843-1846), "Djome ul-voqeati sultoni" related to the reign of Muhammad Aminkhan, "Gulshani davlat" related to the reign of Sayyid Muhammadkhan (1856-1864) and finally "Shohid ul-iqbal" related to the period of Muhammad Rahimkhan Soniy(Second) (1865-1910). In our case, we will focus on the work of "Firdaws al-iqbal", which deals with the period of Muhammad Rahimkhan I.

Literature review: In addition to the above mentioned positive points about the scientific significance of the historical work of "Firdaws al-iqbal", there are also



signs of discriminating its significance. An example of this can be said by Russian historian P. P. Ivanov: "The Khiva Historians reflect the dominant class views on all issues, so that the khan and his close people can see their work in a way that is pleasing to them. There are fewer issues that can undermine their reputation. While the authors of the work are very generous in praising the khan and his surroundings, they use various rebukes and malevolence against those who do not comply with the views of the ruling circles. It should be borne in mind that the aforementioned quotations in historical chronica are reflected in the history of Karakalpakstan" [4]. Similar records are also found in the works of K.Munirov, S.Kamalov, B.Lunin and others [5].

This issue has been seriously promoted especially in the works of M. Nurmuhamedov. He evaluates Munis and the Agahi as palace historians [6]. In turn, he accuses historians of illicit illumination.

The well-known Karakalpak scientist Navruz Djapakov demonstrates in some of his works that Agahi had literary influence on Agahi's Karakalpak poets Berdakh, Kunkhujha and Adjiniyaz.

In particular, N.Djapakov wrote in his book "The Issue of Realism in the Karakalpak Literature of the Revolution" on Agahi: "It should be noted that although the famous historian and poet Muhammadriza Erniyozbek oghlu Agahi evaluates Karakalpak 1827 uprising from the point of view of the palace as a historian, as a realistic poet, he assesses it positively and "... the horror of the fighters of the Khiva Khan's tale shakes the sky, he writes. In this process, the following four quadrants are given:

Agar jam' o'lsa uchqun bir makong'a,

Bo'lur albatta otashgoh paydo.



Va gar har soridin yig‘polsa qatra,

Bo‘lar tadrij ila to‘fon huvaydo [7].

M.Nurmuhamedov strongly criticized N. Djapakov's well-grounded view and accused him of “decorating history” [6]. Indeed, Agahi, despite being a “palace historian”, tries to make real-life events in the country. The above four aims to warn the ruler, saying, “It is a fire from the threshold”. M.Nurmuhamedov gives another interpretation of these events. He argues that the words of Turamurad, the chief of the Kungrad counterpart, were allegedly demolished by Munis's work [6]. Evaluation of this person as "revolutionary" is also found in P.Ivanov, K.Munirov and S.Kamalov's works. Raising the people who led the rebellion in the Khan period to the "revolutionary", "national hero" is one of the trends emerging from the Soviet ideology.

Another aspect of this is that, the story interpretation of “Firdaws al-iqbal” is based on the book “Materials on the history of Turkmen and Turkmenia”[8]. However, in these two volumes, only articles that correspond to the Soviet policy of Munis and Agahi were translated into Russian. Only few historians were fortunate to read and learn completely the original of “Firdaws al-iqbal”. These are talented people like Yahya Gulyamov, Hamid Ziyoev, Subutoy Dolimov, Gulom Karimov. But these scholars did not look for “revolutionaries” from the book's pages. For this reason, they objectively criticized the work and expressed minor objections.

“Firdaws al-iqbal” was only published and studied in 2010 [9]. If we read this entire book and discover the person of the Turamurad Sufi, there is a whole different picture.

Research Methodology: Turamurad's sufi actually belongs to Khan Descendants and is one of Kungrad Uzbeks. That is why the khan appoints his uncle Saidnazarbiy to



Kungrad. Turamurad with his brother Hujamurad got the name of Sufi. They snatched the wealth of customs in Khanate and came to Kungrad and succeeded him as a result of the Sufi way of teaching, and finally did not allow Saidnazarbiy [9]. Turamurad's sufi initiates the invasion, and soon thereafter, he came to Khujayli with 200 men against hakim, but the hakim fled and his eldest son was martyred. Turamurad Sufi slaughtered two of the Khan officials [9]. He captured many people and then went to the fort of the Fortress with a 600-strong army and defeated the tyrant of the Shahpolod and continued slaughtering in Khujayli at night again [9].

Subsequently, TuramuradSufi came to Mangit, and continued violence and then began to take possession of the fort of Kot [9].

In order to suppress these attacks and robbery, Avaz Inok sent troops led by Eltuzar Muhammad Bahadir. Sufi was concerned and put forward the consent of the ceasefire and gave a feast [9].

But Sufi did not calm down and after a while he had forced the habitants of the Amu River banks to Kungrad [9]. After the death of his brother Hujamurad, he did not calm down either, when Hujamurad became a hakim. Finally, he arrested his brother [9]. At that time EltuzarInok obtained the throne of the khanate. The khan immediately sent the troops to Kungrad. Following heavy battles, Turamurad removed his brother from the prison and put him in his post and led the respectful men to a peace treaty with the Khans [9].

In fact, Eltuzarkhan wanted to execute him. But at that time, Bukhara ruler, Amir Haydar, began to move to occupy Khorezm. In fact, Amir Haydar was in close contact with TuramuradSufi, and in the Kungrad war, auxiliary troops from Bukhara also participated.



When Hujamurad was regained the post of hakim of Kungrad, the relations with the Khanate improved and the people found peace. It did not appeal to Turamurad Sufi, and he became again an oppositionist and went on to the battlefield. Khan heard this and sent a thousand men to Kungrad. When Turamurad learnt, he fled to Dashti Kipchak. There Kazakhs robbed the Sufi's property of the Kazakhs and put him on the post of a shepherd [9]. Some Kazakh swordsmen helped him to escape from occupation and flee to Bukhara. Amir Haydar warmly welcomed him. Shortly thereafter, Amir Haydar began to move to Khorezm, where Khorezmian troops were defeated and Eltuzarkhan was drowned in the river [9]. Turamurad Sufi, using this situation, took over the post of Kungrad's ruler and continued the separatist policy.

Muhammad Rahimkhan, who sat on the throne instead of his brother Eltuzarkhan, led his troops to Kungrad three or four times to terminate the separatism of Sufi. However, Turamurad Sufi availed his previous tactics and made a ceasefire before the surrounding, and continued his reign.

In 1811, Turamurad Sufi sent Qurbonbek related to the Qiyat tribe as a swordsman to rob the Karakalpak tribes. However, The leaders of the Karakalpak tribes for example, Maqadbiy, Hasanboybiy, Chonqarobi, beat these looters. The leader of the Aral tribe, one of Turamurad Sufi's trusted people, Qoshtaytar was executed and trophies were handed over to Qodirberganbiy [9]. Qodirberganbiy was one of the leaders of the Karakalpak's khan troops.

Thus, Turamurod Sufi, for 18 years, ruled Kungrad, pursued a separatist policy and persecuted the people. For example, he, because the educated people of Kungrad, such as Eson-Omanotalik and Utafberdi otalik were respected by the khan, executed them together with their sons, siblings and relatives and before their funerals ended, and their wives and daughters were handed over to slaves [9].



Turamurad Sufi punished disobedient tribes or those who did not keep his commandments or chose to move from Kungrad, slaughtered women and sold some of them to Turkmens as slaves. At one time, Akyokish sold 40 beautiful girls from Karakalpaks to Huroson for eleven horses [9].

Due to these arbitrary intimidations and the demand of some Karakalpak elders, the Khan set out for the conquest of Kungrad in April 1811. While there were more than 3,000 Khan troops, Turamurad Sufi's troops exceeded 6,000. Heavy battles and bloodshed lasted more than a month, and Karakalpak commander Ubaydulla Hoja Dakhbediy showed heroism in these battles [9].

Eventually, Turamurad Sufi was overthrown and beheaded. The ambassador of Bukhara in the fortress was also executed in this process. Many men and women detained in the custody for over a dozen years, hanging from the dungeons of the torture bar, and a necklace of neck and neck, were released [9].

The 18-year reign of the Turamurad Sufi thus ends. In these battles, the castle of Kungrad was ruined and many people were killed.

“Firdaws al-iqbal” describes these events in detail, detailing all the specifics, the names of the people who participated in it, and the months and dates clearly were stated.

Some researchers may argue that these events were slandered by the Agahi and that he deliberately condemned Sufi. It should be noted that Munis and Agahi considered it a crime to deceive a lie in history. Each page of the work contains verses from the Quran and they relate to events. As it is known, the Shari'ah condemns lies.

Both Munis and Agahi described the event honestly. Of course, they could not criticize the khan. However, historians used techniques to describe the policies of



Khan, the bloodshed in the battles, and the lamenting events as if it were heroism. However, the reader who understands the essence of the book looks at these details pitifully and condemns its organizer. For example, one story describing Muhammad Rahimkhan on the battlefield with Bukhara is as follows: “Sculls were gathered in four or five places, and every inch of the threshold is one large, and one side is not visible to one another” [9].

This picture also indicates that Muhammad Rahimkhan was the typical representative of all the khans and rulers who reigned during feudalism.

These pictures are related to deeds of the khan at “Firdaws al-iqbal”. At the same time, some of the tablets feature the khan's positive features.

Agahi is a genius poet and ruthless historian. That is why his name is still mentioned among the great people. This is further highlighted in the words of the President SH.M. Mirziyoyev: “Young Reader” competitions should be organized on the works and activities of Abu Raihon Beruniy, Abu Ali ibn Sino, Mirzo Ulughbek, Alisher Navoi, Zahiriddin Muhammad Bobur, MuhammadrizaAgahi, Berdakh who have a great place in the history of our Homeland and spiritual life of our people [10].

Conclusion: Muhammad Rahimkhan's conquest of Kungrad is not only the suppression of the uprising, but also means the territorial integrity of the country.

Nowadays, it is a sacred duty of every historian to abandon the way of misinterpretation of historical events as a Soviet historian, and to present the history of our past to our people in an honest way. So, that our young people would be educated in the spirit of avoiding bloodshed, guilty and in a peaceful life.



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THE DEVELOPMENT OF LIGHT INDUSTRY IN BUKHARA REGION DURING THE INDEPENDENT YEARS

Holikulova Shakhnoza Boymuhammedovna

Lecturer Navoi State Pedagogical Institute

e-mail: kholikulova_sh@mail.ru

Аннотация: Муаллиф ушбу мақолада 1991 йиллардаги саноат ишлаб чиқаришдаги муаммоларни келтириб, Бухоро вилояти миқёсида енгил саноатни ривожланишига таъсир кўрсатган омилларни ёритиб берган. Шунингдек, кўшма корхоналарнинг очилиши, товар айрибошлаш ва халқаро миқёсидаги савдо алоқаларининг самараси рақамлар асосида таҳлил қилинган. Айрим корхоналарнинг ўтиш давридаги банкротлик сабаблари тарихи ёритилган.

Калит сўзлар: хом ашё, истеъмол моллари, саноат улуши, бозор муносабатлари, тадбиркорлик, кўшма корхона, аҳоли фаровонлиги, иш ўрни, маҳаллий ишлаб чиқариш, банкротлик.

Аннотация: Автор описывает промышленного производства в 1991-х годах и правил к притоку легкой промышленности в Бухарский регион, а также открытие совместных предприятий, товарооборот и эффективность торговых отношений по всему миру были оцифрованы. История банкротства некоторых предприятий.

Ключевые слова: сырье, товары народного потребления, доля промышленности, рыночный отношения, предпринимательство, совместное предприятие, благосостояние, занятость, внутреннее производства, банкротство.



Annotation: In this article the author spoke about the problems in the industrial production in 1991s and illustrated the factors affecting the light industry in Bukhara region. Also, the results of the opening of joint ventures, trade turnover and international trade have been analyzed on a numerical basis. The history of bankruptcy of some enterprises in the transition period has been illustrated.

Key words: raw materials, consumer goods, industry share, market relations, entrepreneurship, joint venture, welfare of people, workplace, local production, bankruptcy.

Introduction: In the early years of our independence, we had such an economic situation that the country with rich reserves needed even small production products.

The First President of Uzbekistan, I. Karimov, pointed out that the economic problems of the time were political. “The country is in a difficult and drastic period. This is especially evident in the first public assembly of the USSR People’s Congress, at the meetings of the Supreme Soviet of the USSR, in mass demonstrations of workers in different regions of the country. Now, there is a situation that requires the unification of all the forces struggling for renewal of the society. People are still waiting for immediate solutions to problems such as food, transportation, trade, healthcare, housing, labor and its payment, and relaxation ... The shortage of many consumer goods has dramatically increased”[1].

At the same time, we can conclude that the Republic of Uzbekistan gained its independence when the food was not consumed by foodstuffs and primary consumption. In such an acute phase, decisions were made that developed the primary and minimum industries. Opening of small enterprises and home-based craftsmanship began to grow. The people began to embody a new notion that was not generally encountered during the former Soviet Union. Industry came into the village on the basis of a new era policy.



In particular, this article states: “The nation will not be rich only by producing raw materials. This was once again proved in the last 70 years of our history. Therefore, our country is transformed into the processing of agricultural products grown in the region. With good intentions cooperative production and trade associations were established in the regions of the country. The head of the union says, “two or three years ago, the main agricultural products grown in the region were sold as raw materials to other republics, and only a few of them were recycled. It is also the only canning plant in the regional center. Now, a number of things have been done in our association. A canning factory was put into operation near the material reception center in Dalmun. The plant produces apples, apricots, tomatoes, cucumbers, eggplants, jam and canned food. We have become accustomed to mainly cultivating raw materials. Central Asia and Kazakhstan supply 99 percent of the country’s cotton. In this region, where 50 million people live, only 8% of the country’s industry is produced. So, we still have a weak and poor industry. For example, sugar is now one of the rarest items. We have received it mainly from other republics. Cannot we have sugar beet on our land? It will be very good. We need a factory to process it. Those factories were not built for the sake of some guilty people. Aren’t there business people among us? Bukhara was a great trading center. This proves that this is where the Great Silk Road passed” [2]. The views expressed in this article are based on the requirements of a business aggression. Businessmen are well aware of the favorable environment for industrial production in Uzbekistan, but there were obstacles for their activity. Every historian knows that it depends on political and economic factors.

Thus, with the support of the Government of the Republic of Uzbekistan, the small manufacturing industry gradually developed in Navoi, Bukhara and Samarkand regions, as in other regions. Entrepreneurial banks were established to support entrepreneurs.



Literature review: At the end of August 1991, industrial analysis in Bukhara was as follows. The 31 enterprises or one in three enterprises reduced production volumes to 75,326 thousand sums. Compared to the same period of last year, the Karakul Tanning Plant, the silkworm breeding plant, the graphite-gypsum plant, Ghijduvan and Navoi cotton processing plants, and the “Navoiazot” production unit dropped reduced industrial production volumes. Most importantly, production of one of the two orders on the product line has declined. The share of unprocessed products in Navoiazot has significantly increased. The volume of unprocessed production contained one third across the region over the first half of the previous year[3]. Consumer goods production declined by 7160 thousand sums or by 1.7% [3].

Based on the aforementioned shortcomings, the market economy was chosen as a new path for industrial production, with market relations emerging on the basis of demand and supply. The first task of entrepreneurs was to produce consumer goods and meet the basic needs of the people. By 1994, there were 290 small and private enterprises, 331 farms and 7 joint ventures in Bukhara region. They produced 316 tons of meat, 1559 tons of milk, 161 thousand eggs and other agricultural products last year. Enterprises specializing in the production of consumer goods produced more than 2255 million sums of products [4].

One of such enterprises is Ghijduvon Shoes Company. The enterprise was put into operation on the eve of our independence in 1991. It was able to produce 8 million pairs of shoes per year. It employed more than 350 people. Due to the fact that it was difficult at the start of the enterprise, it produced 90 thousand pairs of shoes. By 1992 it had reached 225 pairs. The number of products has doubled. In 1993, it planned to produce 471 thousand pairs of footwear. As it is seen above, the enterprise grows year after year, and it plays its part in the regional industry. In 1994, the company planned to send 30 people to the CIS countries for sharing practice in order to improve quality. Social security of workers, as well as creating favorable



conditions for them was also aimed. In particular, the enterprise has a kindergarten for 180 seats, a residential building for 120 seats. Our company has great potential now[5].

Research Methodology: In the first years of independence, entrepreneurs have begun to work with foreign investors to develop industrial production.

In 1994 in Kagan district of Bukhara region a joint venture “Uzizroprotein” was built together with the Israeli specialists. The Bukhara External Economic Space and the Minokor Joint Venture launched production of marble and ceramic tiles on the basis of Italian technology. Small businesses operating in rural areas have created additional jobs and facilitated livelihoods [6].

Bukhara also accelerated economic reforms in industry, construction and transport. Especially the establishment of enterprises with foreign companies became major news. There are dozens of companies like “Omega-Bukhara”, “Omega-Sitora”, “Uzbekistan-India”, “Istanbul-Bukhara”, “Uzbekistan-Italy”. One of them made karakul fur coats and shrubs, while others were producing television sets, silk scarves, telephones, scarves, knitwear and medicines. About 700 small businesses were opened. There are more than 800 small enterprises and shops operating in the local industry, all engaged in various production, commercial and trade activities [7].

Bukhara region “Mahalliysanoat” concern is producing scarves by the help of weaving-loom bought from Switzerland. This weaving-loom was installed in a small room rented by the concern firm “Guzal”. There were only four people who initially served there. About 400-500 products were produced daily. If the raw material is acrylic sheath, the machine can be used with full power at two shifts. Raw material is imported from Russia. Bringing it back is very difficult in modern conditions. That is why the concern is no longer possible to sell its products to Russia and to buy it in return. Of course it is temporary. Experts work on preparation of raw materials by adding the nitrogen produced in Navoi to the yarn manufactured in Bukhara. The



workshop bought from Switzerland cost about \$ 100,000. However, the expenses will cover it within six months[8]. Businessmen were in constant motion to overcome such problems in the light industry, and gradually continued in all industries.

Analysis and results: Industrial production in Uzbekistan has thus reached the districts and villages. In particular, in the Alat district of Bukhara entrepreneurs of a small enterprise “Rahmon” started to produce 200 spoons with flower ornaments a day. The product was in demand at the neighboring republican markets. Wood spoons are examples of folk craft. Also a businessman S. Alimov brought water from a sweet spring[9] in Yakkatut and packed the mineral water called “Shifobahsh”.

Pullovers, children's clothes, and various types of furniture Akram Boliev's “Dilorom” company began to contribute to the development of the industry. Craftsmen of the “Mahorat” enterprise are serving to produce plaster products. Along with the scientists of the Bukhara State University, the preparation of salt from the Alat deposit is underway. Raw materials are enough for that. There are 2700 hectares of salt in the district. The reserves are much enough but it's necessary to use them used in their place[9]. Industry like this has become the future of manufacturers who have mastered such science-technical achievements in industry.

When considering the light industry, Bukharaotex has a role in the production. Bukhara cotton fabric manufacturing association established direct cooperation with 10 leading companies in the world, and economic relations with more than 30 companies. It opened trade houses in Russia, Saint-Petersburg, Kurgan, Klimovsk. They study the world market and sell products. For example, the Klimovsk Trading House signed an agreement for the sale of products worth over three billion Russian rubles. At present, the world market needs raw materials, but it can cost up to \$ 7-8 per 1 meter of coke, if it is processed and ready for sale, at 0.50 cents. We do not have this opportunity at the moment but we are investigating it. There are currently



over 20 varieties. A joint venture is planned to open in the future to study the international experience[9].

In order to develop Bukharaoteks, the construction of the new building was completed in 1992. According to the plan, the plant employs over 2,000 people and manufactures consumer goods[11]. The construction of the plant successfully finished and a laboratory was put to work to determine the technical specifications of the cord for compliance with the state industry standards. According to laboratory analysis, “Bukharaotex” imposed a fine of 25 million sums from partners for the poor quality of fibers from cotton ginning plants in Andijan and Jizzakh provinces. Bukharotex has become a regular, nationwide regional workshop on its activities[12].

There were several subsidiaries of the Bukharaotex joint-stock company, and all of these enterprises were not successful. “B. Amonova”, which is an example of a garment manufacturing association, can be an example for that. Initially, this company went on a business plan. Cooperation with the Bukhara Technical College was carried out. According to the documents kept in the Bukhara Region State Archive Fund, graduates fulfilled their practice at this venture[13].

According to 1993 data, the director of the company went to Moscow to participate in the Iplegmash-93 fair in Kiev, the Ukraine, to participate in the raw material fair organized by Soyuzlegprom in Moscow, Russia, and to purchase products from Teprom in St. Petersburg[13]. He has participated in several similar businesses.

The company also performed charity at its own potentiality. According to the Regional Hospital team’s letter, 0.5 tons of cement, 10 medical gowns, 20 pajamas and 60x60 sized 25 pillow-slips were given as a charity[13]. When we look at the records of the same year, the word “because of economic crisis” is used continuously[13].



However, this organization has been unable to meet its contractual obligations over the years. Due to the fact that the products produced did not fully meet the market demand, they remained in the warehouse. Even the necessary equipment for the enterprise's operation has been removed from the inventory and the 1998 joint-stock company is liquidated for a number of reasons (note: Copies of the act of liquidation have been denied by the archive administration).

Such deficiencies were observed in many enterprises in the market economy. Not all businessmen who started their work were able to produce goods that would be competitive. Or there were facilities that could not get timely raw materials. In the spring of 1991, a canning plant was built in the "Madaniyat" collective farm of Peshku district and its products reached Omsk and Ulyanovsk. In 1993 profits of 40 million sums were profitable. By 1994, however, 12,000 conditional bank products had been prepared. In 1995, for several reasons, the shop stopped completely. The reason for this is the bank insufficiency[14]. In the history of the market economy, it is natural to observe such cases. However, it is only the development of a businessman if he does not say "it's natural".

Conclusion: In conclusion, it should be noted that the share of consumer goods and light industry in industrial production is high. Because it is the primary factor in the welfare of the population. However, due to the unilateral economic relations, the people's right to entrepreneurship and ownership has been hampered by artificial barriers. As a result, our country was left behind many years ago. However, our entrepreneurial people did not forget that they were steadily developing in their history and gradually overcame this severe economic tension.

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**THE WORK “MAQOMOTI YUSUF HAMADONIY” BY
ABDULKHOLIK GHIJDUVONIY – A SAMPLE OF RESPECT TO THE
MASTER”**

Nurmatova Nigora Umarovna
Candidate of Historical Sciences
Associate Professor of “Social sciences” department
at Bukhara engineering – technology institute
E-mail address: nurmatova1968@inbox.ru

Annotation: In the article, it was spoken about Abdulkholiq Ghijduvoni and there was analyzed his work “Maqamoti Yusuf Hamadoni”, which he devoted to his master. This paper also draws attention to the fact that, along with giving valuable information about Yusuf Hamadoni’s life and activities, there are some problematic information and the author’s own point of view about its reasons is given.



Annotatisya: Mazkur maqolada Abdulxoliq G'ijduvoniylar haqida fikr yuritiladi va uning ustozlari Yusuf Hamadoniylar haqida yozgan "Maqomoti Yusuf Hamadoniylar" asari tahlil qilinadi. Mazkur asarda Yusuf Hamadoniylar hayoti va faoliyati haqida qimmatli ma'lumotlarning berilishi bilan bir qatorda ayrim muammoli ma'lumotlar ham mavjudligiga e'tibor qaratiladi va buning sabablari haqida muallifning o'z nuqtai nazarini bayon etiladi.

Аннотация: В данной статье раскрывается взгляды Абдулхалика Гиждувани о своём учителе, идеальном человеке Ходжа Юсуф Хамадани. Анализируется произведения «Макомоти Юсуф Хамадани». Уделяется особое внимание на ценные сведения о жизни и творчестве наставника, а также на некоторые проблемные сведения.

Key words: Sufism, Hoja Abdulkholiq Ghijduvoniylar, "Maqomoti Yusuf Hamadani".

Kalit so'zlar: Tasavvuf, Hoja Abdulxoliq G'ijduvoniylar, "Maqomoti Yusuf Hamadoniylar".

Ключевые слова. Суфизм, Ходжа Абдулхалик Гиждувани, «Макомоти Юсуф Хамадани».

Introduction: Khoja Abdulkholiq ibn Abduljamil Ghijduvoniylar, the great figure of Sufism, the famous saint, the founder and leader of the Central Asian sect and known with the name "Khojagon", was born in 1103 in the village of Ghijduvon, one of the largest commercial caravan routes near Bukhara, in a well-educated family. Having received the first information in his village, he goes to Bukhara to improve his education at the age of 22. Here he receives sufficient knowledge from the great scholars of that time and Sufism. Particularly, his meeting with the famous Sufi leader, Abu Yaqub Yusuf Hamadoniylar (1140 AD), played an important role. Yusuf Hamadoniylar attracted him to Sufism. Yusuf Hamadoniylar was born in Ghanimiya, the city of Hamadon, Iran, in 440 AD 1048 (according to some data in



1049)[1]. He died in 1141 AD. His grave is situated close to the pilgrimage place of Sultan Sanjar in Marv. People of Sufism praises Yusuf Hamadoniyy's mausoleum as "Kabai-Khurasan (Caaba of Khurasan)" [2].

Statement of the problem: In his time, Yusuf Hamadoniyy was a Shaykhush shuyukh – sheikh of sheikhs, a scholar of the Rabbani-Divine Sciences, kutbi asar – defender of his century, sohibkaromat avliyo – a saint who is famous for his sacred saints, an owner of spiritual maturity, piri murshid – irshod i.e. ecclesiastic preceptor educating a person who can have the right to teach others.

Abdulkholiq Ghijduvoniyy described Yusuf Hamadoniyy, his piri murshid in his book "Maqomoti Yusuf Hamadoniyy"[3]. Abdulkholiq Ghijduvoniyy's book "Maqomot Yusuf Hamadoniyy" includes the following parts called as the preface, the blessed admonitions of Yusuf Hamadoniyy, the letter of Sanjar ibn Malikshah, the birth and morality of the sheikh, the sheikh's arrival to Samarkand and the history of the sheikh's death. Indeed, in this work there are also facts about the Ghijduvoniyy's biography, as well as about the murids (apprentices) of Yusuf Hamadoniyy. However, the main purpose of writing this book was to make people aware of His Majesty Yusuf Hamadoniyy's morals, stories, wisdom and the great services he had performed in history.

In his "Maqamoti Yusuf Hamadoniyy", Abdulkholiq Ghijduvoniyy, narrated his masters' every deeds and every sayings watching them all the time. It should be noted that His Majesty Yusuf Hamadoniyy visited and studied in Bukhara, Samarkand Marv (Mori), Khorezm, Baghdad, Mecca, Medina and other cities. It is written in the sources that His Majesty was a interlocutor of two hundred and thirteen great scholars, Sheikhs. In "Maqamoti Yusuf Hamadoniyy", there was offered the genealogy of His Majesty Hamadoniyy and it was noted that he was a leader in sciences of hadis (legend about Prophet Mohammed) and tafsir and the leader of theory. In his work "Maqamoti Yusuf Hamadoniyy", Abdulkholiq Ghijduvoniyy



narrates the following story about his master with great respect: “One day, His Majesty Yusuf Hamadoniyy looked at me and said, 'As I am the fourth caliph of Khojai Kalon (i.e. Formadiy), you are my fourth caliph'. Then his eyes filled with tears. I asked, “Who could be a caliph instead of you?” Sheikh said: ‘Hey Abdulkholiq, on my place there will be Abdullo Barkiy, then Khoja Hasan Andoqiyy and then Khoja Ahmad Yassaviy. Khoja Ahmad Yassaviy will travel to Turkistan, and you will become caliph instead. And follow the Sahriat’s (Muslim code of religious, criminal and civil laws based on the Koran) rules all the time and do not disobey the Shariat and prohibit if you see whoever commits an act that is contrary to Shariat”[4].

Abdulkholiq Ghijduvoniyy stated that His Majesty Yusuf Hamadoniyy went on hadj (pilgrimage to the sacred cities of Mecca and Medina) on foot, read the Koran 1000 times and learnt by heart 700 books about tafsir, hadith, fiqh, usul, furu and kalam. More than seven hundred apprentices of his from all over the world reached the level of divinity. In the works, the following facts were interestingly illustrated that Yusuf Hamadani often kept fast during day time and prayed during night, therefore eight hundred people of Buddha religion accepted Islam and very many people found the way of the Truth.

The clever student mentions with great respect that his blessed master was a scientist in conversations and circles; he would never say he was a saint in the circles, he did never prevailed himself over others, he did not insult or deride anyone and he applied everybody as “Khoja!” whoever he saw”.

Abdulkholiq Ghijduvoniyy describes some of his teacher’s precepts as follows: He said “Hush dar dam” (be careful of every breath, be careful not to be inattentive), “nazar bar qadam” (look under your feet and straight to avoid sin and neglect) “Safar dar vatan” (travel in the country) and “Hilvat dar anjuman” (be with people externally and be with reality internally). In his outer and inner world, he sat with



modesty, bow and honor ... Sometimes he said: “Hey kings and dignitaries, ignorant people, you are ignorant of the spiritual pleasures of dervishes. Enjoy others with the language quotes. Try to know passion and find out what’s going to happen in soul. Liberate your outer world from distresses because his inner world will be even more dispersed whose outer world is scattered”[5].

It is known that in 2018, 915 years were full after Abdulkholiq Ghijduvoniyy birthday. Therefore, it is planned to hold a number of events and conferences in our country with the order of our Honorary President Shavkat Miriziyoyev. Abdulkholiq Ghijduvoniyy’s pamphlets “Maqamoti Yusuf Hamadoniyy (Risolai Sohibia) *Vasiyatnoma (Testament)” were translated from Persian language by the translators candidate of philological sciences, senior researcher of the institute of Uzbek language, literature and folklore at the Academy of Sciences of Uzbekistan Republic Sayfiddin Sayfulloh and Doctor of Philology, researcher of the Institute of Uzbek language, literature and folklore at the Academy of Sciences of Uzbekistan Republic Nodirxon Hasan and republished in the office of Muslims of Uzbekistan, in “Movarounnahr” publishing house in 2018. In this book, original copies of manuscripts are also added taking into account the different layers of readers and to increase the literacy of the work. In the book, the translators state that there are four copies of “Maqamoti Yusuf Hamadoniyy” as follows: “1. It was based on a single copy by Said Nafisiy and published with the name “Risolai Sohibia” Abdulkholiq Ghijduvoniyy. Risolai Sohibia. Farkhangiy Eronzamin, I. 1953. 78-101-6). 2. It is in the composition of the book by Kamoliddin Haririyyade “Tibyonu vasoili khaqoyiq fi bayoni salosil it-toriq” (Istanbul, library Sulaymonia, Ibrahim Efendi Department, 30.1., 379a-389b. This book is more perfect than the Nafisiy edition). 3. Abdulkholiq Ghijduvoniyy. Maqomoti Yusuf Hamadoniyy. No. 2533, 20-37v. (Mahmud Hasaniy and Gulbahor Muzaffar qizi announced some fragments of this work, see: “Khojai Jahon Khoja Abdulkholiq Ghijduvoniyy” (Tashkent, 1994, 18-22-6). 4. There was



given a short saying in the work “Qandiya” prepared by Mulla Abdulhakim and published by Iraj Afshar (Tehran, 1955, 6-16-6)”[6]. The translators and authors of the foreword note that they carried the uzbek translation of Abdulkholiq Ghijduvoni’s “Maqamoti Yusuf Hamadoni (Risoi Sohibia) * Vasiyatnomoma” through comparing with “Risoi Sohibia”, “Tibyon” and copies of Academy of Sciences of Uzbekistan Republic.

Because, in this work “Maqomoti Yusuf Hamadoni”, there are some irrationalities. It is natural for a smart reader to immediately realize this. For example, in “Maqomot”, there was attempted to prove that Yusuf Hamadoni was involved in military operations, with a view to defining the highly patriotic character of his by the following example. That is, “When Chata and Tuqmok fighters invaded, he fought against them”[6]. “When one of his companions heard that he was martyred in the battle against Chata, Tuqmok and Urus, he prayed the funeral prayer. He prayed a funeral prayer when he heard of the death of any of his friends and didn’t insult anyone didn’t wish bad wishes to Genghis”[8]. Chata is also written with other name “Jete”. It is well known that the Mongols headed by Genghis Khan in 1219 attacked the lands of Movarounnahr and occupied the whole territory in 1220-1221. Genghis Khan, in the later period of his rule, distributed all the territories he had got hold in 1224 to his descendants. The territories of East Turkestan, Yettisuv and Movarounnahr were given to Chigatay, the second son of Genghis. In the 40-ies of the 14th century, Chigatay’s people were divided into two parts: Mongolia and Movarounnahr consisting of Yettisuv, East Turkestan. The Russian Orientalist academician V.V. Bartold left written information that the population in Yettisuv and east Turkestan of Chigatay state kept the ancient Mongolian traditions, despite the fact that the Mongolian tribes became Turkic-speaking. Eastern Mongolian Turkmenized tribes ignored the relative Mongolian Turkic people living in Movarounnahr and called them “karaunas ” – a mixed nation. Continuing his ideas, it



was emphasized that the Turkic Mongols living in Movorounnahr ignored nomadic Mongol tribes living Yettisuv and East Turkestan called them jete (jetah) i.e. invaders[9].

Thus, the Mongols were part of the nation of Chigatay who threatened the great Amir Temur empire in the fourteenth century. How can Yusuf Hamadani, die in 1141 (XII century), express his attitude to the occupation or how it is going to defend the Motherland against the Mongol invasion? Some of these inconsistencies in the "Maqomote" can be attributed to the attempts to exacerbate the patriotism of Yusuf Hamadani by the novelists (as well as to increase the sensitivity of the events).

The well-known scientist and organizer of the great science, I.M.Muminov, studying the thoughts on dissemination of sufism in Movarounnahr in the work of Bedil's philosophical views helps to make a logical conclusion on this issue. I. Muminov separately emphasizes that Sufism appeared in the 8th century as a philosophical doctrine and entered Mavarounnahr through Iran and had a great influence here in 11th and 12th centuries. Also, when evaluating Sufism as a sophisticated philosophic aspect, the scholar states that there are various trends and directions in it, that the study of Sufism requires a special study and that the most important aspects of Sufism are to be analyzed [10]. The scholar states that Sufism started to spread in Movarounnahr, including the territory of present-day Uzbekistan in the second half of the 11th century and the beginning of the 12th century, i.e. during the period of feudal wars and nomadic tribal aggression. According to V.V. Bartold's book "Turkiston madaniy hayoti tarixi (History of Turkestan's Cultural Life)", the flow of Sufism in Movarounnahr started from the school of the 12th century thinker, Yusuf Hamadoni. I.Muminov noted that Yusuf Hamadoni's school had no uniformity, where different streams were observed and he comments that the greatest streams among them were two. In particular, Yusuf Hamadoni and Abdulkholiq Ghijduvoni's teachings of Sufism corresponded to the interests of city workers. I.



Muminov acknowledges that there are basic rules containing “hush dar dam, nazar bar qadam, safar dar vatan, hilvat dar anjuman”, which corresponded to exactly urban people.

Conclusion: I. Muminov, while emphasizing that Yusuf Hamadoniyy had a proficiency of shoemaker, he directly participated in defending Bukhara and Samarkand from the attacks of nomadic tribes, separately explains that Yusuf Hamadoniyy called on his students to work and to acquire a profession. The scientist came to conclusion that it is not possible to say that this stream (i.e. the direction of khojagon N.N.) was a mystical stream of Sufism and that it played a progressive role in the development of literary and social thought in its time. Such positive conclusions emphasized by the scientist about the Sufism with a great braveness during the reign of the soviet ideology, help to logically approach to the issue in this article.

Abdulkholiq Ghijduvoniyy’s “Maqomoti Yusuf Hamadoniyy” is very valuable as a sign of great respect to his master Yusuf Hamadoniyy. The life of these great people is a great school of edification and the spiritual heritage left by them to the generations serve to further develop spiritual mind of our nation. It is necessary to make scientific conclusions being based on a historical method and a logical approach in studying this book.

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THE ACTIVITY OF PUNDITES IN TIBET AND EASTERN TURKESTAN

(based on the materials of Volume of Turkistan)

Sayfullayev Himaydullo Turgunboy ugli
The National University of Uzbekistan
named after Mirzo Ulugbek, Faculty of
History, Lecturer of the department
"World History"
E- mail: radjabov_1994@inbox.ru

Аннотация: XIX асрнинг иккинчи ярмида тузилиши бошланган “Туркистон тўплами” материалларида Туркистон балки, Туркистонга қўшни бўлган минтақалар Осиё мамлакатлари Шарқий Туркистон, Ғарбий Хитой ва Тибет ҳақида ва у ердаги илмий, сиёсий изланишларни олиб борган инглиз агентлари пундит ва муншийлар фаолияти ҳақида қимматли маълумотлар учрайди.

Калит сўзлар: Туркистон тўплами, пундит, мунши, Тибет, Шарқий Туркистон, Т.Г.Монтогомери, Мухаммад-Хамид (ёки Абдулхамид) мунши, Наин Сингх, Сер Дуглас Форсайт.

Annotation: The materials of “Туркистон тўплами”, which began its creation in the second half of the 19th century, provides valuable information about not only Turkestan, but neighboring regions of Turkestan, Asian countries, Eastern Turkestan, West China and Tibet, also the activity of British agents – pundites, munshies involved in scientific, political research there.

Key words: “Туркистон тўплами”, pundit, munshi, Tibet, Eastern Turkestan, T.G.Montogomeri, Muhammad-Hamid (or Abdulhamid) munshi, Nain Singh, Sir Douglas Forsayt.



INTRODUCTION: In recent years, the studying and researching of “Туркистон тўплами” has led to the need not to study not only Turkestan, but also neighboring regions of Turkestan. The studying of geographical location, population, knowledge of religious, local self government above mentioned regions by europeans, the role of the local indigenous population named Pundit is significant.

RESEARCH METHODOLOGY: Western scientists and researchers wrote about Pundites in their works. In particular, the American historian Derek Waller, in his work “The Pundits British exploration of Tibet and Central Asia” wrote valuable information about their activities. The term “pundit” was mainly used for local researchers[1.p.22]. Muslim local population is also referred to as “munshi”. Munshi (in arabian - secretary) - personal secretary, writer in the East, especially in the Central Asian khanates. Munshies were usually educated people[2.p.132]. Munshies differed from ordinary scribes in that they were scientists and sophisticated people. They are charged with writing and decrees of Khans and Amirs. In most of the historical monuments written by them, those who worked in this post have been nicknamed Munshi as a alias. This indicates that the Englishs has attracted local educated people to their services.

The activity of Pundites in Tibet, Ladak, Bhutan and the Ximalai mountain slopes, Munshies in Central Asia, East Turkestan, Afghanistan was written and the materials of “Туркистон тўплами” also confirmed this. In the second half of the XIX century, Britain’s interest in Eastern Turkestan, Tibet and neighboring regions increased. This led to the need to study East Turkestan, Tibet and its surroundings.

ANALYSES AND RESULTS: The British government began to pursue scientific and strategic study of India and adjoining regions by the beginning of the 19th century, under the leadership of Colonel Lempton in 1803, the establishment of the Indian Thrigonametric Service Research Center. And this required English officers



to use other methods of studying adjacent regions[3.p.133]. At the suggestion of the captain of the British administration, the Pundit school at IBTS was organized for the purpose of a scientific strategic study of India's adjacent regions, which consists of representatives of the Indian and Muslim populations in the foothills of the Himalayas in Dehradun[4.p.25]. The activity of the British in exploring their colonial territories and adjacent regions did not remain aloof from the attention of Russian researchers. In particular, the government of the Russian empire in the second half of the 19th century raised the question of creating a center for the study of the region of Turkestan and neighboring countries. First of all, this was due to the need to study these regions. In the first years of their stay in Central Asia, the Russians, apart from information obtained from newspapers and magazines in the region, did not have any source of information. Any researcher was forced to apply to the Petersburg Library. Taking into account these difficulties, the Governor-General of Turkestan Kaufman addresses the Minister of Public Education, DA A. Tolstov, Vice-President of the Academy of Sciences of the Emperor V. Ya. Bunyakov, Director of the Art Library of the Emperor I. D. Delyanov, Director of the Russian of the geographical imperial society F. I. Litke and the head of the headquarters FL Heyden, asks to make copies for the Turkestan library. After that, the Department of Public Education provided Tashkent with 25-volumes of documents from several Russian sources and acts of the archaeological commission as a gift. Copies of 87 different books in Russian, French and German were sent from the Leadership Library of the Imperial Novorossiysk University.[5.p.141]. Soon, on the initiative of the Turkestan Governor-General in 1867, they began to create the collection "Turkiston volume". In this collection, as noted above, they collected valuable materials about Turkestan and adjacent regions, like Western China, East Turkestan and Tibet, and Pundit activities in the region. In particular, we can see that the Pundits carried out effective expeditionary activities in the regions of Tibet and East Turkestan, which linked



China and India. The intellectual Pistale, the Muslim Muhammad-Hamid (or Abdulhamid) Munshi, became the first student of the Punditsky school of Captain Montgomery. He learned primitive cartographic methods and knowledge, special small trigonometric devices were made for him. In the summer of 1863, he set off from Ladakh towards East Turkestan to Yarkand through the Karokorum pass. Muhammad lives in Yarkand for about six months and creates secret maps of the region and paths. He also collected information about Russian officials and soldiers around the East Turkestan region. But officials from the King government suspect Muhammad's activities in Yarkand. Soon Muhammad found out about this, was forced to go back. But difficulties in the way led to his death. The secret cards and information of Muhammad were brought to Captain Montgomery. Including, in the 60-70s of the 19th century, such Indian Muslims from the Punditsky school as Ahmad Shoh, Muhammad Amin, Abdulla Suzha Munshi under the guise of traders collected information on the population, territory and ways of Kashgar and Yarkand regions of East Turkestan and West China, as well as the activities of Russians in the region and local rulers loyal to the British.

In particular, they established active diplomatic ties with the state of the ruler Ettishahar Yakubbek, created by emigrants from the Kokand Khanate in East Turkestan. The expedition of Douglas Forsyth to Kashgar in 1873 was important. The expedition included Indian Muslims pundits. They were instructed to collect information on trade routes, a map of the region, population. In 1874, together with Gordon Trotter, Biddalf, Stolichko, students of the Pandits schools Munshi and Kshen Singh were sent to New Gisar and Pamir[6.p.99]. We can note that the pupils of Pandit schools and munshi were also involved in expeditions and diplomatic journeys organized by the British.

Usually the information collected was first studied by the English military in India and sent to the English journals of the English Royal Society, the Asian



Society. Naing Singh was considered the most prominent representative of the Punditsky school. N.Singh from 1874 to July 1875, the year of March, in connection with the special assignment of the Indian Large Trigonometric Service, was sent to the study of an unidentified Tibet. Even before this expedition began, Nain Singh was considered an active participant in a number of other similar expeditions[7.p.53]. Including, N.Singh in 1856-1857-s accompanied German travelers (Schlagweit) to Ladakh and Kashmir.

Later he continued to work in the Department of Education. In the years 1858-1863, he worked as a teacher and leader in the school of his native Milam. In 1865, N.Singh was called up for another expedition. At this time he was 30 years old and the head of this expedition was Major Ettuala Smith.

Nain Singh studied intelligence and mapping skills for 2 years in Dehradun. In the same year, Nain Singh and his relative Mani Singh set off. They conducted their activities under the hidden name. Nain Singh was named “1-Number”, “Main Pundit” or “GM”[9.p.26]. This expedition was commissioned to collect information on political and trade relations in the territory from Lhasa to Gartok. Nain Singh and Mani Singh managed to join the large merchant caravan as traders. In order to avoid suspicion of locals and traffickers, Nain Singh pretended to be a sick person and collected cartographic information for 1 year before reaching Lhasa. Nain Singh lived in the holy city of Buddhism Lhasa for 3 months, he collected valuable information about the location of the territory, water supply, religion and the city of Lhasa. Naing Singh In April 1866, as part of the caravan, Ladakh came back[8.p.7]. In July 1866, he himself went off on an expedition. Although he was captured by the locals, he managed to escape.

This shows that pupils from Pandit schools were trained even in emergency situations. The studies of Nain Singh proved the inaccuracy of the map of Tibet,



published in 1717 in the Paris atlas D-anvil. And this further increased the interest in unidentified Tibet. For a trip to Lhasa in 1865–1866, Nain Singh was awarded a gold hand watch. After a successful expedition in 1865–1866, Montgomery in 1867 sent three Pundits, Nain Singh, Mani Singh and Kalyana, to the gold mines of Tibet.

But these Pundits, who managed to reach the hinterland of Tibet, were captured by the local nomadic population. After the talks, Naing Singh agreed to leave one member hostage (Money Many). Kalyana was sent to explore the top Indus. And Nain Singh himself went to Thok Dalunga and as a result of his efforts, he discovered a precious metal weighing 0.9 kg. Soon in 1868, the head of Montgomery, James Walker, sent the reports of 1-travel Nain Singh to the editorial board of the Royal Geographical Society. Information about the secret activities of the Pundits were also consecrated in other publications.

It would not be an exaggeration to say that this successful expedition led to an increase in interest in the Pundisi schools and the education of the Pundits not only by Montohomery, but also by the ruling circles of the British. The above mentioned Nain Singh was also one of the most active students of the Pandit schools. Attracts the attention of the information and reports of Montgomery on Western Tibet. The memorandum of his expedition of 1871–1872 to Lake Tengri Nur (Namcho) presents valuable materials about the region. In particular, during these years, one Pundit group began to uncover unidentified territories in the north of the Tibetan water basin in the upper part of the Brahmaputra.[10.p.315-349] In the Tengri Nur Lake Report it is written: Tengri Nur was named Buek Kul, sometimes Nam-Osmon, Cho-kul or Sky Lake and is very large, about 50 feet long, 16-25 miles wide. The lake was filled with 2 large and several small rivers; the water in it was tasteless and quickly froze[11.p.315-349]. As a result of the expedition, he collects valuable materials about Lake Tengri Nur, the surrounding areas, the



monasteries of the city of Lhasa and the activities of Lama. The names of the Pundits of the expedition were not indicated in this memorandum. This was due to the fact that the Pundits' personalities were hiding, or because the information of some Pundits was not officially issued, and the other side that the information was secret and important (about gold mines, important dry roads). Nain Singh, Mani Singh, Kushen Singh, Ahmad Shoh, Muhammad Amin, Abdulla Suzha, Muhammad-Hamid Munshi constitute an exception to this list. Information about the Pundit expeditions was published in the Royal Geographical Society and these data were under the scrutiny of Russian officers. And this we can see in the Turkestan collection. The Turkestan collection is characterized by the interest of the Russian Empire in the study of Terkestan and neighboring regions

CONCLUSION In conclusion, it should be noted that the studies of the British in East Turkestan and Tibet were greatly expanded, while the British widely used the services of local Indians and Muslims. As mentioned above, they are found in official publications as pundits. Pundit activities are regularly covered in the magazines of the Royal Geographical Society. And this was under the attention of Russian researchers, and first of all military.

For this reason, the information found a place in the Turkestan collection. We can distinguish two groups of students of Punditsky English schools: 1-group Pundits - Hindus, 2-group Munshi, that is, local Muslims. The Pundits were also instructed to find allies for the prospect of plans to map the trade caravan routes, places of gold mines, plans for Eastern Turkestan and Tibet.

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THE FOREIGN TRADE OF RUSSIA IN THE END OF XIX - THE BEGINNING OF XX CENTURIES.

Kholliev Azizbek Guzalovich
PhD. Docent History faculty,
National University of Uzbekistan
E-mail: azizbekholliev@gmail.com

Аннотация: Ушбумақолада XIX аср охири – XX аср бошида Россия ташқи савдо алоқалари ривожланишининг асосий йўналишлари тарихий нуқтаи назардан кўриб чиқилади.

Калит сўзлар: савдо, иқтисодий алоқалар, Россия, экспорт, импорт, ташқи иқтисодий сиёсат, савдо айланмаси, жаҳон бозори, баланс (нисбат)

Аннотация: В данной статье с исторической точки зрения рассматриваются основные направления развития внешнеторговых связей России в конце XIX – начале XX веков.

Ключевые слова: торговля, экономические связи, Россия, экспорт, импорт, внешнеэкономическая политика, торговый оборот, мировой рынок, баланс

Annotation: The main directions of development of the foreign trade connections of Russia in the end of XIX - the beginning of XX centuries are considered in given article from the historical point of view.

Keywords: Trade, economic relations, Russia, export, import, the external economic policy, trade turnover, the world market, balance

INTRODUCTION: The historical development of Russia's economic connections with foreign countries is closely related in its content and method to economic theory.



Historical study of foreign economic activity, and in particular foreign trade policy, grows out of the specific practical needs of modern society, and must respond to these requests.

The history of foreign economic relations is considered in its main aspects. This, in the first place, is related to the evolution of foreign trade relations.

During the centuries-old history, the complex and controversial nature of the interaction of the processes of world and Russian trade development is traced, when periods of mutual cooperation are replaced by eras of intense competition. This, in turn, determines the main objectives and goals of studying the history of foreign trade relations of Russia.

The Russian economy is almost unchanged throughout the XIX century. by its nature, it could seek to exceed exports over imports by stimulating the export of agricultural products, timber and raw materials in order to finance the import of industrial goods. The system of these trade relations has a long history, during which the range of foreign trade turnover changed, but not its meaning. [1]

Russia in the post-reform period was not only an active participant in the European and world market, but was also a leader in selected exports.

LITERATURE REVIEW: Features of the economic development of Russia in the end of XIX - the beginning of XX centuries was the subject of constant discussion in historiography. The issues of development of foreign trade relations are reflected in the studies of historians and economists of various historical periods. Such authors include such researchers as: I.K.Babst, B.F.Brandt, I.V. Vernadsky, D.I. Mendeleev, P.B.Struve, V.Vitchevsky, I.M.Kulisher, A.I.Chuprov, A.I.Nikitsky, Yu.V.Gote, N.H.Bunge, M.N.Sobolev, N.P.Ionichev, B.C.Dyakin, Y.F.Subbotin, A.V.Ignatiev, S.A.Pokrovsky, T.M.Kitanin and others.

At the end of the 1850s, the problem of choosing ways of developing the Russian economy between the principles of free trade and the need for government



intervention caused a wide discussion in scientific literature and journalism, in which economists, public and state figures participated these publications laid the foundation for further research, both the theoretical foundations of the country's trade and customs policy, and the study of the development of relations with Russia's trading partners.

The works of scientists of the end nineteenth and the beginning of twentieth centuries were aimed at substantiating their own scientific positions. At the same time, it was they who initiated the study of the history and practice of foreign economic relations of Russia and its foreign trade.

The status and development of historical and economic science, in turn, was determined by the peculiarities of the economic stages that Russia underwent after 1917. At each of the stages, the focus of the researchers was on its main problem, closely related to the need to solve specific political tasks, resulting in the formation of views and concepts, largely due to these features.

Since the 90s of the XX century, the attention of scientists has shifted to a more in-depth and comprehensive study of issues, directly related to solving specific economic problems.

At the same time, the problem of actually studying the role of Russia's foreign trade relations remains at the center of scientific research. How did international trade develop with the participation of Russia? This and similar questions of the history of Russia's foreign economic relations remain relevant for historical and economic science.

RESEARCH METHODOLOGY: The study of the development of foreign trade relations of Russia in the end of XIX –the beginning of XX centuries should be carried out on the basis of certain approaches.

Consideration of the history of foreign trade relations should be based in the relationship of the main aspects of the evolution of the country's foreign economic



activity as a whole and taking into account the conditions of a specific historical period.

In our opinion, the dynamics of foreign economic relations, including foreign trade, the complex mechanism of the formation and development of their leading forms, weave them at different stages. The specifics of the evolution of foreign trade can be studied and understood only in historical sequence and continuity.

The historical experience of the development of foreign trade relations of Russia is a part of the world economic experience.

The study of Russia's foreign trade relations with should not be limited only the accumulation of historical facts, turn into a simple description of events.

It should be consider that in the historical and economic literature many often the fundamental questions of Russian foreign economic history are debatable.

ANALYSES AND RESULTS: Russia's economic development gave rise to economic difficulties and contradictions, in overcoming which an important place was given to foreign trade.

Especially great was its role in solving the problem of the balance of payments.

Tight balance of payments of Russia, developing their own industry to a large extent at the expense of foreign investment, had to be offset by the active balance of foreign trade operations.

It was possible to achieve this in two ways: full expansion of exports and protection of the domestic market from the competition of foreign goods.

With the dynamic development of the Russian economy, above all industry, many countries of the world maintained intensive economic relations with it.

In the second half of XIX century, trade agreements were concluded on the principles of mutual favor with France - in 1857 and 1874, with England and Belgium - in 1858, Italy - in 1863, Switzerland - in 1872, Peru - in 1874, Spain - in 1876, China in 1858 and 1862, with Japan - in 1867 and etc.



With Germany, England, Austria (Austria-Hungary), Italy, France, trade relations were built on the basis of conventional tariffs. Seven states, including China, Persia, Turkey, had bilateral trade treaties with Russia.

Foreign trade was conducted mainly by sea. With the growth of the railway network, the volume of trade across the land borders also increased.

Russia after the reforms of the 60-70s of the XIX century remained an agrarian country, exported, with some exceptions, agricultural products and imported industrial goods.

The turnover of foreign trade from 1860 to 1890 increased by more than three times. The structure of exports remained traditional: agricultural products 75-80%, more than half of it was grain. [2]

It should be noted that the study of Russia's trade policy is complicated the fact that before 1905 there was no special ministry for trade.

Those tasks were assigned to the Ministry of Finance. October 26, 1864 the Department of Commerce and Manufactories was established in the Ministry of Finance.

The department consisted of 4 offices. The third branch - Foreign Trade Relations - was in charge of communication with the consuls, foreign agents, dealt with issues of trade agreements, customs duties, business on the part of merchant shipping and shipbuilding.

In 1872, as an advisory institution under the Ministry of Finance, the Council of Commerce and Manufactures whose task was to represent the interests of Russian industry and commerce began to operate. [3]

In view of the fact that the Ministry of Finance in the end of XIX – the beginning of XX century had not only a great influence on the country's foreign economic policy, countries, and participated in the discussion of foreign policy issues, that was reflected in the mechanisms for making foreign trade decisions.



The intertwining of competencies of the Ministry of Foreign Affairs and the Ministry of Finance has often not only in solving private issues, but also in determining the overall foreign trade rate.

Statistics show that in the second half of the century due to the excess export of goods over the import there was a constant tendency to increase Russia's income from foreign trade. By 1895, as compared with 1889, that income an average increased on 35 % per annum.

The development of Russian foreign trade was extremely uneven. Factors such as economic crises, the size of the harvest, the war, the protective nature of the customs policy of the government, increased competition etc. Russia's foreign trade sensitively responded to changes in the global economy. In the 60-70s, Russian imports outpaced exports. The rapid increase in volume of importation has been caused, first of all, enhanced purchases of transport and industrial equipment abroad.

In the 80s, imports declined. The export of goods from Russia was constantly increasing, especially rapidly after the second half of the 60s. In connection with this, the state of the overall balance of foreign trade also changed, which, since 1877, has been positive for Russia.

Russia traded with both European and Asian countries. The main share of its turnover was in European trade. The exclusive position in the foreign trade of Russia was occupied by England and Germany.

In terms of the value of exported goods, in the first place was bread, the second place belonged to wool, the third - to flax, then came the oilseeds, lard, hemp, and wood. As a result of the progress of the relevant Russian industries, the import of sugar, tobacco, butter, cotton fabrics and other goods has decreased.

A stable and highly profitable contribution of Russian industrial exports in the post-reform era is the export of oil and oil products from the Baku oil region to the world market.



Oil production here rose from 557 thousand poods in 1865 to 21.5 million in 1880 and to 489 million poods in 1898. [4]

Russia played an important role in the formation of the world grain market, occupied a dominant position among European countries-exporters of grain. During the period from 1866 to 1899, exports of bread grew more than second.

Russian wheat was imported into all Western European states, but England was the main consumer (a quarter of all exports). After Russia Germany, France, Italy, Holland, Greece etc.

Grain export statistics show that it actually grew faster than grain production. Between 1884 and 1904 grain exports increased by 3.5% per year, while the annual increase in grain production was 2.5%. [5]

The shift of the center for the production of marketable grain to the southern and southeastern regions in the 70-80s predetermined their transformation into the breadbasket not only in Russia, but also in Western Europe. If in the first half of the 19th century St. Petersburg was the main port for exporting grain, then in the post-reform period the role of the ports of the Black and Azov Seas increased significantly. Through them, the bulk of agricultural exports went to foreign markets.

The task of bringing out as much bread as possible to the external market in order to be able to make ends meet in the balance of payments becomes one of the main ones in the foreign trade policy of the tsarist government.

In the structure of Russian exports, manufactured goods accounted for only 3-4 percent, with most of them exported to the border countries of Asia.

The foreign trade policy of the Russian government at the beginning of the twentieth century was determined by two main reasons: the desire to create their own industry and fiscal considerations. Along with the trade surplus, customs duties served as an important source of repayment of overseas loans.



In the beginning of XX century, Russia imported mainly industrial goods, which in turn meant, that the demand for consumer goods gradually began to meet the dynamically developing Russian industry.

The structure of foreign trade on the eve of World War I reflected the agricultural character of the country's economy. Among the exported goods from Russia, as in previous years, the leading place was occupied by the products of agriculture. The first place in Russian exports remained firmly for bread. In addition to grain products, Russia on the eve of World War I exported eggs, oil, flax, leather, furs, and a large amount of wood (mostly in unprocessed form). Timber removal was in second place.

Among industrial goods, Russia continued to export cotton fabrics, metals, petroleum products, manganese ore, metal products, and glass abroad.

The growth of exports led to an increase in imports of industrial goods, which served as convincing evidence of Russia's economic growth and expansion of its foreign economic relations, and active participation in the global division of labor.

Industrial goods and some types of raw materials — machinery and equipment, metals (ferrous and non-ferrous), coal, chemical goods, cotton, raw silk, yarn, tea — prevailed among imported goods.

As the industry developed, the demand for imports of industrial goods declined, and before World War I, Russia's dependence on foreign countries remained mainly in the supply of machinery and equipment, chemical products and certain types of non-ferrous metallurgy products.

CONCLUSION: Foreign trade relations of Russia have a long history. They originated in the form of international trade in the era of the formation of statehood of Eastern Slavic tribes and went through several major and lengthy stages in their development, relevant historical milestones of the development of the Russian state and society.



In the second half of XIX century, external economic relations (trade, loans, investments) took a key place in the process of modernization of the Russian economy. A moderate "protective-prohibitive" customs policy was pursued.

As a result of the reforms of the 60-70s, Russia embarked on a long path of its historical development in the direction of creating an industrial market economy and breaking down the archaic social and state structure.

The dynamics of foreign trade relations depended on the development of the entire economy as a whole, determined by the role of industry and the improvement of the productive forces of society.

In the beginning of XX century, Russia's economic growth proceeded in the forms as the economy of the countries of Western Europe, the development of foreign trade relations was determined by the general laws inherent in the global economy. In turn, foreign trade activity had a great influence on the course of Russia's economic development.

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STUDYING KHOREZM LITERARY ENVIRONMENT OF THE XIX CENTURY IN RUSSIA

Adambaeva Nargiza Kadambaевна
Lecturer, Department of Languages,
Urgench branch of Tashkent medical academy
E –mail : mumtaz1980@mail.ru

Annotatsiya: Maqolada Xorazmda XIV-XX asrlarda yashagan va faoliyat olib borgan shoirlar va davlat arboblari, ushbu tarixiy davrning madaniy hayotini o'rgangan sharqshunoslarning ilmiy faoliyati o'rganilgan. A.N. Samoilovichning nodir qo'lyozmalarining topilmalari, adabiy muhit haqida haqiqiy faktlarni umumlashtiradi va taqdim etadi.

Kalit soʻzlar: Xiva, Xorazm, XIX asr, Said Muhammad Raximxon Feruz II, arxiv, qo'lyozma, “Turk etyudlari”, Xiva sheʼriyati;

Аннотация: В статье рассматриваются поэты и государственные деятели, которые жили и работали в Хорезме в XIV-XX веках, изучается научная деятельность востоковедов, изучавших культурную жизнь этой исторической эпохи. Находки редких рукописей отраженные в работах А.Н. Самойловича обобщены и приведены реальные факты о литературной среде.



Ключевые слова: Хива, Хорезм, XIX век, Сеид Мухаммед Рахим Хан Феруз II, придворные книгохранилища, архив, рукописи, «Турецкие этюды», хивинская поэзия;

Abstract: The article deals with the poet and statesmen who lived and worked in Khorezm in the XIV-XX centuries, investigates the scientific activity of the Orientalists, who studied the cultural life of this historical epoch. The findings of rare manuscripts reflected in the works of A.N. Samoylovich are summarized and given real facts about literary environment.

Key words: Khiva, Khorezm, the XIX century, Seid Mohammed Rakhim Khan Feruz II, court book depository, archive, manuscript, «Turkish etudes», poetry of Khiva;

Introduction. Studying the works created by the Khorezm literary poets is one of the most important tasks of today's scientific thought and ideology of independence. Even though there are significant shifts in Khorezmian science in recent years, we can not say that all the creativity of the Khorezm poets has been studied, its works have been collected and published. The rich cultural heritage of our past, the advanced traditions of the Oriental thinkers, national values, the works created on the basis of the humanistic essence of the Islamic religion are examples of all forms of creativity. Studying, researching and popularizing this rare part of Khorezm poets' legacy is one of the criteria for spiritual upbringing. Therefore, manuscript sources, which have a wide range of creativity that overcomes the darkness of the past, should not only serve to decorate shelves. Today, the state-wide attention to spirituality and enlightenment issues is of great scientific and practical significance for today to learn from the ideas of the poet's heritage and the rich heritage of Khorezm's literary heritage.



From the 14th century, Khorezm has restored its former position. As a result of the separation of Khorezm from the Golden Horde, it created a basis for further development of science, culture, literature and art. In the middle of the XIV century, Abu Abdullah Muhammad Batuta, who arrived in Khorezm, wrote remarkable ideas about the cities of Khorezm, their history, monuments and so on. Many scientists wrote about the restoration of their ancient traditions in the 14th century.

During this period, literature and art were dramatically revived. Khwarizmi's "Muhabbatnoma", Sheikh Sharifiy's "Minul Murid", Saifi Saroyi's "Suhayl and Guldursun", Rabguziy's "Qissai Rabguziy", Qutb Khwarizmi's "Khusrav and Shirin", by Maulana Ishaq Khwarizmi and Al-Khwarizmi's qaseeda, gazelles and a number of satirical poems were created in the XIV-XVI centuries.

Academic and university oriental studies in Russia grew out of a single root and throughout its history had a comprehensive, applied and research character. St. Petersburg was the city in which Russian science began and took shape, including oriental studies. Due to the geographical position, history, nature of the population, relations with neighbors, - Oriental studies became the focus of Russia's national interests and was one of the important factors of Russian culture. A.N. Samoilovich is a Russian Orientalist, an outstanding Turkologist, one of the scholars who studied the Khorezm literary environment of the XIX century wrote in his notes on the Khiva Khanate, he repeatedly noted that the current ruler of ancient Khorezm inherited from his father the gift of a poet. He was the last independent khan of Khorezm. In 1873, despite the resistance, the Khanate was under the protectorate of Russia. Since 1896, Lieutenant-General, since 1904 the general from the cavalry. Emperor Nicholas II in 1902 gave the khan the title of "Serene Highness". A.N. Samoylovich became the authoritative organizer of linguistic studies in Russia. He was a member of the scholars invited by the Committee to study Central and East Asia on historical,



archaeological, linguistic, and ethnographic issues. His main works are devoted to Turkic philology.

Literature review. Studying the archival works of A.N. Samoylovich, we witnessed a high talent of an orientalist scholar, a connoisseur of Turkic studies: a deep analyst, an academician who has his own unique method of presentation. Unpublished scientific research related to the literary environment of Khorezm of the XIX century is stored in the manuscript fund of the Russian National Library. Saltikova Shchedrin. (Archive of A.N. Samoylovich RNB F. 671). Archival data helps to provide a wider picture of the literary environment of Khorezm, reveal new facts in the study of the scientific and creative activities of a scientist in full, also allows to evaluate the prominent role of a wide-ranging Russian turkologist.

A.N.Samoilovich is a Russian Orientalist, an outstanding Turkologist, one of the scholars who studied the Khorezm literary environment of the XIX century wrote in his notes on the Khiva Khanate, he repeatedly noted that the current ruler of ancient Khorezm inherited from his father the gift of a poet. He was the last independent khan of Khorezm. In 1873, despite the resistance, the Khanate was under the protectorate of Russia. Since 1896, Lieutenant-General, since 1904 the general from the cavalry. Emperor Nicholas II in 1902 gave the khan the title of "Serene Highness".

From the report of A.N. Samoylovich's trip to the Turkestan region in 1908, it becomes clear that in the process of familiarization with the Khan's personal libraries, he was able to find and study several rare manuscripts. As a result of these studies, a scientific work called "Turkish Etudes" (1917-1918), unpublished to this day fully multi-faceted work of the scientist. This work, with a total volume of more than 800 pages, along with numerous facets of Uzbek literature, also highlights the history of the literary environment of Khorezm of the 19th century. (Archive. F. 671



units.ed.00). Rare data on the palace literature of Khiva, on the Khan libraries, about the existence of Arab, Persian, Turkic manuscripts in them, about well-known and unknown to science poets, about the palace printing house. "Today, the hanantied Seid Mohammed Raheem II (1844-1910), the enlightened patron of Khiva science and art, showed full readiness to promote the scientific study of his country and opened me access also to his own personal book treasures". A.N. Samoylovich also reports: "My brief review of the Khiva court showed how fruitful were the seeds thrown on the Khiva ground by the first writers of the XIX century" (Archive. F. 671.145)

Research methodology. In the history of Uzbek classical literature, the 19th century is considered the Renaissance epoch. It was during this period that the development of lyrical genres was traced, the creation and correspondence of many historical, prosaic, poetic and translation works rich in content in Khorezm, it reveals the outstanding importance of this country in the history of the culture of Turkish peoples in general and in the history of the Central Asian-Turkish literary language in particular".

A.N.Samoylovich is the author of various books and articles describing the high attention paid to literature under the Khanate, the cultural life of Khorezm, and samples of literary works in Russian ("rubai", "gazelle", "muhammas", "mesnevi", "kyta), representatives of literature of the same time.

In the summer of 1908, A.N.Samoylovich met with the palace officials as Abdullajon Devonbegi, Muhammad Sharif Hoji Devonbegi and Bekjan Devonbegs. Later they sent letters to A.N.Samoylovich with high calligraphy samples. On September 27, 1910, Bekzhan Rahimov (Bekjan Devonbegi knew the Russian language and signed in Russian), wrote in his last letter the poem of the palace poet



Ahmad Tabib on the occasion of the death of Muhammad Rakhimhan Feruz and the reign of Isfandiyarhan and the chronograph of these two great events.

In the winter of 1913, A.N.Samoylovich heard the news about Ahmad Tabib's death and published the original version of the poem and chronogram of the letter in order to show his high regard for them, who had the positive qualities of Uzbek people, such as sincerity, humanity, hospitality - Muhammad Rakhimkhon Feruz, the Khiva Khan, who made a great contribution to the development of art and literature, the master of poet Ahmed Tabib, who was always ready to share his literary knowledge with Samoylovich.

Analysis and results. As it became clear from the above, the scientific and artistic, educational flourishing of Khorezm, which re-entered into force in the 19th century, gained an interest and comprehensive study, not only from domestic scientists, also did not leave Russian orientalists without attention. A.N.Samoylovich versatile creative figure, turkologist, one of the scientists who most studied the Khorezm literary environment of the XIX century. But the works of a scientist in this field are almost not studied. This information was also set aside, without due attention in the recently published volume of selected works of A.I. Samoylovich. There is a need to appreciate his contribution to the study of the literary environment of Khorezm. Since A.N. Samoylovich was more interested in the inexhaustible wealth of materials on Turkology, mostly unpublished and not surveyed, especially handwritten treasures. This indicates the relevance and novelty of this article.

Conclusion. In short, despite the difficulties of each era in the XIII-XX centuries, the literary process in Khorezm did not stop. On the contrary, the creators and writers created not only the Khorezm literary environment, but also invaluable and rare artifacts that contributed to the development of world literature. Who lived in this land, this land, this invaluable heritage of classical thinkers, poets and writers to



conduct research and learn scientific thinking from day to day in the current period is one of the important tasks facing the people of knowledge.

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UDC: 375

A GREAT TRAVEL OR THE NEW VIEW ON THE SETTLEMENT OF MENNONITES IN KHOREZM

**Rakhimova Shoira Atabekovna,
Senior Lecturer of the chair of "Languages",
Treatment faculty, Urgench branch
of Tashkent Medical Academy**

**Djumaniyazov Djasurbek Nazarbeyevich,
deputy Dean on Spiritual and enlightenment affairs
Urgench branch of Tashkent Medical Academy
Urgench, Uzbekistan
e.mail address: shoira77.77@bk.ru**

Annotatsiya: Ushbu maqolada O'rta Osiyoda, xususan, Xorazm viloyatida istiqomat qilgan Mennonitlar haqida ma'lumot beriladi. 1881 yilning avgustida Toshkentga Trakt nomli Mennonitlar guruhi keldi. Ular Turkiston bosh gubernatori Kaufman tomonidan qabul qilingan. O'rta Osiyo mamlakatlarida ular mahalliy aholiga ko'plab foydali kasblarni o'rgatganlar

Kalitso'zlar: Mennonitlar, Xiva xonligi, Trakt, Oqmachit, Xorazm viloyati, O'rta Osiyo mamlakatlari, Klass Epp, gubernator Kaufman, cherkov, Vilgelm Penner

Аннотация: В этой статье приводится информация о меннонитах, которые жили в Средней Азии, а именно в Хорезмской области. В августе 1881 года группа меннонитов по имени Тракт прибыла в Ташкент. Они были приняты генеральным губернатором Туркестана Кауфманом. Во время своего пребывания на территории Центральной Азии они обучали местных жителей многим полезным работам.

Ключевые слова: Меннониты, Хивинское ханство, группа по имени Тракт,



Акмачит, Хорезмская область, страны Средней Азии, Класс Эп, губернатор
Кауфман, церковь, Вильгельм Пеннер

Annotation: In this article is given information about Mennonites who lived in the Central Asia, exactly in Khorezm region. In August 1881, a group of Mennonites called Trakt, arrived at Tashkent. They were accepted by Turkestan General Governor Kaufman. During their stay in the Central Asian territory they taught local people many interesting and useful jobs.

Key words: Mennonites, Khiva Khannate, Trakt, AkMetchet, Khorezm region, Central Asian countries, Class Epp, Governor Kaufman, church, Wilhem Penner

Introduction Mennonites originating is connected with the Dutchman Menno Simons. Menno Simons, who lived in 1496-1561, was considered as a great philosopher and a religious scientist. He was born in 1496, in the Dutch city of Witmarsum. Menno Simons reformed Christianity in the early 16th century. According to the religious doctrines of Mennonites, against to obedience, oppression, evil and the power of violence, they propagated ideas of spiritual perfection. Mennonites regarded such things as obtaining weapons, taking part in wars, and killing innocents as non-religious phenomenon. His religious reform was strongly being harassed. The priests, the kings, and the military particularly confronted against to this religious current. Those, who were involved in this religious movement were exterminated and burned in the fire. Mennonites, who could not tolerate severe persecution and difficulties, decided to take a long and difficult journey.

Literature review Many Mennonites, in the mid-16th century, moved and located in the Prussian region of Western Germany. At the end of the 18 and early 19th centuries, a group of Mennonites came and settled in Ukraine.

The Prussian government begins to prepare for the war with France from the



second half of the 19th century. Mennonites refuse to give soldiers to the Prussian army. During 1853-1884, over 18,000 Mennonites settled down in Russia and the Canadian Canal through the Atlantic Ocean. From 1922 to 1926, they traveled through the United States to Kansas, Mexico, and Paraguay. In 1853-1861 Mennonites came to Russia's Volga River, Saratov, and Samara.

In 1874, Russia declared a total military obligation to all the citizens, regardless of their ethnic and religious beliefs. This law comes into force in 1880.

On July 3, 1880, a group of Mennonites called Khausan, consisting of 10 families, came by railroad car and settled in Kaplanbek village near Tashkent. They were here until October 18, 1880.

By the period of time August, 1880 till August 1881, over 6 groups consisting of more than 100 families, the Mennonites, called Medental, Valdekheim and Molotschna arrived by train at Tashkent and they lived in Kaplanbek till the end of November, 1889.

In August 1881, a group of Mennonites called Trakt, arrived at Tashkent. They were accepted by Turkestan General Governor Kaufman (1867-1882). Kaufman invites Mennonites to live in the vast territory of Turkestan.[1]

Research methodology They lived in the village of Awliyo Ata for a while. In September 1881, the group of Mennonites, named Trakt, due to the disturbances in Tashkent and Kokand Khanate on five railroad cars; moved to the village of Saraybulak, belonging to the Emirate of Bukhara. The Emir of Bukhara Muzaffarkhon strongly opposed them to live in Bukhara. In addition, the Mennonites are facing a serious oppression from a group of Muslim religious leaders in the Bukharan emirate, because the Mennonite women did not wear "parandji". After 9 months living in Sarabulak, following the invitation of Muhammad Rakhimkhon II, Mennonites go to Khiivakhon in spring, 1882. At that time, 39 Mennonite families came to Lauzan village, near the Amu Darya River. Mennonites, who faced difficulties, decided to leave to America. Mennonite Emil Rayson came to the reception of the Khiva Khan Muhammad



Rakhimkhon II, who referred to him with deep respect and promised them to protect.[2] As a financial assistance Khiva Khan gave \$ 2000 to Mennonites and peaceful, quiet, serene place for living located in the khan area 12 km from Khiva in the Southern-east on the shores of Shoirlake in the village of Chigirchi. On April 16, 1884, ClaasEpp, Emil Rayson, WilhemPenner, Jacob Jantzen, Michael Klaassen, and 34 other families settled in AkMetchet.

Results and discussion They lived independently and freely. Mennonites had their own administrative authority. Mennonites living in AkMetchet were led by ClaasEpp, in 1884-1913, who was born on September 21, 1838 in Furtsverder, Prussia. The AkMetchet was founded by ClaasEpp, who built a church in the area where he came to conduct religious services. The church was very high, white painted and served at one time to 25 Mennonites. The local people called the church " AkMetchet ", after that, the Mennonites's place have been named after " AkMetchet " by local people. Under the leadership of ClaasEpp housing, schools, hospitals, churches and other administrative buildings were built in AkMetchet. They have set themselves their own criminal and administrative cases. ClaasEpp died on 19 January 1913 in AkMetchet.[3]

The local population and a group of historians from Khorezm considered the Mennonites living in AkMetchet as "Germans", who originally were the Mennonites of the Netherlands. For a long time they lived in Prussia in Germany, this was the reason they spoke German.

The reconstructing work and parquet floor part of the "Nurullaboy" palace in Khiva khanate was built in the early 20th century by Mennonites in European style. In 1934, Mennonites celebrated their 50th anniversary at Whitehall.[4] During the jubilee, Mennonite schoolchildren's performances and musical performances were demonstrated. They describe the martyrdom of the Mennonites from the great historical process starting from the 16th century in the Netherlands, and the painful, difficult life till 1934. Mennonites, who have lived 50 years, during the jubilee were photographed for memory.



The merit of the Mennonites, who lived in AkMetchet from 1884 to 1935, was enormous in the representation of the film-photography in Khorezm. From WilhemPenner, as the Khivans called him "PanarBuva", KhudeiberganDevonov learned photography, film art, and founded the first film-photography art in Central Asia.[5] In addition, Mennonites had done a great deal in the socio-economic life of Khorezm district. In particular, they helped local population in creating new types of cotton and shrubs, in medical care, home-locking, in the sphere of chemistry, photography, planting potatoes, tomatoes, cucumbers and other crops, cultivation. They brought European house heating system, had brought fireplaces, slopes and other European culture, music and art.[6]

In 1925, the former Soviet Union government adopted the markhian doctrine about the life of Mennonites. According to the doctrine the huge requires were put to Mennonites. After that, a group of AkMetchet Mennonites visited Moscow and signed the Kalinin agreement. In 1935, 10 people from the AkMetchet Mennonites opposed Kalinin's agreement and refused to comply with the terms of the contract. Mennonites who opposed the Soviet government's decision were arrested and shot dead.[7]

Conclusion It is also worth mentioning that the Mennonites were strong persecuted during the era of Russian imperialism. In the 1925-1930 period of water reforms, the period of community, was very expensive for AkMetchet Mennonites. [8]They instead of suggested forming of collecting farms gave a plan of creating a farming enterprise, which is a system of market-based systems. The Russian government denied their offer. In 1935, the Mennonites who lived in AkMetchet, were forced to abandon the AkMetchet.[9]

In summary, the Mennonites, who lived in Khorezm during 53 years (1882-1935), left a great mark on the socio-economic and cultural life of Khorezm region. The Soviet government's totalitarian policy, along with the local people, also did not overlook the AkMetchet Mennonites. Thanks to independence, their bright memories are



being restored.[10]

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HISTORIOGRAPHY OF THE FIRST STATEHOOD FORMATION IN KHOREZM

Utkir Ismailovich Abdullayev
UrgenchStateUniversity
PhD. Associate Professor
of History Department
E-mail: adullaev_u@mail.ru

Аннотация: В статье рассмотрена иллюстрация истории первого государства в Хорезме в современной историографии. И проанализированы идеи и комментарии ученых истории

Ключевые слова: Э.В. Ртвеладзе, А.С. Сагдуллаев, Кузаликир, Бактрия, Хорезм, Согдиана, Маргиана, Фергана.

Аннотация: Мақолада Хоразм воҳасида илк давлатчилик тарихининг ҳозирги замон тарихшунослигида ёритилиши қараб чиқилган. Бу борада тарихчи олимларнинг фикр ва изоҳлари таҳлил қилинган.

Калит сўзлар: Э.В. Ртвеладзе, А.С. Сагдуллаев, Кўзаликир, Бактрия, Хоразм, Сўғдиёна, Марғиёна, Фарғона.

Annotation: The article deals with the illustration of the first statehood history in Khorezm oasis in modern historiography. There were analyzed ideas and comments of historian scientists on the issue.

Key words: E.V. Rtveladze, A.S. Sagdullaev, Kuzaligir, Bactria, Khorezm, Sogdiana, Marghiana, Fergana.



Introduction: The study of the history of the first statehood in Central Asia began in Europe in the 60-70s of the 19th century. A number of orientalists, including M. Dunker, V. Tomashek, V. Geyger, E. Raysh, J.D. Prashek argued that there were ancient states in Central Asia before the time of Ahamanides on the basis of the information in “Avesto” and according to the Greek historians Gekatey, Herodotus and Ktesi[1, p. 187]. In the article by S.P. Tolstov “The Main Problems of the Ancient Asian History” published in 1938, there were analyzed some results of the study of the first statehood[2, p. 176-203]. This issue has hardly been studied in terms of historiography.

In the early 20th century, I. Markvart placed the country Aryonam Vajjo, mentioned in Avesto, in Khorezm oasis. In the 30s of the 20th century, I. Markvart founded the view of the Khorezmian kingship, which unites the great majority of Central Asia in the time of Ahamanides, based on the idea of Herodotus about the use of the water in the Akes River by Khorezmians and other peoples [3, p. 9-10]. From the 50s of the last century, this problem has been interpreted as the “Big Khorezm” association.

S.P. Tolstov writes that “it is a political association that is a confederation of the military democracy and it became a state association, the history of which is peculiar to the 8th and 7th centuries B.C. and exactly during that period Khorezm's great irrigation system was erected” [4, p. 341].

Based on the story of Herodotus about the battle between the armies of Cyrus II and Tumaris, S.P. Tolstov made a conclusion that the massaget tribes had a large political military presence in Central Asia before the Ahamanides' era [5, p. 103-104]. The information about this association was reflected in the writings of the ancient Persian Emperors and it was also mentioned in the messages in Behistun writings about the attacks of King Darius I against the Saks [6, p. 231-250].



I. Matkvart and later S.P. Tolstov compared the borders of the Khorezmian kingdom with the territories of Parthia, Khorezm, Areia and Sogdiana, which were united in the 16th territory of state of the Ahamanides. V.B. Henning and I. Gershevich wrote that till the move of Persian king Cyrus II to Central Asia, the center of the Khorezm kingdom was situated in the oasis of Herirud-Tajan river and in Herat and Marv; and the center of Great Khorezm was Herat and Marv [7, p. 40-43]. Khorezm oasis was included into the composition of that state. This idea has been originated from the idea that Khoresmians were located in the south until the occupation of Ahamanides. It is well known that the ancient Greek historian Gekatey reported that people called “Khoresmians” lived in the territories to the east of Parthia. In Herodotus’ book “History”, the geographical location of Khoresmians is surrounded by the Akes River oasis surrounded by mountains.

Literature review: V.V. Struve noted that cultural and political effect field of Khorezm was extensive and Khorezm included feet of the Kopet mountain and the country Tajan [8, p. 560-591].

According to the ideas of V.M. Masson, in the territory of Khorezm oasis, the ruins of urban territories and houses and fortresses, built with wattle and daub and raw-brick peculiar to the 8th and 7th centuries, were not discovered and investigated. V.M. Masson denied the very early appearance of statehood in Khorezm [9, p. 125-126]. The researcher also made the following conclusion: “The primitive community relations in Khorezm collapsed and the union of the Sak tribes in the first half of the 6th century passed its political influence to some southern regions” [9, p. 127]. The Akes River on the geographical location and historical geography of Khoremians reflected in the Herodotus’ work was compared to Tajan oasis by V.M. Masson [10, p. 173-174].



Opinions about the political association “Great Khorezm” the center of which was Herat and Marv have been reflected in the publications of various scientists[11, p. 64-65].

I.M. Dyakonov writes that Girkania, Parthia, Areia and Khorezm were separate administrative districts of Midia [12, p. 349]. This idea denies the existence of Great Khorezm association because all the provinces that form this association were developed within the Median state.

In the late 40s of the 20th century, there began to be drawn the results of archaeological studies i.e. including archaeological materials, together with written sources with the purpose of studying the first statehood problem. Their analysis was illustrated in the following works: S.P. Tolstov's “Ancient Khorezm”, “Searching Ancient Khorezmian Culture”, M.M. Dyakonov's “Formation of the Class Society in North Bactria”, V.M. Masson's “Early Husbandry Culture of Marghiana” [4, p. 341].

S.P. Tolstov, being based on the information of archeological materials and written sources, said that the confederation of military democracy was organized before the period of Ahamanides and it gradually became a state association and he compared the fortress “vara” mentioned in “Avesto” with the ruins of the town of Kuzaliqir, which was surrounded by defensive walls[5, p. 93].

Formational approach (gradually exchanging of social-economic formations and methods of production) was superior in the illustration of statehood's history in the historical sciences of the Soviet era and they explained the emergence of the first states connecting with the aggravation of the struggle between opposite classes in society. According to the views of that period, the first state was a product of the class society and its class essence was the main indicator[13, p. 17].



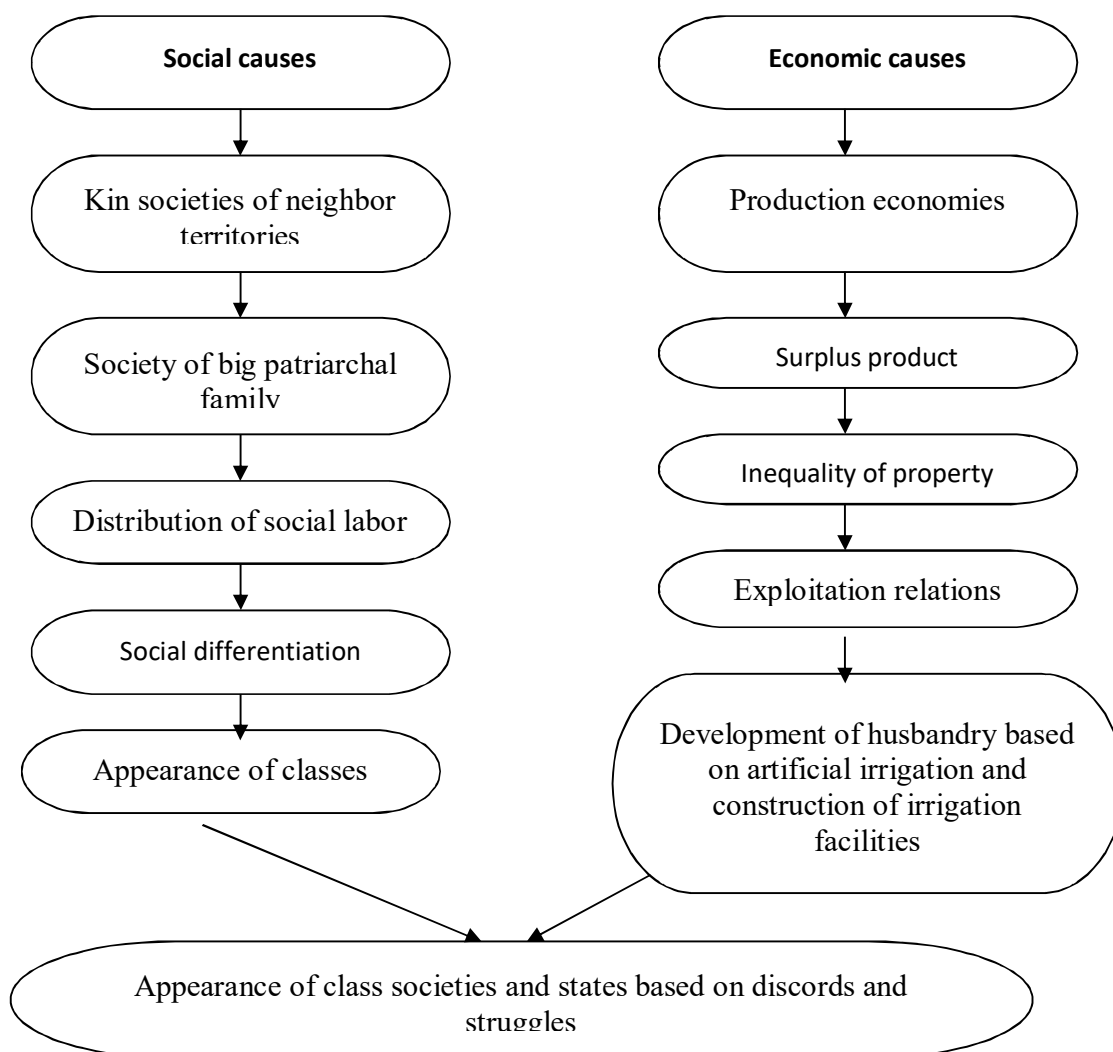
In the 30s and 50s of the 20th century, the question of the nature of the formation of statehood in Central Asia and the study of the laws of development became an important issue and there appeared a question what kind of socially-economic and political characters the first states had in the region. But due to the lack of historical sources, it was difficult to answer that question.

In the ancient East, farming based on artificial irrigation demanded more complex irrigation facilities and considering that fact, scientists have concluded that such similar processes had taken place in Central Asia and many people in the region were forced by the state to build irrigation canals. At first, this idea was developed by S.P. Tolstov and later M.M. Dyakonov illustrated the same reasons as the main factor in the formation of statehood[14, p. 75].

According to the theory that dominated till the 1990s, the causes and factors of the origin of statehood in Central Asia were described as follows:

Research Methodology

Causes and Factors of the Origin of Statehood in Central Asia



This table fully illustrates the sense of class theory, which was superior in the historical sciences of the former Soviet period.

Firstly, studying this issue according to the history of the first statehood problem in Central Asia was connected with the historical date – chronology of emergence of states in the region and the definition of their territorial location and the following issues are important in this direction:

1. To determine the historical geography and territorial location of Khorezm kingdom or Great Khorezm state.



2. To analyze the territorial structure of the political association “Aryoshayyona” mentioned in Avesto.

3. To prove the existence of the ancient Bactrian Kingdom and to determine its historical date.

In the early 60s of the 20th century, the issue of “Great Khorezm” was analyzed by V.A. Livshits [15, p. 151-154]. Also, this controversial topic is reflected in the investigations of I.M. Dyakonov, R. Fray, I.V. Pyankov and M.G. Vorobeveva [16, p. 122-154].

S.P. Tolstov connected the existence of large irrigation canals in Khorezm in the 8th and 7th centuries with powerful central government policy and came to conclusion that if there had been no state organization in Khorezm, it would not have been possible to create such large irrigation systems [5, p. 103].

V.M. Masson noted that “Large irrigation facilities in Khorezm appeared in 6th and 5th centuries B.C. and in the 9th and 8th centuries, the culture of Amirabad cultivation and livestock farming in Khorezm was preserved and the features of the local Bronze Age culture continued to be preserved in the Khorezmian land, which consisted of half-cellars and ceramic bottles” [9, p. 126].

The theory of the Great Khorezm state, which included Sogdiana, Marghiana, Parthia and Aria, was also rejected and according to V.M. Masson, Sogdiana and Marghiana were historically and culturally closer to Bactria from ancient times.

In the history of that period, it was imagined that Khoresmians – people of Khorezm originally lived in the southern part of Central Asia and as a result of the ancient Persians Khorezmians were smashed from the south to the Lower Amu Darya or were forced to return to the Khorezm oasis by Persian king. Histology of this problem was fully illustrated by I.V. Pyankov [17, p. 1972].



M.G. Vorobeveva examined the conclusions peculiar to the problem of Great Khorezm and revealed her following ideas: “Great Khorezm did not unite the territories of Kopet Mountain, Tajan-Herat and Marv oasis in the south. This was not confirmed on the basis of archaeological evidence; the Khoreemians were not moved from the south to the Lower Amu-Darya, but on the contrary, Khorezmians emerged particularly in Khorezm oasis as native people, the southern borders of ancient Khorezm reached the territories of the Middle Amu Darya” [18, p. 38-41]. I.N. Khlopin also wrote that the state founded by Khoresmians in southern Central Asia had never developed [19, p. 56-57].

Drawing his own attention to this issue, A.S. Sagdullaev came to another conclusion. According to him, at the beginning of the 1st millennium B.C., there began migrations of the population of Marghiana and Bactria to the Middle Amu Darya and Kashkadarya oasis. Groups of the southern population were located in Khorezm either. They were mixed with the local population and as a result of this process, the nation “Khoresmians” was founded, which was mentioned in written sources i.e. according to the researcher, Khoresmians did not reside in the southern part of Central Asia till the period of Ahamanides, but they appeared particularly in Khorezm as a result of mixture of the local population in Marghiana, Bactria and the Lower Amu Darya [20, p. 17].

During the years of independence a great deal of attention was paid to the study of the statehood processes in Khorezm oasis. Y.A. Rapoport and M.G. Veinberg’s information is remarkable on the issue [21, p. 31]. They have interpreted the statehood problem in a new way. Researcher L.T. Yablonskiy studied migration processes related to the confederation of nomads and Saks and their impact on the formation of statehood in Khorezm [22, p. 328]. VN. Yagodin also drew his attention to this problem in his articles and put forward the idea that the center of Khorezm’s



statehood corresponded to the lake Sarykamish and the southern Khorezm region, where the main center was the town of Kuzaligir and Khazorasp [23, p. 70-78]. Later archaeological investigations by S.B. Bolelov, S. Baratov, Sh. Matrasulov, V.N. Yagodin, G.Kh. Khojaniyazov play an important role [24, p. 85-90].

I.V. Pyankov considered the issue of “Great Khorezm” state and analyzed the conclusions of I. Markvart, V. Khenning, I. Gershevich, S.P. Tolstov, I.M. Dyakonov, M.G. Vorobeva, I.N. Khlopin and other researchers. According to the Greek historian Gekatey, the scientist concluded that the Khorezmian territory was connected to the mountain foots in Turkmen-Khurasan and that the Khorezm people were moved from the south to the lower Amu-Darya territories during the period of Ahamanids and denies the existence of Khorezm state in the lower Amu Darya like V.M. Masson and M.A. Dandamaev [25, p. 239-241].

According to A.A. Askarov, “the first homeland of Khoresmains was to the south of Bactria, to the East of Areia – in the upper reaches of Herirud and Hilmend rivers, in the present Heart valley” [26, p. 113].

Researcher S.B. Bolelov agreed to the conclusion about the migration of Bactria’s population onto the territories of the Middle Amu Darya and Khorezm [20, p. 17] and wrote that this event happened in the first half of the 6th century B.C. [27, p. 90]. According to V.N. Yagodin, the archaeological evidence found in Khumbuztepa shows that the population of Bactria was migrated to Khorezm [23, p. 71].

In the Khorezm oasis, farming tribes inhabited the small riverbed oases, near the banks of river and nearby artificial structures. The population of Khorezm oasis might have built cities or states, such as the Kuzaligir because of military-political condition before the occupation of Ahamanides. New approaches to the issues of the first statehood and ancient government were reflected in the research works of Y.A.



Rapoport, L.T. Yablonsky, S.B. Bolelov, S. Matrasulov, S.R. Baratov, B.I. Veinberg and V.N. Yagodin[21, p. 31].

As a result of new archaeological surveys carried out in the ruins of Khorezm, new data that show the urban culture were collected and checked in the Lower Amu Darya. As a scientific hypothesis in the historical sciences of the 20th century, the formation of this culture is connected with the entry (migration) of the population of Bactria and Marghiana into Khorezm region. New archaeological discoveries confirm the statehood in Khorezm until the time of Ahamanides. According to Y.A. Rapoport, the ancient Khorezm state, was formed on the 7th and 6th centuries[21, p. 29-30]. According to V.N. Yagodin, the first hearths of statehood in Khorezm were formed around the cities of Kuzaligir and Khazorasp[23, p. 75-76].

E.V. Rtveladze made a conclusion that “Great Khorazm” association was a myth created by researchers of various generations. To clarify his point of view, the scientist cited the following facts:

1. The works of Herodotus do not contain any information about Khorezm kingdom or its composition – Heart(Areia) and Marv (Marghiana).
2. Herodotus’ reports do not contain information about the territorial boundaries, administrative apparatus and political institutions of that State.
3. The Greek historian did not write about Khorezm’s political leadership and the military alliance of various nations under Khorezm.

As can be seen from the Greek historians, Herodotus and Gekatey did not write about the state of Khoresmians and Khorezm kingdom, they just mentioned Khoresmians. This situation was not considered in the publications of the followers of the theory about “Great Khorezm”.



In recent years, the origins of the ancient Khorezm people and the problem of Great Khorezm were examined by Matyakubov Hamdam. According to the researcher, theories and views on Great Khorezm state, which has been widely covered in scientific literature for many years, have not been proved. These views are the hypothesis of scholars and it is desirable to abandon the idea of the Great Khorezm state. In fact, a number of scientists (V.M. Masson, M.G. Vorobeva, I.N. Khlopin, Y.A. Rapoport, A.S. Sagdullaev, V.N. Yagodin) denied this idea and no written evidence has been provided.

Also in scientific literatures, the problem of occurrence of wattle and daub walls and bricks and the emergence of architecture in Khorezm and the emergence of Kuzaligir culture in the region have been explained on new basis. According to the basic conclusions, there appeared new (had been unknown before) architectural traditions in the oasis (fortresses, defense walls, constellations and large buildings, usage of wattle and daub and raw bricks in building construction, the spread of practical knowledge and style of construction) because of the gradual migration of the population from Bactria and Marghiana and it is expedient to admit that the beginning of using wheel for making ceramics in handicraft and the widespread distribution of iron-made instruments were the results of the migration of southern populations [14, p. 75].

Conclusion: In Khorezm oasis, by the end of the seventh century, the formation of Kuzaligir culture resulted from the regional expansion of the implementation of cultural achievements and progressive traditions in different parts of Central Asia due to the migration from Bactria to Marghiana. In the southern part of the Aral Sea, Khorezmian's location emerged due to the mixing of the population of the southern and native population of the region (people of Kuyisay, Khorezmians – Saks). There has been made the following conclusion about this that the stories of Herodotus and



Gekatey peculiar to the history of Khoresmians were based on the memory about the southern country of people of Bactria and Marghiana which comprised the population of Khorezm in the oasis [14, p. 75].

There are some controversial issues and sufficiently learned problems on the history of the first statehood in Khorezm oasis. At the beginning of the 21st century, new scientific views on the subject appeared and yet the following facts haven't been proved – the appearance of slavery relations in primitive society at the last stage of Amirabad's civilization (8th century B.C.) or the emergence of the formation of a new social form of government – the stage of transition to slavery system.

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UDC: 10+130.2

IMPORTANCE OF ECOLOGICAL CULTURE IN FORMING CULTURE OF TOURISM

Bakhtiyor Hoshimovich Mirzarahimov

Lecturer of the philosophy faculty,

Fergana state university

E-mail: alfargoniy.uz@mail.ru

Аннотация: Мақолада глобал туризм муҳитининг вужудга келиши, туризмнинг ҳозирги даврда ривожланиш хусусиялари, туризмнинг маданий функцияси ва туризм маданиятининг мазмун моҳияти ҳақида сўз юритилган. Шунингдек, мақолада туризм маданиятининг эволюцияси, структураси, намоён бўлиш шакллари, ҳозирги кундаги экологик муаммоларни бартараф этишга нисбатан оқилона муносабатни вужудга келтиришдаги аҳамияти ва уни ривожлантиришда экологик билимлар, хусусан шахс экологик маданиятининг аҳамияти муаммоси ёритиб берилган.

Калит сўзлар: глобал туризм муҳити, туризм маданияти, экология, экологик муаммолар, экологик маданият, экологик саёҳат этикаси.

Аннотация: В статье рассматриваются возникновение глобальной туристической среды, современное развитие туризма, культурная функция туризма и сущность культуры туризма. В статье также обсуждается эволюция культуры туризма, ее форма и важность экологических знаний, в частности важность экологической культуры в формировании здорового отношения к решению текущих экологических проблем.

Ключевые слова: глобальная туристическая среда, туристическая культура, экология, экологические проблемы, экологическая культура, экологическая этика путешествий.



Abstract: The article deals with the emergence of a global touristic environment, the current development of tourism, the cultural function of tourism and the essence of culture of tourism. The article also discusses the evolution of culture of tourism, the way it is formed, and the importance of ecological knowledge, in particular the importance of ecological culture in the development of a healthy attitude towards elimination of current environmental problems.

Key words: global tourism environment, tourism culture, ecology, ecological problems, ecological culture, ecological travel ethics.

Introduction: In the recent years of human history, the use of all opportunities to prevent from global environmental issues have become the items of the agenda of the world because they are increasingly aggravated by the collapse of the destructive world, and endangering the global community. Globalization of ecological problems lies in the fact that nature's self-restorative power decreases, its resources are exhausted, pollution and pollution of the environment, and nature's inability to create a perfect environment for human habitation. At the 2000 UN Millennium Summit, it was noted that ensuring environmental sustainability is a key to the future of humanity, and the announcement of 2008 as the "Year of Earth" indicates a major challenge to the environmental crisis. Today, environmental problems should be viewed as a threat to all humanity. In addressing this threat, first of all, it is important to change people's attitude to nature, to achieve an important place in the internal and external policies of the states, and to develop international cooperation in ensuring environmental sustainability.[1]

The ecological crisis of the planet is getting more and more worrisome. As environmental security is a key element of national security, it takes on all aspects of nature and society. Environmental safety and ecological thinking are closely linked to the natural and geographical conditions of the region, the way of life and



the attitude of the society to the nature and to its relationship with nature. So, human beings are in the spirit of moral and ethical attributes. The success of the environmental problem solely depends on the objective factors such as socio-economic, scientific-technical, demographic and environmental conditions, as well as the level of environmental awareness, the state of knowledge and outlook. Accordingly, it is assumed that in our country a wide range of measures and measures to address the institutional system of environmental monitoring, the regulation of ecological relations of individuals and societies, the continuous improvement of the ecological consciousness and outlook of the population, the elimination of the centuries-long values - is being implemented. [2]

"Ecological culture is a rational creative approach to cultivating the benefits of nature, the responsible approach is emerged by this in the development, distribution and use of ecological values." [3] In general, regardless of the interrelationships and differences in ecological culture and personality in the ecological world view, the importance of the people's mentality and socio-ecological need in the community in shaping these two concepts is crucial. The ecological culture and its formation are of particular relevance as a major factor in the regulation of nature relations with society. Therefore, raising environmental awareness among people has already become one of the most important tasks at the level of public policy. Elements of ecological culture: ecological knowledge, skills and skill, beliefs and beliefs, the necessity of enriching the consciousness and the worldview of the people, which govern the activities of each person in the natural environment, first of all, at the local level, and their priorities of universal values. For this purpose it is necessary to study the theoretical and practical issues of the ancient spiritual values of our people for the benefit of all people, and first of all the growing generation, to study the theoretical and practical issues of the current ecological problems and to introduce them to the worldview of people. In the



context of globalization, conservation of ecology and the environment remains an urgent problem. It is important to develop new approaches to addressing these issues, and consider this approach to be a complex, complex socioeconomic and ecological system. The driving force behind these problems is the tourism industry.

Materials and research methods: The ecology-related section of tourism is called ecotourism. The purpose of ecotourism is to preserve the flora and fauna, and to preserve for the next generation. Ecotourism is an important branch of tourism, which is directly linked to rare and endangered species, conservation of biodiversity, conservation of biological species. Ecological tourism is one of the types of natural tourism that unites people. The interest of tourists should be based on the nature of the environment and its preservation. In this type of tourism, protected areas are of special significance. Thus, ecological tourism is a kind of special type of service for research purposes.[4]

The concept of ecotourism is Russian experts I. Zorin and V. Kvartalnov interpreted ecotourism in two ways: the first form - ecotourism is the indirect use of wildlife as a place for tourists to stay and travel, but all the components of the species are tourism aimed at introducing ecological technologies. In this sense, ecotourism reduces harm to the environment and has an educational, recreational and cultural significance. The second form of ecotourism is a combination of ecological approach to nature. It is believed that it combines the benefits of new natural components and the study of the flora and fauna samples. The main sources of ecotourism are nature reserves, local and natural parks, unique, recreational, and simple landscapes. [5] To understand the concept of "ecological tourism", Igor Zorin and V. Kvartalnov proposed explanations, such as "ecosystem", "ecology", and "ecological travel ethics." "Ecological tourism" will be focused on adapting the minds of the population to the ecological requirements and developing the



knowledge of nature. This will gradually develop tourism activities without damaging natural resources. [6]

In addition, the Uzbek scientists have discussed socio-ecological problems, topical issues of social ecology, social foundations of healthy lifestyle, ecological education, Y.Sh.Shodimetov, H.Y.Salomova, A.Nigmatov, R.I.Mamatkulov, G. Pardaev, R. Khayitbaev, A. Kh. Pardaev, A.N.Norchaev, E.T. Rabbimov, I. Tukhliev, B.Sh.Safarov, G.Tursunova and other scientists have emphasized the role of environmental consciousness and culture in tourism and its development.[7]

Analysis and results: To achieve the goal of ecotourism, it is enough to present a plan of the Concept of the Development of Ecological Tourism in Uzbekistan". This concept emphasizes the importance of the following tasks for the development of ecological tourism in our country:

development of special laws and the creation of a legal mechanism for the formation of the ecotourism industry;

ecotourist science, theoretical knowledge and practice developing the basics;
ecological awareness and culture of the population through ecotourism cultivation;
Establishment of ecotourism education and upbringing;

Developing tactical plans and strategies and programs for ecotourism of states and the international community;

biodiversity conservation.[8]

While it is always pointed out that the ecotourism is always positive, the tour cannot lead to a more environmentally-friendly nature if it does not meet its environmental standards and the environmental norms. The negative effects of ecotourism may be:



The plants on the shores of the water basins are flooded; and will die; the rocks are stagnant or aggravated, and the animals are disturbed and prevented from opening the child; As a result of the hunt, the variety of species disappears; changes in eating habits; types were identical; animals are accumulated in the usual manner; the lifestyle of the animals living in water will change; water damage to water plants; leads to destruction and loss of nutrients; water pollution occurs; rare species are reduced; The coral reefs the rocks, and the type of fish declines.

Ecotourism, in its turn, is divided into several types. One of the varieties is hunting and fishing tourism (Safari tour), which is a costly tourist destination, with a great deal of economic benefit, despite the relatively small number of tourists. In particular, considering the experience of the development of hunting tourism in the Central Asian countries, it is characterized by an unprecedented animal diversity in other parts of the world. The Bukhara gazelle and several other wild animals are forbidden because they are threatened with extinction. As a result of the increased use of nature over the last decades, many animal species in Uzbekistan have undergone a strong anthropogenic impact, their habitat has declined, and some have been completely exterminated. Specifically, large species of mammals and birds, which are of great practical significance as hunting sites, have been endangered by the limited and endemic species of ecosystems that have been exploited by human beings, which are less vulnerable to external influences. In particular, the animals, such as the turon tiger, the Cheetah, the Turkmen pig, and the Aral Sea Bullion have disappeared. tiger, slatlone, standing toilets, small and big furrows of Syrdarya and Amudarya, and the Aral Sea Grass - are on the brink of extinction. [9] Hunting tourism is a major source of economic incomes, but should not serve to eliminate wild animals. Foreign hunters are keen to hunt for wildlife that lives in another area. Money for hunting is spent on wildlife preservation. In some areas, it is important to note that wildlife is more harmful to the local population rather than foreign-born



hunters. In this regard, the ecological tourism in our country, the development of hunting tourism and the means to be spent on it, should be used by the government for the protection of wildlife and nature reserves, as well as for other environmental projects.

It is allowed to some tourists traveling on hunting tourism to Central Asian countries to hunt wild ram or Central Asian ibexes.

Some tourists traveling to hunting tourism in Central Asian countries are allowed to hunt or hunt the Middle Asian goat goats. [10]

Conclusion and recommendations: Ecological knowledge and ecological culture provide the development of ecotourism. Understanding the essence of laws of nature in the formation of ecological knowledge and ecological culture, and the fact that man himself understands the biological nature of nature.

It should be noted that, as we develop ecotourism in our country, first of all we need to develop tourism culture through the forming ecological knowledge of the local population, cultivate ecological culture and consciousness through ecotourism, and set up education and upbringing. If we want to enjoy nature, its benefits, and enjoy its beauty, we must not go beyond certain limits while accepting its conditions, taking advantage of environmental resources to meet our own needs.

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**SOCIAL AND PHYSICAL EFFECTS OF PUBLISHING IN SOCIAL
ACTIVITY EVOLUTION AND ITS USE**

Holmirzaev Nodir
Lecturer, Department of Social sciences
Ferghana Polytechnical Institute
Ferghana, Uzbekistan
E-mail: kholmirezayev@mail.ru

Аннотация: Ушбу мақолада ижтимоий фаоллик эволюцияси ва уни ёшларда шакллантиришнинг ижтимоий-фалсафий асослари таҳлил қилинган. Ижтимоий ҳамкорликнинг тадрижий ривожланиш асослари ва унинг жамият тараққиётидаги ўрни ёритилган. Жамиятимиз ёшларида ижтимоий фаолликни шакллантириш долзар вазифалардан бири эканлиги кўрсатиб берилган.



Калит сўзлар: ижтимоий фаоллик, ижтимоий ривожланиш, касбий фаоолик, меҳнатга муҳаббат, меҳнат анъаналари

Аннотация: В статье анализируются социально-философские основы эволюции социальной активности и ее формирования в юности. Основы эволюции социальной сплоченности и ее роль в развитии общества. Показано, что формирование социальной активности молодежи нашего общества является одной из наиболее актуальных задач.

Ключевые слова: социальная активность, социальное развитие, профессионализм, трудовая любовь, трудовые традиции

Annotation: This article analyzes the socio-philosophical foundations of evolution of social activity and its formation in youth. The basics of evolution of social cohesion and its role in the development of society. It has been shown that the formation of social activity in the youth of our society is one of the most urgent tasks.

Key words: social activity, social development, professionalism, labor love, work traditions.

Introduction: Formation of social activity is a complex process. Particularly, this aspect of the modernization process of the society requires more cautiousness. In our opinion, the stronger the moral, moral, faith, conscience, hardworking, honesty, humility, sovereignty, humanism, patriotism, national and social pride and responsibility, the foundation for the growth of society. Thus, every stage of society's development depends on the spiritual well-being and activity of young people. In our opinion, the activity is a process that fosters without any fear of certain activities and fulfills its mission until it reaches its goal. Thus, socio-



philosophical analysis of the formation of social activity in the youth is one of the urgent tasks of the philosophy today.

Literature review: As a result of scientific research related to the social needs of working skills and culture of youth, D. Baubekova's dissertation research [1]. But since the present study was conducted in the light of the demands and ideologies of the former Soviet Union, its significance can not be underestimated.

After gaining independence in Uzbekistan, new research on philosophical, psychological, pedagogical and cultural approaches to the formation of professional culture has been undertaken. In the scientific researches of such scientists as MN Nurmatova, N.Muhammadiev, E.G'oziev, M.Kuronov, M.Yuldashev, E.Asamaddinov, K.U.Najmiddinova [2] professional activity is moral and moral and as part of the educational and educational direction.

Although the institutional foundations and principles that negatively affect cultural development have been studied by scientists from different fields, the chosen subject has not been studied specifically in the context of cultural philosophy.

Research methodology: In the course of the research, the idea of scientific and philosophical principles such as systematics, theoretical-deductive conclusions, analysis and synthesis, historical and logic, hermeneutic analysis, inheritance, universalism and nationality, comparative analysis, and the idea of development.

Analysis and results: The philosophy is characterized by a specific form of activity that is human-specific and is aimed at the rational change of the outside world. The social philosophy of social activity is seen as a way of reaching out to the self-sustaining world of human beings [3]. The ability to engage in a particular type of activity involves the transition to its actual physical expression. This active



person can change the outer world and change itself. According to Forobi, "human activity can not stop, but any activity and activity can not man represent human beings. Because of their nature, the animals also act. The animal sees food and aspires to it and carries out this unconscious movement. What separates man from the beast is a specific will and it is called optional "[4].

The philosophical description of the activity is carried out through the concepts of behavior, behavior. This is not accidental. Society is one of the ways in which people act together, so human activities are always of a social nature, though they are directed to others, even if they are pursued for their own needs and egoistic understandings. It is a form of demonstration of a person's active involvement, which means that he is responsible for socially significant outcomes. In the same way, it does not matter whether these results are determined by the individual's specific goals or targets. A behavior is a conscious action (or inaction), the result of a person's spiritual self-awareness, which reflects the individual's personality and other people's attitude to nature and society as a whole. The system of actions committed by the person's moral goals defines his behavior. Behavior is an external indication of activity, so its internal mechanisms are indirectly manifested and do not always manifest motives acting in his or her activity.

From the point of view of today's doctrine, thoughts, remarks and works of the First President of Uzbekistan I.Karimov and President of the Republic of Uzbekistan Shavkat Mirziyoev are a methodological basis for this period and the future. In particular, as noted by Islam Karimov, "Every nation, every nation, as a child, is a symbol of the younger generation, able to demonstrate the noble qualities of the nation, capable of displaying courage and selflessness in implementing its noble desires, it is natural that he sees his support and support "[5]. This does not happen automatically. Teaching future young people to childhood activity will be



the basis for future success. It is possible to realize the spiritual world of young people from childhood through the formation and development of good ideas. At first glance, this problem may seem insignificant. However, given that each child first understands the world through the objects and objects, including toys, it becomes clear that their role in human education is immeasurable. The image of the toys is stamped on the stone for a child's imagination and remains in his mind for a lifetime. The choice of profession, the future of the future, and the ethical and moral foundations of the life style of the child are undoubtedly determined by what kind of toys he has in the future. "[6] So, in our opinion, activity begins with infancy.

When it comes to the question of the level of activity of the human mind, it is not a mistake to say that a person has good knowledge, deep knowledge of the subject, and a correct understanding of what he has learned. This is especially important for the school-led disciplines. When the educational aspects of science are top priority, the formation of high activity in the child is also easier. Especially when the subjects mentioned in the curriculum of the first and second-grade programs are carefully subverted to the children, their future outcome is not bad. It is one of the main factors in educating the children in these classes about teaching literacy, telling stories, introducing the activities of great figures, reading samples of literary literature on folk artistic works, reading poems, sampling of samples, expressing their emotions. It is noteworthy that in Avesto's teaching, it is noteworthy that in the early days and ends of the day, the knowledge of science and education in the early and late days of the early part of the day is the gradual acquisition of knowledge, reasoning and donation, that he should go to such a place on his way to praise the name of the gods, and to care for them with good words. And in that way he should increase his knowledge. " "... It is a great pleasure to rest in the middle of the day and midnight, and then he should pursue science so that he can learn from everything that the wise men of the past have left." [7]



In a society, family plays an important role in education, occupation, morals, and faith. The beliefs and national characteristics, the way of life and the level of parenting, which form the basis of the spiritual world of human beings. So no part of society can be compared with a family in the formation of a human being. There are such mysterious situations in the family that it is difficult to read and absorb from the outside. In this sense, some occupations will continue only in the range of specific families. Some have the opportunity to learn from specific families, from team to community.

In adolescents, the interest and need to work early are born in a family environment, and the working skills of school-aged boys and girls are considerably shaped. This is further compounded by the educational and teaching process. When these rare skills are timely educated and subordinated to a particular system, as we have already said, a well-educated, highly qualified member of society can be formed. It is the primary task for every young man and woman to live up to their dreams and aspirations for future dreams. It is important to keep in mind that young people need to be inspired by what they are encouraging to say about their future goals and dreams. For example, it is also necessary for children to repeat their best wishes for "always becoming a scientist", "you are a pilot", "you are a great man, a great teacher" and other similar inspirational and hopeful words. Because such incentives encourage young people to seek spiritual, physical, and spiritual beauty.

In his speeches and speeches, the President of our country Shavkat Mirziyoev underlines that the radical renewal and development of the society depends on a comprehensively-minded, intelligent, moral-matured, physically healthy, comprehensively-minded generation, and should support them in every possible way. In particular, the President said: "Every success, every success depends on labor and determination, courage and courage, and the honest work for the sake of



prosperity of the country must surely find its worthwhile value and value" [8]. Because the issue of supporting active young people has become one of the priorities of today. Taking this into consideration, our Honorary President Shavkat Mirziyoev supports the implementation of scientific and intellectual potential and innovative ideas of young people. It also implements large-scale reforms aimed at the efficient use of the created opportunities and the further socio-political activeness of the youth. The youth of our country have been united into the single union for the sake of the Motherland's prosperity and peace of mind. The «Kamolot» Youth Association has been dissolved for years. The Youth Union of Uzbekistan, which has a clear targeted agenda, has a program of harmonious development of the Homeland. All these creative youth of our republic were welcomed by such a positive change.

A number of examples of the great active activists who have been left in the history of our country can be taken as factors for the activation of the current age. Particularly, in the political sphere, the following views on the formation of his character, ethics and humanistic-ideological characteristics from the biography of Amir Temur can be made. "From the age of from seven to seventy years and throughout the lifetime, I spent the poor. I did not wear a second suit and then donated it to the beggars. When I was able to reach out, I raised all my best friends back to high positions, slaughtered sheep every day, and tied the sheep to seven of them. "[9] At the same time: ... "In all the countries that have been defeated, I have tried to earn a respect for the people. Good people, no matter what kind of nation they are, I have done good, and the cruelest and the traitors are expelled from my country ... In all countries, the gate of justice was open. "[10] Or "I have ordered mosques, madrassahs, monks in every city, building rabbis on the road for passengers, and bridges over rivers.



Future people, especially young people, depend on belief, faith, faith, piety, and kindness. In this regard E. Yusupov's remarks are remarkable: "Faith is not a specific quality but a specific system of mature moral norms. Thus, faith includes all the attributes that reflect perfect humanity "[11].

Naturally, no new society has become a non-working society. As a new society is being built in Uzbekistan, it is also connected with the outlook and spirit of the people. Otherwise, those who are fraudulent in the society, fraudsters, hypocrites, cloisters, cobblers, and those who can not see the development of society have a negative impact on it. That is why, as President Islam Karimov put it, "Now we have a very important task and our future is a decisive task. This task is to build up the spirituality of a free civil society, in other words, to educate the perfect people who live by their own rights and who live in their own power and intellect, while seeing their personal interests in the interests of the people and the Motherland. "[12] .

It is worth noting that academics Sharifhodjaev and professor Z. Davronov's ideas about upbringing high spirituality are remarkable: "Spirituality is embraced by high people and feelings emerge in the interests of society, society, state and family. Such a person is pure and clear thinking. It can handle a long distance "[13]. Hence, young people with these capacities make society's opportunities real.

Summary: Based on the above considerations, we want to emphasize that our ancient traditions, values, cultural heritage and statehood are theoretically important factors in increasing the activity of young people in order to increase the activity of our youth today. At the same time, it should be noted that the activation of youth activism can be a factor not only in our national traditions but also in secular democratic processes. So, in our opinion, the activeness of young people is not only in economic and political spheres, but also in being a civilized person and



active in the sphere of democracy. These facts inspire modern youth. As a result of the inspiration, young people make their own conclusions, apply the required fields to their activities and seek to increase their personal activity.

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8. Shavkat Mirziyoev. We will continue our path of national development with determination and bring it to a new level. TABLE 1 - Tashkent: "Uzbekistan", 2017. -B. 535



MODERN PROBLEMS OF TOURISM AND ECONOMICS

UDC: 338.22

STRUCTURAL ELEMENTS OF THE BUSINESS ENVIRONMENT AND THEIR IMPACT ON THE FUNCTIONING OF SMALL BUSINESSES AND ENTREPRENEURSHIP

Aripov Oybek Abdullaevich
Ph.D., DSc. researcher,
Economy Namangan state university
E-mail: aripov2005@mail.ru

Annotatsiya: O'zbekistonda kichik biznes va xususiy tadbirkorlik jadal rivojlanmoqda. Bundan qulayroq ishbilarmonlik muhiti yaratilmoqda. Maqolada biznes muhitining asosiy tarkibiy qismlari keltirilgan. Biznes muhitining o'ziga xos holatini tahlil qilib, biznes muhitini yaxshilash bo'yicha takliflar ishlab chiqdi.

Annotation: Small business and private entrepreneurship is developing rapidly in Uzbekistan. A more favorable business environment is emerging. The article discusses the main structural elements of the business environment. Analyzed the specific state of the business environment, and developed proposals for improving the business environment.

Аннотация: В Узбекистане быстро развивается малый бизнес и частное предпринимательство. Формируется более благоприятная деловая среда. В статье рассматриваются основные структурные элементы деловой среды. Проанализировано конкретное состояние деловой среды, а также разработаны предложения по улучшению деловой среды.



Kalitso'lar: kichik biznes, xususiy tadbirkorlik, ishbilarmonlik muhiti, ishbilarmonlik muhiti elementlari, biznesni yuritish, ishbilarmonlik muhitini rivojlantirish omillari.

Keywords: small business, private entrepreneurship, business environment, elements of the business environment, Doing Business, factors of business environment development.

Ключевые слова: малый бизнес, частное предпринимательство, деловая среда, элементы деловой среды, ведения бизнеса, факторы развития деловой среды.

Introduction. In recent years, as a result of the adoption and implementation of a variety of laws such as "About family entrepreneurship", "About monopoly", "About guaranteeing the freedom of entrepreneurial activities", as well as the Presidential Decree "About measures to fundamentally improve the entrepreneurial environment and provide wide freedom for entrepreneurship ", A number of government decrees aimed at the development of small business and private entrepreneurship, there is a steady development of the economy, there is its diversification and modernization, expanding necessary environment for entrepreneurship. The external result of the consistent improvement of the business environment is the positive dynamics of economic indicators of economic entities. Every small business is constantly striving to benefit from a good business environment and on this basis to compete successfully in the market.

Literature review. The article is based on the regulatory and legal framework of the Republic of Uzbekistan, the works of the President of the Republic of Uzbekistan, scientific works of eminent scientists in the economic and social spheres. The reports of the World Bank Doing Business research group were used.

Research Metodology. In the study of the subject used methods such as logical thinking, scientific thinking, a systematic approach, statistical and comparative analysis. The topic was covered by scientific and technical sources of information, such as textbooks, teaching aids, foreign literature, periodicals, business management, scientific conferences and Internet conferences. In studying the development of small business and private entrepreneurship, a statistical analysis was performed.

Analysis and results. Successful development of entrepreneurship is also expressed in the fact that “in the structure of incomes of the population, the share of income from entrepreneurial activity increases, which over the years of independence increased from 10.6 to 52 percent. This is one of the highest rates in the CIS countries ”[2]. Over the past 7 years, a few countries of the world have managed to maintain annual GDP growth rates. Uzbekistan is among them. Here, annual GDP growth rates remain at an average of 8.0%.

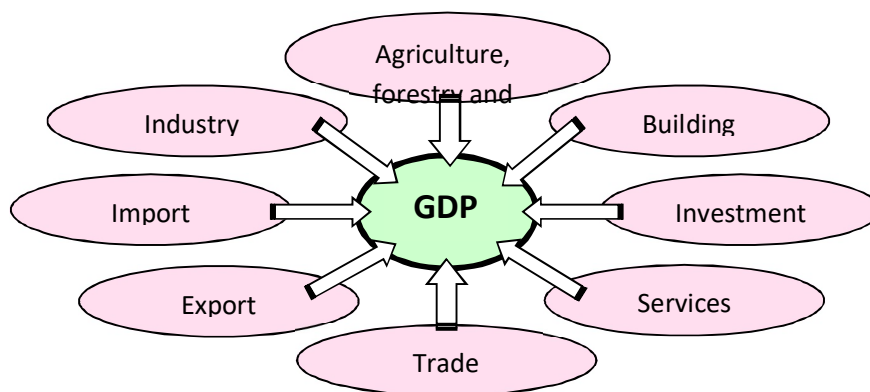


Figure-1. The share of small business in the types of economic activity in January-December 2018 in Uzbekistan

Figure compiled by the author on statistical materials of the State Committee of the Republic of Uzbekistan.

Year by year, in different sectors of the national economy, the share of small businesses and entrepreneurship is getting bigger. For example, in January-December 2018, the share of small business in industries amounted to 34.7%, agriculture, forestry and fisheries - 98.1%, construction - 66.6%, investment - 34.9%. % in trade, 86.3% in trade, 26.5% in exports, 55.8% in imports and 55.2% in services.

The development of small business and private entrepreneurship in the country has a positive effect on the following positive processes [4, C. 4335.]:

- macroeconomic indicators are sustainable, the balance of the economy is strengthened;
- the state budget and the balance of payments are performed with a surplus (in 2018, the surplus is 0.02%) [12];
- growth in exports and gold and foreign exchange reserves are ensured;
- the standard of living of the population increases, the layer of the business elite in the population is expanding.

All of the above circumstances indicate that the business environment in Uzbekistan contributes to economic development, since the existing components of the business environment have a positive effect on the growth of small businesses in the country.

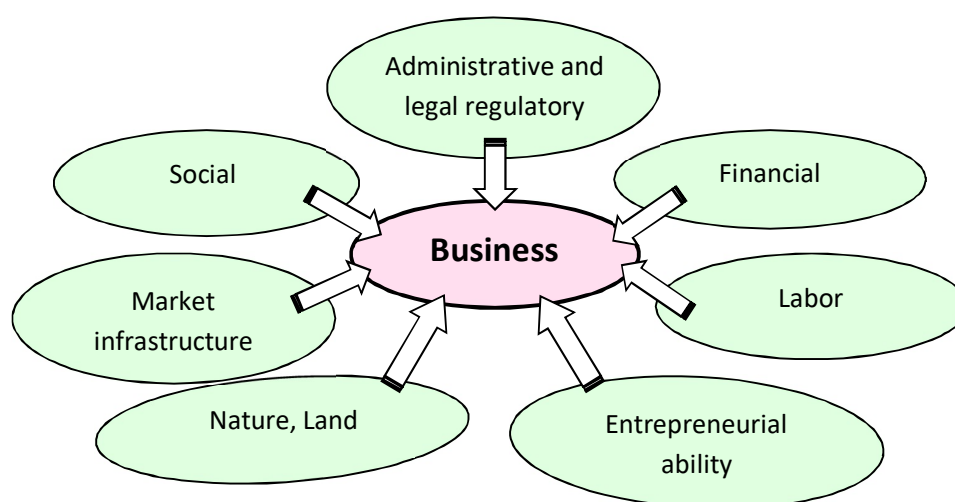


Figure-2. Key components of the business environment

Figure compiled by the author.

The main components of the business environment are shown in Figure-2. It contains important components of the business environment, such as administrative and legal regulators, social and market infrastructure, financial resources, labor resources, nature, land and real estate, as well as entrepreneurial ability. In our opinion, the structure of the business environment and the factors that shape it are very different, but they are all interconnected (Figure-1).

The formation and development of the business environment in Uzbekistan is characterized by the following features:

1. Economic relations between small businesses and private entrepreneurship are becoming more intense and transparent;
2. In practice, freedom is provided and guaranteed, as well as the independence of small businesses;
3. In business, a competitive environment is formed between small enterprises;
4. Small businesses tend to take risks, but learning to minimize them;
5. Social protection is increasing;
6. Ethical principles and norms of business are strengthened, and also affects its development;
7. The vitality and prospects of enterprises are growing;
8. The market mechanism works more intensively.

These characteristics of the business environment stimulates the activities of small businesses. At the same time, the business environment is developing cyclically and moving into newer stages, including the development of small businesses are

expanding. Each small business entity participates in this environment, realizing its experience and potential and takes care of its own benefit. It is already clear to us “without economic independence, political independence cannot be achieved” [1, p. 60.]. Small businesses also determine their own perspective, given the real situation in the region. Favorable business environment allows you to more fully meet the market needs of small businesses.

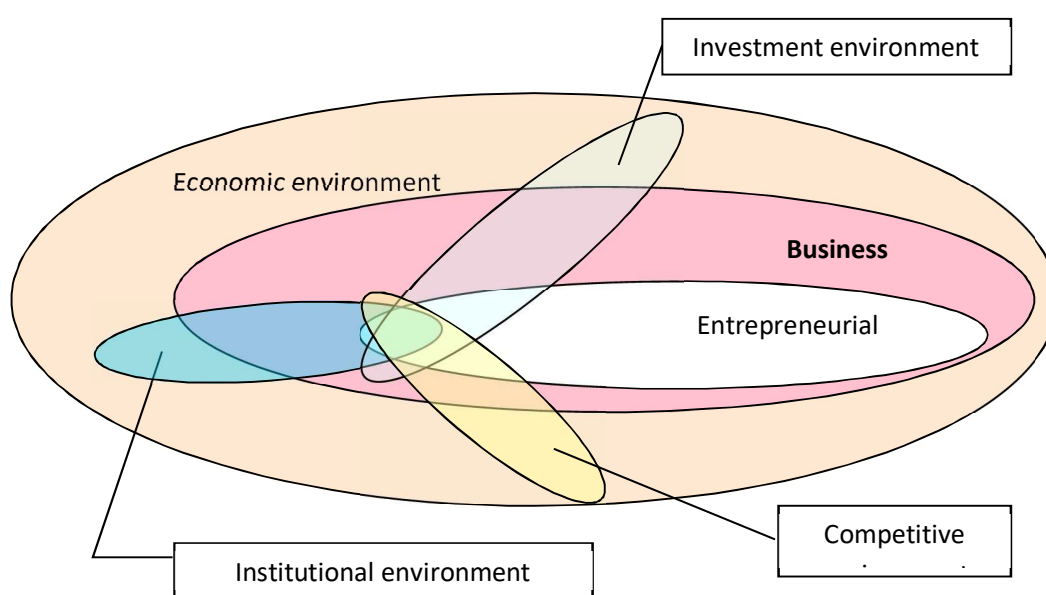


Figure-3. **Determining the scope (scale) of the business environment**

Figure compiled by the author.

In addition to highlighting the essence and content of the business environment, it is also very important for us to determine the extent of the development of the business environment in Uzbekistan. The scope of the business

environment is understood as an environment that includes an entrepreneurial, investment, competitive, and institutional environment.

However, in our opinion, the business environment is a part of the economic environment that is actively used by small business and contributes to the development of small business and private entrepreneurship (See Figure 3).

In particular, the development of small business and private entrepreneurship in Uzbekistan in 2017 was characterized by the fact that 233292 small enterprises and micro enterprises were registered in the country, of which 218 170 were involved. And this is 93.5% of the total. And at the end of 2018, the same figure is 94.9% (Figure-3). At the same time, there are differences in the development of small business and private entrepreneurship in the regions of the country, that is, in some regions there is a rather high level of development, whereas in some areas the results are significantly lower.

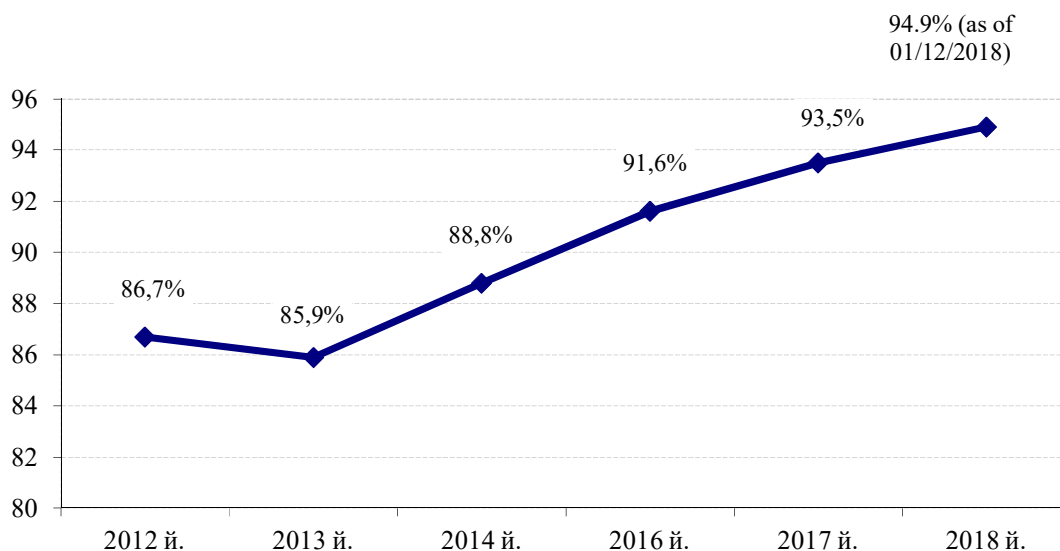


Figure-3. Dynamics of the number of small enterprises and microfirms operating in Uzbekistan (in% ah to the registering)³



The figure was developed by the author on statistical materials of the State Committee of the Republic of Uzbekistan.

In particular, 97.5% of small enterprises and private entrepreneurship operate in the city of Tashkent. This is 4 points higher than the national average. Similarly, the operating enterprises of small business and entrepreneurship in Fergana (97.9%), Khorezm (96.8%), Navoi (96.3%), Kashkadarya (94.4%) and Andijan, exceed the national average (93 ,five%). Especially important is the accumulated experience of the formation of small business and private entrepreneurship in such regions. In these regions (compared to other regions), the business environment is more favorable, and entrepreneurs are more active.

The results of such activity are also reflected in international rating indicators. Over the past ten years, the best rating of Uzbekistan is given in the Doing Business-2018 report (DB-2018), where Uzbekistan occupies the 74th place. However, the rating of Uzbekistan in the DB-2019 study dropped by 2 positions and took 76th place (Table 1).

Table 1.

**World Bank ranking in CIS countries based on a study
of the «Doing Business» group**

Countryses	Ranking for DB-2018	Change from DB-2019	DB-2010	DB-2011	DB-2012	DB-2013	DB-2014	DB-2015	DB-2016	DB-2017	DB-2018	DB-2019
Georgia	1	+3	11	12	16	9	8	15	24	16	9	6
Lithuania	2	+2	26	23	27	27	17	24	20	21	16	14



Estonia	3	−4	24	17	24	21	22	17	16	12	12	16
Latvia	4	not changed	27	24	21	25	24	23	22	14	19	19
Kazakhstan	5	+8	38	54	66	67	70	80	63	65	57	25
Ozerbayzhan	6	+32	63	59	47	49	50	77	41	35	36	28
Russia	7	+4	120	123	120	112	92	62	51	40	35	31
Belorussia	8	+1	58	68	69	58	63	57	44	37	38	37
Moldova	9	−3	94	90	81	83	78	63	52	44	44	47
Armenia	10	−4	43	48	55	32	37	45	35	38	47	51
Kyrgyzstan	11	+7	41	44	70	70	68	102	67	75	77	70
Ukraine	12	+5	142	145	152	137	112	96	83	80	76	71
Uzbekistan	13	−2	150	150	166	154	146	141	82	87	74	76
Tajikistan	14	−3	152	139	147	141	143	166	132	128	123	126
Turkmenistan	no data											

The table was compiled by the author according to the World Bank's rating by the “Doing Business” group. Source: https://ru.wikipedia.org/wiki/The_Doing_Business_Report.

It should be noted that the rating of Uzbekistan at the international level for doing business in 2009–2019 has noticeably improved. For example, if in the report of the Doing Business group in 2010 (DB-2010) the rating of Uzbekistan took the 150th place, in DB-2019 it takes the 76th place among 190 countries of the world. This means that the rating improves by 74 positions in 10 years.

Uzbekistan ranks 13th among the CIS countries according to the DB-2017 report. According to the DB-2018 report, Uzbekistan rose two points higher and



ranked 11th among the CIS countries, but in the DB-2019 study again returned to 13th place. However, from the 2-table it can be seen that the fluctuations in the rating of Uzbekistan in recent years has been moving in a positive direction. For example, fluctuations in the rating of Uzbekistan for the period 2010–2015. ranked 13–14th (ranking ranged only at the same level), and in the period 2015–2019 fluctuations in rating showed 11–13th place (fluctuations have three heights).

Table 2.

CIS rankings by the «Doing Business» group of the World Bank

Countryses	Rating for DB-2018	DB-2010	DB-2011	DB-2012	DB-2013	DB-2014	DB-2015	DB-2016	DB-2017	DB-2018	DB-2019
Georgia	1	1	1	1	1	1	1	4	3	1	1
Lithuania	2	3	3	4	4	2	4	3	4	3	2
Estonia	3	2	2	3	2	3	2	1	1	2	3
Latvia	4	4	4	2	3	4	3	2	2	4	4
Kazakhstan	5	5	7	7	8	9	10	10	10	9	5
Russia	6	9	8	5	6	6	9	6	5	6	6
Ozerbayzhan	7	11	11	11	11	11	7	8	8	5	7
Belorussia	8	8	9	8	7	7	6	7	6	7	8
Moldova	9	10	10	10	10	10	8	9	9	8	9
Armenia	10	7	6	6	5	5	5	5	7	10	10
Kyrgyzstan	11	6	5	9	9	8	12	11	11	13	11
Ukraine	12	12	13	13	12	12	11	13	12	12	12
Uzbekistan	13	13	14	14	14	14	13	12	13	11	13
Tajikistan	14	14	12	12	13	13	14	14	14	14	14
Turkmenistan	no data										



The table was compiled by the author according to the World Bank's rating by the “Doing Business” group. Source: Data Table 1.

It should be noted that in recent years, thanks to the business environment, the activity of small businesses and private entrepreneurship has intensified. Considerable attention was paid to expanding economic freedoms, expanding the competitive environment, increasing production volumes and diversifying economic relations between small businesses.

Conclusion/Recommendations. Although the economic indicators of Uzbekistan are characterized by positive dynamics, it is not difficult to understand that there are still problems in the state regulation of small business and private entrepreneurship.

Currently, the «Strategies of Actions» outlines measures to improve the business environment. In it, it is small business that is viewed as a pillar of the national economy.

«In the forthcoming year, we still need to do a lot to build up even more enabling business and investment environment, creating new jobs, increasing livelihoods of our population, improving pension support» [11].

In this context, it is advisable to take the following measures to further improve the business environment for the development and promotion of small business and private entrepreneurship, in particular:

- based on each regional scale on the part of local authorities, it is necessary to take carefully thought-out measures aimed at improving the business environment and the development of small business and private entrepreneurship;
- an increase in the export of goods in the field of small business and entrepreneurship, as well as solving problems in this area;



- further expansion and promotion of investments in small business and entrepreneurship;
- take measures for the full realization and sale of objects that were sold with zero value until 2019, and find solutions to this problem.
- focus on potential investors in the implementation of foreign investment and effectively use them in the process of modernization;
- further development of private property and entrepreneurship and ensuring their effective protection from the state.

In addition, in order to improve entrepreneurship, it is necessary to consistently continue reforms in the field of state registration of business entities, obtaining construction permits, connecting to the power supply system, registering property, protecting minority shareholders, international trade and executing contracts. It is worth to note that on February 5, 2019, the Resolution of the President of the Republic of Uzbekistan “About additional measures to improve the rating of the Republic of Uzbekistan in the annual report of the World Bank and the International Finance Corporation «Doing Business» entered into force. It envisages the achievement of the country of 20th place in the rating by 2022 – «Improving business – 2022»

In conclusion, we can conclude that the business environment is an environment that activates and facilitates the activities of small businesses and entrepreneurs and has a positive effect on the development of the country. To enhance the positive impact of the business environment, it is necessary to coordinate the complementary functions of the state mechanism and market mechanisms. The business environment is improving and improving on the basis of two (state and market) mechanisms. Without agreement between these mechanisms, the business environment cannot have a due effect on market economy entities.



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FEATURES OF THE FORMATION AND ORGANIZATIONAL MODEL OF REGIONAL INTERSECTORAL CLUSTERS IN THE TEXTILE INDUSTRY

Radjapov Kamoladdin Erkaevich
Urgench state university Economics Faculty,
Candidate of Economic Sciences.
E-mail: radjapov_k73@mail.ru

Erkayeva Bibirobiya,
Tashkent State University of Economics
first-year student of the Marketing faculty.
E-mail: erkaeva1999@gmail.com

Annotatsiya: respublikada klasterli yondashuvni rivojlantirish bo'yicha tadqiqotlar tahlili shuni ko'rsatadiki, yaqinda ushbu muammoni katta e'tiborga sazovor bo'ldi. Shunday qilib, ip-gazlama, mato va tayyor kiyim-kechak va trikotaj ishlab chiqarish jarayonlarini birlashtiruvchi to'qimachilik korxonalarini (klasterlarni) tashkil etish bo'yicha takliflar mavjud, ayrim ishlar bo'yicha klasterlarni shakllantirish uchun paxta kompleksi taklif etiladi. Bizning fikrimizcha, iqtisodiyotimizning ushbu sohasidagi global bozorlarda jiddiy raqobat sharoitida respublikada ham mintaqaviy shart-sharoitlar, ham alohida korxonalarning raqobatbardosh afzalliklari hisobga



olingan holda to'qimachilik klasterlari shakllantirilishi kerak (tanlov bozor raqobatiga asoslangan bo'lishi kerak). Shunday qilib, respublikaning to'qimachilik sanoatining raqobatbardosh ustunliklarini ro'yobga chiqarishni shakllantirish va rivojlanish jarayonlariga ta'sir qiluvchi ijobiy va salbiy tendensiyalarni hisobga olgan holda klaster strategiyasini amalga oshirish talab etiladi.

Аннотация. Анализ исследований по развитию кластерного подхода в республике, свидетельствует, что в последнее время данной проблеме уделяется значительное внимание. Так, имеются предложения по организации текстильных холдингов (кластеров), объединяющих процессы производства пряжи, тканей и готовой швейно-трикотажной продукции, в отдельных исследованиях хлопковый комплекс предлагается как основа формированию кластеров. По нашему мнению, в условиях жесткой конкуренции на мировых рынках в данном секторе экономики в республике должны формироваться текстильные кластеры, с учетом как региональных условий, так и конкурентных преимуществ отдельных предприятий (отбор должен осуществляться на основе рыночной конкуренции). Таким образом, реализация конкурентных преимуществ текстильной промышленности республики требует осуществления кластерной стратегии с учетом положительных и отрицательных тенденций, влияющих на процессы её формирования и развития.

Abstract. An analysis of research on the development of the cluster approach in the republic shows that recently this problem has received considerable attention. Thus, there are proposals on the organization of textile holdings (clusters), combining the processes of production of yarn, fabrics and ready-made garment and knitwear, in some studies the cotton complex is proposed as the basis for the formation of clusters. In our opinion, in the conditions of tough competition in the global markets in this sector of the economy, textile clusters should be formed in the republic, taking



into account both regional conditions and the competitive advantages of individual enterprises (selection should be based on market competition). Thus, the realization of the competitive advantages of the textile industry of the republic requires the implementation of a cluster strategy taking into account the positive and negative trends affecting the processes of its formation and development.

Kalitso'zlar. Минтақа, кластер, ташкилий усул, кросс-секторли кластер, алгоритм, рақобат, инновация.

Ключевые слова. Регион, кластер, организационный метод, кросс-секторный кластер, алгоритм, конкуренция, инновация

Key words. Region, cluster, organizational model, cross-sector cluster, algorithm, competition, innovation.

Introduction. A resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated November 25, 2018 in the country in 13 districts, including the Khorezm region in the Shavatsky district, created a textile cluster uniting 354 farms with a total area of 9,630 hectares, which received 26,620 tons of raw cotton. The cluster includes LLC &Textile Finans Khorezm, which provides financial resources to support farms. In general, the cluster of farms allocated 31.5 billion soums of credit funds, purchased agricultural equipment from Russia, Belarus, Turkey, and from the USA a six-row cotton harvester &JOHN DEERE&. The farms mainly fulfilled their contractual obligations, many received more than 40 centers of raw cotton per hectare.

Research methodology. In this article induction, deduction, analogy, comparative, economic analysis, observation, comparison research methods are used.

Analysis and results. Economic forecasting plans to move to complete processing of cotton fiber by 2020 through the organization of cotton-textile clusters. President of Uzbekistan Shavkat Mirziyoyev held a meeting on September 12, 2018 on increasing state budget revenues and achieving planned macroeconomic



indicators, as well as accelerating the introduction of clusters in the cotton-textile industry.

In this direction, the need to ensure a sufficient flow of currency for the modernization and sustainable development of the economy, and for this purpose - to increase the competitiveness of local products and increase its exports.

It is necessary to pay special attention to the development of clusters for the widespread introduction of modern market relations in agriculture.

The reserves for additional budget revenues have already been found and measures have been taken to mobilize them. For eight months, the budget received funds by 21% more compared to the same period last year. Growth in local budgets was 22%.

The main focus on effective and targeted spending of additional income remains at the disposal of local authorities.

State economic policy is needed to accelerate work in areas and sectors in which there are problems with achieving target and forecast parameters. The main goal is to assess the importance of analyzing each investment project and solving problems that impede their implementation.

To date, export issues have also been raised. In the first nine months, exports are expected to increase by 19% compared with the corresponding period of 2017. In foreign economic activity, the need to develop measures to promote exporting enterprises for each type of exported products has been identified.

Measures have been identified for the export of the expected crop in the amount of 607 thousand tons of re-crop, as well as vegetables grown in September-October in greenhouses.

Instructions were given to prevent price increases in the markets, to reserve more than 501 thousand tons of agricultural products and supply them to the



domestic market in the winter and autumn months in accordance with the demands of the population.

The main focus is the expansion of cotton-textile clusters. This year, cluster harvesting of cotton has been established in 20 districts covering an area of 164,000 hectares. To expand this system, 44 initiators with production capacity and financial capabilities were selected. In 2019, it is planned to harvest cotton in 61 clusters, covering 51% of all cotton fields.

As a result of the creation of new capacities and the organization of cluster activities in 2019, 78% of the harvested cotton fiber will be processed in the country, which is twice as much as in 2017. By 2020, the transition to the complete processing of cotton fiber will be completed. The share of finished products will be increased from 40% to at least 60%.

Clusters depend on the future of agriculture, its economic efficiency. Clusters should be the “locomotive” of the accelerated development of the agricultural sector.

The main idea of cluster formation is to create, on the basis of scientifically-based and technologically feasible, integrated solutions, as well as commercial mechanisms, conditions for the implementation of an innovative development strategy for the industry and thereby increase its competitiveness. The need to form a textile cluster model is that:

- see the relationship between the structural parts of the textile cluster;
- it is possible to determine which functions are performed by individual units or parts of an industry cluster, as well as the place and role of each structural part in it;
- it is possible to assess how full the cluster itself is in terms of composition and structure (which links are redundant, which are missing);
- it contains the potential to determine ways to optimize the composition and structure of the industry cluster.



There are a number of problems, mainly relevant for the development of regional intersectoral clusters:

a) for regional intersectoral clusters, which include textile enterprises producing a diverse range of products in the context of growing competitive markets:

- insufficient level of development of cooperative relations and subcontracting mechanisms, characterized by a relatively low proportion of components produced by external suppliers;

- low competitiveness of textile enterprises: expansion of the product line, transaction costs and unjustified overhead costs, a high level of marriage;

- low level of technological equipment and organization of production;

- insufficient level of competitiveness of external suppliers, including the quality and technological level of the products and services supplied by them;

- lack of specialized production and market infrastructure for manufacturers and suppliers;

- restriction of access to raw materials for small enterprises specializing in the processing of cotton products;

- financial barriers to the acquisition of expensive production equipment;

- problems with the availability and quality of training of engineering staff and skilled workers serving modern process equipment;

- low intensity of research activities in key areas of cluster development, including the educational component;

- low efficiency of the process of technology commercialization;

b) for clusters (integrated with the textile industry), consisting of enterprises of various sectors related to tourist services (tour operators, hotels, catering sectors, souvenir manufacturers, transport enterprises):

- the low level of development of specialized infrastructure and services, including hotels, catering organizations, passenger transport;



- low level of marketing and the formation of territorial brands;
- non-compliance with quality standards of services provided.

At the same time, the existing systemic problems can, in our opinion, be partially solved through the development of regional intersectoral clusters by state and local government bodies, the main areas of activity of which should be:

a) promoting the institutional development of regional intersectoral clusters:

- initiate and support the creation of a specialized organization for the development of regional intersectoral clusters, as well as activities for the strategic planning of the cluster development, the establishment of effective information interaction between the cluster members and the promotion of enhanced cooperation between them;

- development of a strategy for the development of a regional intersectoral textile cluster and a program of measures for its implementation, including the development of a set of cluster projects and measures aimed at creating favorable conditions for the development of a textile cluster based on an analysis of barriers and opportunities for its development;

- development of support mechanisms for projects aimed at improving the competitiveness of textile enterprises and promoting the effectiveness of their interaction;

- establishment of effective information interaction between the participants of the textile cluster. Implementation of measures to stimulate cooperation between the participants of the textile cluster (organization of conferences, seminars, working groups, the creation of specialized Internet resources and electronic mailing lists);

b) facilitating the implementation of projects aimed at improving competitiveness and increasing the efficiency of interaction between enterprises and organizations in light industry.



In the framework of this direction, the formation and development of mechanisms aimed at improving the competitiveness of textile enterprises and promoting the effectiveness of their interaction, which can be used, including in the implementation of cluster projects, is proposed.

However, the textile industry should not be understood as the only resource-consuming industry. It also participates in the interaction with other cluster members, moreover, the textile industry determines the technological nature of the interaction of other industries.

The resources circulating in a cluster are extremely diverse. The interaction of the structural parts of the regional textile cluster in the aspect of provision, consumption, movement and transformation of resources. The usefulness of the basic model of a textile cluster is that:

- a) traced the relationship between the structural parts of the textile cluster;
- b) it is possible to determine which functions are performed by individual units or parts of an industry cluster, as well as the place and role of each structural part in it;
- c) it is possible to assess how full the cluster itself is in terms of composition and structure (which links are redundant, which are missing);
- d) contains the potential to determine ways to optimize the composition and structure of the sectoral cluster.

Analysis of the cluster approach for the existence of links between economic structures and the development of the textile and clothing industry of the republic for the future:

- technical and technological modernization of the industry based on the implementation of state target programs for the development of the industry;
- the closure of the technological chain "raw materials - finished products."



For the development of textile production at the present time there is a tendency of production within the full production cycle:

- development of sewing production. This trend is a consequence of the concentration of production and diversification of textile enterprises;
- development of a system of personnel training in the framework of higher and vocational education based on the formation of the educational services market;
- the organization of regional holding and associative structures is an important prerequisite for the formation of the internal cluster market, and also takes on the character of a long-term strategic partnership;
- development of logistics networks, industry-specific shopping complexes, retail and warehouse terminals and the concentration of wholesale and retail trade in textile products at the places of its production;
- inconsistency of products of the domestic chemical industry with the needs of textile enterprises and insufficient time for it on the part of textile enterprises;
- development of innovation processes in accordance with the requirements of the industry, which requires, firstly, for the realization of the scientific potential of the republic, coordination of innovation activities, and secondly, the formation of an innovation infrastructure.

Conclusions and suggestions. The importance of infrastructure formation is especially important for organizing the connection of scientific, technical and innovation activities with production. The availability of services for organizations engaged in research and development, provides the possibility of commercialization of development.

For organizations engaged in innovation activities, the availability of infrastructures makes it possible to work in small numbers, to compensate for the absence of many components necessary for successful work by acquiring the services of specialized organizations. One of the integral elements of the innovation



infrastructure is the system of production and technological support for the sphere of research and development itself and the organization of pilot production.

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SCIENTIFIC AND ECONOMIC BASIS FOR AGRICULTURAL STRUCTURE

Radjapov Kamoladdin Erkaevich
Urgench state university Economics Faculty,
Candidate of Economic Sciences.
E-mail: radjapov_k73@mail.ru

Erkayeva Bibirobiya,
Tashkent State University of Economics
first-year student of the Marketing faculty.
E-mail: erkaeva1999@gmail.com

Annotatsiya: Zamonaviy rivojlanishni amalga oshirish agroklastarlarning tashkiliy tuzilmasini va bozor infratuzilmasini rivojlanishning yangi bosqichini milliy iqtisodiyotga ta'sirini aks ettiradi va innovatsion muhit o'zgarishini rag'batlantiradi. Barcha omillarni hisobga olgan holda agroskustrlarning ilmiy va texnologik jihatlarini, shu jumladan barcha omillarni hisobga olgan holda xom ashyolardan



tayyor mahsulotlarga qadar bo'lgan davrni o'z ichiga olgan ishlab chiqarishda innovatsiyalardan foydalanish bo'yicha tavsiyalar va tavsiyalar berish.

Kalit so'zlar: Agro-klaster, ARGE, SWOT, indikator.

Аннотация: Реализация современного развития отражает организационную структуру агрокластеров и влияние нового этапа развития рыночной инфраструктуры на национальную экономику и подталкивает к изменению инновационной среды. Предоставление рекомендаций и рекомендаций по использованию инноваций в производстве, охватывающих период от сырья до готовой продукции, с использованием научных и технологических аспектов агрокластеров, в том числе факторов всех факторов, с учетом всех факторов.

Ключевые слова: агрокластер, ARGE, SWOT, индикатор.

Abstract: Implementation of modern development reflects the organizational structure of the agro clusters and the impact of the new stage of development of the market infrastructure on the national economy and pushes for the innovation environment change. Providing recommendations and recommendations for the use of innovation in production, covering the period from the raw materials to the finished product, with the use of scientific and technological aspects of agro clusters, including the factors of all factors, taking into account all factors.

Key words: Agro cluster, ARGE, SWOT, indicator.

Introduction. From the moment our country gained independence, institutional reforms in the economy have been continuing, and the reduction of the difference between rural and urban communities contributes to the growth of the culture of the people. Determines the standard of living of the population in our country and contributes to the implementation of the concept of food security around the world. It is important that the reforms in agriculture, including the implementation of



privatization in all sectors, have been shaped by new forms of ownership and the legal basis and socio-economic mechanisms of property relations.

A number of laws, decrees and resolutions on the creation and further liberalization of our economy, its legal framework, modernization and diversification of production have been adopted and consistently implemented.

In 2017, 161 large industrial facilities have been commissioned in our country. This will allow us to produce additional 1.5 trillion soums next year. As a result of these measures, the sustainable economic growth rate in 2017 was 5.5%, the volume of exports increased by almost 15%. The positive balance of foreign trade turnover reached \$ 854 million⁴.

We have started to freely convert our national currency. Legal entities and individuals have the opportunity to buy and sell foreign currency freely from commercial banks without restrictions. The volume of purchase and sale transactions of foreign currency increased 1.5 times compared to the liberalization period and amounted to an average of \$ 1.3 billion. At the same time, the gold and currency reserves of our country increased by \$ 1.1 billion during the year⁵.

Implementation of the Decree of the President of the Republic of Uzbekistan "On measures to ensure the country's food security more efficiently" with a view to creating a competitive environment in the market economy requires the development of processing of raw materials produced in agriculture, development of finished products is doing.

The share of agricultural products in the country's GDP is 17%. The volume of processing of agricultural products does not exceed 10%. In the developed countries this figure is more than 50 percent. In this regard, a comprehensive program for further reform of agriculture has been developed. Particularly, it is necessary to carry

⁴ Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoev to the Oliy Majlis. "Xalq so'zi" Year 2017.

⁵ Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoev to the Oliy Majlis. "Xalq so'zi" Year 2018.



out explanatory and publicity studies on the problem of food security, lack of genetically modified products. In recent years, imports of fruits and vegetables have been rising in the domestic markets, and the demand for agricultural production has increased.

The introduction of new forms of entrepreneurship, the production of import-substituting products, first of all, restoration of old-fashioned varieties, the rational and productive work of selection, the wide range of scientific achievements, innovations to be implemented.

Research methodology. In this article induction, deduction, analogy, comparative, economic analysis, observation, comparison research methods are used.

Analysis and results. It is known that the textile industry of our country can process up to 1 million 400 thousand tons of cotton fiber. It can fully meet the needs of the finished products manufacturers in our country. However, there are many problems with the management of the cotton fiber industry. This leads to a decline in yields in the production and processing of raw cotton. In this regard, a separate Decree of the President of the Republic of Kazakhstan on the solution of problems in the field, further stimulation of domestic producers was adopted. To date, our textile enterprises have been able to sell raw cotton only through the Uzpakhtasanoat joint-stock company. According to the decree, the textile enterprises have now been able to purchase raw cotton directly from farmers on a direct contract basis.

In the framework of creation of cotton-textile clusters in Navoi, Bukhara and Sirdarya regions there is an experiment on production of cotton raw material based on market requirements, formation and sale of price-quotes. In the future it is envisaged to implement such positive experience throughout the country. The livestock sector has created enough conditions for breeding cattle and poultry, improving quality and productivity. At present, the country has continued to establish



specialized horticultural and vegetable complexes, high-tech poultry farms, fisheries and hothouse farms.

Fruit and vegetable products worth \$ 1.5-2 billion were exported in our country⁶. However, the creation and development of agro clusters on the ground would have helped increase the export potential of the products. In the production and export of goods, the "Uzagroexport" stock exchange, stock exchanges, agrofirms and wholesalers should play a major role.

Effective realization of agricultural products is very important and problematic. For this purpose, the formation and development of a system that promotes the increase in the volume and quantity of products grown on farms is of great importance.

The basis of organizational and economic mechanisms of modern development of innovation approach to agricultural development in the context of institutional reforms is the management of technological processes in this agro-industrial complex. It is also an effective form of the formation of the cluster integrated structure of agricultural production in the conditions of crisis prevention.

The cluster is a self-sustaining economic product or service provider, technology and know-how, market infrastructure, relationships between providers and developers that combine with each other in a single system, and provide value-added and regional allocation and specialization is calculated.

The cluster approach is the only basic and basic method, which is a means of implementing the state's economic policy. Cluster is an economic system based on globalization of agro-business competition and current organizational and economic mechanisms and commercial support. Developed countries in Asia, Europe, and the United States gained a high economic change from the cluster strategy.

⁶ Statistical Bulletin of the Republic of Uzbekistan



Agro clusters is not only an organizational-legal form of enterprise, but also a cooperative and a specialized association with the principle of regional co-operation, an agro-business with the right of ownership, agricultural cooperative co-operation and is a driving force of innovation that promotes the growth of competition among other independent legal and business entities.

The organizational structure of the cluster focuses on the basic provisions of the organization. Integration of economic innovations into complex and statistical analysis and economic activity of enterprises in the Agrosanoat Complex SWOT-analysis is the integration of the strategic approach to the classification of rural areas through regional co-operation based on scientific-methodological approach. Initially, innovation is based on the definition of collaboration:

- cost cutting;
- technological knowledge acquisition;
- modernization assistance;
- development of technology;
- network standards;
- access to additional markets.

Taking into account the sustainable development and viability of the agribusiness based on the capabilities, the following applies:

- loans received by companies;
- use of integrated infrastructure;
- participation in investment programs and investment projects;
- use high standards of technological processes and product quality;
- savings from purchasing at the expense of collaborating suppliers;
- collective brand, a joint distributor network.

Agro clusters trade enterprises - auxiliary organizations - specialized networks - large and small raw materials suppliers - service providers - consultants - private



research and development engineering firms - high technology firms - researches with similar strategies and a system that requires the integration of production engineering companies and regulators.

Agro clusters should be based on foreign sources based on their experiences, using the conditions and opportunities created in the country:

1) formation of agro clusters, based on the theoretical foundations of Marshall's localization economy and industrial clusters described in Rosenfeld Schmitz's⁷ works;

2) Identify agrarian clusters based on intersectoral relationships using input-output schemes.

3) It is desirable to associate institutions in a geographical space with the localization of the economy and the impact of urbanization on the internal system, and the use of technological innovations.

In evaluating clusters, it is important to specify the link between its organizational members and to identify the innovative potential among its members. Implementing the measurement of the relationship between cluster policy and its impact on the cluster.

When organizing agro clusters, the following identifiers should be identified:

1. SWOT analysis of a folder.
2. Factors of localization and other factors.
3. Development of inter-branch balances or creation of innovative intersectoral balance.
4. Network analysis using graph theory.
5. Determination of competitiveness advantages and disadvantages.

Methods of assessing the need for agro clusters:

1. Economical and mathematical modeling.

⁷ Zaika A. Analiz opyta Finland and the post-economical effective formulation of economical clusters. Economics and politics. 2009. No. 6 (55). p. 37-40.



2. Regression models (unmanaged - number of patents, R & D costs, innovative products). Integral indexes based on indicator system.
3. Creating a motivation map for the members of the cluster.
4. Evaluating the effectiveness of cluster conflicts.
5. Evaluating the effects of a cold.
6. Evaluating the impact of clusters on the national economy.

Development Agro Cluster Improvement Mechanisms. Cluster development strategy:

1. Enter the competitive advantages.
2. Portfolio analysis of investment projects.
3. Development of the software.

Agro clusters are based on the following approach in the organizational structure: the first approach should be based on an analysis of its individual components, not an every-requisite innovation potential. The second approach may be conditional on the resource.

The third approach is based on the innovative potential resources being implemented and implemented (hidden) resources; in the fourth approach, innovative capacity is the measure of the ability and completeness of the economic entity to perform innovative activities. The Fifth Approach is an effective utility. The Sixth Approach combines resource and effective approaches. The seventh approach is to examine the innovative potential from a systematic approach.

Information gathering, processing, grouping of the components, description of indicators, determining the factors influencing the results, scientific substantiation of the given indicators, calculation of results on the basic indicators, integral of innovative capabilities estimation and evaluation of the index, proposals for the implementation of the innovative potential of the university, analysis of results, and definition of the components of innovative capabilities.



It requires development of personnel and development of technological, financial-economic, organizational forms of management. The aggregate role of the agro cluster's innovative capacities is crucial and requires organizational considerations.

It is important to take into account the following proposals and recommendations in the agro clusters in our country:

1. Provide regional placement of clusters;
2. Realization of agro clusters specialization;
3. Formation of the Cluster Formation and Development Framework;
4. Transformation of agro clusters into smaller economic zones;
5. Improvement and development of competitive environment in the economy;
6. Pay attention to quality and quantity of products, use of innovations and international standardization;
7. Adaptation of the system of preparation and retraining of personnel to production systems;
8. Evaluating the impact of agro clusters on ecosystems;

Conclusions and suggestions. The conclusion suggests that the implementation of the above scientific proposals and recommendations, the formation and development of agro clusters will contribute to the country's sustainable economic growth and competition, modernization and diversification of the economy, production of finished products, use of innovation on entrepreneurship and entrepreneurship, attracting domestic and foreign investments, increasing fixed foreign exchange earnings, increasing the country's export potential, creating new jobs, and the increase in the share of the processing industry, the rise of the culture of the population and the appearance of the village-forming villages are of particular importance are calculated.



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**THE IMPORTANCE OF TOURISM INFRASTRUCTURE IN HISTORICAL
AND CULTURAL MONUMENTS OF KHOREZM REGION AS WELL AS
INFORMATION AND COMMUNICATION TECHNOLOGIES AND THEIR
EFFECTS ON MUSEUMS.**

Doschanov Tangribergan Doschanovich
Professor of Tourism and
economy faculty, Urgench state
university
Email: [doschanov T@rambler.ru](mailto:doschanov.T@rambler.ru)

Matniyozov Murodjon Rajabboyevich
Second-year master student
Urgench state university
The faculty of Tourism and economics
e-mail: murodali.matniyozov@mail.ru

Ruzmetov Baxodir Shomurotovich
Lecturer of Tourism and economy
faculty, Urgench state university
e-mail: ruzmetov.bahodir@mail.ru

Annotation. This article outlines the role of historical monuments in the tourism infrastructure and the use of information and communication technologies in museums and the use of foreign experience.

Key words: tourism industries, tourism infrastructure, information and communication technology (ICT), touristic destination, aesthetic education

Аннотация. Мазкур мақолада тарихий маданий ёдгорликларни туризм инфратузилмасидаги рўли ва ахборот коммуникацион технологияларни музейларда қўллашнинг муҳим омиллари ва хориж тажрибаларини ўзимизда қўллаш ёритилиб берилган.



Калит сўзлар: сайёхлик соҳалари, АКТ, туризм инфраструктураси, сайёхлик ўналишлари, эстетик таълим.

Аннотация. В данной статье описывается роль исторических памятников в туристической инфраструктуре, использование информационно-коммуникационных технологий в музеях и использование зарубежного опыта.

Ключевые слова: туристические отрасли, информационно-коммуникационные технологии (ИКТ), туристическое направление, индустрия туризма, инфраструктура туризма, эстетическое воспитание

Introduction. In recent years the government of Uzbekistan has consistently implemented comprehensive measures to develop tourism infrastructure as one of the most important strategic sectors of the national economy, which ensures its diversification and accelerated development, the increasing of daily life of the population and their incomes together with creating new jobs.

The Khorezm oasis attracts world scientists and tourists with its attractiveness for a long time. There are hundreds of historical and cultural monuments in this space, each of which has its own secrets and great history. Taking into account the growing interest in various historical and cultural monuments in the Khorezm region in recent years, as well as the contribution of the region to the tourism infrastructure, the Presidential Decree "On the Program of measures for complex development of the tourist potential of Khorezm region for 2017-2021" was adopted. In line with this decree, concrete instructions have been given to improve the state of historical and cultural monuments in the region, as well as the restoration processes, the construction and reconstruction of the hotel, together with the development of tourist infrastructure in the region. The Cabinet of Ministers has developed a plan of action for the creation of new travel arrangements and tourism.

Literature review. The development of the tourism industry, which is the basis of its development, were researched by Tomoko Kanashima, Takayaku Katsura,



Thomas Sobol, Evelyn Rosetti, V.Kvartalnov, S.Julidov, S.Skobkin, E.Ilina. In our Republic these directions are studied by M.Pardaev, I.Tukhliev, G. Qudratov, A.Eshtaev, O.Khomidov, B.Turaev, D.Usmanova, N. Ibadullayev, R.Amriddinova, B.Safarov, M.Alimovas. Today, this issue is raised to the level of state policy and is reflected in the reports of the President of the Republic of Uzbekistan.

Research Methodology. This article examines aesthetic education in museum environments and the possibility of using computer display in supporting aesthetic education. While computer applications in museums have greatly expanded since the 1990s, the use of computers especially in art galleries is still at a relatively experimental phase. In particular, the use of computer-mediated-learning systems for supporting art museum education that is the core theme of this research has barely been examined before and consequently, this research has become exploratory in its nature. This research reveals the importance of the recognition of the true value and benefit of computer applications in exhibition spaces.

Analyses and results. It is well-known that the importance of tourism potential of Khorazm region and the city of Khiva in the development of tourism in our country, and the government's attention to the development of tourism in the region. This allows us to expand the tourism potential of the region and on the basis of the evaluation will be based on attention to the issues of increasing the number of tourists visiting. In this regard, the city has a rich historical and cultural potential and has over 300 historical and cultural monuments dating back to its 3000th anniversary.

There are 208 sites of cultural heritage, including 20 archaeological sites, 124 historical and architectural monuments, 7 ensembles, 28 sights and temples in Khorazm region⁸. In addition, The natural and climatic conditions of the region provide permanent tourist season at a certain time of the year.

⁸Ruzmetov B., Matyakubov U., Khudoyberganov D. Prospects of tourism development in Khorezm region.: "Actualnye problemy turizm - 2009"



At the same time, ecotouristic potential, medical tourism, desert tourism, horse and camel rides, hunting tourism, and agro-tourism potential can be used optimally. In order to implement these tasks, the implementation of state programs and resolutions on the development of tourism in Khorazm region and Khiva, the formation of tourism infrastructure, stages and trends of tourism services development, the number of domestic and foreign tourists visiting the region and their satisfaction with tourist services in the region should be avoided. For this purpose, the tourist attraction of Khorazm region and Khiva city should be used effectively .

It should be noted that the historical monuments preserved in the region today are the pride of Uzbekistan. There are 256 sites of cultural heritage in the region, 18 of them are archeology, 134 architecture, 66 sculpture monuments, 6 sightseeing and 32 sacred places. The Ichan Kala complex of Khiva, known as the "open area museum" in the eastern porch, comprises a total area of 26 hectares containing over a hundred historical monuments, which are included in the UNESCO World Heritage List. One can say without exaggeration that one of the most important historical monuments of Khorezm is the historical complex of Ichan-Kala in Khiva, which is included in the UNESCO World Heritage List. The Ichan-Kala historical complex features over 400 ancient national-style houses and 60 architectural monuments. Visitors to Ichan-Qala will be able to watch daily shows of the Ancient Ark and the Summerhouse, while their national-style films are translated into English. This is a push to attract guests from around the world.

Among the historical and cultural monuments of Khiva, the most popular tourist destinations are:

- Ichan-Kala museum: Mosque and Saidbay madrasah
- Madrasa Allakullikhan (1834/35)
- Abdullahan Mosque (1865)



- Anushahan Mosque and Palace (1657)
- Tash House (Palace of Allakulihan) (1830/36)
- Juma Mosque Tower (1788/89)
- Mausoleum of Said Alovuddin (14th century)
- Muhammad Aminhon madrasah (1851/52)
- Kalta minor (1855)
- The Ark (1868/88)
- Muhammad Aminhon Madrasah (1871)
- Shergozi madrasah (1718/20)
- Baglandi mosque

The home museum of Komil Khorazmiy

Muhammad Rakhimhon II mosque

The mausoleum of Pahlovon Mahmud

The museum of Mamun Academy

The museum of Al Beruniy

The Khorezm region has a very high tourist potential and any foreign visitors can visit historical and cultural monuments, museums, dwelling places, places of workshop and sightseeing and get enough of them.

All these visits are good impression on the tourists, and as a result of all the comforts created for tourists, tourism in the region is consistently developing.

Today, based on international experience, all developed and developing countries are striving to stabilize the country's economy through the development of the services sector. Therefore, the development of the services sector will directly contribute to the development of the economy, such as the creation of new workplaces, and the prevention of unemployment. Promising projects in the field of tourism are being implemented in all regions of our country.

Museums Table 1.

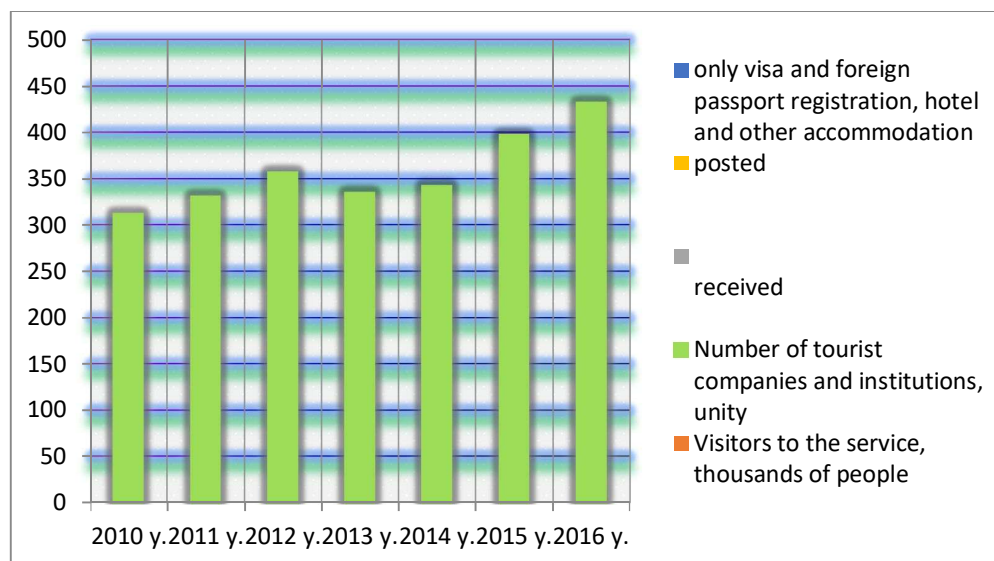
	2010 y.	2011 y.	2012 y.	2013 y.	2014 y.	2015 y.	2016 y.
The number of museums (including affiliates), unity	105	106	107	106	108	106	109
Museum exhibits, thousand units	1991232	2010,9	2013593	2072468	2167,4	2159,7	2060,7
Number of excursions in museums, unity	76255	81011	71097	96565	103378	96793	107144
Number of exhibitions in museums, unity	1180	1312	2214	2093	1548	1654	2307
Number of visits to museums thousand	4904,3	6198,2	4847	5022,1	6016,9	5462,3	5371,2
schoolchildren, students academic lyceums and professional colleges visit museums	2558,6	3641,7	2947,7	2795,7	3043,0	2798,4	2693,4
Number of visits to museums, per 1000 inhabitants	172	211	163	155	196	175	171

Source: Calculations based on the results of Ichan-Kala museums survey from 2010 to 2016

The table illustrates that we have great potential in the sector of museums. The number of visits to museums has also shown a relatively high rate of growth in 2016. Meanwhile the number of exhibitions and excursions are increased from 2010 to 2016.

According to the table data, during the analyzed period the illustrations of museum's visits and exhibitions rised significantly.

Table 2 . Tourist activity organizations



Source: The state Committee for Tourism development of the Republic of Uzbekistan

Opportunities for technology jobs permeate the tourism industry at virtually every level. Although information technology has always been important in the field, its importance increases as the variety of new devices and improvements on existing ones appear. For instance, application of advanced information technology to provide tourist information via navigation systems, PDAs (personal digital assistants), or mobile phones is growing. Consequently, additional technical manpower will continue to be needed for tourism managers to achieve the best results. People skilled in Web technologies, user interface, modules, database management, programming, business intelligence, business analysis, market research, and computer graphics are among those who can look forward to opportunities in the industry in our KHorezm region.

In addition to information technology, a number of new tourism products have emerged as tourism technology has been combined with other industries. These include medical tourism, educational tourism, agricultural tourism, ecotourism, and space tourism. Another technology creating tourism jobs is the Global Positioning



System (GPS). GPS has become a widely used aid to navigation worldwide, and is also a useful tool for mapmaking, land surveying, and commerce. Indeed, there is hardly a field that is not employing GPS; its many capabilities are applied by scientists, pilots, military troops, hikers, bikers, business travelers, vacationers, off-road adventurers, mariners, fishermen, hunters, and balloonists, to cite a few. I consider that all these technologies can help to develop our touristic infrastructure and also improve our touristic spot.

INFORMATION COMMUNICATION TECHNOLOGY (ICT)

ICT stands for Information Communication Technology (hereafter ICT) and is a revision of the old IT acronym with the intention of encouraging its use in more collaborative ways. Government reports often use the term ICT to refer to digital technology applications specifically aimed at the development of education and communication strategies in educational institutions including museums. There are several influential factors impinging on the development of ICT in museums and galleries and these are as follows.

ICT as a Key Tool to Democratise Museum Collections

Firstly, there is a growing appreciation that museums are not just about objects, they are for people. The UK Museums Association definition in 1995 said that the museum was “an institution that collects, documents, preserves, exhibits and interprets material evidence and associated information for the public benefit” (Museums Association, 1995). This old definition indicated stewardship as the most crucial part of the museum’s institutional mission. But in 1999 the MA modified its definition of the museum to:

Museums enable people to explore collections for inspiration, learning and enjoyment. They are institutions that collect, safeguard, and make accessible artefacts, exhibitions and specimens, which they hold in trust for society.



(Museums Association, 1999)

In such circumstances, the importance of the effective interpretation of the objects is stressed in order to make the cultural heritage attractive and meaningful to the wider public. Also, combining learning and enjoyment helps to define the museum as an alternative form of public entertainment. The “Infotainment” (information combined with entertainment) and “edutainment” (education combined with entertainment) approach to museum exhibitions has become a popular strategy of museum communication today and this perceived combination of leisure and learning has become a valuable asset of contemporary museums. Computer technology is seen as offering an attractive and accessible way for making learning opportunities more dynamic and more enjoyable thus it can enhance understanding and appreciation of museum collections.

Government and Public Initiatives on the Use of ICT in Museum Education

Since the mid 1990’s, in North America, Europe and some countries in Asia, there has been a tendency for governmental support to encourage the development of an information superhighway infrastructure in the academic

Museums in the Information Age

The arrival of the information age has directly encouraged the introduction of ICT in museum activities. It is interesting that the advent of the information age has encouraged a society dependent upon multiple media for information dissemination and communication. We can, therefore, expect to have a modern audience in museums which is accustomed to the flood of visual, aural and written information which bombards them daily through television, radio, video, and print media. At the CECAICOM (Committee for Education and Cultural Action) conference in 1991, Shalev mentioned that computers would become a crucial medium for museum



communication in the upcoming century. “I think that we are emerging into the era when the individual will have his own personal newspaper in the morning. He will have his own individual needs that he will satisfy from all the huge data banks that will be connected directly with his own personal or family TV set, and he will be in a parallel situation in the sense that he will want to satisfy his own individual needs from any given exhibition.” (Shalev, 1991, p. 62-3.)

In a time when multimedia is becoming prevalent in many areas of work, education and leisure, we can expect to have museum audiences, especially people in the younger generation, who may be no longer satisfied to accept an established order of knowledge that curators and other museum professionals try to convey through exhibitions. Rather, visitors may prefer to draw their own conclusions from a museum experience gained through interacting with the vast amounts of information that a museum can offer. ICT can offer this potential, and many museums have responded by introducing multimedia programs in the museum and on websites.

These museum professionals’ predictions in the late 1980’s and early 1990’s seem to have become true sooner than they had thought due to the speed of technological growth in the IT industries. In recent decades, stand-alone computers have become relatively common tools in homes, offices, and schools. Digital technology can now be used to convey very large amounts of information and this information can be retrieved in ever more sophisticated ways, with various media including video, still images and sound, through a variety of links. Increasingly, all of these data are not dealt with just on stand-alone computers but can be exchangeable over networks and in particular, the Internet (Ryan, Scott, Freeman, Patel, 2000, p.9).

The first published research on the capabilities of computer programs for the development of user experience and learning in art and historical museums was conducted by Gottesdiener and Boyer (1992, p.168). Their work is about the impact



of a computer game designed to motivate visitors to attend carefully to information in the exhibition “Raphael and French Art” held at the Grand Palais in Paris, November 1983. The computer game, called “Look and Compare”, consisted of four sets of tasks, each of which involved a number of questions (e.g. ‘Which of these four paintings by Raphael inspired the artist?’). Gottesdiener and Boyer’s survey examined the extent of computer usage over four days, the socio-demographic profile of the players and non-players, and the behavioural differences between players and non-players in the gallery. There are two points worth mentioning from their examination of visitor behaviour. One is that playing the computer game did increase the level of attention paid by visitors to target paintings. Another is that the computer game provided visitors with the opportunity to work together in finding answers, thus, it enhanced the chance of social exchanges among visitors .

Conclusion. It is interesting to note that, recent trends in educational philosophy in museums in general, and aesthetic education in particular as one of the approaches for audience development in the art and historical museum. I have also described the advantages of the use of computer-mediated-learning and why it may be effective for the development of an aesthetic approach to museum education. Aesthetic education emphasises the importance of the audience’s involvement in the learning process and the cultivation of skills to achieve active exploration of the art object. I have argued that computer-mediated-learning might be a powerful tool to support aesthetic education because of its ability to encourage an interactive, exploratory and user-centred learning experience. Although some research has been undertaken on the theme of computer-mediated-learning in the art museum, no survey has explored deeply how computers can stimulate visitors’ art experiences and how they may support the audience’s aesthetic experience in the art museum setting.

Above all, it should be noted that Khorezm region is rich in historical monuments,



museums and sights. This heritage, which has reached us in the long history series, will be delivered to future generations, and the use of these historical monuments will be one of the topical issues of the day. As a result of the creation of the necessary conditions for the tourists, taking into account many historical and cultural monuments in the region, it is obvious that tourism has been steadily developing in our region.

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**ORGANIZATIONAL AND LEGAL MECHANISM FOR THE
DEVELOPMENT SERVICES OF LEASING AND PROSPECTS OF
LEASING SERVICES DEVELOPMENT.**

Abdullayev Farhod Ozodovich
Director of Urgench territorial branch
of Academy of Republic
Administration under the President of
the Republic of Uzbekistan
E-mail: farhodeconomy@mail.ru

Shamurotov Sabirjon Bazarbayevich
Second year master
of Tourism and Economy faculty
of Urgench State University
E-mail: sabirjon94@mail.ru

Annotatsiya. Ushbu maqolada O'zbekiston Respublikasida lizing xizmatlarini rivojlantirish tashkiliy-huquqiy mexanizmlari qabul qilingan huquqiy hujjatlar



misolida yoritib berilgan. Mamlakatimiz lizing xizmatlari bozori tadqiqotlar asosida o'rganilgan.

Kalit so'zlar. lizing, lizing xizmatlari, lizing oluvchi, lizing beruvchi, lizing shartnomasi, mexanizm, lizing obyektlari, bojxona imtiyozlari, soliq imtiyozlari, lizing subyektlari

Аннотация. В данной статье рассматриваются организационно-правовые механизмы развития лизинговых услуг в Республике Узбекистан. На основании исследования рынка лизинговых услуг нашей страны.

Ключевые слова лизинг, лизинговые услуги, пользователь лизинга, лизингодатель, договор лизинга, механизм, объекты лизинга, таможенные льготы, налоговые льготы, лизинговые активы.

Annotation. This article describes the legal framework for the development of leasing services in the Republic of Uzbekistan. The market of leasing services of our country has been studied.

Keywords. leasing, leasing services, lessee, lessor, lease agreement, mechanism, leasing objects, customs privileges, tax breaks, leasing assets.

Introduction. Leasing services in our country are developing and becoming one of the most important sectors of the economy. Leasing entities are exempt from VAT(Value Added Tax) on lease payments, as these payments are fully charged on the whole and reduce the tax base by income tax.

Leasing subjects are exempt from property tax on the subject of leasing according to Article 269 of the Tax Code "Property tax privileges". In calculating the property tax on legal entities, the tax base shall be reduced by the value of the leased property under the lease agreement. Imported technological equipment on leasing terms is exempt from VAT and customs duties during customs clearance.

Lessee will be able to accurately calculate the budget of their business and manage the cash flows of the enterprise over the term of the leasing agreement because the



lease agreement provides monthly payments equal to the same amount. If actively investing in this sector, our country will soon become one of the leading countries in this area.

Analysis of topic material. The development of leasing services is represented by V. Gazman, V. Goremikin, A. Deniskin. In their monographs leasing services are illustrated well and clearly. Issues of developing leasing services in modern economy are shown and are taken action by the scientists.

As well as Uzbek scientists Abdurakhmonova M. Mo'minov A. have researches on leasing services. In this article data of unit of Uzbek lessors are also used.

Research methodology. In the study monograph, induction, deduction, economic analysis, observation and comparison research methods used.

Analysis and results. In our country, leasing services are becoming one of the most important sectors of the economy. This is due to the fact that a solid legal basis has been created and the state is supported by leasing objects (lessor and lessee): tax and customs privileges for lessee and lessors. Leasing services make companies more competitive in modern market. There are also benefits for government because of creating new work places for people.

The Law of Leasing, adopted on April 14, 1999, is a legal basis for this industry. The present Law consists of 25 articles, which cover the concept of leasing, leasing objects and subjects, leasing forms, leasing activities. According to this law, leasing is a separate type of lease, in which one party (lessor) submits the property (object of leasing) as stipulated in the leasing agreement from the third party (seller) on the instructions of the second party (lessee) and shall transfer it to the lessee for a period of more than twelve months in the possession and use of the remuneration in the conditions set forth in this agreement. A user of leasing shall be recognized as the person receiving the object of leasing according to the lease agreement for possession and use. In addition, the leasing contract is recognized as the lessor of the object of



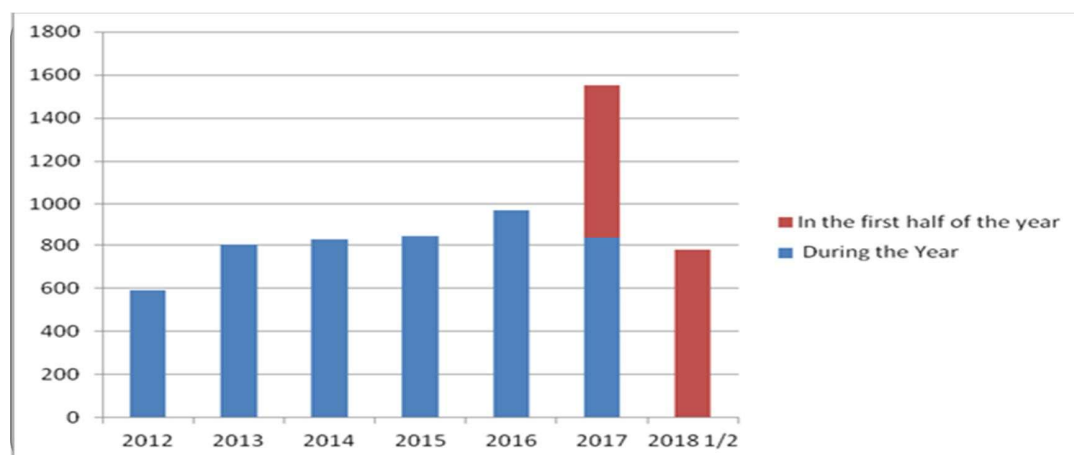
leasing in the future for leasing to the lessee. "In addition, the International Financial Leasing Convention adopted on 28 May 1988 was adopted. In addition, the Tax Code of the Republic of Uzbekistan exists on the reduction of the tax burden on leasing subjects. Leasing is the legal basis for reducing the tax base.

Leasing entities are exempt from VAT on lease payments, as these payments are fully charged on the whole and reduce the tax base by income tax.

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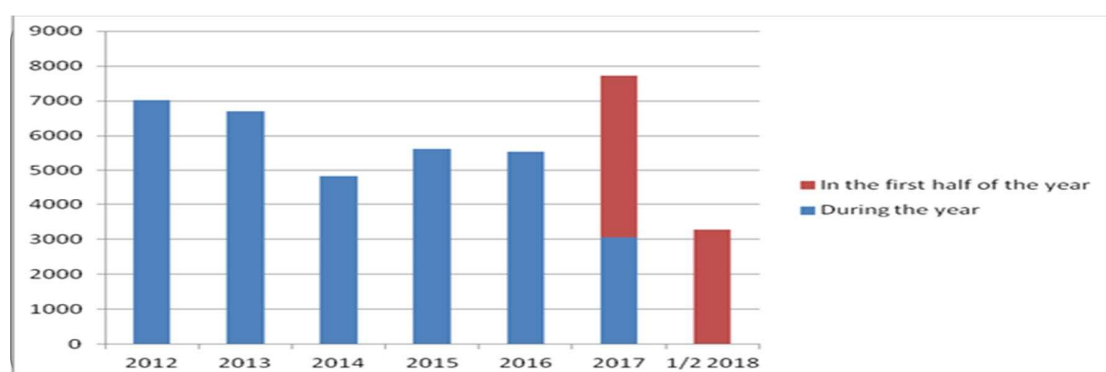
Lessees will be able to accurately calculate the budget of their business and manage the cash flows at the time of the leasing agreement, as the lease agreement provides monthly payments equal to the same amount. Lessees will be able to purchase the products of world leading and local manufacturers without separating their working capital. Leased equipment not only covers itself, but also greatly increases the profit of the enterprise. Significant growth in the number and number of leasing transactions in our country is achieved. In the first half of 2018, the volume of new leasing transactions amounted to 779.6 billion sums, while the total portfolio of leasing operations amounted to about 3.5 trillion sums. However, 1 trillion soums in the joint portfolios belong to the leasing portfolio of the National Bank for Foreign Economic Activity of the Republic of Uzbekistan. The analysis of the leasing market of the Republic of Uzbekistan has been prepared by the Lessors Association of Uzbekistan on the basis of official data provided by leasing companies and commercial banks. During the preparation of the rating of leasing companies in Uzbekistan, leasing activities were defined by more than 50 leasing investors, of which 18 are banks.

Table 1 The volume of leasing transactions(in bn UZS)⁹



In the first half of 2018, the volume of new leasing transactions increased by 9.7% to UZS 779.6 bn., Which is 68.8 bn. UZS in comparison with the same period of the previous year 's. This is accomplished by the state-owned leasing company "Uzagrolizing", implementing government programs to support the preferential leasing provided to support the agricultural sector, as well as the traditional leasing companies and commercial banks the positive effects of deals on the market. In the first half of 2018, the agricultural sector became the market makers of real estate and motor vehicles, in particular freight cars. In addition, the record volume in the market has also had a significant impact on the growth of the technology sector.

Table 2 The number of leasing transactions



¹ www.unit of the lessors.uz



The number of leasing deals concluded in the first half of 2018 has dropped and amounted to 3280 transactions. Compared to the first half of 2017, the number of new leasing transactions decreased by 30%, which is by 1394 deals less. The tendency of new leasing deals to increase in the leasing market was distributed as follows:

Table 3 Leasing market distribution among lessors¹⁰

	2014	2015	2016	2017	½ 2018
Leasing companies					
amount of property, (billion sum)	592,6	668,2	630,8	963,8	681,0
Share	71,7%	78,5%	64,8%	62,0%	87,3%
Banks					
amount of property, (billion sum)	233,6	183,0	342,3	589,6	98,6
Share	28,3%	21,5%	35,2%	38%	12,7%
Jami	826,2	851,2	973,1	1553,6	779,6

In the first half of 2018, the tendency of the leasing market distribution among the lessors has changed drastically, and now 87% of the market belongs to leasing companies. As for commercial banks, the volume of leasing services provided decreased by 12.7% compared with the results of 2017. If the leasing portfolio is considered by lessors, its share is 53.3% of leasing companies. As of the first half of 2018, the amount of leasing portfolio exceeds 3 trillion sums. 504 billion sums

¹⁰www.unitofthellessors.uz

Table 4 Top-5 Leasing companies¹¹

№	Leasing companies	The volume of leasing services provided in the first half of 2018 (in billion sums)
1	“Uzagrolizing” SLC	229,0
2	“Uzbek Leasing International A.O” AS	90,7
3	“Uzavtosanoat-Leasing” LTD LC	87,0
4	“Uzmeliomashlizing” SC	44,0
5	“Qurilishmashlizing” RILK AS	37,0

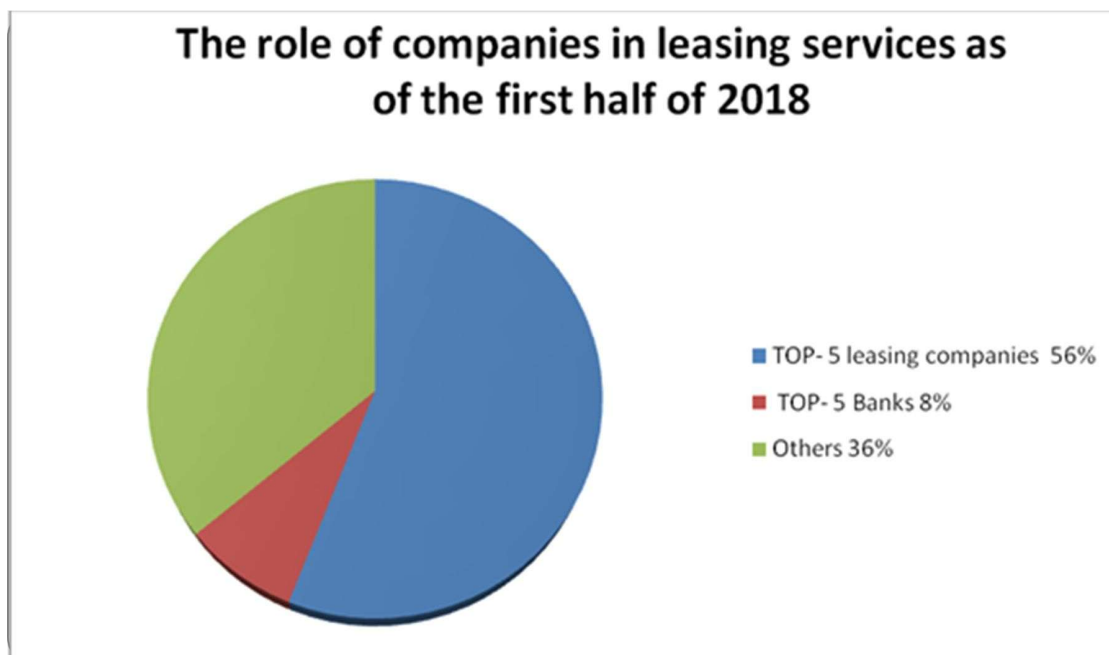
Table 5 Top-5 Banks

№	Banks	The volume of leasing services provided in the first half of 2018 (in billion sums)
1	“Ipoteka Bank” JSB	23,3
2	“Ipak Yo’li Bank” JSB	13,6
3	“Trust Bank” JSB	13,5
4	“KDB Bank Uzbekistan” JSB	10,1
5	“Davir Bank” JSB	9,6

In the first half of 2018, the total volume of the market's major leasing company made up 29.4% of the new leasing transactions, and by 2017 this figure was 30.5%. The share of TOP 10 of leasing companies made up 76.6% of the volume of new leasing transactions.

¹¹www.unit of the lessors.uz

Table 6¹²



he share of agricultural machinery in the first half of 2018 amounted to 30.7%, the share of technological equipment - 33.3%. This is evidence of the increasing demand for high-tech equipment in recent years in the modernization of industrial enterprises. In particular, the following technological equipment is in great demand in the market: construction materials production equipment - 62.3 billion sums; construction machinery - 59.9 billion sums; land reclamation techniques - 36.8 billion soums; equipment for food production - 17.5 billion sums. It should be noted that in the first half of 2018 a new leasing deal was signed in the technological equipment sector worth 256.3 billion sums. UzbekLeasing International AO (45.0 billion sums) is the leader among the leasing companies in the volume of leased technological equipment, followed by Uzmeliomashlizing SUE (41.3 billion sums)), and Rural Construction Enterprise ("JV" Qurilishmashlizing ") (34.7 billion sums). The amount of new leasing deals made in the agricultural sector made up 236.3 billion sums.

¹²www.unitofthellessors.uz



Among leasing companies, Uzagrolizing, a state-owned specialized leasing company (229.0 billion sums), leasing services on preferential terms for the domestic farmers in this sector, leads the above-mentioned UzbekLeasing International AO (3.7 billion sums) and Microcreditbank (1.4 billion sums).

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UDK 338.242

**FACTORS OF INNOVATIVE DEVELOPMENT OF THE AGRARIAN
SECTOR IN THE CONTEXT OF INSTITUTIONAL REFORMS IN
UZBEKISTAN**

Matyoqubova Dilfuza Olimboevna,
Urgench State University,
Senior lecturer of Tourism and
Economy faculty
E-mail: dilfuzamatyaqubova@mail.ru

Annotatsiya: Maqolada agrar sohani innovatsion rivojlantirishda klaster tizimini qo'llashning O'zbekiston sharoitida o'ziga xos jihatlari yoritilgan hamda, uni keng joriy qilishda hukumat tomonidan yaratilayotgan chora-tadbirlardan oqilona foydalanish borasida nazariy jihatdan asoslangan ilmiy taklif va amaliy tavsiyalar berilgan.

Kalit so'zlar: innovatsiya, klaster, fermer xo'jaligi, raqobatbardoshlik, eksport salohiyati, import salohiyati, modernizatsiya.

Аннотация: В статье представлены теоретически обоснованные предложения и рекомендации по инновационному развитию аграрного сектора в контексте кластерной системы в Узбекистане и рациональному использованию мер государственного управления при ее широком внедрении.

Ключевые слова: инновация, кластер, сельское хозяйство, индивидуальное сельское хозяйство, конкурентоспособность, экспортный потенциал, импортный потенциал, модернизация.

Annotation: The article presents theoretically-based proposals and recommendations on the innovative development of the agrarian sector in the



context of the cluster system in the Republic of Uzbekistan and the rational use of government-led measures in its widespread implementation.

Introduction: Sustainable development of agriculture through the implementation of institutional reforms in the agricultural sector, effective utilization of farming and livestock activities, increasing productivity and competitiveness of production, and enhancing export capacity are being undertaken in Uzbekistan.

Of course, innovations have a great role. Transition to innovative development not only solves the problems accumulated in the agrarian sector of the Uzbek economy, but also solves the problems of agro-processing industry. Innovative activities are key factors in the development of agriculture and their maximum use is the only way to ensure sustainable development of agro-industrial complex in our country.

In the context of growing dynamics of socioeconomic changes and globalization of the global economy, the country is rapidly moving to an innovative way of agricultural development in the short run, with a high-quality new information- it will need to restore the technological base.

Materials and Research Methods. The article uses scientific conclusions, abstract logical, comparative and system analysis, methods of analysis and synthesis, methods of induction and deduction.

The necessity of the transition of Uzbekistan to innovative development, undoubtedly, is one of the key priorities of all levels of government. Transition from the technological degradation of the agrarian sector of the Republic's economy to industrial production is a very difficult task.

According to the estimates of various experts, at present, in the US, where the indicator is more than 50%, only 4-5% of the innovative potential of the agricultural economy of Uzbekistan is used. Scientific and technological progress and application of advanced technologies together with a complex of organizational and



economic activities serve as a basis for further development of agriculture in our country.

In particular, the Strategy for the five main priorities of development of the Republic of Uzbekistan for 2017-2021 launched a qualitatively new approach to the strategic planning system of the country's state and public development perspectives¹³.

The aim of the strategy is to radically increase the effectiveness of reforms in the country, to create conditions for the full and dynamic development of the state and society, modernize the country and liberalize all spheres of life.

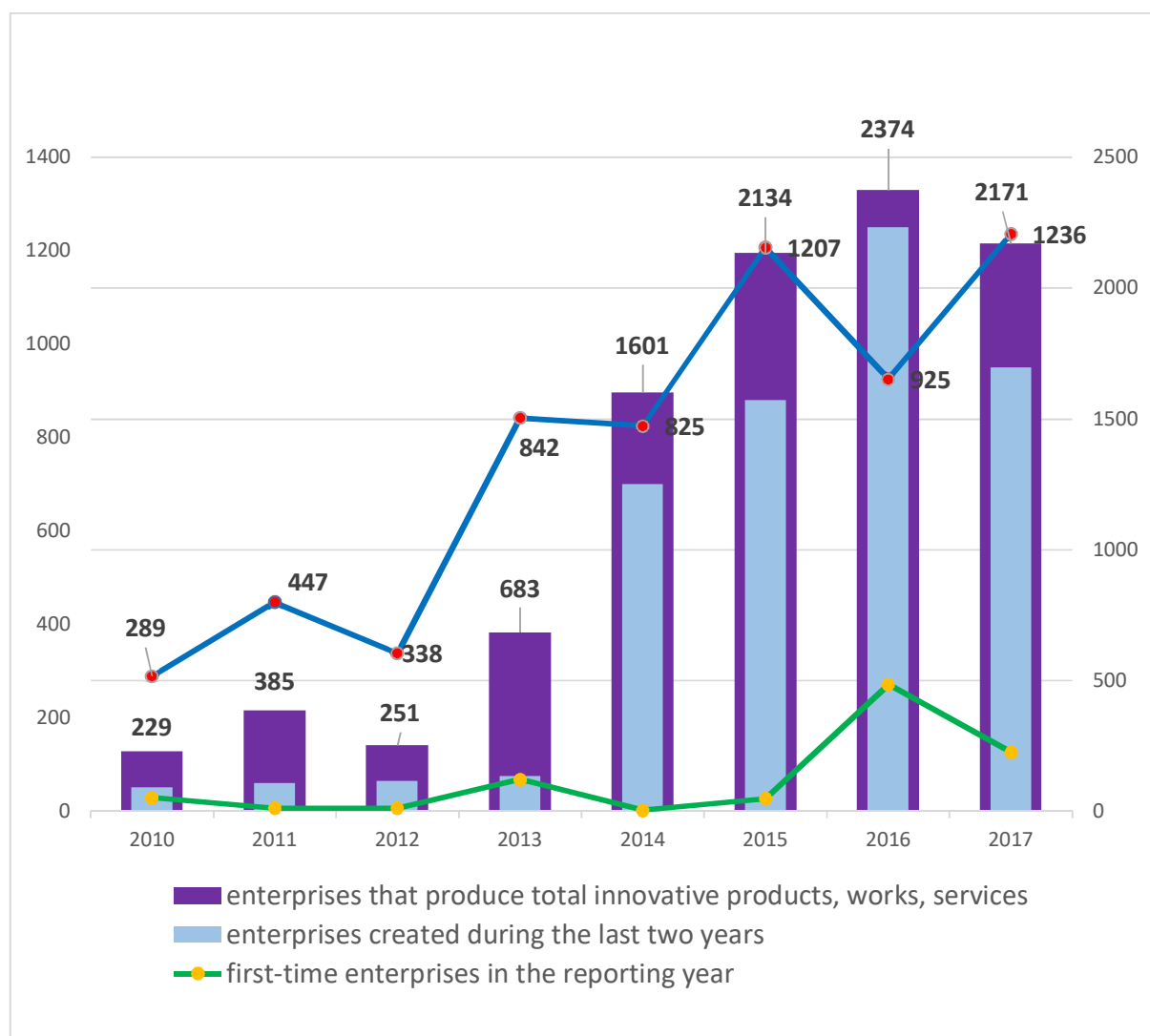
Particular attention is paid to the modernization and accelerated development of agriculture. The most important is the urgency of deepening structural transformation and further development of agricultural production, further strengthening of food security of the country, expansion of production of ecologically clean products, considerable increase of export potential of the agrarian sector.

Discussion and results. Studying best practices of the world's leading agrarian sector in the modernization and accelerated development of agriculture, including the creation of intensive varieties of breeding areas, the use of innovative agro-technologies in the cultivation of crops, especially in the processing of agricultural products experiments gave the anticipated effect.

The following figure shows the dynamics of enterprises and organizations producing innovative products, works, services in the latest years(Figure 1).

¹³Decree of the President of the Republic of Uzbekistan dated February 7, 2017 N UP-4947

Figure 1. Enterprises and organizations producing innovative products, works and services in the Republic of Uzbekistan for the period 2010-2017¹⁴

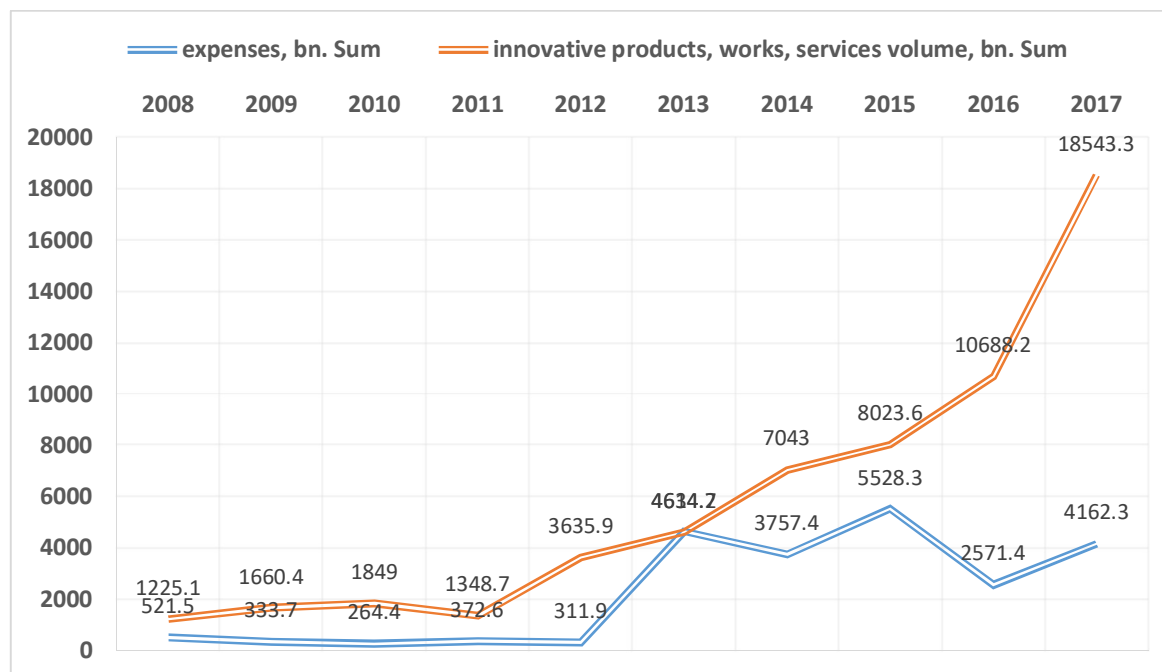


The number of enterprises and organizations producing innovative products, works and services has grown 7.5 times in the period of 2010 to 2017, from 289 to 2171. For the first time we can see that the number of enterprises that have opened the production of innovative products, works and services for the first time increased by 1007.

¹⁴Based on data from State Committee of Uzbekistan on statistics stat.uz

The following chart analyzes the dynamics of innovative products, jobs, services, and costs (Figure2).

Figure 2. Dynamics of innovation products, works, services volume and expenditures in the Republic of Uzbekistan for 2010-2017¹⁵



The volume of innovative products, works and services reached 18543,3 billion UZS in 2017, 1.7 times more than in 2016, 14 times more than in 2008. Innovation costs decreased by 8 times in comparison with 2008, and by 1.6% compared to 2016. In this regard, high efficiency is achieved through the use of innovations in the efficient use of opportunities in the agrarian sphere and the use of clusters to increase the competitiveness of the industry.

¹⁵Based on data from State Committee of Uzbekistan on statistics stat.uz



Numerous local and foreign literature studies have been made on clusters. The cluster's approach to determining the nature of the cluster is unclear and evolutionary. The fundamentals of the theory of cluster are the work of Austrian and American economist, political scientist and sociologist Y. Shumpeter. The term "cluster" is a "cluster" by Professor M. Porter, a Harvard Business School of the 1980s, and describes as follows: "Cluster - geographically friendly partners and a common and mutually exclusive are complementary organizations" [3]

In contemporary economic literature, cluster is characterized by a network of specialized suppliers serving as an alternative to sectoral approach, based on the regional concentration of mainstream manufacturers and consumers connected to the technological chain and serves as an alternative to sectoral approach [2]. In this case the cluster has the features of mutual competition among its participants, cooperation of participants, the formation of unique powers of the region, the formation of enterprises and organizations in a particular area.

Analysis of Cluster Approaches by R.R.Tochchukov allowed to distinguish two main clusters in the cluster [6]. First, companies in the cluster need to be connected in the same way. In addition, the connections are not only horizontal, but also vertical. Second, clusters are geographically linked groups of companies.

Studying the theoretical aspects and practical significance of clusters, we believe that the experience of developed countries should add another characteristic to general terminology: this process should not only involve companies in a particular industry (relevant sectors), but also government agencies and academic institutions.

In our opinion, this component is described as organizations that combine different spheres of activity, including all production stages, from processing to production, from agricultural production to single-source reproduction, and has synergistic effect. It is important to determine the essence of the agribusiness industry.

Thus, the agro-industrial complex should be understood as the cooperation of the territorial industrial association, agro-industrial complex, financial institutions (e.g., commercial banks), energy supplying agencies and research institutions, their combination of economic resources and strengthens the competitiveness of industries and regions and economies.

Although creation of agrocluster organization is a very complex and painful process, it is one of the most reliable ways to reduce labor costs in the regions of Uzbekistan, to reduce the value of existing resources, to the number of capital investments in unit production, and to reduce the labor costs of the workers.

One of the main advantages of the cluster approach for the development of the region's economy is to reduce the role of administrative factors - strengthening the role of economic factors. The role of regional authorities is only at the initial stage. For example, in the organization of new clusters, taking into account the interests of this region, the role of the provincial administrations in the selection of promising clusters is high. Subsequently, the role of regional authorities decreases, and the laws and factors of market economy are the locomotives.

Agroclusters are based on three specifications, as shown in Figure 3 below.



Figure 3. Agrocluster properties¹⁶

When agrocluster are organized, there is a possibility for regional specialization and localization of agricultural production, availability of links between business entities of the sector, availability of products from various agricultural products. The manufacturer is characterized by the formality of technological relationships.

In 2018, 17 cotton-textile clusters were set up in the country, with a total area of 140901 hectares. Starting from March 2019², the Cabinet of Ministers adopted a resolution "On Additional Measures for Organizing the Activity of Cotton-Textile Production and Clusters", which was attended by 13 heads of 17 cotton-textile clusters, cotton-cleaning plants and 68 cotton processing centers were transferred to these clusters on probation terms for a period of 5 years.

The first cluster in the Khorezm region of Uzbekistan was organized in Shavat- textile direction in Shavat district. This cluster includes a whole system of seeding, growing, harvesting, processing, deep processing, delivery of finished products to consumers.

In 2019, another three clusters will be set up in the Yangibazar, Bogot and Hanka regions of Uzbekistan. For these purposes 2596 hectares of 1096 farming entities are allocated, with a total area of 34.7 thousand hectares and 42% of the total area under cultivation of cotton in the region. In the long term by 2024 agro-clusters with other specializations will be created, including milk/dairy, goat, fruit and vegetables, beans, and the level of production, processing and production of finished agricultural products, will increase.

Summary

It is important to develop all necessary and sufficient regional legislative basis regulating the process of creating and developing clusters in innovative

¹⁶author's development



development of the agrarian sector and regulating the legal framework for cluster policy in the region.

Proper selection of crops based on local properties, adequate supply of organic fertilizers, rational use of scientifically-based quantities of mineral fertilizers and pesticides, creation and development of resource-saving processing systems should be carried out.

The use of modern methods of calculating the optimal combination of crops and crops, optimization and improvement of their composition (including economic and mathematical modeling), and the use of environment-friendly resource-saving technologies for the cultivation of agricultural crops should be applied.

It is necessary to create a new product line for deep processing of agricultural raw materials and expansion of products range.

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MECHANISMS OF INCREASING TOURISM POTENSIAL IN KHORAZM REGION AND USING THEM

**Dilshod Khudayberganov Tukhtabayevich,
Urgench state university
Tourism and economyfaculty,
Head of Tourism Department,
Candidate of Economic Sciences, Docent.
E-mail: dilshodx@bk.ru**

**Durdona Urinova Batir qizi,
Urgench state university
Tourism and economyfaculty,
Tourism Department,
second year master,
E-mail: durdona_urinova@mail.ru**

Annotatsiya. Ushbu maqolada Xorazm viloyati mintaqasida turizm salohiyatini oshirish mexanizmlari qabul qilingan me'yoriy huquqiy hujjatlar va dasturlar



misolida yoritib o'tilgan hamda ulardan samarali foydalanish bo'yicha muhim fikrlar bayon etilgan

Аннотация. В данной статье излагаются механизмы совершенствования туризма в Хорезмской области в контексте принятых нормативных правовых актов и практик, а также приводятся важные моменты для их эффективного использования.

Annotation. This article outlines the mechanisms for improving tourism in Khorazm region in the context of adopted normative legal acts and practices and provides important points for their effective utilization..

Kali so'zlar: turizm, turizm salohiyati, mexanizm, dastur, qaror, farmon, infratuzilma

Ключевые слова. Туризм, туристический потенциал, механизм, применение, решение, указ, инфраструктура.

Key words. Tourism, Tourism Potential, mechanism, application, decision, decree, infrastructure .

Introduction . The development of the tourism industry plays an important role in the modernization of the economy and the welfare of the population. It is well known that the development of the tourism sector is accompanied by an increase in the gross domestic product of the country and directly contributes to the growth of income. If we focus on the effectiveness of socio-economic development of developed countries, we will witness the fact that in recent years non-production sectors have become a major sector in the social division of labor. In particular, currently , more than 195 million people worldwide work in tourism,



about 8 percent of the world's total employed¹⁷. This suggests that tourism opportunities are very high in terms of creating new jobs.

The employment of the population in the tourism industry, meanwhile, is becoming an important source of regional economies. At the same time, as a result of the development of tourism and hotel management, more than 500 different types of property and accommodation facilities operate in our country. Because in Uzbekistan the majority of tourist flows belong to the cities of Samarkand, Bukhara and Khiva, with high tourism potential and high tourist infrastructure. The tourism is limited to ancient cities in the context of historical and cultural monuments. However, there is a great potential for the development of tourism in the unique nature of our country, national reserves, mountainous regions¹⁸. Therefore, it is necessary to create opportunities for tourism development in Khorazm region. However, the legal and regulatory framework adopted in this regard, the legal mechanisms, leads to the resolution of these issues.

Analysis of topic material . The development of the tourism industry, which is the basis of its development, were researched by V.Senin, V.Bogolyubov, A.Durovich, M.Efremova, V.Kvartalnov, S.Julidov, S.Skobkin , E.Ilina. In our Republic these directions are studied by M.Pardaev, I.Tukhliev, G. Qudratov, A.Eshtaev, O.Khomidov, B.Turaev, D.Usmanova, N. Ibadullayev, R.Amriddinova, B.Safarov , M.Alimovas . Today, this issue is raised to the level of state policy and is reflected in the reports of the President of the Republic of Uzbekistan.

Research Methodology. In this article induction, deduction, analogy, comparative, economic analysis, observation, comparison research methods are used.

¹⁷www.unwto.org

¹⁸President of the Republic of Uzbekistan Sh . Mirziyoev's Appeal to the Oliy Majlis . December 28, 2018. City of Tashkent. // www.president.uz



Analysis and results. It is well-known that the importance of tourism potential of Khorazm region and the city of Khiva in the development of tourism in our country, and the government's attention to the development of tourism in the region. This allows us to expand the tourism potential of the region and on the basis of the evaluation will be based on attention to the issues of increasing the number of tourists visiting. In this regard, the city has a rich historical and cultural potential and has over 300 historical and cultural monuments dating back to its 3000th anniversary.

There are 208 sites of cultural heritage, including 20 archaeological sites, 124 historical and architectural monuments, 7 ensembles, 28 sights and temples in Khorazm region¹⁹. In addition, The natural and climatic conditions of the region provide permanent tourist season at a certain time of the year.

At the same time, ecotouristic potential, medical tourism, desert tourism, horse and camel rides, hunting tourism, and agro-tourism potential can be used optimally. In order to implement these tasks, the implementation of state programs and resolutions on the development of tourism in Khorazm region and Khiva, the formation of tourism infrastructure, stages and trends of tourism services development, the number of domestic and foreign tourists visiting the region and their satisfaction with tourist services in the region should be avoided. For this purpose, the tourist attraction of Khorazm region and Khiva city should be used effectively.

In order to accelerate the development of the tourism industry in the region, it is necessary to involve investments, to apply innovative ideas and technologies to the sphere, as well as to enjoy the rich natural, cultural and historical heritage, resources and abilities of the country. For this reason, the wide-ranging tourism and tourism industry in our country is a key factor in further advancement in the future. Because

¹⁹Ruzmetov B., Matyakubov U., Khudoyberganov D. Prospects of tourism development in Khorezm region.: "Actualnye problemy turizm - 2009"



one of the most important ways of achieving socio-economic development is directly connected with the effective use of tourist potential of the country²⁰ .

Tourism potential is a factor and category that determines the development of tourism, and it is manifested in different ways. In particular, the existing tourism potential for the ecotourism network of the region plays an important role in environmental protection, involvement of ecotourists in nature, solving the problems of preserving and reproducing the unique flora and fauna, improving socio-economic conditions and providing the population with new jobs.

Legal mechanisms that enhance the tourism potential of the Khorazm region in the consistent implementation of these tasks are reflected in the form of normative-legal acts.. This mechanism will serve to ensure the development of tourism in the region. It is also seen as one of the important directions in the development of services, services and tourism, unemployment, increasing incomes, living standards and increasing the role of services in the region's exports . At the same time, it will ensure rapid development of the tourism industry, increase its role and share in the economy, diversification and quality of tourist services, and expansion of tourism infrastructure .

Resolutions, decrees and programs are aimed at raising tourism potential have been developed by the government, including the Law "On Tourism", Decree of the President of the Republic of Uzbekistan dated December 2, 2016 PF-4861 "On measures to ensure the rapid development of the tourism industry of the Republic of Uzbekistan", 2017 Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On the Program of Complex Development of the Tourism Potential of the Khorazm Region and Khiva City for 2017-2021" dated May 4, 2017²¹ .

²⁰Professors M. Pardaev and H.M Musaev. Development of services and tourism: problems and their solutions. Monographs. - T., 2008. - 87 p.

²¹www.lex.uz



In particular, on the basis of the Decree of the President of the Republic of Uzbekistan on 4 May 2017-2021 the Complex Development Program of Tourism Potential of Khorezm Region and Khiva City was adopted. Adoption of this document is to strengthen the influence of this sector on the development of the regions on the basis of sustainable development of tourism in Khorezm region and further enhancement of tourism potential. First of all, it is necessary to study and improve the tourism potential in order to fully address these opportunities. The Decree adopted by the President of the Republic of Uzbekistan creates favorable conditions for the development of the tourism sector by attraction of investments, the introduction of innovative ideas and technologies, and the effective use of the rich natural, cultural and historical heritage of the country.²²

Starting from February 10, 2018 citizens of Israel, Indonesia, Korea, Malaysia, Singapore, Turkey and Japan, as well as foreign airline companies regularly arriving to Uzbekistan, have been granted a visa-free regime for 30 days from the date of entry into the territory of the Republic of Uzbekistan for air crew members; a simplified order of registration of tourist visas for citizens of other 39 states has been introduced. Directly from these countries, Khorezm region has attracted a large number of tourists and took an important place in improving tourism.

In order to further simplify tourism formalities and enhance tourism potential, from May 1, 2018, 72-hour entry visas for foreign passengers on transit have been introduced in Uzbekistan. The occurrence of this opportunity is also an important area for tourism potential of the region, primarily for the types of tourist information, with the exit of tourists out of the border area of the airport. In this case, passengers must have air tickets and visas to third countries and pay consular fees. In addition,

²²Resolution of the President of the Republic of Uzbekistan dated February 6, 2018 "On Measures for the Development of Access Tourism" No. PP-3509



the Decree of the President of the Republic of Uzbekistan on attracting direct foreign investments to the development of the hotel economy was adopted²³. This decree is directly aimed at improving the hotel industry in the region.

As a result of the implemented reforms, the region is gradually developing tourism and is divided into the following stages:

- **first stage (1992-1995)**. At this stage, it is planned to create a new system of management in the tourism sector, create additional business types that will facilitate tourist business, create banking, auditing, advisory services, create regional branches of tourism network in the region, advertise tourism products internationally, licensing privatized touristic enterprises a special attention was paid.

- **second stage (1995-1999)**. The changes that have been made at this stage have intensified the way in which the tourism industry accepts. In 1995, the President of the Republic of Uzbekistan, entitled "Restoration of the Great Silk Road and Development of International Tourism," had a strategic significance in the recovery of the Great Silk Road tourism product. This led to the second stage of the reform of tourism.

- **third stage (1999-2005)**. At this stage of tourism reform, the Decree of the President of the Republic of Uzbekistan "On State Program for the Development of Tourism of Uzbekistan for 2005" was published on April 15, 1999. Based on this, the market relations in the tourism industry have been settled and the competitive tourism market around the world has begun, and the centralization of tourism management has been eliminated. And in 2003 Urganch Airport was converted to Urgench International Airport.

- **fourth stage (2005-2016)**. At this stage of tourism reform, the Association of Private Tourist Organizations and other tourist associations have been established,

²³Decree of the President of the Republic of Uzbekistan from January 5, 2019 "About additional measures on accelerated development of tourism in the Republic of Uzbekistan" PF -5611

and economic relations between them and tourist enterprises have been realized. Reforms in the field deepened and the "Tourism Development Program for 2013-2015 in Khorezm region" was adopted on 20 March 2013.

- fifth stage (starting from 2016). At this stage, the reform of the tourism sector has been fundamentally improved and the committee has been set up to improve the efficiency of tourism services in the country. The issues of accelerated development of tourism have been solved, and the most important one is the five-year program aimed at raising tourism potential in Khorezm region and Khiva.

During the years 2019-2021 within the framework of the program of the visit cultural-historical, archaeological, environmental, cultural, gastronomic, youth, entertainment, sports, business, travel, agro, family, adventure, extremal remain, such as children and rural tourism grows steadily²⁴. In order to fully utilize the tourism potential of these areas, it is necessary to organize various public and leisure activities, as well as to further the implementation and implementation of the set tasks. At the same time, legal mechanisms increasing the tourism potential in Khorazm region are influenced by the following trends (Figure 1):



Figure 1. Important directions of legal mechanism of developing tourism potential in Khorazm region²⁵

Conclusions and Suggestions. Based on the above analysis and results, tourism potential in the Khorezm region provides for the broad development of modern tourism in the future. The tourism infrastructure of the Khorezm region and Khiva, as well as the tourism potential of the Khorezm region, will be further enhanced, the tourism potential and services will be improved, the tourism potential of the region will be promoted, and the quality of advertising will be improved, the infrastructure of tourist infrastructure will be improved, The choice of touristic routes provides effective utilization of tourist resources. At the same time, the state programs and decisions are taken to increase the tourism potential of the region are the creation of an effective mechanism for the sustainable development of tourism as a result of the tourism potential.

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ORGANIZATIONAL AND ECONOMIC MECHANISMS OF TOURIST SERVICES DEVELOPMENT IN UZBEKISTAN

Jumaniyazova Sharifa Rashidovna,
lecturer, Urgench State University,
The faculty of Tourism and economics.
e-mail: jumaniyazova.sharifa@mail.ru

Abstract. This article deals with organizational and economic mechanisms for the development of tourist services in Uzbekistan and the ongoing reforms in this area. At the same time, the article outlines the role of tourism in the national economy, the development of regions and the creation of new jobs.

Key words: tourist services, organizational-economic mechanism, internal tourism, tourism infrastructure, tourist product.



Annotatsiya. Mazkur maqolada O'zbekistonda turistik xizmatlarni rivojlantirishning tashkiliy-iqtisodiy mexanizmlari va ushbu sohada amalga oshirilayotgan islohotlar haqida so'z boradi. Shu bilan birga maqolada turizmning milliy iqtisodiyotda, hududlarni rivojlantirishda va yangi ish o'rinlari yaratishdagi roli ochib berilgan.

Kalitso'zlar: turistik xizmatlar, tashkiliy-iqtisodiy mexanizm, ichki turizm, turizm infratuzilmasi, turistik mahsulot.

Аннотация. В данной статье рассматриваются организационные и экономические механизмы развития туристических услуг в Узбекистане и проводимые реформы в этой области. В то же время в статье освещается роль туризма в народном хозяйстве, развитии регионов и создании новых рабочих мест.

Ключевые слова: туристические услуги, организационно-экономический механизм, внутренний туризм, туристическая инфраструктура, туристический продукт.

Introduction. One of the most important issues facing the economy of the country is the need growth for employment in the sphere of modernization of the economy and improvement of well-being of the population. In particular, it is important to identify prospects for enhancing employment in the service sector, to improve the organizational-economic mechanisms and to develop scientifically sound recommendations and practical recommendations on this issue, which are the main driving force of property.

At the same time, the main attention was paid to the last twenty years of the functioning of the tourism and hospitality industry. At the same time, the main attention was paid to the last twenty years of the functioning of the tourism and hospitality industry. In the course of the analysis, various factors that significantly



influenced the development of the international market for tourist services were identified: climate change, natural disasters, currency fluctuations, changes in prices for petroleum products, political and military conflicts, terrorism, epidemics of dangerous viral and infectious diseases, financial and economic crises and a number of other factors. [5]

At present, both in the world and in Uzbekistan, attention to the economy of non-oil sector, especially tourism, is increasingly growing. People are trying to spend their leisure time on relaxing, restoring their health, learning the world, traditions and values of the people. These services are provided by tourism.

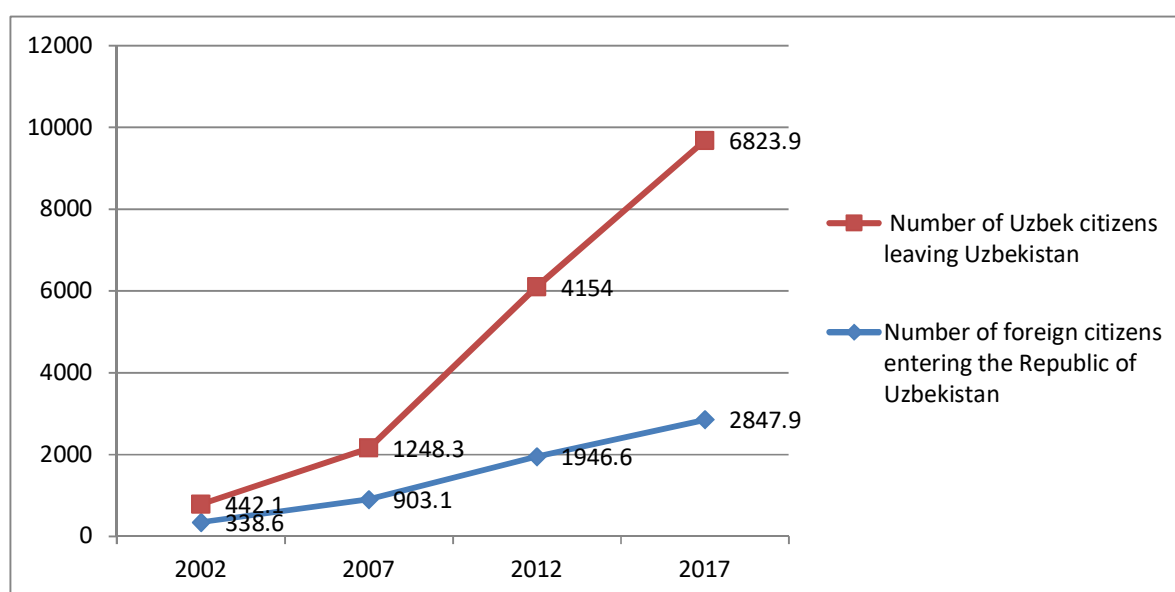
Materials and methods. Article 3 of the Law of the Republic of Uzbekistan "On Tourism" provides the following information on the concept of tourist services: "**tourist services**- services of subjects of tourist activities for accommodation, meals, transport, information and advertising services, as well as other services aimed at meeting needs of tourists"[1]

Tourist service are outlined in following "Tourist services are the combination of actions in the field of service which are one purpose oriented and intended to the satisfaction and provision of tourist's needs, which should address the nature of tourism, its aims and the focus of touristic services, and should not be against the universal principles"[4] in scientific literatures, particularly in the book "Tourism: Theory and Practice," published in 2018 by authors M.R.Boltaboev, I.S.Tukhliyev, B.Sh.Safarov and S.A.Abdusamidov,

Results and discussion. In our country, prospects for the consistent development of tourism, the effective use of tourism facilities, improving the quality of services, increasing the flow of tourists to our country and accelerated development of domestic tourism are among the most important issues. Because, Uzbekistan has a considerable potential in tourism development. This is directly related to the existence

of many unique natural objects, rich cultural and historical heritage. Every year the number of foreigners visiting the Republic of Uzbekistan is increasing. In the last 15 years, the number of foreign citizens visiting Uzbekistan has risen to 15.5 times or from 442.1 thousands in 2002 to 2847.9 thousands in 2017. Foreign visits of Uzbek citizens in 2017 made up 5,182.5 thousand people, which is 6.5 times more than in 2002.

Number of foreign nationals and departing citizens of the Republic of Uzbekistan in 2002-2017, thousand people(table1)



Source: www.stat.uz

Subjects of tourist activity aim to provide the quality of tourist services to foreign tourists. It should be noted that the number of tour companies and organizations operating in this network and the number of customers using these services are increasing year by year.

The following data in the case of regions show that the main part of the total number of tourist companies correspond to this amount in Tashkent. In the next 2



places there are Samarkand region with 12.4% and Bukhara region with 6.2%. This data shows that in Syrdarya and Navoi regions there are few tourist business centres and there is a need for additional organizational and economic measures in these regions.

Distribution of tourist companies in all regions of Uzbekistan.

T/r	Areas	Quantity	Percentage
1	Tashkent city	634	66,2
2	Tashkent region	19	2,0
3	The Republic of Karakalpakstan	15	1,6
4	Khorezm region	29	3,0
5	Surkhandaryaregion	14	1,5
6	Qashqadaryaregion	12	1,3
7	Navoi region	4	0,4
8	Bukharo region	59	6,2
9	Samarkand region	119	12,4
10	Syrdaryaregion	4	0,4
11	Jizzakhregion	5	0,5
12	Andijan region	19	2,0
13	Ferganaregion	17	1,8
14	Namangan region	7	0,7
	Total	957	

Source: www.stat.uz



At the present time, the development of tourism services in our country has become a state policy as a priority direction of economic development. At the microeconomic level of the management system of the tourism complex there are organizations having different forms of ownership in the tourism industry, enterprises, regional branches and representatives of the State Committee of the Republic of Uzbekistan for Tourism Development, operating in different forms of ownership in the tourism industry. As a result of the reorganization of the tourism management system, new and more effective management methods are emerging. The protection of business and tourist rights and interests is enhanced and the optimal ways and means of tourism development are identified. Obviously, the most important part of public policy in the field of tourism is to prepare a mechanism for its implementation. An analysis of the structure of the government's tourism services market shows that at present, there are the following economic and administrative mechanisms of government support:

- Tax exemptions, subsidies;
- National legislation and statutory acts that promote the development of tourism and the protection of the rights of consumers of tourist services;
- Reduce the passport records and visa restrictions on entry and exit from the country;
- Encourage non-formal tourism through the use of various pricing methods and incentives;
- Development and support of social tourism;
- Strengthening of tourist safety requirements;
- Strengthening the measures taken by the state for the protection of the environment, cultural, historical and other tourist resources.



The necessary legal and economic foundations for the development of tourism are created, and the government takes appropriate measures, issues, laws and decisions and ensures their implementation in real life situations

In particular, the Decree by the President of the Republic of Uzbekistan Sh.M.Mirziyoyev "On measures to ensure the rapid development of the tourism industry of the Republic in Uzbekistan" dated in December 2, 2016,[3] stimulates further stimulation of entrepreneurship activity in tourism, infrastructure development, granting additional benefits and preferences to tourism organizations.

In accordance with Presidential Decree of the Republic of Uzbekistan of August 16, 2017 "On Prior Measures for the Development of Tourism in 2018-2019", with the creation of a favorable economic, administrative and legal environment for the intensive development of the tourism industry, increase the number of ATMs and terminals that operate on international payment systems in airports, railway stations, hotels and other tourist destinations, as well as receive payments in foreign currency for business services, including additional facilities in unlinked electronic payments were created.

In addition, the Decree of the President of the Republic of Uzbekistan of February 7, 2018, PD-3514 "On measures to Ensure the Rapid Development of Domestic Tourism" was adopted in order for the domestic tourism development.

In accordance with the law, the plan of measures to implement the domestic tourism development program "Travel around Uzbekistan" has been approved to intensify the development of domestic tourism, providing citizens with the the cultural and historical heritage information and wealth of the country. [9]



These documents set priorities for the solution of the problems accumulated in the field, the development of tourism potential, and gave many privileges and benefits for the further development of domestic tourism.

In conclusion, it is necessary to say that there are certain tasks for the State Committee for Tourism Development in the Republic of Uzbekistan to entrust:

- advertising-oriented activities in the external and internal markets of tourism services, promotion of historical and cultural heritage, preservation and development of the tourism image in the Republic of Uzbekistan, entry of national tourism products and brands into international tourism markets implementing the policy;
- coordination and monitoring the implementation of national and regional programs for the comprehensive development of domestic, inbound and outbound tourism, intensive development in a wide range of tourism types, foreign investment for the tourism development infrastructure, according to international standards, as well as regulating the industry in cooperation with international financial institutions and other organizations attraction;
- optimization of the state and market relations to regulate tourism industry and development of competitiveness in the tourism service market, elaboration of proposals for the elimination of all barriers to tourism development, assistance in the development of entrepreneurship activity in the tourism sector, technology implementation and so on.

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MODERN PROBLEMS OF PHILOLOGY AND LINGUISTICS

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PECULIAR FEATURES OF THE CATEGORY OF EMOTIVENESS IN THE LITERARY TEXTS

Abduraxmonova Mavluda Sadiqovna

Senior Lecturer

The faculty of Economy and Management,

Foreign Languages Department,

Tashkent University of Information Technologies

named after Muhammad al Khwarizmi,

E-mail: gavharwlu@mail.ru

Annotation: The article deals with the literary texts which are usually characterized by the category of emotiveness. Emotiveness is regarded as one of peculiar features of fictional texts. The article also includes the examples taken from different English literary texts. Usually, stylistic devices, expressive means and others are means of revealing emotionality of the particular text.

Key words: emotiveness, literary text, characteristics, stylistic devices, expressive means, extract, linguistic markers, nonlinguistic units.

Аннотация: В статье рассматриваются литературные тексты, которые обычно характеризуется категорией эмоциональности. Эмоциональность рассматривается как одна из особенностей художественных текстов. Эта статья также включает в себя примеры, взятые из различных английских литературных текстов. Обычно стилистические приемы, выразительные средства и другие являются средством выявления эмоциональности конкретного текста.



Ключевые слова: эмоциональность, художественный текст, характеристики, стилистические приемы, выразительные средства, отрывок, лингвистические маркеры, нелингвистические единицы.

Annotatsiya: Ushbu maqolabadiiy matnlar, qaysiki odatda emotsionallik kategoriyasi bilan tavsiflanadigan matnlar haqida. Emotsionallik badiiy matnlarning asosiy xususiyatlaridan biri sanaladi. Bundan tashqari, maqolada ingliz badiiy matnlardan ham namunalar keltirilgan. Odatda, stylistik qurilmalar, ifoda vositalari va shu kabilar badiiy matnning emotsionalligini ko'rsatib beruvchi vositalar hisoblanadi.

Kalit so'zlar: emotsionallik, badiiy matn, xususiyatlar, uslubiy qurilmalar, ifoda vositalari, parcha, lingvistik markerlar, nolisoniy birliklar.

Introduction. Literary text usually stands at the center of linguistics and its modern trends. Many investigations have been done concerning the peculiar features of literary text. It is necessary to mention that literary text is characterized by the communication of the author and the reader. In order to achieve the communicative activity between them, several characteristics regarding literary text are particularly observed. In particular, the literary text is a phenomenon which has multidimensional and multilayered structure. Being polyfunctional, the literary text has the characteristic, which is called "emotiveness".

It should be stressed that emotiveness is investigated in many aspects of science, due to its vitality. In other words, the representatives of philosophy, psychology, sociology study emotionality in their aspects. In the field of linguistics, the notion of emotionality is viewed as "emotiveness". Emotiveness, as a term of linguistic sciences, is characterized by the expression of various emotions and feelings of a particular person with the help of particular language units, which are colored emotionally.



It should be inferred that textual emotiveness is considered to be the integral category of text revealing specific features of person's emotionality. In this respect, different language units including emotive meanings are of great importance.

Literature review. There are a lot of researches and studies concerning the specificities of literary text and the category of emotiveness. As text and its characteristics are of great importance of modern linguists, several definitions have been provided denoting to the term "text" itself. According to Kubryakova (2001), text is the succession of verbal signs, which is distinguish by means of cohesion and coherence. As for Moskalskaya (1981), text is characterized by two senses, narrow and wide. By narrow sense, text is considered to be a multifaceted syntactical entire, that is microtext. And in terms of wide sense, text is regarded as literary work such as novel, story, essay and others. Additionally, Galperin (1981) pointed out that text should be in the format of written presentation. As it is clear, several definitions were presented on the term "text".

As for literary text, it is the type of literary communication, which is specified by peculiar aspects such as anthropocentric approach, the construction of imaginary world, and aesthetic function. As anthropocentric approach is regarded as core of modern linguistics, the literary text is also distinguished by anthropocentric quality. It should be stressed that as a result of anthropocentric paradigm, modern branches of linguistics came into appearance such as communicative linguistics, cognitive linguistics, pragmalinguistics, text linguistics, linguoculturology and others (Maslova, 2009). That means totally new approaches to the literary text become evident as a result of the appearance of modern trends of linguistics. The next peculiar features of literary text is its being based on the construction of the imaginary world. Moreover, the provision of an aesthetic function is also typical to literary texts.



As for the text category of emotiveness, also different studies have been made, in this respect, it is expedient to make reference to the study of emotiveness by Aznaurova E.S., Shakhovskiy V.I., Wierzbicka A., and others.

Shakhovskiy (2009), with his superior contribution to the problem of emotiveness, studied the lexical system of English language, in the perspective of emotive meaning and emotive constituents. According to his point of view, text category of emotiveness, being complex multifold phenomenon, is characterized by two aspects, which are linguistic and nonlinguistic.

Summing up all the aspects of emotiveness, its definitions and components, Ashurova D.U, Galiyeva M.R (2016) state that the text category of emotiveness is specified by some signals which are indicating the emotiveness in the literary texts. In this respect, the following categories should be mentioned that reveal emotiveness in the literary text:

- Stylistic devices: epithet, irony, zeugma, repetition, hyperboll, oxymoron, gradation, rhetorical question and others;
- Convergence of stylistic devices;
- Fictional dialogues;
- Expressive means: interjections, exclamations, exclamatory sentences, words of oath and swearing.

Here, it is necessary to note that there are existing investigations on the category of emotiveness of literary text. However, as emotiveness is a complex multifaceted occurrence , it has myriad unrevealed aspects and sides that should be investigated further.

Research methodology. In this work, descriptive and analytical methods are used to analyze the linguistic literature related to the problems, which are under discussion. Additionally, stylistic analyses are done aimed to analyze the stylistic foundation of stylistic devices.



What is more, stylistic analyses are appropriate to analyze the emotiveness in the literary text by means of expressive means.

It should be pointed out that textual emotiveness is revealed through the analysis of the following works such as "Happy man" by Somerset Maugham, "Green door" by O'Henry, "Wild Flower" by Erskine Cadwell, and others.

Analysis and results. Emotiveness as one of the categories of literary text, is usually common to nearly all literary works. Let us see the examples in detail. The first example is as follows:

*"I hope you won't think it very odd for a perfect stranger to talk to you like this." He gave an **apologetic laugh**. "I am not going to tell you the story of my life"...*

*"I was brought up by two old aunts. **I have never** been anywhere. **I have never** done anything. **I have no** children. I am a medical officer at the Camberwell Infirmary. I can't stick it anymore". ("Happy Man" by Somerset Maugham).*

In this extract, the category of emotiveness is represented by means of short sentences, repetitions, gradation and oxymoron. Here, short sentences are: ***I have never been anywhere. I have never done anything. I have no children. I can't stick it anymore***, at the same time, gradation is also expressed through the usage of quite short sentences. The repetition of ***I have never*** also creates emotive atmosphere. It can also be referred that in the given extract, all usage of linguistic devices might be named as the convergence of stylistic devices.

Let us analyze the text "Green Door" by O'Henry. Author uses several stylistic devices in the perspective of increasing emotiveness. And one of them is **parallel construction** that used to enhance emotiveness:

*"**you are walking** along Broadway. You like looking into the shop windows and **you are deciding** which theater to go to. **You are asking** yourself, do I want **something to make me laugh, or something to make me feel sad**". ("Green Door" by O'Henry)*



In the above mentioned example, quite identical syntactical structures such as ***you are walking, you are deciding, You are asking, somethingto make me*** help to create emotiveness through parallel construction.

Additionally, in this story the author uses **hyperbole** when he describes Rudolph Steiner as a “*true adventurer*” and explains that there are few evenings that he did not go forth from his “*hall bedchamber search of the unexpected adventure*” (“Green Door” by O’Henry)

Besides, in order to raise the emotiveness the author also uses **personification**:

“in the big city the twin spirit Romance and adventure are always abroad seeking worthy wooers. As we roam the streets they slyly peep at us and challenge us in twenty different guises.” (“Green Door” by O’Henry)

In the given example, personification is used with the help of ***the twin spirit Romance and adventure***, that also create the emotionality of the text.

What is more, the author uses **oxymoron** to show emotiveness by the usage of “*she began to eat with a sort of dainty ferocity...*” (“Green Door” by O’Henry). In this example, the combination of two phrases “*dainty*” and “*ferocity*”, the reader feels the emotive character of the phrase.

As a peculiar feature of literary text, emotiveness, is typical to many literary works. The next text, that is analyzed is the story of “Wild Flower” by Erskine Cadwell. In this text also, several means of expressing emotions are outlined. Let us see the analysis:

“Vern,” she said, holding out her hand to touch him.

He grasped it in his, squeezing and stroking her fingers and wrist. “What is it, Nellie?”

“I’m afraid it is going to happen ... happen ... happen right away,” she said weakly, closing her eyes before she could finish.



He bent down and saw **that her lips were bloodless and that her face was whiter** than he had ever seen anyone's face. While he watched her, her body became tense and she bit her mouth to keep from screaming with pain. ("Wild Flower" by Erskine Cadwell.)

In this extract, when Vern saw Nellie's condition, he felt of afraid and worry. This is achieved by use of stylistic devices such as aposiopesis (*Vern, What is it, Nellie*), repetition (*happen ... happen ... happen*), and epithet (*that her lips were bloodless, that her face was whiter*). In this respect, the reader feels emotion of anxiety.

In this extract, the reader also feels emotiveness:

"At sundown she stopped and sat down by the side of the road. She felt as though she would never be able to take another step again. The pains in her body had drawn the color from her face, and her limbs felt as though they were being pulled from her body. Before she knew it, she had fainted." ("Wild Flower" by Erskine Cadwell.)

In this passage described the Nellie's feelings of tiredness that she cannot walk anymore. Author describe it with the help of simile (*felt as though she would never be able to take another step again...*)

Additionally, the next emotional charge of this extract is supported not only stylistic devices, but also by expressive means of exclamation:

"I'd hurry as fast as I could!" he said, "I'll run until I find somebody."

He ran up the road as fast as he could...

He stumbled, falling heavily, headlong, on the road.

But it was a house, and somebody lived in it. He ran toward it as fast as he could.

He ran up to the door and pounded on it with both fists.

"Let me in!" he yelled. "Open the door!"

"I came for help. My wife's down the road, sick. I've got to get her into a house somewhere. She's lying on the ground." ("Wild Flower" by Erskine Cadwell.)



In this example, emotiveness is achieved by simile (*as fast as he could*), and exclamatory sentences (*I'd hurry as fast as I could!, Let me in!, Open the door!*) and inversion (*He stumbled, falling heavily, headlong, on the road*). It is indicated that textual emotiveness is not only achieved by stylistic devices, but also expressive means such as exclamatory sentences and interjections.

Conclusion. According to above mentioned assumptions about textual emotiveness and the analyses of the literary texts, a conclusion can be drawn that emotiveness is considered to be peculiar to the literary texts. There is no evidence to refute the fact that emotionality is inseparable part of literary texts. As a component of fictional text, emotiveness is characterized by linguistic and nonlinguistic units. Linguistic markers are expressive means, stylistic devices and emotive lexicon, in general, whereas nonlinguistic units are emotive situation, emotional presupposition and intention.

The category of textual emotiveness is specified by some signals which are indicating the emotiveness in the literary texts. It should be stressed that emotionality of the literary text is revealed on the basis of stylistic devices, convergence of stylistic devices, fictional dialogues and expressive means. at the end, it should be stressed that textual emotiveness is an inherent category of fictional texts consisting in both linguistic (stylistic device, expressive means) and extralinguistic (emotional situations, emotive state of communicants, emotional intentions) factors.

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ALTERNATIVE ASSESSMENT AS MODERN REQUIREMENT OF TEACHING ENGLISH

Daniyarova Sitara Qulmat qizi
Lecturer, The Faculty of Economy and
Management Department of Foreign
Languages Tashkent University of
Information Technology named after
Mukhammad al Khorezmi
E-mail: sitanxo@gmail.com

Hakimova Laziza Yusupovna
Lecturer, The Faculty of Economy and
Management Department of Foreign
Languages Tashkent University of
Information Technology named after
Mukhammad al Khorezmi
E-mail: sitanxo@gmail.com

Abstract: This article highlights specific features of assessing students' knowledge, abilities and skills. Unlike traditional method of teaching, alternative assessment is of



high importance among language teachers and students, who prefer the utilization of modern approach. Alternative assessment is characterized by aspects such as being process oriented and having authentic character. Being continuous assessment, alternative method of evaluating students has the crucial role in terms of improving students' weaknesses and monitoring their progress.

Key words: assessment, alternative assessment, traditional assessment, teaching English, students, authentic, portfolios, peer assessment.

Annotatsiya: Ushbu maqolada o'quvchilarning bilimlarini, qobiliyat va ko'nikmalarini baholashning o'ziga xos xususiyatlarini yoritadi. An'anaviy o'qitish uslubidan farqli o'laroq, muqobil baholash zamonaviy pedagogik texnologiyalardan foydalanishni afzal ko'rgan til o'qituvchilari talabalar orasida g'oyatda muhimdir. Shu bilan bir qatorda, muqobil baholash jarayonga asoslanganlil va autentik harakterlilik bilan tavsiflanadi. Baholash muntazam hisoblangan holda, baholashning muqobil usuli talabalarning kamchiliklarini bartaraf etish va ular taraqqiyotini kuzatishda hal qiluvchi rol o'ynaydi.

Kalit so'zlar: baholash, muqobil baholash, an'anaviy baholash, ingliz tilini o'qitish, talabalar, autentik, portfoliolar, tengdosh baholashi

Аннотация: В этой статье освещаются особенности оценки знаний, умений и навыков студентов. В отличие от традиционного метода обучения, альтернативная оценка имеет большое значение среди преподавателей и студентов, которые предпочитают использовать современный подход. Альтернативная оценка характеризуется такими аспектами, как ориентированность на процесс аутентичный характер. Будучи непрерывной оценкой, альтернативный метод оценки студентов играет решающую роль с точки зрения улучшения слабостей студентов и мониторинга их успеваемости.



Ключевые слова: оценка, альтернативная оценка, традиционная оценка, преподавание английского языка, студенты, аутентичные, портфолио, оценка сверстников.

Introduction. Teaching English is becoming more and more common trend in nearly all spheres of education. Teaching process includes various aspects such as approaches, methods, lesson plans, observations and others. Assessment is also no exception.

Assessing students' knowledge fairly and with loyalty is always considered essential part of teaching process. For this reason, a great deal of attention should be paid to the procedure of assessing by instructors. Modern requirements of teaching language load a burden of responsibility for English language teachers for the sake of equal measurement on students' capabilities and knowledge. On this occasion, changing methods of traditional assessment to alternative one encourage both teachers and students.

As traditional methods of assessment serve for several years, it also had some shortcomings as usual. The measurements of students' knowledge are important part as it involves the identification of strengths and weakness of students. The information gained from assessment should also serve for further improvements. Therefore, type of assessment such as alternative one is being implemented in the process of modern academic study.

Literature review. Assessment is an essential part of teaching as it is the estimation of students' knowledge. According to Nitko and Brookhart (2007), assessment is the procedure of gaining data for the sake of deciding on students, as well as syllabus, curriculum and educational system. Other scholars such as Gronlund and Waugh (2009), claim that assessment such a broad term referring to all methods of identifying students' learning outcomes.



The significance of alternative assessment began about 1990s as the new trends and approaches have begun in teaching. It was claimed by Charles R. Hancock that in 1990s alternative approach became necessity in the aspects of learning and assessing and this was emphasized by him in the article "Alternative Assessment and Second Language Study: What and Why?" .

As for definitions of this term, different scholars provided various assumptions. To illustrate, alternative assessment was considered to be quite similar with performance-based assessment and authentic assessment. And this kind of test is designated to be a sort of performance assessment demanding the learners to generate ideas, thought instead of selecting correct option (Herman, Aschbacher, Winters, 1992). Alternative assessment, which is being based on performance assessment, provide alternative to traditional paper and pencil testing (Gronlund and Waugh, 2009).

According to some resources, authentic assessment and performance-based assessment also fall into the sort of alternative assessment. Authentic assessment, being the type of alternative one, includes the evaluation with the integration of "real world" situations and appliances of language learning to real world. As for Gronlund and Waugh (2009), it focuses on understanding real life problems and applying the language to real life. In order to make the assessment authentic one, the aim, target audience, context and constraints should be based on real life situations. The types of authentic assessment also were provided by scholars mentioned above, they are as follows: Simulations, Microteaching, Teaching Practice (educational tasks look like real-life practices).

As for performance-based assessment, it is also one type of alternative one, which requires learners to create response, produce the result and show how the language is applied (Authentic Assessment for English language learners, 1999). This type of assessment demands special rubrics for assessment and new assessment instruments.



According to the viewpoint of Gronlund and Waugh (1990), performance-based assessment involves learners to demonstrate their skills or understandings of language through performing particular task and accomplishing it. And the subtypes were enlisted by abovementioned scholars such as creating painting, writing a story or poem, playing musical piece, making oral presentation, reporting on particular experiment and others.

Summing up all definitions suggested by scientists, the followings can be pointed out:

- Alternative assessment is a term covering any number of alternatives to standardized tests.
- Alternative assessment is the usage of multi-assessment methods instead of attaching to traditional paper-and-pencil tests.
- Alternative assessments are those ones which overcome the restrictions of pencil-and-paper testing.
- Alternative assessment is any type of classroom testing practice that focuses on nonstop individual student improvement.

The following categories of alternative assessment were enlisted such as letter, memo, presentations, poster presentations, portfolios, proposals, reports, case studies, fishbowls (debate)(Queen's University: Assessment strategies and Berkeley Center for Teaching and Learning: Alternatives to Traditional Testing, 2018). Additionally, these types were also claimed as the inclusion of alternative assessment such as performance-based assessments (including projects, exhibitions, role playing, experiments and demonstrations), open-ended questions, writing samples, interviews, journals and learning logs, story of text retelling, cloze tests, portfolios, self and peer assessments, teacher observations and checklists²⁶.

²⁶Assessment, Articulation, and Accountability, 1999., p-4

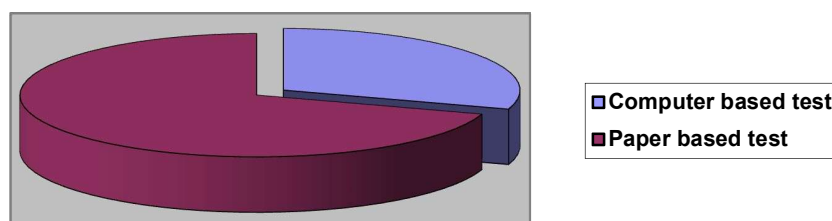
Research methodology. The investigation based on evaluation, and the comparison of alternative assessment with the traditional one are studied thoroughly by means of analytical, descriptive and comparative methods of analysis. Firstly, information has been obtained through the research has been done before. Then, appropriate information has been compiled in the literature review.

For the sake of analysis of alternative assessment, the researcher gained collected data on the basis of questionnaires from teachers and observations of teachers' ways of assessing students' knowledge. For the research methodology, the researcher gained data collection from the teachers of Uzbek State World languages University, 3rd English faculty during two months.

Analysis and Results. Let us see the analysis of data collection which was gathered by teachers. As teachers are main responsible for assessing students' knowledge, basic data was collected from the instructors.

The questions in the questionnaire were about the experiment of English language teachers and their methods of teaching. According to the results of questionnaire, it was evident that even though educational system is being based on communicative approach, there are still evidences illustrating the approach based on traditional assessment. On this occasion, the preference of paper and pencil testing approach is widely appreciated.

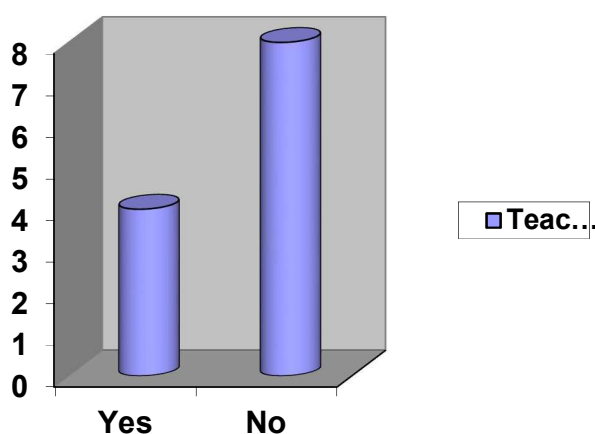
Let us analyze some questions in details. One of question was about the usage of testing method.





The first chart illustrates information about the usage of test types. Teachers were questioned on whether selection of paper based test or choice of computer based test. As can be seen, about 70% of teachers had preference of still traditional method of testing and only nearly one-third amount of instructors used computer based test in assessing.

The next illustration highlights the data on teachers' monitoring students' progress. It can be clearly stated from the diagram that majority of English teachers did not observe students' progress regularly.



There were also other questions on the analysis of choice of assessment type. It should be stated that, however, alternative assessment could not fully replace traditional assessment. For this reason, the researcher enlisted main distinctive features of traditional assessment. The main differences can be seen in the following diagram, and it is expedient to say that alternative assessment outweighs traditional:

Traditional assessment	Alternative assessment
One-shot tests	Continuous, longitudinal assessment
Tests are inauthentic	Tests are authentic
No feedback is provided to learners	Feedback provided to learners



Speeded exams	Untimed exams
Decontextualized test tasks	Contextualized tests tasks
Norm-referenced score	Criterion-referenced score
Summativeassessment	Formativeassessment
Based on product	Based on process
Non-interactive performance of students	Interactive performance of students

According to the table above, it is evident to say that traditional method of assessment includes some shortcomings such as being inauthentic, non-interactive and summative. However, alternative assessment is based on authentic tasks, that later can be applied on real life, that has interactive tasks and formative assessment which is on the basis of continuously monitoring students' progress. Additionally, traditional assessment is based on product approach, unlike alternative assessment, which is oriented to process approach.

Conclusion From the statements mentioned above, one can come to conclusion that alternative assessment has more benefits than traditional one. As it has task authenticity, this type of assessment can fulfill the communicative approach to language teaching.

As monitoring students' progress continuously is one of predominant tasks of language teachers, alternative assessment becomes basic necessity in this aspect. There is no evidence to refute the fact that alternative assessment helps teachers identify students' weakness and strength in terms of language learning and provide possible ways of eliminating their weak points.

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**ETYMOLOGY OF THE ENGLISH WORD-STOCK, THE APPROACHES
AND PRINCIPLES ON CREATING ETYMOLOGICAL DICTIONARIES
OF ENGLISH LANGUAGE**

Davletova Dildora Nadir qizi
Second-year master student
Urgench State university

Email: ddavletova.dildora1994@mail.ru

Аннотация. Мазкур маколада инглиз тилининг этимологияси, турли хил тилшунослар томонидан бажарилган инглиз тили этимологик лугатларини тузишдаги ёндашувлар ва принциплар, масала юзасидан турли назариялар



мухокама килинади. Макола етимологик лугатларни киёсий урганишга багишланган.

Калит сўзлар: махаллий сузлар, этимология, этимологик лугатлар, киёсий тахлил, ёндашув, олинма суз, суз негизи, таржима олинма сузлари, суз ясяш, аслият.

Аннотация. В этой статье обсуждается этимология английского языка, принципы форматирования этимологического словаря, которые сделаны разными лингвистами. В статье также рассматриваются различные гипотезы по вопросам теории. Статья посвящена сравнительному анализу этимологического словаря.

Ключевые слова: родные слова, этимология, этимологический словарь, сравнительный анализ, принцип, заимствующее слово, корни слов, переводные заимствования, деривация, происхождение.

Annotation. This article discusses the etymology of the English word-stock, the approaches and the principles of English etymological vocabularies, which are done by various linguists. It also considers different hypothesis on the matter. The article is devoted to the comparative study of creating etymological dictionaries.

Key words: native words, etymology, etymological dictionaries, comparative analyses, principle, borrowing word, word roots, translation borrowings, derivation, origins.

Intoduction. What is Etymology? Why is etymology important? There are the following reasons that give us explanations why word rootsshould be learnt:

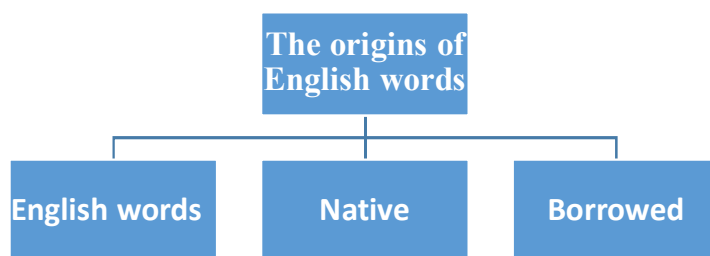
- One can recognize word chunks in unfamiliar words and be able to narrow down the possible meaning of the word
- It can help anyone with vocabulary in many subject areas



- One can be better able to pronounce unfamiliar words
- One can become a better speller
- Since many languages have common roots to Latin and Greek, it makes learning a foreign language easier

The term "Etymology" shifts from century to century, falling somewhere between the classical, philosophical attempt to establish some innate (truth - giving) connection between the word and what the word stands for and the nineteenth - and twentieth –century lexicographical attempt to trace a word to its earliest form.

Materials and methods. Etymological theory recognizes that words originate through a limited number of basic mechanisms, the most important of which are language change, borrowing (i.e., the adoption of "loanwords" from other languages); word formation such as derivation and compounding; and onomatopoeia and sound symbolism, (i.e., the creation of imitative words such as "click" or "grunt").



A native word is a word, which belongs to the original English word stock, as known from the earliest available manuscripts of the Old English period. For instance:

- Words of the Indo-European origin (IE) Family relations: *father, mother, brother, son, daughter*;



- Parts of the human body: *foot, nose, lip, heart, tooth*;
- Animals and plants: *cow, swine, goose, tree, birch, corn*;
- The most important objects and phenomena of nature: *sun, moon, star, wind, water, wood, hill, stone*;
- Adjectives: *hard, quick, slow, red, white, new*;
- Numerals from 1 to 100: *one, two, twenty, eighty*;
- Pronouns – personal, except *they* (Sc.): *I, you, he*;
- demonstrative: *that*;
- interrogative: *who*;
- Some of the most frequent verbs: *bear, do, be, sit, stand*.

A borrowed word (a borrowing or a loan word) is a word taken over from another language and modified in phonemic shape, spelling, paradigm or meaning according to the standards of the English language. Words of common Germanic origin Nouns:

- denoting parts of the human body: *head, arm, finger*
- Periods of time: *summer, winter, time, week*
- Natural phenomena: *storm, rain, flood, ice, ground, sea, earth*
- Artefacts and materials: *bridge, house, shop, room, coal, iron, lead, cloth*
- Animals, plants and birds: *sheep, horse, fox, crow, oak, grass*
- Adjectives denoting colors, size and other properties: *broad, dead, deaf, deep, grey, blue*
- Verbs: *see, hear, speak, tell, say, make, give*

Other borrowings:

- Japanese: *karate, judo, hara-kiri, kimono, tycoon*;
- Arabic: *algebra, algorithm, fakir, giraffe, sultan*



- Turkish: *yogurt, kiosk, tulip*
- Persian: *caravan, shawl, bazaar, sherbet*
- Eskimo: *kayak, igloo, anorak*
- Amerindian languages: *toboggan, wigwam, opossum*

Classification of borrowings according to the aspect, which is borrowed

- Translation borrowings (translation loans) are words and expressions formed from the material already existing in the English language but according to patterns taken from another language, by way of literal morpheme-for-morpheme translation. E.g. *masterpiece* < Germ. *Meisterstück*; *Wonder child* < Germ. *Wunderkind*; *wall newspaper* < Rus. *стеннаягазета*; *collective farm* < Rus. *колхоз*.

“Words of identical origin that occur in several languages as a result of simultaneous or successive borrowings from one ultimate source” (I. A. Arnold, p. 260).

- ⊙ Words denoting science and technological advances: *sputnik, television, antenna, bionics, gene, cybernetics*
- ⊙ Political terms: *politics, democracy, communism, revolution*
- ⊙ Fruits and foodstuffs imported from exotic countries: *coffee, chocolate, grapefruit*
- ⊙ Names of sciences: *philosophy, mathematics, physics, chemistry*
- ⊙ Terms of art: *music, theatre, drama, tragedy*
- ⊙ The sports terms: *football, baseball, cricket, golf*.



Research methodology. In linguistics, the term *etymon* refers to a word or morpheme (e.g., stem or root) from which a later word derives. For example, the Latin word *candidus*, which means "white", is the etymon of English *candid*.

Etymologists apply a number of methods to study the origins of words, some of which are:

- Philological research. Changes in the form and meaning of the word can be traced with the aid of older texts, if such are available.
- Making use of dialectological data. The form or meaning of the word might show variations between dialects, which may yield clues about its earlier history.
- The comparative method. By a systematic comparison of related languages, etymologists may often be able to detect which words derive from their common ancestor language and which were instead later borrowed from another language.
- The study of semantic change. Etymologists must often make hypotheses about changes in the meaning of particular words. Such hypotheses are tested against the general knowledge of semantic shifts. For example, the assumption of a particular change of meaning may be substantiated by showing that the same type of change has occurred in other languages as well.

Analyses and results. An etymological dictionary discusses the etymology of the words listed. Often, large dictionaries, such as the Oxford English Dictionary and Webster's, will contain some etymological information, without aspiring to focus on etymology.

Etymological dictionaries are the product of research in historical linguistics. For a large number of words in any language, the etymology will be uncertain, disputed, or simply unknown. In such cases, depending on the space available, an etymological



dictionary will present various suggestions and perhaps make a judgement on their likelihood, and provide references to a full discussion in specialist literature.

²⁷To create an etymological dictionary of any language is one of the responsible tasks and everyone uses their own principles on making such dictionaries. There are different linguists who have explored etymology and created etymological dictionaries. For example: Christopher Mark Simon in his dissertation explores the interplay between ancient etymological practices and the Roman historical tradition in stories of the early city. It aims to provide a better understanding of the intersection between language and history in Roman thinking about the past by examining the use of ancient etymology as a means to connect the origins of the Latin language with the origins of Rome and its culture. It assesses the influence exerted by ancient etymology not only from the perspective of etymologies as a category of historical evidence, but also from the perspective of etymological practices as an hermeneutic with the ability to (re)interpret and (re)construct the past.

"Etymology," Aarseff points out, is one of the trickiest words of all, both philosophically and philologically" In his earlier article on the background of the Old English he stressed that the meaning now usually assigned to etymology, i.e., its late nineteenth-century meaning of word provenance, "will not do at all before around 1820 at the earliest.

Etymology before 1820, as Bailey's Universal Etymological Dictionary (1721) makes clear, was a "Part of Grammar, the Original of words, in order to distinguish their true Meaning and Signification", and an "Etymologist" is "one skilled in searching out the true Interpretation of Words" not the form. Following Locke, Bailey explains in his introduction that since "Words are those Channels by which the Knowledge of

²⁷O'Neill, Michael "Etymology: Its meaning in-language study before 1900 and the English tradition". The University Of Florida, Ph.D., 1976 Language, Linguistics



Things is conveyed to our Understandings," an etymological lexicon must help us understand them in their "proper Meanings and . . . true Sense." The correctness of our thinking, Bailey asserts, depends on our exact understanding of the meanings of the words we use. Bailey's definition of etymology tends toward the Lockean notion of using words precisely to avoid imprecise thinking; his declaring etymology a part of grammar, which is often overlooked by modern scholars, is pervasive before 1800.

It is important to point that there is a relation between the concepts that is being expressed by the word and the word itself. As R.M.W. Dixon states in the book *Word: A Cross – Linguistic Typology*, "the word is the smallest independent unit of language referring to a certain linguistic reality or to a relation of such realities and characterized by certain formal features (acoustic, morphemic) either actually (as an independent component of the context) or potentially (as a unit of the lexical plan)."

Conclusion. Finally, Etymology which is one of the most systematic, enjoyable and effective ways of enhancing word power will increase the learners' ability to figure out unknown and difficult words with ease and without continual reference to unabridged sources. According to methodologists having word formation knowledge, student can increase the ability to read difficult tests without continue reference to unabridged sources. Etymology of English includes original native word, loan words. Most of the English words come from Greek language. Creating Etymological dictionaries is also necessary in all the languages that are developing day by day. Etymological dictionaries are the product of research in historical linguistics. For a large number of words in any language, the etymology will be uncertain, disputed, or simply unknown. In such cases, depending on the space available, an etymological dictionary will present various suggestions and perhaps make a judgment on their likelihood, and provide references to a full discussion in specialist literature. All of the etymological dictionaries can be helpful in different cases. Discovering the common roots of words, language learners soon understand



the meaning of many unknown words, they have never seen before, derived from the same root. Etymology is not only useful, effective and interesting, but it also is a fast word attack strategy. That is why, learning etymology of a word is very vital in any language in order to enrich the vocabulary, to be able to understand deeply the words that are slangs, dialect and etc. Creating Etymological dictionaries is also necessary in all the languages that are developing day by day.

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COMPARATIVE ANALYSIS OF SENTENCES AND ITS TYPES IN ENGLISH AND UZBEK LANGUAGES

Kasimova Mehrixon Mutalxodja qizi
Lecturer, The Faculty of Economy and
Management, Department of Foreign
Languages, Tashkent University of
Information Technology named after
Muhammad al-Khwarizmi,
E-mail: nanoshka_55@inbox.ru

Abstract: The article deals with the comparison of sentences and types of sentences in two different system languages, namely English and Uzbek. As the aim is to investigate thoroughly and make comparisons, sentence is defined firstly, and then types of sentences according to the aim of the interlocutor and grammatical structure are compared within the examples of English and Uzbek languages.

Key words: sentence, classification, types, English language, Uzbek language, compound sentences, complex sentences, mixed sentences.

Annotatsiya: Ushbu maqola har xil tizimli tillar, ya'ni ingliz va o'zbek tilida gap va uning turlarini taqqoslashga bag'ishlangan. Maqola maqsadi chuqur o'rganish va taqqoslash bo'lganidek, avvalo gap yoritiladi, so'ngra gapning ifoda-maqsadiga va strukturasiga ko'ra turlari ingliz va o'zbek tillarda misollar bilan solishtiriladi.

Kalit so'zlar: gap, tasnifi, turlari, ingliz tili, o'zbek tili, qo'shma gap, ergash gap, aralash gap.

Аннотация: Статья посвящена сравнению предложений и типов предложений в двух разных системных языках: английском и узбекском. Так как цель состоит в том, чтобы тщательно исследовать и проводить сравнения, сначала мы определяем предложение, а затем сравниваем типы предложений в



соответствие с целью собеседника и грамматической структурой в примерах английского и узбекского языков.

Ключевые слова: предложение, классификация, типы, английский язык, узбекский язык, сложные предложение, смешанные предложение.

Introduction. Sentence as one of main constituents of grammar in all languages, it is of high interest to investigate and compare. For this reason, the researcher is going to compare and differentiate sentences of English and Uzbek languages that both have different system and belong to various language family groups.

The research serves with it contribution mostly to the investigators and followers of comparative linguistics, in particular, comparative typology and contrastive linguistics. Therefore, sentence as basic language unit for communication has been taken as the theme of study. Sentences were studied well and deeply before several times, but, the comparison of them in the perspective of English and Uzbek languages have not been widely opened yet.

Literature review. As the topic of the research is dedicated to sentence types of Uzbek and English languages, it is necessary to provide definitions suggested by scholars. As scientists approach from various aspects, distinctive definitions exist on the term what is called as a sentence. They are as follows:

- Sentence is minimum integral part of speech that is constructed by words, which is characterized by syntactic pattern and communicative intention (Ivanova I., Burlakova V., (1981)
- Sentence as a unit of speech, is distinguished by grammatical structure conforming language laws and conveying thought of the speaker (B.A.Ilyish, 1965). Additionally, it is pointed out that sentence do not only describe the reality, but also it demonstrates the attitude of the interlocutor.



- Sentence might be the inclusion of three major factors such as the act of speech, the speaker, the reality (Iriskulov, A.T., 2006)

As for the classification of the sentences, also various scholars approached differently. According to the viewpoint of B. A. Ilyish, sentences are categorized on the basis of two following aspects:

- a) according to types of communication (In its way, it is again subdivided into declarative, interrogative, imperative sentence types)
- b) according to structure (This principle is subdivided into simple and composite sentences)

Moreover, from the viewpoint of Ch. Fries, sentences are classified into communicative and non-communicative sentence types. In its turn, communicative sentences are also subdivided into the followings:

- a) Utterances with "oral" responses such as greetings, calls and questions
- b) Utterances with "action" responses such as requests, commands
- c) Utterances requiring conversational signals of attention for continuing communication

As different sentence classification has provided, now it is time to unite all of them. Well-known scientist, Iriskulov A.T. (2006) compiled all criteria and suggested the following criteria to the classification of sentences of English language they are three:

1. The criterion on the basis of sentence structure
2. The criterion according to the aim of the speaker
3. The criterion connected with the existence of all parts of sentence

On the basis of following criteria, the sentences of English and Uzbek languages will be compared and distinctive key points will be analyzed. For the examples of sentence types of Uzbek language, the book named "Hozirgi o'zbek adabiy tili" written by Anorbekova A. and Mirzayeva Sh. was enlisted as reference.



Research methodology. The research based on the comparison of sentence types in English and Uzbek languages was analyzed deeply on the basis of the works of scholars such as Ilyish, Ivanova, Burlakova, Fries and Iriskulov for English examples and Anorbekova and Mirzayeva for the illustration of Uzbek language sentences.

For the sake of comparing the sentence types in two different system languages, the researcher have used analytical, descriptive and comparative methods of research. From this perspective, the researcher provides with the analysis of sentence types from the aspect such as according to the aim of the speaker and according to the structure.

Analysis and Results. In order to show the similarities and differences of sentence types, the researcher has studied the classification of the sentences in terms of the criterion on the basis of sentence structure and the criterion according to the aim of the speaker. Let us see the examples in table:

Types of sentences

English	Uzbek
<u>I. Types of Sentences according to the Aim of the Speaker</u>	
a) Declarative Sentences	
<i>Sandy opens the door</i> <i>Anderson did not open the door</i>	<i>Ana bizning matabimiz.</i> <i>Bu bizning universitetimiz talabasi emas.</i>
b) Interrogative sentences	



<i>Are we staying here?</i>	<i>Sen shuguruhda o'qiysanmi?</i>
<i>Where are we staying?</i>	<i>Bu qaysi universitet?</i>
	<i>(Onani kim sevmaydi?)</i>
c) Exclamatory Sentences	
<i>What a lovely night! How beautiful it is here!</i>	<i>Nurga to'lsin uyingiz!</i>
d) Imperative Sentences	
<i>Open the door.</i>	<i>Oling qo'lingizni</i>
	<i>Ishga qabul qilinsin</i>
<u>Types of Sentences according to the Aim of the Speaker</u>	
<u>(Simple and Composite)</u>	
types of composite sentences:	composite sentences:
a) compound	a) Bog'langan
d) complex	b) Ergashgapli (kesim, ega, hol, to'ldiruvchi, aniqlovchi ergash gapli qo'shma gaplar)
c) mixed (compound-complex) sentences	c) Bog'lovchisiz



<i>A) You shall walk and I will ride</i>	<i>A) U kim bo'lsa bo'lsin, men esa o'z gapimda turaman</i>
<i>B) What the newspapers say may be false (subject clause).</i> <i>I don't remember what his name is. (object)</i> <i>He thought that it might well be. (object)</i> <i>The lot that is on the corner needs moving. (attributive)</i> <i>He is a man whom I have always admired. (attributive)</i> <i>When Bill decided to leave, everyone expressed regret. (adverbial clause of time)</i>	<i>B) Shuni unutmangki, siz kelajagi buyuk yurt farzandisiz</i>
<i>C) Blair found herself smiling at him and she took the letter he held out to her</i>	<i>C) Hamal keldi-amal keldi</i>

As can be seen in the table, even though the compared languages belong to different language groups, the comparison of sentences was quite easy. Firstly, sentence types according to the category of aim of speaker, both languages include typology of declarative, interrogative, exclamatory and imperative sentences.



However, according to example provided in Uzbek in terms of interrogative type, the question like "Onani kim sevmaydi?" is considered to be interrogative sentence, while this kind sentence is regarded as rhetorical question in English.

In addition, the comparison of sentences from the perspective of structure, sentences are divided into simple and composite ones in both languages. The subdivision of composite sentences is as follows:

- a. English composite sentences: compound, complex, mixed
- b. Uzbek composite sentences: bog'langan (compound), ergash gapli (complex), bog'lovchisiz (without conjunction).

As for difference of them, it is expedient to say that according to some sources, Uzbek language has also the type like mixed, but it is not enlisted to the official type of sentences in terms of structure. What is more, the sentence called "bog'lovchisiz" in Uzbek language does not exist in English, because this sentence might be considered as wrong one.

It is also essential to state that complex sentences in both languages have subtypes such as subject clause, object clause, attributive clause and others in English language. And in Uzbek language, they are as follows: ega (subject) ergash gapli qo'shma gap, kesim (predicate) ergash gapli qo'shma gap, to'ldiruvchi (object) ergash gapli qo'shma gap, aniqllovchi (attributive) ergash gapli qo'shma gap and others.

Conclusion. At the end, it should be noted that despite being two different system languages, English and Uzbek languages have nearly similar features in terms of sentence and its types. However, some distinctive features were also observed.

It is also expedient to mention that when the sentences of English and Uzbek language are analyzed in the perspective of aim of the speaker, they are quite similar that both languages has the types like declarative, interrogative, imperative and exclamatory sentences. On the other hand, in typology according to the structure,



some different aspects have been observed as the composite sentences of English and Uzbek languages are subdivided differently.

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RAY BRADBURY'S MARTIAN CHRONICLES, THE USAGE OF EPITHETIC DEVICES IN THE STORIES THE ROCKET SUMMER AND YLLA

Nurullayev Nurbek Ulug`bek o`g`li,
Master student, English language and literature department,
Urgench State University,
E-mail address: nurullaevn@bk.ru

Annotatsiya: Maqolada sifatlovchilarning mazmuni ochib beriladi. Rey Bredberining Mars solnomasi asaridan olingan hikoyalarda epitetlarning foydalanilishi tahlil qilinadi. Shuningdek, hikoyalar mazmuni, ularning tasviriy tuzilishiga e`tibor qaratiladi. Muallif fikrini dalillash uchun bir qancha misollar keltirildi.

Kalit so'zlar: tilshunoslik, epitet, sifatlovchi, xronologik, ilmiy fantastika, ramz, old qo`shimcha, homoform, nisbiy sifat, mavhum ot, taqlid qilish, ko`chma ma`no

Аннотация: Статья раскрывает содержание определение. Будет проанализирована эксплуатация эпитетических устройств в рассказах, взятых из Марсианской хроники Рэя Брэдбери. Кроме того, будет подчеркнут смысл историй, их описательная структура.

Приведены некоторые примеры, подтверждающие идеи автора.

Ключевые слова: лингвистика, эпитет, прилагательное, хронологический, научная фантастика, символ, префикс, омоформ, относительное прилагательное, абстрактное существительное, подражание, переносное значение

Abstract: The article reveals the content of adjectives. The exploitation of epithetic



devices in stories that are taken from Ray Bradbury's *Martian Chronicles* will be analyzed. In addition, the meaning of the stories, their descriptive structure will be highlighted. Some examples are given to prove the author's ideas.

Keywords: linguistics, epithets, adjectives, chronological, science fiction, symbol, prefix, homophorm, relative adjective, abstract noun, imitation, figurative meaning

Introduction. Ray Bradbury is famous American science fiction novelist who wrote a number interesting books in genre of science fiction. From his childhood he was interested in reading books and as a result he himself could become one of the outstanding writers of his era. The *Martian Chronicles* is a fixup of short stories with new text connecting them into a novel. Bradbury has credited Sherwood Anderson's *Winesburg, Ohio* and John Steinbeck's *The Grapes of Wrath* as influences on the structure of the book. He has called it a "half-cousin to a novel" and "a book of stories pretending to be a novel". As such, it is similar in structure to Bradbury's short story collection, *The Illustrated Man*, which also uses a thin frame story to link various unrelated short stories [3, p26].

The *Martian Chronicles* follows a "future history" structure. The stories, complete in themselves, come together as episodes in a larger sequential narrative framework. The overall structure is in three parts, punctuated by two catastrophes: the near-extinction of the Martians and the parallel near-extinction of the human race.

The first third (set in the period January 1999—April 2000) details the attempts of the Earthmen to reach Mars, and the various ways in which the Martians keep them from returning. In the crucial story, "*—And the Moon Be Still as Bright*", it is revealed by the fourth exploratory expedition that the Martians have all but perished in a plague caused by germs brought by one of the previous expeditions. This unexpected development sets the stage for the second act (December 2001—November 2005), in which humans from Earth colonize the deserted planet, occasionally having contact with the few surviving Martians, but for the most part preoccupied with making Mars



a second Earth. However, as war on Earth threatens, most of the settlers pack up and return home. A global nuclear war ensues, cutting off contact between Mars and Earth. The third act (December 2005—October 2026) deals with the aftermath of the war, and concludes with the prospect of the few surviving humans becoming the new Martians, a prospect already foreshadowed in "—And the Moon Be Still as Bright", and which allows the book to return to its beginning [5, p. 55].

The stories of the book are arranged in chronological order, starting in January 1999, with the blasting off of the first rocket. "Rocket Summer" is a short vignette which describes Ohio's winter turning briefly into "summer" due to the extreme heat of the rocket's take-off, as well as the reaction of the citizens nearby. Rocket summer is a story which starts *Martian Chronicles*. In the story the massive emigration of humans to Mars planet by a hundreds of rockets is described. There were so many of them that it changed the climate of the Earth and it become too hot. Ices are melting and snows disappearing from the streets [2, p. 33].

First published as "I'll Not Ask for Wine" in *Maclean's*, January 1, 1950. The following chapter, "Ylla", moves the story to Mars, describing the Martians as having brown skin, yellow eyes, and russet hair. Ylla, a Martian woman trapped in an unromantic marriage, dreams of the coming astronauts through telepathy. Her husband, though he pretends to deny the reality of the dreams, becomes bitterly jealous, sensing his wife's inchoate romantic feelings for one of the astronauts. After taking his gun under the pretense of hunting, he kills astronauts Nathaniel York and "Bert" as soon as they arrive. Ylla is a piece of story which depicts the first astronaut travelling to then mars. It is actually told by the description of two Martian couple. A wife starts see strange dreams in which people from the earth travel to the mars when she tell the story to her husband he gets very frustrated. He believes that earth is a planet, which cannot support life. However, as Ylla the wife continues to have



dreams he gets extremely jealous as Ylla claims that an alien from Earth Nathaniel York has promised to take her with himself. In the end, Yll the husband finds out the day when earthmen will arrive from her wife's dream and on the day destroys their ship as soon as they arrive to Mars.

Materials and methods. The writer uses a variety of devices to describe the stories. In the first story it is interesting to see the description of changes that happens on our planet as too many rockets begin to take off. At first Bradbury gives some details about the environment of earth in 1999 as seen a future time in the story. It happens that it is very cold at that time as panes blind with frost or icicles fringing. Continuing his description he refers to housewives lumbering like great black bears. However, after the rockets start to fly housewives shed their bear disguises. A time when long wave of heat passes there is a flooding sea. This is also masterfully shown by the pioneer of science fiction by saying as if somebody had left a bakery door open. As a result windows flew up and frost patterns are melted. As description continues Bradbury writes about rockets stood making summer with every breath of its mighty exhausts. Other examples include pink clouds, cold winter morning ancient green lawns dripping porches.

The second story starts with the descriptions of the house of Martians. The writer uses here crystal pillars as the symbol of the house, referring to it many times during the story. The majority of the descriptive language however reflects the planet of Mars. It has empty seas, magnetic dust, gentle rain and scorched air. The nostalgic feeling present in the collection serves to bind the stories together. In his discussion of Midwest literature, Bredahl uses the term "divided narrative" to describe what some have called the "*Winesburg, Ohio* form," named after Sherwood Anderson's collection of stories set in the Midwest (49). Bradbury repeatedly named *Winesburg, Ohio* as an inspiration for *The Martian Chronicles* (Mogen 84). Emphasis on the



divisions between the narratives differentiates this form from a short story cycle. Divided narratives are stories that have clear physical boundaries between stories or chapters, are united by a motivating force or theme, and that can stand alone as individual units. In *The Martian Chronicles*, the physical boundaries are between the end of each story and the beginning of the next. The stories have very few recurring characters, and one does not necessarily lead into the next. Bredahl also states that the boundaries between the stories are obstacles that the motivating force must cross (50). The motivation that bridges the gaps created by the boundaries in *The Martian Chronicles* is the author's feeling of nostalgia for the Midwestern past. While bound together by the feeling of nostalgia present in each piece, each self-contained story can be read individually, as most of the stories in *The Martian Chronicles* were published separately before being collected into book form. Separately, each story has an element of nostalgia, and when bound together as a collection of divided narratives, the gaps between the stories are bridged by the author's nostalgia for his Midwestern childhood.

Discussion. The usage of adjectives can be analyzed from different perspectives. A point which can be highlighted is the masterful exploitation of the adjectives. It is interesting to see that Bradbury can easily turn nouns into adjectives by putting prefixes and suffixes. For example, the noun baker is changed into an adjective bakery by putting y suffix in the end of the of the word and we have bakery.

For example: *And then a long wave of warmth crossed the small town. A flooding sea of hot air; it seemed as if someone had left a bakery door open.*

Ray Bradbury uses homophorms in his description language to strengthen the description of places, objects and people. This is an example,

The children worked off their wool clothes.



Some of the adjectives in the Ray Bradbury's book are relative adjectives. These are not originally adjective words but are exploited as an adjective. In his way certain problems have been solved the description have been enriched. They can be divided into two groups relative adjectives that are taken from concrete and real nouns and the relative adjectives that are take from abstract nouns. Inside the stories both variations can be determined. As an example,

The housewives shed their bear disguises.

The warm desert air changing the frost patterns on the windows, erasing the art work. The rocket stood in the cold winter morning, making summer with every breath of its mighty exhausts.

They had a house of crystal pillars on the planet Mars by the edge of an empty sea, and every morning you could see Mrs. K eating the golden fruits that grew from the crystal walls, or cleaning the house with handfuls of magnetic dust which, taking all dirt with it, blew away on the hot wind [9, p. 5-15].

Other adjectives are given by imitation. Take for example, *and from the book, as his fingers stroked, a voice sang, a soft ancient voice, which told tales of when the sea was red steam on the shore and ancient men had carried clouds of metal insects and electric spiders into battle.*

“You’re unkind. I didn’t think him up on purpose; he just came in my mind while I drowsed. It wasn’t like a dream. It was so unexpected and different.

He looked at me and he said, «I’ve come from the third planet in my ship. My name is Nathaniel York—»” “A stupid name; it’s no name at all,” objected the husband.

“And he said, «This is the first trip across space. There are only two of us in our ship, myself and my friend Bert.»” “Another stupid name.” “The third planet is incapable of supporting life,” stated the husband patiently.



“Our scientists have said there’s far too much oxygen in their atmosphere.”
“But wouldn’t it be fascinating if there were people? And they traveled through space in some sort of ship?” “Really, Ylla, you know how I hate this emotional wailing. Let’s get on with our work.” “What’s that song?” snapped her husband at last, walking in to sit at the fire table. I don’t know. She looked up, surprised at herself. She put her hand to her mouth, unbelieving.

The sun was setting. The house was closing itself in, like a giant flower, with the passing of light.

A wind blew among the pillars; the fire table bubbled its fierce pool of silver lava. The wind stirred her russet hair, crooning softly in her ears.

She stood silently looking out into the great sallow distances of sea bottom, as if recalling something, her yellow eyes soft and moist, “Drink to me only with thine eyes, and I will pledge with mine,” she sang, softly, quietly,

page, 9

“Or leave a kiss within the cup, and I’ll not ask for wine.” She hummed now, moving her hands in the wind ever so tightly, her eyes shut.

page, 9

The renowned novelist also uses participle forms of the verbs as descriptive devices. Examples are,

And then a long wave of warmth crossed the small town. A flooding sea of hot air; it seemed as if someone had left a bakery door open.

People leaned from their dripping porches and watched the reddening sky.



A number of times the adjectives are in the figurative meaning. For example,

They had a house of crystal pillars on the planet Mars by the edge of an empty sea, and every morning you could see Mrs. K eating the golden fruits that grew from the crystal walls, or cleaning the house with handfuls of magnetic dust which, taking all dirt with it, blew away on the hot wind.

Afternoons, when the fossil sea was warm and motionless, and the wine trees stood stiff in the yard, and the little distant Martian bone town was all enclosed, and no one drifted out their doors, you could see Mr. K himself in his room, reading from a metal book with raised hieroglyphs over which he brushed his hand, as one might play a harp.

The adjectives in the book can be divided into five categories: taste, smell, sight, hearing, and touch. All of them are present in the book and there some of the examples,

And from the book, as his fingers stroked, a voice sang, a soft ancient voice, which told tales of when the sea was red steam on the shore and ancient men had carried clouds of metal insects and electric spiders into battle.

Once they had liked painting pictures with chemical fire, swimming in the canals in the seasons when the wine trees filled them with green liquors, and talking into the dawn together by the blue phosphorous portraits in the speaking room.

Conclusion. Bradbury attributed his lifelong habit of writing every day to two incidents. The first of these, occurring when he was three years old, was his mother's taking him to see Lon Chaney's performance in *The Hunchback of Notre Dame*.^[1] The second incident occurred in 1932, when a carnival entertainer, one Mr. Electrico, touched the young man on the nose with an electrified sword, made his hair stand on end, and shouted, "Live forever!" Bradbury remarked, "I felt that something strange



and wonderful had happened to me because of my encounter with Mr. Electrico...[he] gave me a future...I began to write, full-time. I have written every single day of my life since that day 69 years ago."At that age, Bradbury first started to do magic, which was his first great love. If he had not discovered writing, he would have become a magician.

Bradbury claimed a wide variety of influences, and described discussions he might have with his favorite poets and writers Robert Frost, William Shakespeare, John Steinbeck, Aldous Huxley, and Thomas Wolfe. From Steinbeck, he said he learned "how to write objectively and yet insert all of the insights without too much extra comment". He studied Eudora Welty for her "remarkable ability to give you atmosphere, character, and motion in a single line". Bradbury's favorite writers growing up included Katherine Anne Porter, who wrote about the American South, Edith Wharton, and Jessamyn West [1, p. 14].

Bradbury was once described as a "Midwest surrealist" and is often labeled a science-fiction writer, which he described as "the art of the possible." Bradbury resisted that categorization, however:

First of all, I don't write science fiction. I've only done one science fiction book and that's *Fahrenheit 451*, based on reality. Science fiction is a depiction of the real. Fantasy is a depiction of the unreal. So *Martian Chronicles* is not science fiction, it's fantasy. It couldn't happen, you see? That's the reason it's going to be around a long time -- because it's a Greek myth, and myths have staying power.

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THE FORMATION OF SYNONYMS IN DICTIONARIES

Saydaliyeva Gavharxon Avazovna
Lecturer, The Faculty of Economy and Management,
Department of Foreign Languages,
Tashkent University of Information Technology
named after Muhammad al Khwarizmi
E- mail address gavharwlu@mail.ru

Аннотация: Ушбу мақолада синонимларни луғатларда ташкил топиши ифодаланган. Бизнинг замонамизда – буюк ижтимоий ўзгаришлар ва мислсиз илмий-техник тараққиёт даврида тиллар айниқса тез ривожланмоқда, фан-техника ва маданиятларнинг турли соҳаларида юзага келаётган янги тушунчаларни ифодаловчи турли сўзлар билан тўхтовсиз бойимоқда. Луғатларнинг сўзлар ва ибораларнинг қўлланишини назарий тадқиқ этишда ҳамда тилга амалий ўргатишда аҳамияти катта. Турли типдаги луғатлар тузиш умуммаданий аҳамиятга эгадир. Синонимлар луғати – тилнинг маънодош ва маъноси яқин сўзларни ўз ичига олади ва тавсифлайди. Бундай луғатлар, аввало, тилнинг синонимик бойлигидан, синонимларидан тўғри ва ўринли фойдаланиш учун хизмат қиладиган муҳим амалий қўлланмадир.

Калит сўзлар: синоним, синонимик қатор, луғат, алфавит тартиби, энциклопедик, филологик.

Annotation: This article describes the formation of synonyms in dictionaries. In our era, during the great social transformations and unprecedented scientific and technological advancement, languages are developing rapidly, with a variety of words that reflect the new concepts that emerge in various fields of science, technology and culture. The use of vocabulary is a great importance in theoretical research and practical teaching of language. Creating different types of dictionaries



is very important. Synonyms dictionary includes the meaning of the language and describes close words. These dictionaries are important as a practical guide for the correct and proper use of the synonymy in the language.

Key words: synonymy, synonymic row, dictionary, alphabetical order, encyclopedic, philological

Аннотация: В данной статье описываются формирование синонимов в словарях. В нашу эпоху, во время великих социальных преобразований и беспрецедентного научно-технического прогресса, языки быстро развиваются, и множество слов отражают новые концепции, возникающие в различных областях науки, техники и культуры. Использование словарных слов и словосочетаний имеет большое значение в теоретических исследованиях и в практическом обучении языка. Создание разных типов словарей имеет первостепенное значение. Словарь синонимов - значение и значение языка включает и описывает близкие слова. Эти словари являются, прежде всего, важным практическим руководством для правильного использования синонимии языка и его синонимов.

Ключевые слова: синонимия, синонимический ряд, словарь, алфавитный порядок, энциклопедический, филологический

Introduction. Word language is the most important means of communication between people and language. The assemblage of collected and sorted words are called dictionary. The field of theoretical and practical principles of formation dictionaries are called lexicography (Greek Lexicon- "dictionary" and graph- "I write"). Guidance specialists are called lexicographers. There are many types of dictionaries. They are the constant help and support of every civilized person. With the help of dictionary people aware of an unknowable word, the meaning of the word you know will help you to understand how correctly and properly it is used.



Glossaries will also be used if you need to find the right and appropriate words according to the context in a short time.

From the day that human came into the world, he confronts the world of words, he lives with them and brings to perfection. The little boy who still does not speak the language, listens to his lovely beard, after learning some words pays attention to the conversation between adults with pleasure, all learned words he keeps in mind. After going to school, it is time to study new, freshly words and there come across to the first school dictionary. The next step of human life is also directly related to the word world. Therefore, when it comes to maturity, the need for dictionaries is increasing at every step of life.

Literature review. It is difficult to understand the meaning of unfamiliar words and phrases without looking through the dictionaries.

The language is constantly changing and developing and its lexicons are the product of centuries. Each historical period and every social development stage will leave a trace. Each generation contributes to enrich the structure of vocabulary system. When language is passed from one generation to another, it enriches and elaborates itself. As time passes, many words are considered to be outdated or passively used words (in passive background). Sometimes the words that have passed to an outdated, forgotten, passive foundation are "resurrected", updated or activated. Many words have a new meaning, a new form, meaning loss or shape. At the same time, there are always new words in the language and all of these changes will reflected in a variety of dictionaries.

In our era, during the great social transformations and unprecedented scientific and technological advancement, the languages are developing rapidly, with a variety of words that express new concepts in various fields of science and technology. The usage of dictionaries are important in theoretical research and practical teaching of language. Nowadays creating different types of dictionaries are very important. The



dictionary is based on alphabetical order, informing the public as a handy tool, fulfilling cultural and ideological functions.

In a number of dictionaries (J. Fernald English synonyms and antonyms) there is no synonym of the verb "go", but in other dictionaries there are 11 synonyms of this word. (The Nuttal dictionary of English synonyms and antonyms 1999). The synonym of the word "annoy" is "irritation" in the Advanced English textbook, but in the textbook of I.R.Galperin this word's synonym is "bother". The synonym of the word "Damage" is given the word "spoil" in the "Advanced English" textbook, while in I.R Galperin's textbook has been given the words "spoil" and "damage", and there is no any information about the word "hurt".

In every language has its own synonymic dictionary, such as in uzbek language there is "O'zbek tili sinonimlarining izohli lug'ati" (1974) by A. Hojiyev, Russian dictionaries are "Kratkiy slovar sinonimov russkogo yazika " (1956) by V. Klyuyeva, " Slovar sinonimov russkogo yazika" by A.P.Evgeneva (1970-1971), English dictionaries are Webster's Dictionary of Synonyms (The Springfield, Mass 1951) and The Oxford English dictionary.

Research methodology. Dictionaries are subdivided into two types: encyclopedic and philological. Special dictionaries contain a variety of terminology dictionaries and encyclopedias. Philological (linguistic) dictionaries contain the general lexicon of the language. The object of linguistic dictionaries is a word. These dictionaries provide information on every word that makes up a linguistic union - its meaning, its scope, its relationship to other words, its grammatical, stylistic and other features. Synonyms dictionaries describe close words and include meaning of the language includes. First of all these dictionaries are important in practical guide to correct and proper use of synonymy in the language. For this purpose, the general meaning of the synonyms in each synonymic row is explained in the dictionary, while the specific



meaning each synonym is given. The synonyms dictionary describes the meaning of the word, the stylistic functions of each word that is in the synonymic line.

Modern English Dictionary contains literary and verbal groups of words. Literary texts are peculiar to the literary, oral texts are peculiar to the verbal communication and have the general peculiarities in word-of-speech lexicon. Each of these two layers have its own classification. Literary Speech Lexicon covers general literary designations, terms, poetic words, archaic words, new words.

Oral speech lexicon is a lexicon used in verbal speech. This includes slangs, jargonizes, professionalism, dialectics, and euphemisms, along with the words commonly used.

Analysis and results. Literary terms are especially used in bookish style, differentiated by either positive or negative meaning or neutrality. The difference between literary words and vocabulary is that they are identical:

Table 1

Common (neutral)	bookish	Colloquial
To begin	To commence	Bring about, get off
To dismiss	To discharge	To sack
To eat	To consume	To cram
Child	Infant	Kid
Food	Provision	Grub, fleshpots
Money	Cash notes	Beans, bucks, shekels
Prison	penitentiary	Jail, cage, can

Table 2

Common	Bookish	Colloquial
Бет	Юз, чехра, жамол	Афт, турк, башара
Бола	Фарзанд	Тойча, болакай



Кулмоқ	Жилмаймоқ	Илжаймоқ
Гапирмоқ	Сўзлашмоқ	Лақилламоқ
Чиройли	Зебо, хусндор, гўзал	Кетворган
Қарамоқ	Назар солмоқ	Ўқраймоқ
Жаҳл	Қаҳр	Зарда
Лойиқ	монанд	Боп

The words are formed in dictionaries as:

1. For the words borrowed from other languages:

As for the borrowings of the English language, the sources are studied separately in accordance with different periods. The following periods are particularly distinguished by scholars based on the sources of borrowings in English language:

2. Germanic period
3. Old English period (600-1100 y.y.)
4. Middle English period (1100-1500 y.y.)
5. Early Modern English period (1500-1650 y.y.)
6. Modern English (1650-present)

On the contrary, Uzbek language native words consist in Turkic language family, which is based on the language family of Turkic. It should be stressed that Uzbek language extended by Persian, Arabic and Russian languages. In 500-300 BC, the Persian language developed in the territory of Uzbekistan because of getting in touch with the population of Iran. For this reason, the poetry and prosaic works were written in Persian language until XV century. As for Arabic language, its spread began in the VII century after the conquest of Central Asia. Therefore, Arabic language became predominant especially among scientists and scholars. It must also be stated that Alisher Navoi, contributed greatly to the development of Turkic language through writing the poetry in this language. Starting from XVIII century,



Russia began invading the territory of Central Asia and as a result, Russian language started influencing to all aspects of life in Central Asia and language.

Table 3

Old English	Borrowed from French languages	Borrowed from Latin languages
To ask	To question	To interrogate
Teaching	Guidance	Instruction
Fast	Firm	Secure
To rise	To mount	To ascent
Dumb	Mute	Inarticulate
To gather	To assemble	To collect

2. Many modern synonyms in English are abbreviations:

Vacation-vac	examination- exam
Earthquake- quake	preparation- prep
Bicycle- bike	laboratory- lab
Perambulator- pram	impossible- impos
Veteran-vet	public house- pub

3. The following synonyms are created using affixes:

Undaunted-dauntless
Changeable-changeful
Undefended-defenseless
Sincerity- sincerity
Anxiety-anxiousness
Effectively- effectiveness
Effective- efficacious
Righteous- rightful



Middle- midst

Meddling-meddlesome

4. In order to conversion

Commandment n. ,command n.

Laughter n. , laugh n.

Trial n. , try

Saying n. , say n.

Conclusion. Determining the separation of the degree in synonyms always requires of their semantic functional aspects. According to Webster's Dictionary, synonyms constitute one or more words that express almost the same content. In fact, synonymic words are almost entirely form in the same context. From the interpretation given in the Webster Dictionary for synonyms, it is possible to conclude that only their functional essence is explained, and the differences of synonymic components in the content play a very important role. However, they can not always be used in context. It concludes that the use of synonyms depends on a particular context and is classified by proportionality. That is, they are meant to be a part of their substitution.

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**THE IMAGE OF THE TIME AND SPACE IN THE STORY "AN
ENCOUNTER" OF JOYCE'S COLLECTION "DUBLINERS"**

Nazira Mukhitdinova
Independent researcher of
Jizzakh State Pedagogical Institute
Email: naziramukhitdinova@mail.ru

Аннотация

Мақолада Жеймс Жойснинг "Дублинликлар" тўпламидан ўрин олган "Учрашув" хикояси матни поэтикаси хусусида сўз боради. Хикоядаги макон ва замон хронотопи очиб берилди.

Калит сўзлар: макон ва замон, поэтика, персонаж, экспозиция, характер, интеллект, психологик мураккаблик.

Аннотация. Статья посвящена поэтике рассказа "Встреча" из сборника "Дублинцы" Джеймса Джойса. Художественное пространство и время (хронотоп) рассказа раскрываются в статье.

Ключевые слова: пространство и время, поэтика, персонаж, экспозиция, характер, интеллектуальной, психологическая сложность.

Annotation. The article deals with the poetics of the text of the story "An Encounter" of James Joyce in short story collection "Dubliners". The Chronotope of space and time of the story will be revealed in the article.



Key words: space and time, poetics, personality, exposition, character, intellectual, psychological complexity.

Introduction. “An Encounter” is one of the stories in James Joyce’s *Dubliners*, the 1914 collection of short stories which is now regarded as one of the landmark texts of modernist literature. “An Encounter” is not one of the best-known stories in the collection, but like many of the short stories that make up *Dubliners* the story shows Joyce addressing taboo issues, as well as the boredom and disappointment of everyday life, with consummate stylistic skill and attention to detail.

Literature review. “An Encounter”, in summary, is narrated by a man who is recalling an episode from his childhood, and specifically his schooldays in Dublin. The boy recounts how one of his school friends, Leo Dillon, introduced him and a number of other boys to the adventure and excitement of the Wild West, and how they would play cowboys and Indians together. However, the narrator yearned for real adventure, and, realizing that you have to go out and find it (rather than sitting at home and waiting for adventure to come to you), he and a couple of school friends, Leo Dillon and a boy named Mahony, decide to play truant for a day (‘miching’, as they call it), pretending to be ill and sacking off school. Leo Dillon (or ‘Fatty’, as Mahony unflatteringly refers to him) gets cold feet and bails on them, but Mahony and the narrator are quite pleased about that: each of the three of them had stumped up sixpence to pay for food and other provisions for their day off, and now they have a shilling and sixpence to spend between two of them rather than between three.

The two boys spend the morning wandering around Dublin, and cross the river Liffey on the ferry. They buy some biscuits and chocolate to eat, and some raspberry lemonade to drink. Mahony, armed with his catapult which he wants to use to attack birds, chases a cat down an alley. They then wander into a field where they meet a suspicious old man who strikes up a conversation with them. The boys are at first bored by the old man’s small talk. He asks them if they read books and tells them he



has all of the books by Sir Walter Scott and Sir Edward Bulwer-Lytton at home. The narrator pretends to have read them, which impresses the man. The man says that Mahony seems to be more into games than books.

He then asks them if they have any sweethearts, and Mahony replies that he has three girls, while the narrator says he has none.

The old man then starts talking about young girls at great length, before getting up and going to do something nearby (probably, although it is never stated, pleasuring himself), much to the boys' shock. The narrator and Mahony resolve to give false names, Murphy and Smith, if the man asks for their names. When the man returns to the boys, he talks of how wayward boys should be disciplined by being whipped, while Mahony goes chasing after the cat again and the narrator is left talking to the man. Going back on his earlier liberal sentiments, the man says that if any boy ever expresses any interest in girls, he should be whipped for it. Unsettled by this talk, the narrator gets up and leaves the man, calling out for Mahony (as the false name 'Murphy') to come after him. The narrator confides that he was relieved to get away from the man with Mahony safely in tow, even though he had always despised Mahony a little.

Research Methodology. Joyce's title, "An Encounter", obviously refers to the conversation the two boys have with the older man towards the end of the story. But what kind of an encounter is it? It's difficult to analyze or pin down, because, in true modernist fashion, Joyce offers us only hints and insinuations, gaps and silences, rather than explicit description of what goes on. Partly, as in "The Sisters", this is because the narrator was a young boy at the time of the events described, and didn't have an adult's knowledge of the real world.

The story "An Encounter" has direct link with "The Sisters", which both belong to story collection "Dubliners", in which the personage of the same storyteller is the leader, both his position in relation to the text and the reader, and the place of the



events there were the same. However, the storyteller is now a teenager, who got older.

In the story "The Sisters", as in the story "An Encounter", peculiar exposition in the structure of time seems to be exaggerated: the sentence is about the criteria by which the time is accustomed to spend, the established norm; the sight of the universe is squandered, and the hero-storyteller tries to pass through.

Initially, two layers of time in the story are put opposite: in the morning and in the evening. In the morning, the time is spent at school, subordinated to social order, in the evening it is the time of the game of Indians, the free time of adolescents. In essence, this confrontation scaled in relation to: the world of the child's dreams and real life will meet.

The first appeared thanks to books about traditional, self-willed and brave beauties' society, adventure about the Wild West, which gives permission to "move away from the existing life by giving vent to desire."²⁸ The plot of the story is based on the desire to see in reality, to try to bask in the game, to face real life and try to experience true adventures.

The expansion of the space of the story space is based on this desire. The established order of the time spending forcibly loaded from the outside puts pressure on the story. He tries to break the rhythm of life in a mold and jump over these boundaries (Spatial Barriers) and find a way to freedom: "The evening war games became very boring to me, as if it were the morning hours at school: in the depths of my soul, I really dreamed of adventures. However, I thought that the adventure will not happen with the people who sit at home: the adventure must be sought in the distant from the homeland" [1, 17]. Joyce shows in a cynical way that this plan really leads to the fact that the personage missed one day from school, with a trip to the nearest sightseeing, Pidgin-House.



The main facets of the structure of space-time of the story shape the structure of adventurous narratives; a simple, habitual escape from life is carried out according to the scheme: first comes the space of house- the world of dreams, based on the births from books, stories and the older ones, the healthy – minded people, slandered adventures by the followers of social norms, then comes the path, the description of adventure " distant from the homeland ", and the adventure on the way itself.

The time of events in this story – the eve of summer holiday, spring, waiting time, as always, the rhythm of the season is important for Joyce.

Instead of the rhythm of social life ("the monotony of school life"), the heroes (for one day) go under the rhythm judgment of nature. The storyteller-the hero does not forget to take into account the natural daily changes, he and his friends feel a strong physical dependence on the movement of the sun in the sky.

Analysis and results. Joyce points out that with a sad irony their established order could not be released anyway until the end: "We had to return home until the four, otherwise they would find out that we were escaping"[1,20]. He detailed the development of the feelings of the personages: "It was a gentle sunny morning dawn of the first week of June. \...\ All branches of high trees along the canal are tilted to cheerful light green leaves. The granite of the bridge was slowly heated, and I, with my hands, in a way suitable for the rhythm that gave the jar in my head, I slapped it. My mood was great " [1,18]; "When we reached the river, it was the same lunch break: the workers were having breakfast and we were both...\ we sat on the iron pipes on the river to have a snack. \...\ School and home seemed to have stayed far away from us, and we felt ourselves totally free" [1,19-20]; "The air became stuffy, the sweet ashes with mold in the window of shopkeepers' stores were burned in the sun. \...\ We both get tired hard..."[1,20]; "it was too late and we were not in a situation where we thought we would go to Pidgin-House, we were very tired. \...\



The Sun went ahead of the clouds making us sad and thinking, and left alone with our blessed breakfast,” [1,20].

The story is built on the basis of the real essence of events and the conflicting laying of their reflections. The adventure happens when heroes are overwhelmed, within the minute they give up the goal they envisioned on their journey, and at the time “the sun is falling behind the clouds...”. Although this event draws attention to the word “all of a sudden”, which immediately begins to change from the box of events, but this unexpected change does not happen: meeting with an unfamiliar person is not underwent by a friend of the storyteller, he experiences only himself, neither time nor space does not turn into a “conspiratorial adventure”.

The place of the meeting is the field, "cursive slope, the river Dodder is seen hardly behind its humps [1,20], uninhabited open space. The heroes were brought to this place by a cat, one of them was running from behind the cat. The cat is not an accidental personage for Joyce: this is a creature that is a worthy guide to the hateful, risky space, a mysterious creature, an animal that does not belong to this world.

Thus, in the open field, heroes who are overwhelmed and whose spirits are drowning come across someone unfamiliar. "He would have walked slowly. His one hand is in his shink, in his second hand, there is a rod and he would beat the ground slowly with a rod. He was wearing greenish black suit, and on his head there is a high hat, when we call the night canvas. He seemed to me as he became older, because he had a white middle on his mustache" [1, 20-21]. An unfamiliar person who is stressed by the storyteller is said to have been reduced to even in details of his clothing, undoubtedly realistic, household plan. However, in the European (German) Romantic tradition, Satan is distinguished by such details. That's exactly what he says from the famous story of Adelbert Chamisso. The fact is that this man, whose heroes met during the whole story, was called “unfamiliar”, also serves in favor of this comparison. The “teeth of the Unfamiliar "are sparse yellow”, “eyes are green like



glass”, in the words of which there is already an "abstract mystery". The scale of those dreams that actually gave birth to the reader, referring to the path of the heroes, apparently seems to be related to this stranger: "He said that in his house there were all the works of Lord Litton and that reading them over and over again will never make him be fed up" [1,21], he also talks about books, including books that “boys cannot read” [1,21]. The green eyes like glass of an unfamiliar person underscore his aquatic romance in the context of the story, the tendency to the distant travelling. It seems as if he was born to play the role of a seductive devil.

However, this role is not performed by the stranger: he does not mislead anyone, and his speech is too abstract, his personal monologue satisfies only himself: I had such an impression that he repeated the rumors that he allegedly memorized, or a magnetized mind with his own words slowly circled around the orbit already motionless [1, 22]. “His mind revolves around a new center, as if his words were magnetized” [1, 23]. In front of the storyteller- hero, a mentally unhealthy person appears in place of a seductive devil. Instead of joining the world of adventures, interesting events, trials, he becomes a witness to the mind that has become nauseated, stuck in his shell, and gets acquainted with the sphere of mental illness.

The friends of the storyteller Leo Dillon and Mahony with an unfamiliar person in the story are compared. In search of adventure, they were all three (a lucky number in fairy tales) should come out together, but they turned out to be two people, and as a result of this disappointment, bad luck is inevitable.

The "frightened escaped" boy was given a beautiful name as Leo, and he was relative with Joe Dillon, who introduced that same, group of children to the Wild West, and the battle in the yard ended with his victorious dance. This heroic wreath of honor around the personage, highlighted in the narrative exposition, and the sharp difference between his cowardice, described in the story itself, arose from the inconsistency of children with the real life world of freedom and the game world of



the children. (Joe Dillon, brother of Leo decides to become a priest and tries to experience a real adventure. At the moment he "...addicted to the game by excessive hysteria" [1, 16].

Mahony, who is presented in the games, on the tramp with slingshot, does not like intellectual interests, is the representative of "ordinary people". The character who is fearing the world of mental illness, asks him for help: "I once again had to scream, and only the Mahony noticed me and responded to my call and answer. My heart beat so resounding when he ran through the field to the side I was standing! I was a bit ashamed, because I hated him somehow in the depth of my heart [1, 24]. In this respect, the psychological complexity that is typical for the style of Joyce, is revealed: salvation comes from the help of the expected one that he does not respect.

Conclusion. The image in the structure of the personality, acting in the story, Mahony is a rough, physically present, an image of an incompetent person to show some kind of spiritual influence. For this reason, even a meeting with an unfamiliar person for Mahony becomes inconclusive: he escapes from the stranger running behind the cat. [1, 33]; the necessity for physical activity is stronger for him than enthusiasm. In general, Leo Dillon avoids being faced with a mentally ill patient, he is fearful and he is addicted to a game of children and the world of Dreams, which does not turn into a real reality. among three personages, only the storyteller acts with the spiritual need for "real adventures" to move forward and for this reason the real world of mental illness is manifested in him.

Thus, in the story "An Encounter", the next stage of biological growth of the hero of the book, his adolescence is shown. It is represented the structure of risky adventurous story and trying to get out of the boundaries of social norms (peculiar to school and children's game). This movement leads to the discovery of a broken world of mental illness, which is wrapped in its own shell.



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DISTINGUISHING FEATURES OF SOURCES OF BORROWINGS IN ENGLISH AND UZBEK LANGUAGES

Muksimova Nazokat Abdulloyevna
Lecturer, Department of Foreign languages,
Economics and Menegment faculty,
Tashken University of Information
Technologies named after
Mukhammad al-Kwarizmi,
E-mail: nanoshka_55@inbox.ru

Yusupova Aziza Abdudjamilovna
Lecturer, Department of Foreign languages,
Economics and Menegment faculty,
Tashken University of Information
Technologies named after
Mukhammad al-Kwarizmi,
E-mail: aziza_y@inbox.ru

Annotatsiya: Ushbu maqola ikkita farqli tillar bo'lmish, ingliz va o'zbek tillaridagi o'zlashma so'zlarning manbalari haqida. Shuni ta'kidlash joizki, Ingliz tili o'zlashma so'zlarining manbalari beshta tarixiy davrga tayanadi. Ingliz tilining o'zlashma so'zlarining manbalari lotin, fransuz hamda qadimgi Skandinaviya tillaridir, o'zbek tiliga o'zlashgan so'zlarning manbalari esa asosan arab, fors hamda rus tilidir.

Kalit so'zlar: o'zlashgan so'zlar, o'zlashma so'zlar, ingliz tili, o'zbek tili, lug'at zahirasi, manbaa til, qabul qiluvchi til.

Аннотация: В этой статье рассматриваются различные источники заимствований на двух разных языках, в частности на английском и узбекском. Следует отметить, что заимствования английских слов основаны на пяти разных исторических периодах. Исходные языки для заимствований на



английском языке в основном латинские, французские и древнескандинавские, тогда как источником заимствований на узбекском языке являются в основном арабский, персидский и русский языки.

Ключевые слова: заимствования, заимствования, английский язык, узбекский язык, словарный запас, исходный язык, язык получателя.

Annotation: This article deals with different sources of borrowings in two diverse languages, English and Uzbek in particular. It is necessary to note that borrowings of English words are based on 5 different historical periods. The source languages for English borrowings are mainly Latin, French and Old Norse, whereas the origins of Uzbek language borrowings are mainly Arabic, Persian and Russian languages.

Key words: borrowing, loanwords, English language, Uzbek language, word stock, source language, recipient language.

Introduction. The word stock of the particular language is of great importance of deep investigations. As the vocabulary is the basic aspect of each language, it is quite significant to analyze its features among linguistics.

It should also be mentioned that comparative analysis always are held between languages and within one language. For this reason, the theme of loan words, and their special characteristics in Uzbek and English languages are studied deeply. It must be referred that quite inadequate researches have been done on this topic, and it would be interesting and advantageous for the representatives of modern trends of linguistics as those two compared languages have totally different system and structure.

Enriching vocabulary is one of the most crucial aspects of linguistics and lexicology, in particular. On this occasion, enhancing the word stock of the target language with the help of loan words is considered to be one of productive ways of forming new words. It should also be inferred that the actuality of the research is



determined by growing interest of linguists in the investigation of the origin of the words of the particular language and the foundation of borrowings.

Literature review. Initially, it is expedient to mention that borrowings and loan words are quite identical terms denoting to the words taken into one language from another one. There are different scholars, who provide various definitions to these terms.

In this respect, it is expedient to refer to the fact that O. Jespersen emphasized borrowed word as the milestones of philological sphere. The reason is due to the fact that borrowed words provide the linguists with approximately dates of linguistic modifications. According to him, by means of borrowed words, the information and assumptions about the civilization of the nations became evident. As one of well-known linguists, Shuchard emphasized that no language is entirely pure, it is clear that nearly all languages have the word stock enriched by borrowed words. There is the evidence of the fact that borrowed words are penetrated as a result of primary two factors, such as linguistic and extra-linguistic.

According the viewpoint of Haugen (1950), borrowed word is a term that refers to the process of adapting the word from the donor language, into the recipient one. Here, the donor language is the language which the word originally come from, whereas, the recipient language is the one which adapts the particular word. It is necessary to state that borrowings can be resulted primarily due to the contacts among different nations, cultures and languages.

The scientist, Haugen also pointed out that borrowed words from one language to another is related to the mastery if bilingualism at two languages. In this respect, he provided definition that "...borrowing is the attempted reproduction in one language of patterns previously found in another"²⁹. From the perspective of Haugen, it can be

²⁹ Haugen, E. The Analysis of Linguistic Borrowing,. 1950. p: 212



known that due to the borrowings, three major results appeared such as loanwords, loan blends and loan shifts.

As can be seen, loan words appeared as the result of borrowings. It is also necessary to state the fact that loan words are classified on the degree of being adapted by recipient language. The classification, in its place is as follows: unadapted loanwords, quotation loanwords and compounds, partially adapted loanwords, fully adapted loanwords, loanwords taken over in plural form and abbreviation.

As etymology of the languages is quite fascinating topic, the borrowed words are of great interest of investigation. In this place, it must be noted that sources of borrowings of English and Uzbek languages are characterized by different languages. Borrowings of the compared languages are differently approached.

As for the borrowings of the English language, the sources are studied separately in accordance with different periods. The following periods are particularly distinguished by scholars on the basis of the sources of borrowings in English language:

- I. Germanic period
- II. Old English period (600-1100 y.y.)
- III. Middle English period (1100-1500 y.y.)
- IV. Early Modern English period (1500-1650 y.y.)
- V. Modern English (1650-present)

On the contrary, Uzbek language native words consist in Turkic language family, which is based on the language family of Turkic. It should be stresses that Uzbek language extended on the basis of Persian, Arabic and Russian languages later. In 500-300 BC, the Persian language developed in the territory of Uzbekistan as a result of getting in touch with the population of Iran. For this reason, the poetry and prosaic works were written in Persian language till XV century. As for Arabic language, its spread began in the VII century after the conquest of Central Asia. Therefore, Arabic



language became predominant especially among scientists and scholars. It must also be stated that Alisher Navoi, contributed greatly to the development of Turkic language through writing the poetry in this language. Starting from XVIII century, Russia began invading the territory of Central Asia and as a result, Russian language started influencing to all aspects of life in Central Asia and language, in particular.

Research methodology . The research provided in the article is based on the analysis of English and Uzbek languages and their word stocks. The researcher compared the various spheres of interest such as scientific works, articles, dissertations, and others.

In this investigation, the methods of descriptive and analytical analyses are used to examine the linguistic literature associated with the problems, which are great importance of discussion. Additionally, comparative analysis was also done on the basis of the vocabulary of two different system languages, in particular English and Uzbek languages.

Analysis and Results. Words of another origin, in terms of English language, are based on five historical stages as we mentioned above. It should be said that all periods are distinguished by adapting words from other languages such as Old Germanic, Latin, Celtic, Scandinavian, French, Greek, Arabic and other languages. As the period of modern English is highly influenced by many languages, this stage should be studied separately. In this respect, it is better to unite other four remaining periods in one table. Let us see them in this table

Periods			
Germanic period	Old English period	Middle English period	Early Modern English period
Languages influencing borrowings in English language			



Latin and Old Germanic languages: ancor-"anchor" butere-"butter" cycene-"kitchen" disc-"dish" piper-"pepper" straet-"street" weall-"wall" win-"wine"	Latin: casere-"caeser, emperor" ceaster-"city" cest-"chest" circul-"circle" maegester-"master" paper-"paper"	Scandinavian: anger, blight, clumsy gear, scorch, skin, skirt, sky, sly, they them	Latin: agile, abdomen, anatomy, compensate, gradual, meditate, orbit, peninsula, physician
	Celtic: brocc-"badger" cumb-"combe, valley"	French: <i>words related to law and government:</i> attorney, court, crime, judge, parliament; <i>church:</i> abbot, chaplain, saint, priest, religion; <i>military:</i> army, captain, enemy, marine, volunteer <i>culture:</i> art, bracelet, satin, fashion, fur	Greek: anonymous, atmosphere, climax, data, history, parasite, skeleton, tonic, tragedy
			Arabic: algebra, algorithm, almanac, alchemy, admiral, amber, cipher, saffron, sugar, zero, coffee



		and others.	and others.
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According to the graph above, it is evident to say that Latin was predominant language among others in the perspective of borrowing words from other sources. The reason is that majority of manuscripts written in Latin were preserved through the ages. Next, while the renaissance spread throughout England, many words were borrowed from Greek and Latin languages.

Huge changes happened during the period of Modern English. During this period, the world was evident for major colonial expansion, technological and industrial and American immigration throughout several centuries. Here, as a result of such occurrences, myriad words from European languages and from other parts of the world entered to the word stock of English language. The languages such as French (*ballet, saloon, infantry, garage, jeans*), Spanish (*armada, alligator, guitar, mosquito, tornado*), Italian (*balcony, casino, piano, opera, cappuccino*), Dutch (*cruise, landscape, cookie, waffle*), German (*kindergarten, wunderkind, U-boat*), Scandinavian (*ombudsman, ski, slalom*), Russian (*borscht, tsar, vodka*); Sanskrit (*yoga, avatar*), Hindi (*bungalow, jungle, shampoo*), Persian (*check, chess*), Arabic (*emir, harem, mosque, bazaar*), African languages (*banana, gorilla, jazz, zebra*), Chinese (*ketchup, tea*), Japanese (*judo, karaoke, sushi, tsunami*), Australia (*boomerang, kangaroo*) became the source languages for the borrowed words of the English language as a recipient one. As can be seen, English language has been influenced by many other languages and enriched its vocabulary by means of borrowed words.

Let us turn to the examples of borrowings in Uzbek language. As it is mentioned above, main examples of borrowings in Uzbek language are taken from Arabian, Persian and Russian languages. The examples are as follows:

Borrowings of Uzbek language		
Arabian	Persian	Russian
adib, aholi, ahvol, bino, darak, fan, firqa, harakat, hikmat, jiddiy, kamol, kamtar, kimyo, lug'at, mador, maktab, muallim, odam, oila, qalam, qoida, rais, sahna, talaba, tanqid, vaqt, xalq, xalifa, yaqin, zafar, shayx.	bahor, barg, bulbul, dasta, dehqon, devor, dono, farzand, gardun, gul, go'sht, hamma, istara, jang, kaptar, karaxt, murg'ak, nihol, olov, olcha, parcha, qonxo'r, ro'za, sust, taxt, xalta, g'isht, shakar, shirin, chiroq, chorva, chorpoya	kino, konfet, lenta, limon, parovoz, parta, patnis, poyezd, ruchka, soldat, stol, stul, tomat, tufli, shkaf.

According to the table above, the influence of Arabian, Persian and Russian languages is huge and enormous. As a result of historical invasion and settlement, myriad words were acquired to Uzbek language.

Conclusion

According to the comparison of the sources of borrowings, it can be drawn a conclusion that Uzbek and English, as different system languages, have totally distinctive features in terms of borrowed words. It must be stated that English language has the word stock which has majority of words that are borrowed. On the contrary, Uzbek language has the words originated from Arabian, Persian and Russian languages. Then, borrowed words of English language are studied by the division of five periods, but the ones of Uzbek language are not studied deeply. As this theme has not been studied well and thoroughly, many aspects should be revealed further.



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UNIVERSAL NAMES AND AFFIXOIDS WITH GENDER FEATURES IN KHOREZM EPOSES

Kuvandik Olloyorov Madiyorovich
PhD of Philosophy,
Senior Lecturer at the Department of
Uzbek Linguistics
Urgench State University, Philology faculty,
Khorezm, Uzbekistan
E-mail: volidaravshan@gmail.com

Dildora Khudayberganova
PhD student
Urgench state university
E-mail: xudoyberganova.dildora0707@gmail.com

Abstract: This article clarified the specific features of the Khorezm eposes and proper nouns with peculiarities. This article highlighted the research results collected from more than fifty of Khorezm eposes. The author analysed the content and substitutional meaning of the constituent parts of the proper nouns, especially names of the people. Moreover, this article gave a wide range of information on the etymology, usage, lexic, morphologic and syntactic peculiarities of the Khorezm eposes' language. Furthermore, the author analyzed the different names with gender features, the elements that expresses the people's gender by means of giving examples from the masterpieces of the Khorezm eposes, especially in dastans.

Key words: dastans, onomastics, gender features, affixoids, exaggeration.

Аннотация: В данной статье выяснены особенности хорезмских эпосов и имен собственных с особенностями. В этой статье освещены результаты исследований, собранные более чем из пятидесяти хорезмских эпосов. Автор проанализировал содержание и замещающее значение составных частей имен собственных, особенно имен людей. Кроме того, эта статья дала широкий



спектр информации об этиологии, использовании, лексике, морфологии и синтаксических особенностях языка хорезмских эпосов. Кроме того, автор проанализировал различные имена с гендерными особенностями, элементами, которые выражают пол людей, посредством примеров из шедевров хорезмских эпосов, особенно на дастанах.

Ключевые слова: дастаны, ономастика, гендерные особенности, аффиксоиды, перенапряжение.

Annotatsiya: Ushbu maqola Xorazm eposining o'ziga xos xususiyatlarini va o'ziga xos nomlarni o'ziga xos xususiyatlari bilan izohlaydi. Ushbu maqolada ellikdan ortiq Xorazm eposidan to'plangan tadqiqot natijalari aks etgan. Yozuvchi nomlarning tarkibiy qismlari, ayniqsa, odamlarning nomlari mazmunini va o'rnini baholashni tahlil qildi. Bundan tashqari, ushbu maqola Xorazm eposi tilining etiologiyasi, ishlatilishi, so'z boyligi, morfologiyasi va sintaktik xususiyatlari haqida keng ma'lumot olish imkonini berdi. Bundan tashqari, muallif turli xil nomlarni gender xususiyatlariga, odamlarning jinsini ifodalaydigan unsurlarga, Xorazm eposlarining asarlari misollari, ayniqsa, dostonlar ustida tahlil qiladi.

Kalit so'zlar: dostonlar, onomastikalar, jinsiy xususiyatlar, afsonaviylar, haddan tashqari bo'rttirish

INTRODUCTION: In the lexicon of Khorezm eposes, there are such anthroponyms that gender features appear in the universal form of such names, or we can met unnaturality from the point of view of sex. This situation is well-known in modern Uzbek anthroponyms. Some of the names of our language profiles are incompatible with current onomastic concepts. Examples of such names are:

1. **Kamalzhon** (name of female, dastan "Sayod and Hamra" on page 50);
2. **Kukgul** (name of male, dastan "Edigo", on page 198);
3. **Lola** (name of male, dastan "Asyl and Karam", on pages 259- 260);
4. **Oypora** (name of male, dastan "Ashik Garib and Hilola pari" on page 43);
5. **Oyhan** (name of male, dastan "Yusuf and Ahmad", on page 16);



6. **Agha Yunus** (name of female, dastan “Yunus pari”, on page 58);

7. **Tawka (King)** (name of male, dastan “Edigo” on page 204).

8. **Sanobar** (name of male, dastan “Gul and Sanobar”, on page 231) and others. Here we analyze some of the names used in the text of the Khorezm epos.

Masalan: “*Ammo Karamjonning bir hamrohi bor erdi, ul hamrohining oti **Lola** erdi. Anga aydi: san el oyog’i tingandan so’ng Asilxonning bo’gina borg’il*”.

The epos “Asyl and Karam”, included in the second book of “Oshiknoma” collections, contains the anthroponym of Lola (Tulip-the girl’s name). No one doubts that this name is certainly given for females in the category of gender-specific names in modern Uzbek anthroponyms and Khorezm regional anthroponyms. However, in the text of the above-mentioned poem, we can see that the name is used to call a man. For example:

*...Ammo Karamjonning bir hamrohi bor erdi, ul hamrohining oti **Lola** erdi. Anga aydi: san el oyog’i tingandan so’ng Asilxonning bo’gina borg’il...*

(But Karamjon had one companion, his name was Lola (tulip), He said to him: after people finish the working day, go to Asylkhan’s garden)

(See the poem “Asyl and Karam” on page 259);

or:

*...Kel o’zingni **Lolajonga** yor ayla,*

Kel, man olay sani Karam olmiydi...

(Let yourself be my beloved, Let me marry you, anyway Karam does not marry you)

(See the poem “Asyl and Karam” on page 260);

From the given fragments this will be clear that, Karamjon sends his fellow Lola in order to examine the love of Asyl by giving different questions.

The name **Sanobar** (the name of the flower) in the dastan “Gul and Sanobar”, which is included in the third book of "Oshiknoma" collection, can also be surprised



by today's ethnic Uzbek people in the way that it is used to determine a man's name. Let's look at the following passage:

*...Ammo roviyoni axbor va noqiloni osor va muhaddisoni dostoni bo'ston andog' rivoyat qilibdurlarkim, Chin shahrinda Xurshidshoh otlig' podsho bor erdi. Oning **Sanobar** otli bir o'g'li bor erdi...*

(Historians tell a story that in China there was one king named Khurshidshah. He had a son named Sanobar)

This unusual tradition can be seen in most of the above-mentioned names. For example: even though the name **Kamoljon** is seen as a male name and the names **Oypora** and **Ayhan** are determined as female names in Uzbek anthroponyms, it should be considered that they were used vice-verse in our national dastan's lexicon.

The name **Tavkai** is also gender-oriented, first of all, as a woman's name. Because the name of the predecessor of the famous epic "Alpomish" is all in our minds. However, in the language of Khorezm epics, we find that this name is used as a man's name.

We have already pointed out that the affixoid units employed in the names of dastans' lexicon also have specific gender characteristics. Below we will try to analyze the unusual positions of these units.

Aga (Og'a-Brother). In the Khorezmian dialects and today's Khorezm anthroponymics, the element 'aga' is one of the common names of men. However, we can see this name was used as a female name in "Gurugli" eposes-**Aga Yunus Pary**.

Gul (Flower). This component is very active in forming proper nouns, and it is found in many names of epic dastans: **Gulasal** ("Yusuf and Ahmad"), **Gulrukh**, **Gulrukhpari**, **Gulrukhsor** ("Avaz uylangan"), **Gulandom** ("Gurugli"), **Gulshirin** ("Arab tangan"), **Gulikhiromon**, **Gulshan** ("Khirmondali"), **Guljon**, **Gulqiz**, **Gulnoz**



(“Gulqizoy”), **Guljamila**, **Gulsarvi** (“Edigo”), **Gulchehra** (“Oshiq Alband”), **Gulchaman** (“Oshiq Najab”), **Gulsutun** (“Shahriyor”) and others.

The element “gul”, which applies to nearly all the languages of the Central Asian peoples, can also be a part of the name and a root of the name: **Donogul** (“Donogul”), **Kukgul** (“Edigo”), **Lolagul** (“Gul and Sanobar”), **Novgul** (“Sayod and Hamro”), **Oygul** (“Avaz”), **Oqchagul** (“Yunus and Misqol”), **Olmagul** (“Zulfizar”), **Sarvigul** (“Khandon botir”), **Tutigul** (“Gurugli”) and others. There is a view that this affixoid can only be included in the name of women today. However, in the epos “Edigo”, which is part of the “Oshiknoma” collections, we can see that **Kukgul** is used as a man's name:

*...Ammo, **Ko‘kgul** degan bola tamomi o‘g‘lonlarning ushoqlarini utdi...*

(But the boy named Kukgul win all the other boys’ small coins)

Looking at the anthroponyms of Khorezmian dialects, we can meet the facts that nowadays **Gulmon**, **Gulimmat**, **Gulmir** are used as well as the names of men. So this element was also involved in making male names.

It is wrong to say that the element “gul” is only used to mean “flower, odour, beautiful”. Actually, in spite of the fact that the lexema “gul” was originated from Persian languages, it is considered as one of the most actively used common nouns among Uzbek language and a number of its dialects. Principally, while giving a name to the newly born baby, this morpheme is used to indicate its future beauty, charm, attractiveness, pulchritude, elegance, prettiness, allure and other features regarding mostly women’s characteristics. As comparison:

Gulandom – odour of the flower, the scent of the blossom;

Guloro – decorated with blossoms;

Gulasal – The honey of the flower, sweet and tasty like honey, beautiful like flowers;

Guljamol – beautiful face, perfect girl;



Guljahon – the blossom of the world, the only beauty on the earth;

Gulniso – the prettiest of all the women;

Gulnor – the flower of the pomegranate;

Gulnoz – capricious, flirtatious flower and others.

The component “gul” is sometimes used together with Arabian units and sometimes can be applied with other words belonging to Persian and Turkish languages. For example, Persian + Arabian stemmed names: **Guljamol**, **Gulhadicha**, **Gulasal**, **Guliasror** and others; Persian+Persian stemmed names: **Gulandom**, **Gulanor**, **Guljahon**, **Gulchehra**, **Gulshirin** and others; Uzbek + Persian stemmed names: **Aqchagul**, **Guloyim**, **Oygul** and others.

At some points the lexema “gul” can be used without losing its connective bound - “i” in Persian stemmed names, for instance: **Gulⁱsurx**, **Gulⁱasror**, **Gulⁱxiromon** and others.

We can see that the morpheme “gul” can be situated in different places of the words in our given examples. In some parts it is used before the main name and in other parts it is applied after the main name. However, the function of the lexema “gul” used in both ways is not the same. When it is used after the main name, the component’s function and meaning will be close to the affixoids and it nearly loses its lexical meaning. For instance: **Donogul**, **Oygul**, **Olmagul**, **Oqchagul**, **To‘tigul** and others. On the other hand, it is not difficult to perceive that, when it is used before the main name, this word does not lose its lexical meaning. For example: **Guljamol**, **Gulxadicha**, **Gulasal**, **Guliasror**, **Gulisurx**, **Gulixiromon** and others.

Oy (Moon). This element is also one of the most active onomastic affixoids, which has been involved in the creation of names: **Oysulton** (“Bozirgon”), **Oypora** (“Oshiq G‘arib and Shohsanam”), **Oygulqiz**(“Gulqizoy”), **Oygul** (“AvaZ”), **Oykhon** (“Yusuf and Ahmad”), **Oysanam**, **Oyjamol** (“Oshiq Garib and Shohsanam”)and



others. This item will also be used at the end of the names: ***Boloyim, Gulqizoy, Gulnozoy, Guloyim, Donoguloy*** and others.

The element “oy” in the content of these names were used not to describe the moon, but to express respect and loving. The affixoid *oy* is used in the form of a *oyim* (with the –im, which is the suffix of genitive case in Uzbek) and means ownership, expression of exaggeration in the sense of closeness, mastery.

The word *oy* is primarily a term used to refer to the name of women, however, its logical meaning is moon, sky and earth's natural satellite. However, in some cases it is added to the male names, meaning of "happiness, happy". For example, ***Oybek*** and ***Oytemir***. This affixoid is also actively used in other Turkic languages.

All in all, the component “gul” and “oy” are considered to be one of the actively used onomastic units in the lexics of dastans, Uzbek dialects and Uzbek literary language, principally as a component of names. By investigating this unit more deeply, the new colourful meanings can become obvious. Summing up the above, it can be said that the study of the gender aspects of the names of the Khorezm epos can provide a better understanding of the contemporary Uzbek anthroponyms.

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MODERN PROBLEMS OF PEDOGOGY AND PHYHOLOGY

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PEDAGOGICAL AND PSYCHOLOGICAL PECULIARITIES OF TRAINING FUTURE SPECIALISTS OF PRIMARY EDUCATION TO INNOVATIVE PROFESSIONAL PERFORMANCE

Ibragimova Gulsanam Nematovna

Tashkent State pedagogical university named after Nizami

Docent of the Department of “General Pedagogy”

Email: ibragimova_gulsanam@mail.ru

Аннотация: Ушбу мақолада бўлажак мактабгача таълим мутахассисларини инновацион касбий фаолиятга тайёрлаш жараёнининг ўзага хос педагогик, психологик хусусиятлари ҳақида фикр юритилган. Шунингдек, бўлажак мактабгача таълим мутахассисларини инновацион касбий фаолиятга тайёрлашда педагогик амалиёт, илғор тажрибалар ҳамда ота-оналар билан ҳамкорлик масалалари баён қилинган.

Калит сўзлар: мактабгача таълим, мактабгача таълим мутахассиси, инновацион касбий фаолият, педагогик амалиёт, компетенция, ижодий ёндашув, педагогик вазиятлар, илмий дунёқараш.

Аннотация: данной статье рассматриваются конкретные педагогические и психологические особенности подготовки будущих специалистов дошкольного образования к инновационной профессиональной деятельности. В ней также изложены вопросы педагогической практики, лучших практик и сотрудничества с родителями для подготовки будущих специалистов дошкольного образования к инновационной карьере.



Ключевые слова: дошкольное образование, специалист по дошкольному образованию, инновационная профессиональная деятельность, педагогическая практика, компетентность, творческий подход, педагогические ситуации, научное мировоззрение.

Annotation. This article is about specific psychological and pedagogical features of training future primary education specialists to innovative professional performance. Furthermore, the importance of pedagogical practise, modern technologies and cooperation with parents during preparation of future specialists of primary education to innovative professional performance are mentioned below.

Key words: primary education, specialist of primary education, innovative professional performance, pedagogical practise, competence, creativity, pedagogical technologies, scientific cognition.

Introduction. Strategy of Action in the five priority areas of development of the Republic of Uzbekistan put a priority on expansion of the network of preschool educational institutions and improving the conditions of the educational process in order to provide comprehensive intellectual, esthetic and physical development of kids, enhancing involvement and active participation of children into preschool educational institutions as well as increasing personnel development of pedagogs and trainers. With the support of President of Republic of Uzbekistan the perspective long-term action plan of modernizing preschool institutions has developed and instructional researches in order to improve the network of primary educational services have done.

Literature review. The solution of majority of tasks set before the Organization of preschool institutions by governance of the Republic is highly connected with professional skills and leadership qualities of teachers. Provide the involvement of students into various activities, formation of creative, well-educated, spiritually rich individual and also, achievement of goals set before preschool



education service nowadays is ranked as trainers professional obligation. For this reason, in the 4th meeting of Ministry of Preschool education of Republic of Uzbekistan on 7th of July in 2018 government training program for preschool education institutions “The first step” was approved as a logical continuation of the preschool education policy modernization. The actual document substantiated the basic principles of state policy, main purposes of training process in the field of preschool education, and it is a legislative document formed as necessary framework for step-by-step progressive educational development of preschool age children. Consequently, it creates a necessity in forming educational process by using pedagogical innovations.

In order to, prepare qualified specialists during higher pedagogical training program future teachers and trainers should be introduced with highly integrated lectures, practical and laboratory lessons, in addition to, improved course of pedagogical practice and days of spiritual enrichment.

As it was stated in “Pedagogy encyclopedia: ...innovations indicates creative side of every reforms, and reveal itself in the creative efforts focused on improving existing path of life, social outlook, tools of work, principles and methods. Human creativity lies on the basis of every innovation. The raising of creative activity to the level of innovation activity, which would lead to appropriation of thought and way of life requires the existence of subjective and objective features (motive and necessity)” [3; p-137.]

Research Methodology. It is an obligatory for educators to have a comprehensive knowledge about specific features of personality of every student and deep psychological background in order to ensure the efficiency of preschool education. Thus, students should be instructed that their personal plan of teaching is to be based on regard for specific conditions and features, such as:



- the ability to foresee possible pedagogical issues; for this, future teacher must have a competence to predict and prevent possible pedagogical issues.

- be familiar with methods of solving possible pedagogical issues;

- the ability of future teacher to choose and utilize the most conducive problem solving methods;

- the ability to influence and encourage students ;

- extend an individual approach to every student;

- demonstrate the competence of organizing social events in cooperation with students;

- raise interest of students into reading and force them to love of reading.

Mostly, progressive development and appropriate preparation of kids to primary education depends on professional teaching competence of future educator. Pedagogical, psychological and methodical investigations reveal that, personal qualities, as well as professional skills, plays major role in enhancing efficiency of educational process . For this reason, professional skills, intelligence and creativity of future trainers are considered as a main points in forming mental activity and independent outlook of students.

Participation in pedagogical practice in preschool educational institutions provides solid foundation for further professional performance of students. Creative approach to pedagogical performance, implementation of modern methodical techniques into practice, leadership skills, exploration of educatees personality from psychological and pedagogical point, analysing, ability to organize socio-cultural events are some of the qualities which future teachers integrate in pedagogical practice period. These all qualities are necessary in training future teachers. Similarly, future trainers should clarify a set of rules necessary for their further professional performance. Such as :

- forming the sense of conscious discipline ;



- be fair in relationships with students;
- support and help active students in the group;
- encourage independent performance of students;
- working with students systematically upon tasks and stimulate them during learning process ;
- implementation of organizing systematic educative events amongst students.

At the same time, educational dialogue during lectures, practical and methodical lessons , natural inculcation to self study, searching for new data about subject, working on the scientific literature and analyzing knowledge absorbed during training is need to be implemented as well in preparing of specialists to future innovative working performance.

In preschool educational institutions leading a group work has specific features. Specialist of preschool educational institution form not only basic knowledge of environment ,nature, how to calculate and speak but also, increase their knowledge of traditions and national values for their spiritual enrichment. They struggle to instil honesty,fairness,kindness sense of unity, cooperation from earliest age into kids conciousness.

For future teacher of preschool institution it is crucial to observe permanently socio- political area and insist strong personal opinion. Students must experience persistency towards nowadays social events and real- time information flow . Developing of skills in students personality to sort out proper information, have strong and critical viewpoint is determinative. Form analytical and critical thinking toward environmental issues by measuring the gravity of world events on daily basis is in demand for future trainers of preschool institutions.

The principle of simultaneous educational and social development must be followed in integrating professional experience of future specialist of preschool education. By this, the progress in understanding of methods , forms, concepts



,necessary tools of educative actions can be successfully achieved. Also,future educators should enhance qualification on involving students in social events. All of this , will promote a basis of deep spiritual enrichment of educatees of preschool institutions. [4; 93-6.].

Analysis and results. Obstruction of negative qualities in kids personality , as well as , formation of positive behaviour and skills is to be a main priority of future preschools specialist training . Mostly, new comers of preschool institutions demonstrates shyness, naughtiness, inability to adopt new environment . Prevention of such behaviour, adjustment of kids into new groupwork environment, involvement into interactive atmosphere and provision of their spiritual peace are number of important tasks put forward teacher. In order to, provide students with practical help in obstructing bad behaviour , encourage persistence and formulating truthfulness and honesty in their personality , teachers should use a method of groupwork influence. Trainer should introduce students with surrounding reality and prepare for further proper actions in this environment.

Conclusion. When teacher set manageable, accurate task of medium difficulty , students interest into subject will increase , as well as, their educational curiosity, leadership skills and initativeness. As a result, student will try to be equal to expectations of a teacher and feel the responsibility of his actions. The ability of managing immediate educational tasks leads to favorable results in discipline of students and by this, personal qualities as endurance and resistance will be developed in students personality.

Future specialist of preschool institutions should have clear understanding that by exploring positive sides of kids behavior, teacher will be able to encourage them and diminish bad behavior of its students , but systematic itemizing drawbacks of a child may be consequenced by negative effects. To develop behavior of kids properly trainer should be kind but strict. Teachers and parents should cooperate in



order to diminish naughtiness, lack of attention , incuriosity of kids in terms of education .

Cooperation with parents and “Mahalla” in correct organization and management of educational processes is in main priority of preschool education institutions .

Undeniably , teacher plays an immense role in upbringing of preschool age students as a responsible, reliable , attentive , hard- working individuals of society and understanding the importance of this mission should come to future specialists through training process in higher educational institutions.

Obviously , a huge range of requirements are put forward specialists of preschool education. This is the main reason of necessity in permanent development of intelligence, deep spiritual beliefs , proper social participation and behavior in future teachers consciousness.

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CONFLICTOLOGICAL COMPETENCE OF THE TEACHER, CONTENT AND STRUCTURAL ANALYSIS

Shodiyev Ilyosjon Narziquil o'g'li

**PhD student of Tashkent state pedagogical
university named after Nizami**

Email: Shodiyev.ilyos27@gmail.com

Аннотация

Мақолада таълим жараёни субъектлари ўртасида юзага келадиган конфликтнинг моҳияти, илмий – назарий таҳлили келтирилган. Шунингдек, конфликтологик компетентликнинг умумий тузилиши (гностик, тартибга солувчи, проекцион, рефлексив, норматив), педагогик низоларнинг хусусиятлари, ифода шакллари, педагогик қарашлар баён этилган.



Калит сўзлар: конфликт, таълим тизимининг субъектлари, компетентлик, касбий компетентлик, конфликтологик компетентлик, вертикал конфликт, горизонтал конфликт.

Аннотация. В статье приводится сущность и содержание конфликтов, научно-теоретический анализ, возникающих в образовательной среде между ее субъектами. Также рассматривается структура конфликтологической компетентности, компонентами которой являются гностический, регулятивный, проектировочный, рефлексивный, нормативный. Далее представлено описание общепринятых элементов конфликтологической компетентности, такие как педагогические конфликтные черты, мнения, формы выражения и педагогические взгляды.

Ключевые слова: конфликт, субъекты образовательной системы, компетентность, профессиональная компетентность, конфликтологическая компетентность, вертикальный конфликт, горизонтальный конфликт.

Annotation. The article provides a theoretical analysis of the nature and content of conflicts, arising in the educational environment between its subjects. In the structure of conflictological competence, it is advisable to present, along with the generally accepted (gnostic, regulatory, design, reflexive, normative), pedagogical conflict features, opinions, forms of expression, pedagogical views.

Key words: conflict, subjects of the educational system, competence, professional competence, conflictological competence, vertical conflict, horizontal conflict.

Introduction. In modern conditions of development of the higher education system, the requirements for the training of teachers are increasing. The conflict within the framework of the modern conflictological paradigm is considered as an objective phenomenon of social interaction, since it is a form of extreme aggravation of natural contradictions characteristic of society. Educational institutions are no



exception. Conflicts are perceived by the main subjects of pedagogical interaction (teachers, administration representatives, students, parents) as an inevitable phenomenon of higher education life, which not only must be considered, but also actively influenced by it in order to prevent negative consequences and realize constructive opportunities. However, the nature of the mutual claims of teachers and administrators, teachers and students, who constitute the main part of the socio-psychological tension in higher education society, suggests that teachers of higher education institutions do not possess sufficiently effective practical methods of conflict management.

Literature review. Following the opinion of V.I. Kurbatova [5, p. 68] and R.I. Mokshantseva [6, p. 27], conflict in a general sense is a collision of divergent opinions, interests, and subject positions with respect to a particular problem as a result of the appearance of border contradictions. According to A.Y. Antsupova and A.I. Shipilova [1, p. 81], the conflict, representing an acute way of resolving contradictions between the subjects of the social environment. And it is accompanied by negative emotions, has a bipolar, active character.

In terms of pedagogical activity, conflict represents a way of interaction of participants in educational relations, which is characterized by a divergence of interests and is expressed in the aggravation of contradictions, manifesting itself in an emotional form.

In the scientific literature (R.L. Krichevsky, A.A. Urbanovich) there are various groups of causes that can lead to conflicts in the educational environment: the reasons that are within the functional field of the organization (conflicts arising along the vertical “leader - teacher”, “teacher – student”, and horizontally “teacher - teacher”, “teacher – parents”) when the actions of one of the subjects opinion of another, do not meet the requirements of intra-organizational culture; reasons caused by psychological characteristics of interpersonal communications (mutual sympathies



and antipathies, unfavorable psychological atmosphere in the team and family, possible communication barriers, violation of the “subjective area” of the personality, etc.); reasons based on the personality traits of the personality (increased level of anxiety, low level of emotional stability and sociability, etc.).

In general, conflicts that arise in the pedagogical environment are determined by the personal characteristics of the participants in the educational process, their subjective position in relation to this or that problem, which is significant for them, affects the personal space of the subject. The vector of conflict may come from any of the participants of educational relations, so the teacher must have the appropriate competence; on the one hand, to prevent a conflict from arising, and on the other, to be ready to implement productive strategies for getting out of a conflict situation in the event of the latter.

Research methodology. In actualizing the need for a teacher to possess competence in preventing (resolving) conflicts, we note that in a general sense, following the position of E.F. Zeer [3, p. 37], competence is a quality of personality, characterized by the presence of sustainable knowledge in a certain area, which allows to determine the compliance of a person with the requirements. The concept of “competence” receives differentiation into different types depending on the space where it should be implemented. In particular, in pedagogical activity as a special type of professional work, the concept of professional (professional and pedagogical) competence, which has an applied focus, is actualized, imposing special requirements on specialists in the educational sphere.

In the interpretation of D.A. Ivanova [4, p. 43] professional competence is presented as the ability of a specialist to use knowledge in solving practical problems in accordance with his functional duties.

B.I. Hassan interprets the concept of conflictological competence from the standpoint of the ability of an individual in conflict situations to carry out activities



aimed at reducing the destructive consequences of a conflict situation with a view to translating it into a constructive channel [9, p. 97]. According to A.A. Kuzina, a teacher's conflictological competence includes a complex of knowledge and skills that, acting systemically, allow us to build the correct communication trajectory in conflict situations [8, p. 14].

By conflictological competencies, we understand the knowledge, ability and willingness to anticipate conflict situations, take prompt and reasoned actions for fruitful participation in conflict situations, recognize the causes of incidents, reduce their negative impact, carry out preventive and consultative conflict events in the educational environment. The pedagogue psychologist must master the technology of conflict resolution, which depends on the formation of conflictological competence, which includes mastering conflictological competences [2].

Conflictological readiness of the future specialist of psychological and pedagogical direction contains indications of understanding of the functional conflictological problem, algorithm of strategies in possible conflict situations, the establishment of original working methods in practical activities, the ability to assess their own strength in accordance with future professional tasks.

Analysis and results. An analysis of the sources of scientific information on the problem of conflict led to the conclusion that the ability to manage conflict situations is one of the most important types of professional competence of a person. To denote this ability, researchers in the psychological literature use similar concepts: "Conflict competence" (L.A. Petrovskaya, B.I. Hasan), "Conflictological competence" (N.I. Leonov, V.G. Zazykin, L.N. Tsoi). In general, the authors call the flexible individual management style, a special cognitive style, creative thinking, openness, conflict tolerance, mastering emotions, clarifying one's wishes and possibilities, a set of cooperation, reflexive culture, culture of self-regulation, communication skills, sensitivity. Thus, currently in the psychological literature there is no generally



accepted approach to the consideration of the structural components of conflict competence, and there are no uniform criteria for the selection of its components. A comparative analysis of various approaches allowed us to conclude that it is necessary to clearly integrate individual personality traits into the components that make up the structure of conflict competence. It should be noted that the concept of “conflict competence” should not be identified with the concept of “conflictological competence”.

Conflictological competence is a complex integrated education, a type of communicative competence and has its essential qualitative features: the complexity of the structural organization having an integral character; connectedness with the structure of the communication process and its effectiveness; dynamic structural components; the possibility of their improvement.

The teacher has a special place in the problem of conflict resolution. This should take into account that he, as a subject managing a process, develops in the process of his activity, gaining experience in managing conflict situations and their resolution.

Structural-dynamic model of conflictological competence proposed by N.I. Leonov. The structural components of this model are the socio-psychological, operational and behavioral characteristics of the personality of the teacher. Dynamic components are the characteristics defined both by the specific nature of the professional activity and by the situation of direct interaction between the teacher and other subjects of the educational space (professionally important qualities). Conflictological competence is a systemic, multicomponent education of professionally important, socio-psychological, operative and behavioral characteristics of a teacher, contributing to the constructive resolution of conflicts between subjects of the educational space.

A.A. Derkach [7, p. 135] defines conflictological competence as a cognitive-regulatory substructure of the specialist's professionalism and characterizes it from



the standpoint of personal readiness for forecasting, anticipating conflicts and resolving them on a fair basis.

At the same time, the author focuses on the obligatory presence of a specialist with sustainable motivation, emotional stability and professionally significant qualities. In our opinion, the position of the author associated with the selection, along with the knowledge-operational aspect of the conflictological competence of the psychological aspects, is quite justified. It is obvious that it is the direction and efficiency of the functioning of mental processes that is the basis for the productive interaction of the subjects of the educational community and determines the stability of their emotional position.

Conclusion. All things considered we can say about structure conflictological competence and it including the following components:

- gnostic, represented by a system of theoretical knowledge in the field of the causes of conflicts, the characteristics of its development, the specifics of the behavior and activities of conflicting subjects, taking into account the assessment of their characterological properties;
- regulatory (constructive), which includes the ability to influence the actions of the conflicting parties, resolve conflicts in a constructive manner, owning for this the appropriate strategies and techniques;
- reflexive, ensuring the organization of activities taking into account the monitoring of their own behavior, the manifestation of emotional reactions in a given situation of communication;
- normative, including knowledge of corporate standards of conduct in activities and following their requirements.

In conclusion, we note that the substantive and structural rationale for the phenomenon of “conflictological competence of a teacher” presented in this article



may be the theoretical basis for applied solutions for the development of conflictological competence of a teacher in the system of pedagogical education.

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DEVELOPING THE CREATIVE THINKING OF STUDENTS BY MEANS OF INTERACTIVE METHOD TECHNOLOGIES

Isroilova Mahsuda Nig'matullayevna
Tashkent State Dentistry institute,
Docent of Department of Anatomy
Email: mahsuda_i@mail.ru

Аннотация. Мақолада интерфаол метод технологияларнинг ўрни, таълим жараёнида талабаларнинг ижодий фикрлашини ривожлантиришдаги роли масалалари ёритилган. Унда бу жараённи амалга оширишда педагогнинг



педагогик-психологик вазифалари келтирилган. Ижодий фикрлашни ривожлантириб боришга хизмат қилувчи таълим технологиялари келтирилган.

Калит сўзлар: интерфаол технологиялар, таълим жараёни, билим, кўникма, малака, шакллантириш, мустақил ўрганиш, ижодий фаолият.

Аннотация. В статье рассматриваются роль интерактивной метод технологии, роль студентов в развитии творческого мышления в образовательном процессе. В этом процессе представлены педагогические и психологические задачи учителя. Образовательные технологии используются для продвижения творческого мышления.

Ключевые слова: интерактивные технологии, учебный процесс, знание, навыки, опыт, формировать, самообразование, творческая деятельность.

Annotation. The article discusses the role of the interactive method technology, the role of students in developing of creative thinking in the learning process. This process presents the pedagogical and psychological tasks of the teacher. Educational technologies are used to promote creative thinking.

Key words: interactive technologies, educational process, knowledge, skills, experience, shape, self-study, creative action.

Introduction. At the moment, attention to using of interactive technologies in the educational process is increasing. Modern technologies teach students to find, study, analyze and draw conclusions.

Helping students in independent, creative activity means providing them with conditions for their identification and practical application, as well as pedagogical support for their creative activity.

Psychological and pedagogical bases of the future teacher's personality development based on social emotions and adaptation, elimination of social difficulties, priority of the social environment as a characteristic of the educational



process, attitude to society, theoretical approaches to the development of the soul and social and pedagogical ideas as the basis for the formation of personality.

Anyone gains a certain experience as a result of the development of professional knowledge. Therefore, a person must create, enrich and complement their professionalism with professionalism. This experience enriches the student in higher educational institutions throughout his life. The teacher should always demonstrate their creative skills. Only then will he demonstrate his creativity during his professional career.

Literature review. Today, a student-centered approach to learning is one of the key tools for the development of students' creativity: "self-management", "self-development", and "self-improvement". "Self-organization" can be used as a key factor in applying the concept of self-study. The essence of all this is that the subject himself is the initiator and organizer of the process of learning, learning and development, that is, the student does not become the subject of learning.

In this process, we want to emphasize that, in addition to the opinion of the educational psychologist, the means of supporting the knowledge of students and their creative aspirations should be aimed at the following goals:

a) general pedagogical support for all trainees (attentive attitude to students, participation in curriculum planning, creating a mutual learning environment, learning games, colorful creativity, their achievements in a positive "stepladder", using communication);

b) individual - personal support (identification of the student's personal problems, development, education, tactical identification, monitoring the development process of each student, pedagogical support and support for the individual needs of the student, and others).³⁰

³⁰ Azizkhodzhaeva N.N. Pedagogical technologies in the preparation of the teacher. T. 2000. – P.-80



Analysis of various approaches has shown that the future teacher should be approached from the point of view of the theory of attitude in order to carefully study the professional orientation of the professional activity. Because relationships combine the personality of a person. Thus, it is possible to determine the professional orientation of a person.

Analyzing the factors that make up the future teacher's profession, we focused on how students understand the importance of professional activity. In this regard, we have identified the following:

- Interest in the subject;
- Desire to master a certain subject;
- The advantages of self-motivation for self-discipline;
- Understand their pedagogical competence;
- Strong desire for higher education;
- Having a vision of the teaching profession for society;
- The presence of pedagogical creativity;
- The strength of financial need.

If students who choose the profession of a teacher tend to take these actions in terms of their interest in students, 60% of potential teachers will be able to work with their professional skills and work with students. It was clear that they chose their needs.

Our study suggests that teachers should perform the following pedagogical and psychological tasks of a specific nature:

- assisting students in understanding the values, goals, prospects, uniqueness of the realization of the results of their creative activity and cooperation with them on this path;
- analyze, analyze, critically and constructively the creativity of students in relation to creative, creative goals;



- the formation and regular development of theoretical analytical skills of students;
- to organize the emotional and constructive attitudes of students to their creative activities;
- creation of favorable pedagogical conditions for the involvement of students in joint creative activities;
- providing students with creative and self-expression skills;
- Cooperation and support to eliminate barriers that negatively affect the independent development of students;
- Preparing students to translate their personal problems into creative thinking.

The results of the pedagogical support of the creative work of students are reflected in the enhancement of their features and creative qualities.

Creative thinking in turn

- ❖ Independent and informed learning;
- ❖ Constant promotion;
- ❖ Address to rationally solve various disputed and problematic situations;
- ❖ Learning non-traditional and innovative thinking

Creative activity is a way of thinking and thinking that develops through abilities, abilities and creativity, innovation, creativity, creative activity.

The result of our research is that it is desirable to analyze the creative tasks, grouping them into three groups. They are:

- creative independent work
- creative exercises
- learning problems

1.Independent creative work differs from two other types of creative tasks: the ability to quickly organize and continue teaching and learning activities. Creative self-employment is the means by which education can be provided:



- continue to read, study and continue the motives created in the lesson;
- leads to learning, knowledge, expansion of students' skills;
- prepare students for independent continuation of education on educational material;
- Facilitates learning for students.

2.Creative exercise. Rest and study always force to study to enjoy studying. During the exercise, creative exercises are used to eliminate the boredom of students.

Creative exercise is different from two types of exercise: expanding the amount of learned knowledge. Thus, students can enrich their field of thinking with wider knowledge, facts, and references when returning to previously studied material.

Creative exercises are designed as catchy and contrived, as opposed to ordinary exercises. At the same time, to use additional information, teaching methods, as well as the reuse of knowledge gained, teaching methods studied in the context of the subject. A problem exercise is the use of learning materials that require the student to know unknown information. This requires more active thinking.

3.Learning problems. Are a set of learning tasks, which can be presented as a system of creative tasks.

When preparing students for creative activities, first of all, they should be responsible for their activities.³¹

In developing of students' creative thinking, problem education, unlike other forms of education, creates a high level of mental activity, self-development, as well as the formation of students' knowledge and skills. The challenge is to transfer the student to an independent creative search. For example, writing an essay, references, inventions, removal from office, etc. This is a problem task, which, in turn, creates an interactive learning environment.

³¹ G.N. Ibragimova. Developing students' creative abilities on the basis of interactive teaching methods and technologies. "Monograph" T., 2016. – p.-77



Interactive learning is an active organizer of pedagogical activity, and the reader is the subject of this activity. The goals and objectives of the training, its content and expected results are set and adjusted according to the individual capabilities of the student. Interactive teaching methods are an important tool for interactive learning. Interactive teaching methods not only help students develop information, creativity, independence, but also contribute to the full realization of their learning goals.

Research methodology. They require the student to be more active in thinking, analyzing facts, and studying the origin of subjects. The basic concept of this technology is reflected in problem tasks of varying complexity, thanks to their solution, the student acquires new knowledge and methods of action, with the result that creative abilities appear: productive thinking, imagination, motivation, intellectual emotions. The problem is that the question is different from the simple question, so the student must not only apply his knowledge, but also express his opinion. Problem learning technology attracts attention with its simplicity: it can be used at all stages of learning, for example, in all curricula. It is a good idea for teachers to master the problematic technology of learning that can be used in the classroom. Zinkhine, “Fifth Plus”, “Charspalak”, BBB (“I know”, “I want to know”, “I learned”), “Boomerang”, “Communication training”, “Blis-o” “Discussion”, “Work in groups”, “Presentation”, “Little Speech”, “Role Play”, “Intelligence Attack”, “Impulses”, “Life Path”, “Situation”, “Intelligence” and some other interactive methods, including smaller technologies are of great importance when developing a curriculum. They know well the theoretical knowledge of the student; efficient use of time; creative thinking;



activate the lesson; be able to listen to other people's ideas; which leads to conclusions from the views expressed.³²

Individual learning is of particular importance in the development of students' creative thinking. The assignments given to the student will be directed towards the development, demonstration, understanding and appreciation of his or her personality. Accordingly, the tasks are focused on self-assessment, analysis of their mistakes, assessment of the role of the curriculum, identification of skills and talents. The student is given the opportunity to choose the types of educational or training activities (integration or division of the subject). He must develop his skills and abilities in a group. Accordingly, it is advisable to use the project method, such as brainstorming, group work, group work and project, to create conditions for cooperation between the students.

The use of interactive methods and games associated with individual, problem-oriented and developing educational technologies in the educational process, for the purpose of a lesson, leads to the following results: the increased interest of students in learning; the curriculum is enhanced, avoiding the dullness and fatigue of students in the classroom; cooperation of teachers and students will be ensured; growing speech and logical thinking of students; Students will have creative work skills and active relationships.³³ The project method is creative and personally oriented. All members of the Study Group are responsible for all tasks performed within the project. Teamwork is based on active dialogue between students. The subject of the project should cover one or several subjects, and the choice of the subject should be based on the age, level of knowledge, opportunities and interests of the students. As a result of the project, a product of practical importance will be created. The project will be

³² Ishmukhamedov R., Abdukodirov A., Pardaev A. Innovative technologies in education (manuals for teachers in educational institutions). - T.: "Iste'dod", 2008. – p.-180

³³ Yuldashev J., Yuldosheva F.F., Yuldosheva G.G. Ensuring the quality of interactive learning - T.: "Fan", 2008. – p.-81



implemented in several stages: selection of the project theme; the creation of a working group; Drawing up a project plan; timing; distribution and execution of tasks; discussion of the work done in the working group, identification, summarizing and summarizing; project reporting; score of it. Work on the project requires independent learning, creativity and joint training. Here are the tasks of the teacher: to prepare students for work on project technology; theme selection; including counseling and referral to students when planning and working at work.

One of the most important requirements for the organization of the project of educational technologies is to achieve high results in a short time and without undue effort. During a short period of time, students will be able to transfer specific theoretical knowledge to students, acquire skills and abilities in certain types of activities, as well as monitor students' activities, evaluate their knowledge, skills and qualifications. The incentive for students to engage in practical work requires teachers to have high pedagogical skills and A new approach to the learning process.

Analysis and results. In our opinion, to create a pedagogical system that allows students to develop their creative thinking skills, you should pay attention to the following:

- Creating pedagogical and psychological conditions for creative thinking in students;

- Identification of students' creative thinking;

- Identification of specific pedagogical technological aspects of creative thinking skills of students. Based on the above considerations, we have developed a model of a comprehensively developed personality. Undoubtedly, the ability of a well-educated trainee to show our republic at the level of developed countries plays an important role in the formation of independent thinking, a free, creative person.

At the same time, it is necessary to pay special attention to the creative environment, a certain spiritual and psychological situation, organizational,



methodological and psychological measures among future teachers. It is impossible to develop creative abilities of students, to prepare them for creative pedagogical activity. In this process, it is desirable to provide scientific information about potential pedagogical innovations, their characteristic features, usage parameters, and innovative learning opportunities available to future teachers. A successful creative environment allows students to learn how to actively absorb and apply innovation in their own business. This will help them to abandon template templates in their future pedagogical work.

Based on the foregoing, it can be concluded that the specific pedagogical direction of future teachers is the uniqueness of their attitude to their profession, for example, to the students themselves and the creators themselves as a subject of the pedagogical process.

An important pedagogical requirement for the creativity of future teachers is to direct it to independent learning and creative thinking. The above problems will form the basis for changing target areas. As a result, a high level of pedagogical education is being introduced in practice.

Strengthening national independence and decisive determination in Uzbekistan is an incomplete historical and socio-political situation. Removing and eliminating such things as consciousness, worldview, ignorance, dependence on the consciousness and worldview of citizens are even more complex social problems. To this end, train young, free, creative and independent-minded young people in new consciousness and attitudes capable of meeting new requirements in order to gradually and consistently carry out large and large-scale events in all spheres of society. Cultivation is one of our most important tasks.

Conclusion. The aim of higher pedagogical education is to increase the ability of higher educational institutions to meet the many cultural and educational needs of individuals and societies, to improve the system of social and professional



development of specialists for the educational system, and the exact needs of the economy.

The educational process in the system of higher pedagogical education allows students to acquire knowledge about man and society, history and culture, acquire fundamental knowledge, navigate in scientific activities, develop the basics of professional pedagogical science, and develop pedagogical creativity. At the same time, future teachers have the right to continue educational and creative pedagogical activities.

These tasks, in turn, require deep reforms not only in the economic and political spheres, but also in the spiritual and educational spheres, in particular in the educational system and this is one of the most pressing issues for graduates to improve their professional skills.

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FACTORS OF THE HARMONY OF SPIRITUAL AND MATERIAL LIFE IN THE PERFECTION OF PERSONALITY

Mirsagatova Nargiza Sayfullayevna

**Tashkent State pedagogical university named after Nizami,
Senior teacher of the Department of "General Pedagogy"**

E-mail: mirsagatov.92@mail.ru

Annotatsiya. Maqola har tomonlama rivojlangan shaxsni tarbiyalashning eng dolzarb masalalariga bag'ishlangan. Maqolada axloqiy va axloqiy masalalar, shaxsning ta'lim jarayonidagi o'rni, bu vazifani amalga oshirishning aspektlari, shuningdek, uni qanday hal qilish bo'yicha qarorlar muhokama qilinadi.

Kalit so'zlar : axloq, ma'naviyat, an'ana, tarbiya, saxiylik, vafodorlik, hurmat, jiddiylik, muhabbat, vijdoniylik, insoniylik, sahovatlilik.

Аннотация. Статья посвящена теме, являющейся одной из самых актуальных вопросов сегодняшнего дня воспитания всесторонне развитой личности. В статье рассмотрены вопросы морали и нравственности, их роли в



процессе воспитания личности, аспекты реализации этой задачи, а также суждения по поводу способов её решения.

Ключевые слова: мораль, нравственность, обычаи, воспитание, доброта, преданность, искренность, уважение, скромность, любовь, верность, честность, человечность, отвага, щедрость.

Annotation. The article attempts to identify the factors that directly affect the achievement of individual's spiritual and material life. According to the results of consistent scientific research, the author argued that the important role of social-pedagogical, ethical-moral, spiritual, ideological, material and practical factors play a crucial role in terms of achieving the harmonious spiritual and material life of a person.

Key concepts: factors, socio-pedagogical factors, ethical-moral factors, psychological factors, ideological factors, material factors, practical factors.

Introduction. A mature, spiritually-minded, civilized person adopts the ideas of the independence ideology and carries out social activities by practicing them. The national consciousness, language and culture are key to the revival and development of the national culture. Effective use of them promotes the national feeling, pride and kudos in perfection of a person, as well as the formation of a sense of national self-consciousness.

In the Pedagogical and psychiatric instructions it is assumed that the perfection of a person should be directly affected by various factors. A positive or negative factor determines whether or not a person's spiritual growth is going up or down. Whether or not the person achieves the material and spiritual harmony is also likely to have such a positive or negative impact on the factors. Therefore, in the process of scientific research, special attention will be paid to the identification of factors directly influencing on the achievement of the material and spiritual well-being of a person.



It is worthwhile to grasp all aspects of the linguistic aspect, taking into account the fact that the concept of factor is central to the base.

Literature review. The conceptual terminology of the Uzbek language, which is the leading source of terminologic resources in Uzbekistan, clarifies this concept as: the occurrence of work, event, and so on [8, 122]. If the concept is negligible because of the Arabic language, it is an impressive force because of the expression of the world, then the above mentioned definition is not logically correct. Indeed, The reason can not be something “caused”. That is, a certain cause can be the basis for a reason or event that originates a certain event or phenomenon, but it is not permissible to describe it as something.

On the one hand, The traditionally relevant factors are explored by their particular attributes and effects, and on the other hand, the impact of the event allows them to examine their behavior and effectiveness.

In addition, The history of formation and development of scientific knowledge, the process of enrichment of the sciences beses the factors and their social significance, role and place. It is also desirable to emphasize the identification of the factors that enable the individual to achieve a harmonious combination of material and spiritual life.

Research Methodology. The source indicate that content and behavior of any activity are characterized by the presence and the effect of certain factors. Specifically, pedagogical factors are divided into the following types: 1) pure pedagogical (the condition of the educational system, the provision of educational and scientific literature, the content of spiritual-enlightenment work, the level of organization of training, personal qualities and skills of pedagogues, their professional qualification, pedagogical work with parents, modeling of parents for children, pedagogical support to families, pedagogical counseling, work with minors who has”pedagogical deviation”, teaching pedagogical support to guardians and



replacing guardians, working with minors who have deviant behavior, and so on); 2) pedagogical significance (social asset, environment, lifestyle of the subject, educational activity, labor and economic, material, household, management, information, geographical, social, political, ethical, sport and other) Factors.

The well-known psychologist K.G.Yung also draws attention to the fact that the practical concepts, which are important in their work, are reflected in the influence of certain factors and the driving force. That is, the level of knowledge in curriculum that ensures the implementation of specific actions, as well as the effectiveness and impact of objective and subjective factors. From the psychological point of view, K.G. Yung represents the attributes of the person as the key elements of the human mentality, the attributes of a person's attitudes, the effects of the social history, the essence of the activity was based on ethical principles as one of the criteria for determining the social status of the subject. Because ethical principles are a standard for regulating social relations, ensuring a systematic, consistent, and coherent life of society. According to which in different spheres and places the activity of person, which is directed to the content and the level of efficiency, is evaluated from the point of view of their compliance with social and ethical criteria. Hence, spirituality is primarily an example of morality. In general, the priority of ethical principles in the material and spiritual life of the person is characterized by the fact that the principles of direct ethical principles is directly related to the following: 1) considers material benefits as nature (God's) grace given to it; 2) he accepts material wealth as a means of prosperity; he does not feel lonely; he does not try to accumulate wealth with greed; 3) creates tangible wealth through honest work, does not want to be wealthy, by the labor of others; 4) He wants to share the wealth he possesses with the whole of the world, and the golden rule of nature is as follows: it is immorality (malaise, disability) that does not help the needy person



Meaningfulness in achieving the harmony spiritual and material life is to be respectful of the individual's personality, to encourage his subconscious, inner ability, knowledge and aspirations, to be careful about the material resources he has acquired, to appreciate, and to preserve and to abandon, to focus on necessities and needs and nonextravagance (housecleaning, enjoyment, gambling, drug).

Spiritual factors are also important in achieving the spiritual and material life of person. In fact, having material and moral wealth necessitates training of individual personally with certain psychological qualities. In particular, he has the character of psychological attributes such as bold, courageous, bold, determined, adamant, energetic, self-esteem, self-control, confidence in their strengths and capabilities that will help him achieve the suitability of spiritual and material life. The results of research conducted by D. Karnegi[1], R. Kiosaki, Sh. Letcher, O. Mandino[3], H. Hill[5], B. Sheffer[6] and others have confirmed that most people with high moral and ethical attributes live in poverty. In modern conditions, ie perfection of one's personality, as a social necessity, it is important not only spiritual-moral, but also achieve maturity. Hence, material maturity promotes to expand the capacity of the individual to create the necessary conditions for self-improvement and self-development. In addition, financial maturity also relieves the individual from the need for support and support. The underlying cause of the crisis is psychological depression, low self-esteem, anxiety, and less self-sacrificing.

Contemporary psychology has proven the idea of materialism. In fact, the way in which a person lives is related to his ideas or thoughts that are in his or her mind. Therefore, it is important for young people to succeed in the early stages of social training and to adapt them to a wise and grateful attitude to the whole of their maturity, as well as provide them with material and spiritual wealth.

Analysis and results. Awareness of the mind with positive ideas in achieving the harmonious of the spiritual and material life of the individual; neglecting negative



thoughts; rich imagination and fantasy, creative thinking ability; ideologically and indifferent to the person's convincing, incentive and inspirational ideas, to get acquainted with positive content and power, a desire to learn, to read the wisdom, the preaching, the ability to evaluate the pallets of speech, the use of words with negative content and power in their speeches, expressions of gratitude to those around, reflecting ideological factors factor.

The tangible factors make it possible for a person to realize the intimate relationship between spirituality and matter and that to have the opportunity to enrich his spiritual well-being on the basis of prosperity, in general, acknowledges that there are two important human lives. Long term researchs affirm the link between the substance and the spirituality of one's relationship. Understanding of the spirituality of one's personality, the fact that he has a positive acceptance of the social and natural esistance, regardless of the content of the situation, the truthfulness of the reality (luck and failure, success and failures are a natural process, both of these contradictions are important for acquiring a person's life), and Even finding “ the light in the darkness is primarily protect a person from spiritual and moral crises- despair, anxiety, indignation, hatred, envy, mobility, and vice versa, which allows them to lower their material wealth, and, on the contrary, to make material gains.

Conclusion. Striving for material wealth, consistent, productive work on this path, achieving a balance between income and expense, accumulating material resources, understanding the situation on the financial market, how to evaluate a reasonable estimate, ensuring the flow of assets, financial independence, financial well-being is a key factor in the achievement of the material and spiritual coecistance by the individual as a particular aspects of material factors.

In the life of a person, his activity plays special role. In the process of transforming a person into a social entity, the kind of activities such as play, reading and labor are of particular relevance. The ability to work in different areas of life,



achievements depend on the skills acquired during play, reading and labor. The achievement of a material and spiritual life as well as in, is based on the psychological characteristics of the younger generation in terms of the ability to play, to study, and work effectively, is the best way. In this process, thanks to the positive influence of play, education and labor, a person develops practical skills that will enable him to succeed in creating material wealth and enriching his spirituality, and in later years they will be further developed.

This, the person achieves the effects of spiritual and material life through certain factors. Socio-pedagogical, ethical, moral, spiritual, ideological, material and practical factors play an important role in the achieving harmonious of material and spiritual life by individual. Appropriate and targeted use of the influence of these factors at different age stages opens the perspective of achieving a harmonious combination of a person's spiritual and material life.

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THE PROBLEM OF INTERPERSONAL RELATIONS IN THE FAMILY ACCORDING TO EASTERN ANCESTORS

Faroxat Odiljonovna Mirzayeva
Tashkent State Pedagogical University named
after Nizami, Senior Lecturer of the
Department of “General Pedagogy”
Email;[**mirzayevafarog'at@mail.ru**](mailto:mirzayevafarog'at@mail.ru)

Аннотация: Ушбу мақолада Ўзбек oilаларидаги бола тарбияси масаласи, бола тарбиясида Шарқ мутафаккирлари Муҳаммад ибн Мусо ал-Хоразмий, Абу Наср Форобий, Абу Райхон Беруний, Абу Али ибн Сино, Муҳаммад Қошғарий, Юсуф Хос Хожиб, Кайковус, Умар Хайём, Аҳмад Югнакий, Ҳусайн Воиз Кошифий каби мутафаккирларнинг қатор асарларидаги болаларни oilада тарбиялаш масалаларига доир маълумотлар келтирилган.

Калит сўзлар: ақл, билим, маданият, муносабат, мутафаккир, мустақил, oilа, тарбия, таълим, фазилат, ҳунар.

Аннотация: В данной статье рассматривается вопрос овоспитании детей в узбекских семьях, и даётся информация о воспитании детей в произведениях востоковедов, таких как Мухаммед ибн Муса аль-Хорезми, Абу Наср Фараби,



Абу Райхан Беруни, Абу Али ибн Сино, Мухаммед Кошгари, Юсуф Хос Ходжиб, Кайкивус, Умар Хайям, Ахмад Югнаки, Хуссейн Воиз Кошифи.

Ключевые слова: разум, знание, культура, отношение, мыслитель, независимый, семья, воспитание, учёба, достоинство, искусство.

Annotation: This article addresses the issue of raising children in Uzbek families, raising children of orientalists, such as Mohammed ibn Musa al-Khorezmi, Abu Nasr Farabi, Abu Rayhan Beruni, Abu Ali ibn Sino, Mohammed Koshgariy, Yusuf Khos Hojib, Kaykivus, Umar Haim, Ahmad Yunakiy, Hussein Voyz Koshify with information about the education of their children.

Key words: mind, knowledge , culture, relation , thinker, independent, family, education, teaching, quality of deserving praise, craft.

Introduction. Family checks the traditions of people, society and life. It carefully keeps all the best with it and passes them on to future generations. The family provides primary social orientation to their children, instilling universal values. The family provides primary social orientation to their children, instilling universal values. By joining a large community of children, the family has a strong influence on the development of society, the economy, culture and education. That is why the family has long been the most light and reliable focus in the ancient East. In Uzbek families, parents and ancestors play an important role in shaping the special lifestyle of families, making them more economical and productive, teaching them to help their children grow healthy and morally mature. Uzbek families are characterized by their strength, care, childishness, respect for kinship, respect and other qualities. Thanks to the state independence of Uzbekistan, the national traditions and customs of our people began to recover, and these traditions play a crucial role in strengthening the family.

Literature review. The educational heritage of Eastern thinkers plays an important role. They also paid great attention to the family and the memory of the



child in the family.

The great thinkers tried to solve this problem because the upbringing of generations shaped the future fate of humanity and positively assimilated them. In the ranks of the works of Mohammed ibn Musa al-Harezmi, Abu Nasr Farabi, Abu Rayhan Beruni, Abu Ali ibn Sino, Mohammed Koshgariy, Yusuf Khos Hojib, Kaikivus, Umar Khayyam, Ahmed Yunakiy, Hussain Voiz Kozifiy mentioned correct education of children in families.[4]

Research Methodology. According to Abu Nasr Farabi, all abilities and capabilities of a person have two aspects. The first is congenital inherited by natural qualities, and the second aspect arises in the circumstances, practice and experience. He also stresses the need to take into account the qualities associated with education.[1]

The problem of raising children in the family is also found in the views of Abu Bakr Mohammed ibn al-Abbas al-Khorezmi. He says that parents are divided into two types: the father who gave life and the other father who gives training. The first father because of the physical life, and the second - because of the spiritual life. However, it is important to engage in teaching with this in mind. His next words are very instructive: "I did not see a better teacher than time, and a better and more important learner than a human." If we analyze the meaning and value of these words, on the one hand, on the social impact of raising a child, on the other hand, we can understand that the human person can reach maturity through education Beruni advises parents to keep the child at the same pace.[3]

It is said that he is achieved by maintaining anger, fear and depression, insomnia, try to find a useful thing for them that they want, and keep them away from what they do not like.



Different attitudes of parents - this is a different behavior. The appearance of good behavior not only affects the psychology of the child, but also contributes to physiological growth. Bad behavior leads to malfunctions in the body. On the contrary, changes in the child's body lead to changes in the child's behavior. A child philosopher is a scientifically based expert in diagnosing body and soul as a result of the variability of children's behavior.[3]

Ibn Sino mentions that raising a child is very difficult and delicate and that you need to start from an early age and follow it consistently. He especially pays attention to the song others sing for their springs off "Alla" and says that "Alla" performs two important tasks. First, during a sleeping song, the child receives physical comfort; and the second - mother's love for her child rises and strengthens and mother's sincere desire breaks out of her heart. This song which has special qualities plunges into the heart of a child. Thus, the child is experiencing a situation that he himself is not aware of anything et. He gradually begins to understand the world. From this understanding begins to learn. This is the same teaching. Learning comes from sensation. Ibn Sino emphasizes this phenomenon, since "the sensitivity of a young boy is equal to an adult." [4]

A great thinker Yusuf Hos Hodjib wrote in his book "Qutadgu Bilig" these ones: "The child is so smart, clever and sensitive, that parents start to feel pride of him". He focuses on the responsibility of the father for raising a child. "Those whose children are spoiled will be bitterly sorry" If the father raises his child by the wrong method and is poorly brought up then this is the fault of the father. When a father has taught and is teaching various crafts, he can be glad that he has got a son and a daughter, and that he needs to teach them profession and knowledge so that they would become educated, well brought up and real human.[3]

Raising children in the family plays an important role in the heritage of the great thinker, the poet Alisher Navoi. In his series, he writes that questions of



teaching and interpretation are commonplace. According to it, the maturity of a society is connected with the future of its future, and the development of a child is a noble character facing its parents.

Alisher Navoi, says that a good parent plays an important role in raising children. For example, his thoughts about hot things deserve attention: “A good wife, says Navoi, is a state of peace and happiness, his peace and serenity in the house, if there is a beauty about her it is good for heart, if she is urbane it is good for soul. If she is a clever one there will be prosperity in her house. But if she is bad behaved and awful-mannered , and always seeks for badness so the husband will suffer.[2]

Divani emphasizes the role of parents in shaping their worldview, in which raising children should be equally important, both of which should be responsive. and provide food, clothing, materials and equipment that are the material basis for acquiring virtues, acquiring the skills of a beloved profession, reaching maturity and receiving a scientific profession. Even if it is a lot, it is hardly the main problem in education that she will be responsible for her mother. Because she is experiencing the difficulties of pregnancy and the birth of her birth. The mother will give the child a small amount of energy that will lead to the life of the child, last for a long time and bring a sacrifice to the child. Parents should be encouraged to adhere to moral standards at the first attempt, to be ashamed of their actions. Thus, Divani notes that parenting is the primary responsibility of parents.

Analysis and results. Based on the results obtained, it is advisable to summarize the following conclusions:

- the education of children and family issues are considered eternal values in the works of Orientalists;

- the fact that the personal example of parents is important for the upbringing of a child in a family by oriental scientists; the basis for the development of the child's personality in the family;



-the basis of the development of the child's personality in the family will be based on the fundamental principle of education and upbringing;

-duties of parents, responsibilities and responsibilities in family education are widely recognized by Oriental scientists.

From the abovementioned ideas, it seems that the family has received education in the family, and the parent plays a key role in this process.

Conclusion. Continuous upbringing in family upbringing is associated with emotional stability, sincere attitude, high prevalence among parents, maintaining unity between family and adult children, special care for raising a child, love and respect for the child and family planning, age and personality attitudes of the child, observation of the child, support for the desire for independence and initiative, the more family-oriented, the stronger the relationship, the more successful the education of children. Most of the child lives in the family. In family education, the educational process should not be tedious, dry and inaccessible. Therefore, family and family education are very important, as they take into account a relatively small part of the child's personality.

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ECONOMIC CULTURE AS AN OBJECT OF THE SYSTEM PEDAGOGICAL ANALYSIS

Quchqorova Nargiza Mamajonovna
Urganch State University
Senior Lecturer of the
department of primary education
Email: gochqorova_n@mail.ru

Аннотация Ушбу мақолада олий таълим муассаларида талабаларнинг иқтисодий маданиятини шакллантиришнинг шарт – шароитлари, иқтисодий таълим орқали иқтисодий маданиятни ривожлантириш ҳамда ривожланган мамлакатларнинг иқтисодий маданиятини ривожлантиришга доир педагогик таҳлиллари, иқтисодий фикрлаш, унинг структураси ва компонентлари очиб берилган

Калит сўзлар: инновация, компонент, компетенция, иқтисодий фикрлаш, иқтисодий таълим, иқтисодий танлов, иқтисодий саводхонлик, иқтисодий тизим.



Аннотация В данной статье описываются условия формирования экономической культуры студентов в высших учебных заведениях, развитие экономической культуры через экономическое образование, а также педагогический анализ, экономическое мышление, структура и компоненты экономической культуры развитых стран.

Ключевые слова: инновация, компонент, компитенция, экономическое мышление, экономическое образование, экономический выбор, экономическая грамотность, экономическая система.

Annotation: This article describes the conditions for the formation of students' economic culture in higher education institutions, the development of economic culture through economic education, as well as pedagogical analysis, economic thinking, structure and components of economic culture in developed countries.

Keywords: innovation, component, competency, economic thinking, economic education, economic choice, economic literacy, economic system.

Introduction. The state scientific, technical and educational policy pursued in the Republic of Uzbekistan is aimed at preserving and ensuring the development of scientific and technical potential, creating optimal educational conditions, creating innovative activities, and concentrating efforts in solving socio-economic problems in the context of a profound transformation of the economy. Successful solution of these urgent problems will ensure the effectiveness of creating and implementing an innovation development strategy in the interests of further improving the country's economy and increasing its competitiveness in the global market.

In reforming the educational system of our republic, alignment with curricula based on international experience that meet the requirements of international standards is the basis for improving the system of higher pedagogical education..



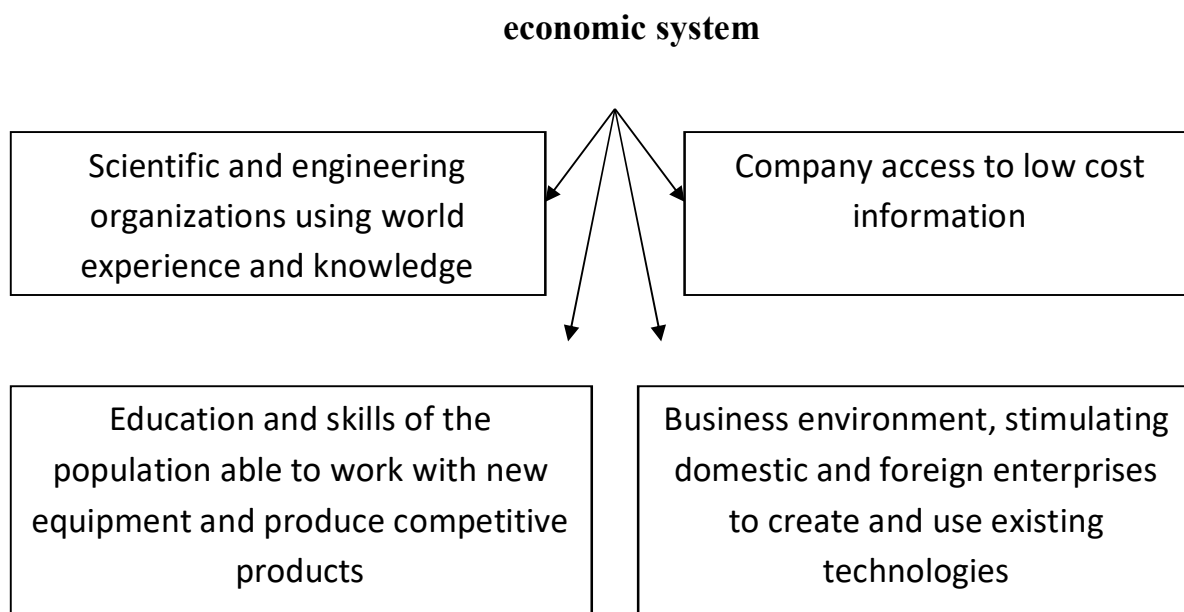
Under the conditions of Uzbekistan, a fundamental reform of the education system, taking into account the national mentality, traditions and obysaev, is a requirement of the time. In this regard, the Strategy for Action in the five areas of development of the Republic of Uzbekistan in 2017–2021 defines the main tasks as “ and innovation, the creation of effective mechanisms for the implementation of scientific and innovative achievements in practice ... ”, [1; 70c] improving the quality level of training, created necessary conditions for the training of highly qualified personnel based on international standards, the establishment of each higher educational institution close cooperation with leading scientific and educational centers of the world and the development of students' creative abilities, effective use of interactive methods in working with young people, improving higher education.

In the coming XXI century, a number of significant changes are needed in the system of continuous higher education, aimed at training modern specialists and the need to maintain the appropriate level of quality of vocational education of the future teacher. In the conditions of modernization of the education system of the Republic of Uzbekistan and the transition to a two-tier system, the status of a graduate of the university is changing substantially. Modern people, thanks to scientific and technological progress and globalization, receive a certain amount of information every day, which should and can contribute to raising the level of education, qualifications of specialists and their professional level. In turn, this raises the need for continuous education, the requirements for a general and material and economic culture, for professional competence, for the mobility of the preparation of students in various fields increase. At the same time, one of the main senses of education is the creation of conditions for the constant development and improvement of each individual throughout his life.



Material and research methods. The experience of developed countries shows that the formation of the economic system should effectively develop four basic components (Figure 1.1).

The main components of the formation



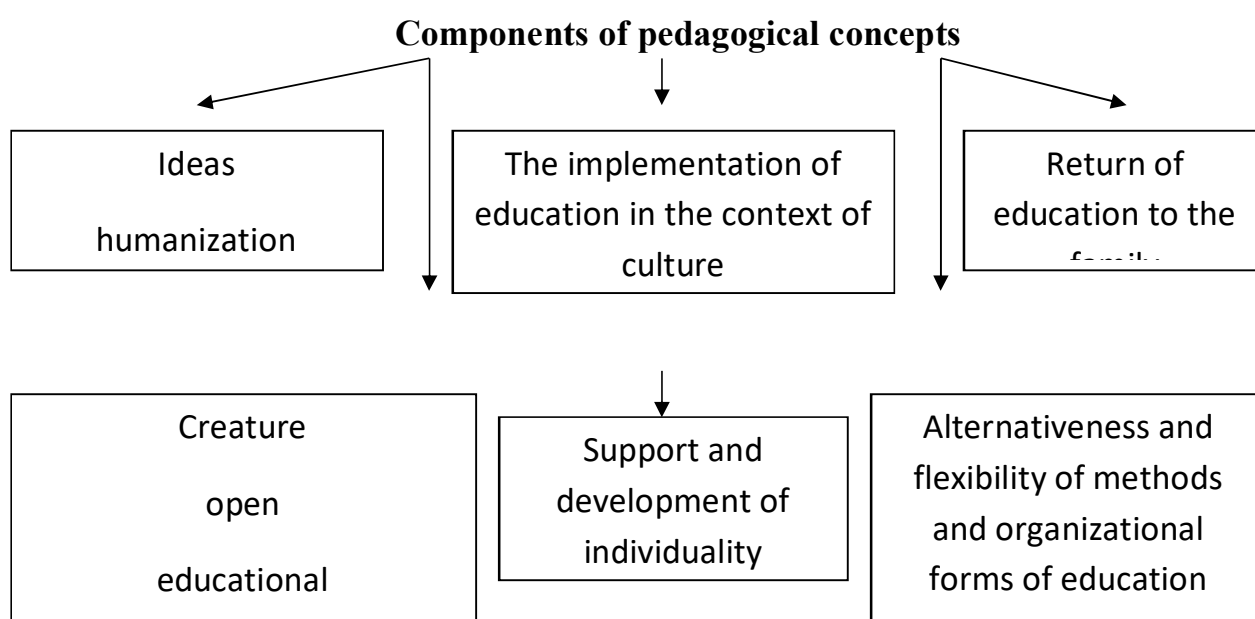
economic thinking of the emotional plan does not contribute to the formation of active behavior within society. At the same time, economic illiteracy gives rise to conflicts, which negatively affects the economic results. Knowledge obtained in the process of learning and the ability of rational thinking should enable a person to quickly adapt to the requirements dictated by economic and social transformations in society, competently implement their economic choices in various life and work situations.

Also, from an economic point of view, information and communication technologies have had a significant impact on changing the strategy of higher professional education and further development. They brought to the education and training of such innovative elements as excessive information resources, new network services and previously unknown communication opportunities. As this

process deepened, the educational system absorbed, as it were, the socio-technological capabilities of information and communication technologies. Thus, the network libraries and digitized resources of a general cultural nature that emerged unexpectedly began to be actively used by the faculty and students - from them the resources of the educational nature and purpose grew. For example, services for analyzing large arrays of information, on the presentation of knowledge in the form of tables and presentations, have become a natural companion of the educational process. And, finally, new communication opportunities have given rise to networked communities for a variety of interests.

Results and discussion. In the modern educational system of higher educational institutions, a creative search for new approaches, conceptual ways and meaningful forms in the work on developing the skills of the economic culture of students is needed.

Modern pedagogical concepts are distinguished by the desire to rely on universal human values and civilized forms of vital activity in all spheres. The following components are present to some extent in all concepts (Scheme 1.2).





In pedagogical science, problems of the development of a multifaceted personality culture are being developed, which emphasizes its theoretical and practical need for a real educational process. The urgency of this issue lies in the fact that humanistic education makes a decisive turn towards the student's personality - he becomes really the subject of his development in all aspects of culture: informational, entrepreneurial, physical, economic, corporate, managerial, and not the means by which teachers implement alienated from this individual abstract plans and programs. Such an education respects the personal dignity of each student, his individual life goals, requests and interests, creates favorable conditions for his self-determination in the development.

Economic education is the basis of economic education of the individual and the basis for the formation of economic culture.

Economic culture is a structural quality of a person, developing in the process of training and education, synthesizing in itself deep and solid knowledge of the fundamentals of the functioning of the economy and the individual's ability to use this knowledge in the process of life activity [3; 158p] All this determines the basic principles on which the system of economic education of students should be built:

- student-centered approach to the teaching of economic disciplines;
- their orientation to universal values in the economy;
- consideration of modern economy as a complex ecological system;
- consistency in subject teaching, the interaction of various types of didactic connections, between training topics, courses, subjects, cycles.

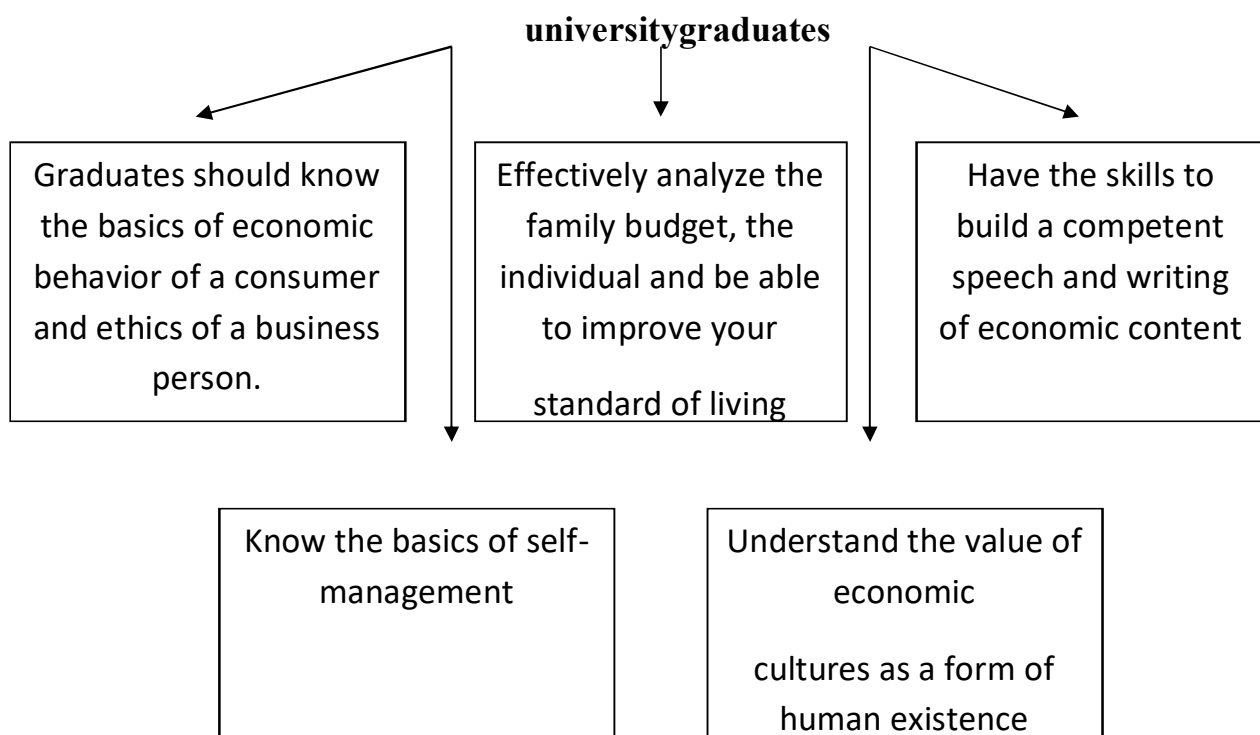
It is customary to single out the elements of economic culture:

- economic literacy;

- economic thinking;
- system of ideas about the laws and mechanisms of market economy functioning;
- ability to analyze economic information;
- character traits that provide literate "economic deeds."

As a result of a focused and comprehensive higher professional education, it should have a positive effect on the economic culture of the population, and university graduates should competently apply their knowledge and skills (Figure 1.3).

Application of economic knowledge and skills





Conclusions

Today it is obvious that no matter how competent a person is and in whatever field of activity they work, he must understand the importance of economic culture, since a person is from birth and his whole life is in a circle of social and economic relations. Therefore, any person should be economically cultural.

Today, there is an acute demand for economic knowledge, economics education in higher pedagogical education, since in recent years the subject “Economics” has been given priority attention in the curricula of higher educational institutions. This will certainly have a positive effect on the formation of the economic culture of society as a whole.

The main task of such networks is the intranetwork exchange of practical knowledge, accumulated by teachers during their pedagogical activity. This knowledge can be accessible to other educators only in a situation of real cooperation. Networking provides such benefits as reducing isolation, professional development, finding joint solutions for similar problems, sharing experiences, accelerating knowledge sharing.

One of the most promising characteristics of network professionals' cooperation is the mutual motivation of the participants, the synergetic effects that lead to the emergence of internal dynamics. At the same time, as experience shows, the task of public authorities is not even moderation, but the provision of infrastructure for networking

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**CONTINUOUS FORMATION OF MEDIA COMPETENCE OF TEACHERS
IN CONSTANT CHANGES IN INFORMATION AND EDUCATIONAL
ENVIRONMENT**

Khujaniyazova Guzal Yuldashevna
Urgench branch of Tashkent university
of information technologies named after
Muhammad Al -Khwarizmi senior
lecturer of “Social studies” department
Email: Guzalenska77@mail.ru

Sultonova Umida
“Foreign languages inter faculties”
department lecturer
Urgench State University
Email: umidaxan75@mail.ru

Bozorova Ozoda Xusainovna
“Philology and teaching languages
(English)”faculty, Student,
Uzbekistan state World
Languages University
Email: Ozuwka97@mail.ru

Annotation:It must be noted that education, including media education of teacher in the modern world ceases to be the stage at the beginning of independent life, and becomes a continuous process accompanying the person throughout life. This means that the formation of media competence teachers you need to consider like the current task of continuing education. Specific condition for the formation of media competence of the teacher is the dynamic information and educational environment, the constant occurrence of certain changes that requires the teacher to address new types of problems and therefore, inclusion in media competence new



knowledge and skills.

Keywords: media competence, teacher, information, education, environment, continuous media education, media literacy.

Аннотация: Следует отметить, что образование, в том числе медиаобразование учителя в современном мире, перестает быть этапом в начале самостоятельной жизни и становится непрерывным процессом, сопровождающим человека на протяжении всей жизни. Это означает, что формирование медиа-компетенции учителей нужно рассматривать как актуальную задачу непрерывного образования. Специфическим условием формирования медиакомпетентности учителя является динамическая информационно-образовательная среда, постоянное возникновение определенных изменений, требующих от учителя решения новых видов проблем и, следовательно, включения в медиакомпетентность новых знаний и навыков.

Ключевые слова: медиакомпетентность, педагог, информация, образование, среда, непрерывное медиаобразование, медиаграмотность.

Annotatsiya: Zamonaviy dunyoda o'qituvchi media-o'qitishni o'z ichiga olgan ta'lim, mustaqil hayotning boshlanishida bir bosqich bo'lishni to'xtatib, inson hayotida davom etadigan uzluksiz jarayonga aylanadi. Bu shuni anglatadiki, o'qituvchilarning media malakasini shakllantirish ta'limni davom ettirishning dolzarb vazifasidir. O'qituvchining media malakasini shakllantirishning o'ziga xos sharti dinamik axborot-ta'lim muhiti, o'qituvchilardan yangi muammolarni hal qilishni talab qiladigan muayyan o'zgarishlarning paydo bo'lishi va shuning uchun ommaviy axborot vositalarida yangi bilim va malakalarni o'z ichiga oladi.

Kalit so'zlar: media vakolatlari, o'qituvchi, axborot, ta'lim, atrof-muhit, uzluksiz media ta'lim, media savodxonligi.

Introduction. In the modern social situation of high dynamism of the educational and information environment, reforming education, rapid changes in the teacher's



competence requirements, the implementation of the concept of “lifelong education” is urgent, according to which the formation and development of media competence of a teacher should be viewed as a continuous process of media education in the context of solving continuous problems professional training. At the same time, it is necessary to ensure the continuity of various forms, levels and levels of education: vocational training (secondary vocational and higher education) - mentoring, methodological support for a novice teacher during vocational adaptation -the implementation of various forms of professional development of teachers - the organization of methodical work with teachers in school - self-education of teachers. [1,2]The specific condition for the formation of media competence of teachers is the dynamic information and educational environment, their constant changes. For a teacher, it is important to detect and identify such changes in a timely manner, to predict their impact on educational practice, taking into account the identified changes, to design their activities and personality, to master ways to solve new professional tasks, the knowledge, skills, abilities necessary for this. In this regard, it is necessary to include a new component in the structure of the media competence of the teacher - readiness for an adequate response to changes in the educational and information environment. The objectives of this article are: –identencing changes in the information and educational environment that have a significant impact on the activities of the teacher, the use of media in it; - justification for the inclusion of an additional element in the structure of media competence of the teacher - readiness for an adequate response to changes in the information and educational environment; - a description of the structure and content of such readiness, pedagogical conditions and tools for its formation in the context of the tasks of continuing education of the teacher.

Material and research methods. To solve the set tasks, the following methods were used: - analysis of the current informational and educational environment, changes



occurring in them, their influence on the teacher's activities, interaction with students, use of media by the teacher; - designing the structure and content of the teacher's readiness to adequately respond to changes in the information and educational environment as part of its media competence; - simulation of the formation of such readiness in the system of continuous media education of the teacher. The implementation of the methods was carried out based on the following methodological foundations: - the theory of media education of the teacher and the formation of his media competence.[3,4]

Results and discussion. In today's information society, media education, the use of media in the educational process, the formation of a teacher's media competence are the subject of numerous foreign studies. The works reveal the essence of media education, media competence, pedagogical potential and conditions for the use of various media in the educational process (information technologies, the Internet, social networks, screen arts, reading, television, advertising, interactive games, computer animation, etc.), models and tools for the formation readiness of the teacher to use them. However, in existing studies there is practically no consideration of such a necessary component of media competence as the teacher's readiness to adequately respond to the constantly occurring changes in the educational and information environment, evaluate and predict such changes, improve their personal qualities, abilities, master new knowledge and skills in accordance with them. , ways to solve new professional problems using media. At the same time, in the educational and information environment, changes are constantly taking place related to the reform of education, the development of information technologies, and the expansion of types and sources of information. Thus, the analysis made it possible to identify the following key changes in the information environment that have a significant impact on the components of a teacher's media competence: - an increase in the volume of transmitted data and models for their processing; - distribution of software that may



be affected by a regular user; - development of human-machine interfaces, artificial intelligence technologies, semantic systems working with the meanings of natural languages, neural interfaces; - introduction of quantum and optical computers, etc.[5,6].

In response to changes in the information environment, the educational environment also changes: - innovative training tools are introduced using information technologies: online courses, simulators, simulators, online gaming worlds, etc .; - develop network forms of implementation of educational programs; - remotely used technologies, e-learning; - Robotics lessons are included in school programs; - in training, various forms of introducing students into productive states of consciousness are tested using information technologies (for example, the flow state, when a person is fully involved in the creative process and does not feel anxiety about possible success or failure); - the learning process adapts to the needs of a particular learner and his personal characteristics: the learner can choose the learning format and its pace, focus on a very narrow topic or, on the contrary, master an interdisciplinary program; - electronic educational environments are being created, incl. online platforms; - practice-oriented educational programs are increasing, the emphasis shifts from theoretical training to the inclusion of students in the development and implementation of real projects; - forms of mastering educational programs are being developed that allow combining training with labor activity ("dual training", training at the workplace). The question arises: how should these changes be reflected in the structure of the teacher's media competence? In accordance with the accepted understanding, media education is aimed at mastering the knowledge and skills that enable individuals: 1) to analyze, critically interpret and create media texts; 2) to determine the sources of media texts, their political, social, commercial and / or cultural interests, their context; 3) to interpret media texts and values distributed by the media; 4) select the appropriate media to create and



distribute their own media texts and find the audience interested in them; 5) to get the opportunity of free access to the media both for perception and for products. As we see, this definition does not include such a component as knowledge and skills that allow individuals to evaluate and predict changes in the media environment, the emergence of new media, use them in their own activities, design their activities and personality in accordance with such changes.[7].

The conceptual basis for building the model was the following ideas, which can also be viewed as conditions for the formation of a teacher's readiness to adequately respond to changes in the information and educational environment: 1. The teacher's professional development should take place in a rich media environment that encourages him to actively use media to solve professional and life tasks . Media technologies should be built into the process of continuing education and teacher self-education. [8]. Thus, in the period of university training and advanced training, this may be expressed in the use of IT tools for mastering professional competencies (computer testing, online simulators, computer simulators, computer games, etc.), creating online platforms with training courses, organizing role-playing and business skills. games using social networks, information and communication technologies, the use of e-learning, distance learning technologies, electronic library systems, databases, organization of topics eskih websites, Internet forums, conducting online surveys, using vuchebnom process for processing the results of research of modern software, including used in the industry, the organization of a point-rating system of evaluation by means of an electronic platform, etc. In the period of professional activity of a teacher at school, in a special organization, the teacher performs various professional functions by using media (maintaining various databases, including taking into account students' achievements, automated management of various activities, filling in thematic plans, educational plans and other documentation on an electronic platform, electronic management students' journals and diaries, active use



of interactive boards, media projectors, electronic presentations, educational software, computer games, the use of social networks for sharing information, organizing educational online forums, maintaining their own page on the school's website (the author's website), etc.). 2. Using media to solve pedagogical tasks will be more effective if the teacher masters new media, new ways to use them in solving professional and personal tasks together with students as subjects of informational and pedagogical interaction (here you can use the ideas of Waldorf pedagogy, where one teacher together with students "from scratch" studies all academic subjects). In this way, the role of the teacher changes from manager to co-activist. 3. Media sources should be for the teacher only a means to achieve the goals of education and training, but in no case the goal. Media is only a means of realizing the goals of a teacher, the effectiveness of their pedagogical use depends largely on the teacher's professional skills. 4. The main thing in building pedagogical interaction with the use of media and taking into account changes in the educational and information environment should be the teacher and students, and the media should remain a means of optimizing such interaction. The media should not be allowed to become an "idol" for a teacher or student. It is necessary to detect both the constructive, developmental and destructive influence of media on the development of the individual. 5. The teacher needs to take preventive, preventive measures to prevent the occurrence of students and dependent behavior in relation to the media (computer, Internet, gaming, television addiction, etc.). For this, it is necessary to use the means of complex prevention of social addictions. 6. The median should replace the live communication of the teacher with the pupil, but only enrich it. Priority should be given to live, not virtual communication subjects of the educational process. 7. The teacher should understand the essence and strategy of the ongoing changes in the educational and information environment, interpret them from the standpoint of key spiritual and moral values and encourage students to



make this understanding. In this case, the ability is formed not only to critically evaluate, but also to predict changes. 8. The teacher should be able to not only use, but also create media for solving the problems of training and education, i.e. possess the skills of computer programming, creating learning interfaces and programs. 9. The use of media should not come to the forefront as an informational, but rather a motivational function - to arouse in teachers an interest in social, professional and other personally significant issues. Accordingly, the teacher needs to master ways of motivating students to solve educational, social and other personally significant tasks using media. 10. The teacher needs to develop information and immunity in himself and students for the negative effects of the media environment on the spiritual and moral world of the individual. In the process of using media to solve pedagogical problems, it is important for the teacher to maintain his own creative individuality, individual style of professional thinking and activity, and pedagogical communication. Media should serve to enrich this style, its more optimal implementation, but should not level this style. Therefore, the teacher should not copy samples of the use of media by colleagues, as well as those presented in the methodological literature - it is necessary to adapt them to specific conditions and to the peculiarities of their own personality. 12. In the selection of media resources for their use in solving pedagogical tasks, the teacher must adhere to the principle of selecting means that correspond to a high cultural and intellectual level. 13. In the process of formation of the teacher's readiness for an adequate response to changes in the information and educational environment, it is necessary to ensure an optimal combination of individual, group and collective forms of work (individual counseling on overcoming barriers to the introduction of pedagogical innovations, tutor support for designing and implementing self-design programs for media competence, group psychological pedagogical trainings, group design, collective workshops, webinars, eminary, round tables, etc.). 14. It is necessary to ensure the continuity of media



education, the formation of the teacher's readiness to adequately respond to changes in the information and educational environment, continuity of content and means at various stages and levels of education and self-education.[9].

The theoretical model of the process of continuous formation of a teacher's readiness to adequately respond to changes in the information and educational environment reveals the goals, objectives, functions, stages, content, subjects, tools of this process through a system of goal-functional, structural-logical, informative, organizational and managerial, instrumental technological characteristics. The goal-functional characteristics of the model reveal: The general goal of the process being modeled is the formation and constant development of the teacher's readiness to adequately respond to changes in the information and educational environment as an integral component of its media competence. Objectives: - the formation of the teacher's ability to detect and predict changes in the educational and information environment; - development of skills to assess the impact of past and forecasted changes in the information and educational environment on teaching activities and pedagogical interaction; - preparing the teacher for the design of pedagogical reality, professional activity and his own personality, taking into account the past and forecasted changes in the educational and information environment; - development of the teacher's ability to adjust their own actions and personal qualities in order to adequately respond to changes in the information and educational environment. Functions of the process being modeled: - developmental - development of the personality of the teacher as a subject of innovation activity; - predictive - forecasting changes in the information environment and the educational system; - adaptive - adaptation of the teacher's activity to the changed conditions of the information and educational environment, adaptation of the teacher's personality to new professional functions and tasks that have arisen in connection with the changes in the information and educational environment that have occurred; - optimizing - regulation of the teacher's



actions in order to make optimal use of the media for solving pedagogical problems. The substantial characteristics of the model reveal the content of the process being modeled, including the detection of changes in the information and educational environment, their translation into pedagogical tasks, the analysis and solution of these problems, the analysis of the results obtained and the correction on this basis of their personality and pedagogical activity. Structural and logical characteristics of the model reveal the logic and stages of the simulated process. For their construction, a matrix was used that reveals the interrelationships of media competence invariants and the levels of formation of readiness for an adequate response to changes in the information and educational environment.[10].

Conclusions. Therefore, the following conclusions can be made that the teacher's readiness to adequately respond to changes in the information and educational environment must be shaped in the context of solving the problems of its continuous media education and continuous training, ensuring continuity of goals, content and means at its various levels: vocational training (secondary professional and higher education) - mentoring, methodical support for a novice teacher during the period of professional adaptation AI - Implementation of various forms of professional development of teachers - the organization of methodical work with teachers in school - self-education teacher.

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**FORMATION OF A PROFESSIONALLY ORIENTED FOREIGN
LANGUAGE COMMUNICATIVE COMPETENCE OF STUDENTS OF A
NON-LINGUISTIC UNIVERSITY**

Khujaniyazova Guzal Yuldashevna
Urgench branch of Tashkent university of
information technologies named after
Muhammad Al -Khwarizmi senior lecturer
of “Social studies” department
Email: Guzalenska77@mail.ru

Annotation: The article considers the task of forming professional foreign language competence of non-linguistic specialties students as a part of their professional competence. The author describes system for using newly developed information and communication technologies in teaching foreign languages, such as wiki, blog, search engines, online translators, learning management system Moodle and others.

Key words: specialists, communication, media competence, teacher, information, education, environment, continuous media education, media literacy.

Аннотация: В статье рассматривается задача формирования профессиональной языковой компетенции у студентов неязыковых специальностей как часть их профессиональной компетентности. Автор описывает систему использования новейших информационных и коммуникационных технологий при обучении иностранным языкам, таких как вики, блог, поисковые системы, онлайн-переводчики, система управления обучением Moodle и другие.

Ключевые слова: специалисты, коммуникация, медиакомпетентность, педагог, информация, образование, среда, непрерывное медиаобразование, медиаграмотность.

Annotatsiya: Maqolada lingvistik bo'lmagan mutaxassisliklar bo'yicha talabalar o'rtasida kasbiy yetukliklari doirasida professional tilshunoslikni shakllantirish



vazifasi ko'rib chiqiladi. Muallif vikis, blog, qidiruv tizimlari, onlayn tarjimonlar, Moodle ta'lim boshqaruvi tizimi va boshqalar kabi xorijiy tillarni o'rgatishda eng so'nggi axborot va kommunikatsiya texnologiyalaridan foydalanish tizimini ta'riflaydi.

Kalit so'zlar: mutaxassislar, muloqot, ommaviy axborot vositalarining malakasi, o'qituvchi, axborot, ta'lim, atrof-muhit, uzluksiz media ta'lim, media savodxonligi.

Introduction. Learning problem of foreign language communication in educational institutions of various types is constantly in the center of attention of methodologists-theorists and teachers-practitioners. This question is relevant, as never before, since the requirements for graduates universities - specialists in various fields of professional activity are increasing.

The geopolitical processes that are currently intensively underway contribute to the intensification of the dialogue of cultures, the development of cooperation between Uzbekistan and various foreign countries: business relations of specialists of the widest profile become international. The problem of interaction and cooperation between countries and people speaking different languages and brought up in different cultures is particularly acute in the 21st century.

Foreign language communication is a part of the professional activities of a modern specialist who is needed to be able to build an oral presentation on the laws of rhetoric and ethics of communication, composition, correctly formulate the written text - report, article, essay, business correspondence, be able to competently formulate questions during presentations and press conferences, to be able to conduct a dialogue during interviews, etc. This knowledge and skills should become objects focused teaching students a foreign language as a professionally directed foreign language communicative activities. The result of this activity is the formation professionally oriented foreign language communicative



competence in the amount specified by the state educational standard and programs disciplines "Foreign Language (s)".

Material and research methods. The relationship between the younger generation and the professional community is defined through the concept of professional socialization, the possibilities of which, above all, has a university where a person joins the system of professional norms and values through activity, communication, and changes in self-consciousness [1]. Communication in the process of socialization plays a special, sometimes "preeminent» role [2]. On the one hand, in the process of socialization, the sphere of communication expands and deepens thanks to the emergence of professional contacts. On the other hand, verbal communication, even as an educational one, is itself the most important means of socialization (practical classes, extracurricular activities, etc.). The formation of a professionally oriented foreign language communicative competence of students with appropriate organization of the learning process in a foreign language can and should be used for the purpose of professional socialization trainees.

Thus, the problem of teaching students to professionally directed foreign language communication is currently relevant.

Results and discussion.

In the light of the above, the formation of a professionally oriented foreign language communicative competence of students, which is inherent to the specificity, is of particular importance. Despite the available scientific research on this problem, the expansion of educational services in this field and the increased interest in the methods of teaching foreign languages to students of these specialties, the problem of forming a professionally directed foreign language communicative competence of students remains little studied. In this connection, a number of contradictions arise between:



- modern requirements of educational standards to the level of proficiency future foreign language specialists for special purposes (English for special purposes), programs defining the content of learning a foreign language in non-linguistic university, and insufficiently developed educational and methodical and didactic a base providing adequate training;
- the need of the media industry in graduates relevant universities that speak a foreign language as a means of professional communication, and the insufficient use of modern interactive technology teaching language and culture in non-linguistic universities;
- student interest in mastering practical skills of professionally oriented communication and traditional methods of teaching a foreign language in non-linguistic universities , poorly implementing the fundamental principle communication skills .[3]

By virtue of the above, dependence on the appropriate methodology of teaching, a future-oriented foreign language to future public relations specialists, journalists, becomes crucial. The choice of the research topic determined the urgency of the problem and the contradictions that arose.

The object of the research is the process of learning a foreign language as a means of professionally directed intercultural communication in a non-linguistic university.

The main goal of the research was the development of a methodology for the formation of a professionally directed foreign language communicative competence of students of a non-linguistic university.

In accordance with the goal, the following research tasks are defined:

- 1) to give a structural and informative characteristic of professionally directed foreign language communicative competence in the context of learning a foreign language in non-linguistic high school ;



- 2) to identify the social perceptual component of foreign language communicative competence and to reveal its specificity and significance for the professional activities of future public relations specialists and journalists;
- 3) to develop a methodology for the formation of a professionally directed foreign language communicative competence of students;
- 4) determine the role and place of the project method in the process of teaching professionally directed foreign language communication of students;
- 5) to develop the author's course of study of professional foreign language communication of future public relations specialists, journalists, and conduct its pilot testing.[4]

The undertaken research is aimed at testing the working hypothesis, which consists in the fact that the optimization of the process of forming the professionally directed foreign language communicative competence of future specialists can be achieved provided that:

- in the process of learning a foreign language, specificity is taken into account future students' professional activities;
- as a specific, integral and significant component of the content of professionally directed foreign language communicative competence is the social perceptual component that ensures the effectiveness of feedback in the professional intercultural communication of future public relations specialists and journalists;
- a course of professional foreign language communication is based on the project method, which stimulates cognitive and social activity of students.

To achieve the goals and objectives of the study, the following methods were used and research approaches:

- System-structural approach to the analysis of the studied phenomena;
- conceptual analysis of scientific literature on the methodology of teaching foreign languages in non-linguistic universities, Russian as a foreign language, pedagogy ,



psychology, psycholinguistics, communicative linguistics, sociolinguistics, philosophy, intercultural communication;

- Conduct a substantive analysis of the requirements for the training of specialists in public relations, journalists represented in the State Educational Standard of Higher Professional Education, as well as in standard curricula in foreign languages and major disciplines;
- prognostic methods (modeling of the educational process of the formation of the professionally directed foreign language communicative competence of students);
- experimental methods (conducting experimental training);
- statistical methods (questioning students, polls of colleagues teaching English for special purposes - English for special purposes).[5]

The scientific novelty of the study lies in the fact that it reveals the structure and content of the professionally directed foreign language communicative competence of future specialists; the role, essence and significance of the social perceptual component of the said competence are revealed; identified ways of formation skills and development of skills in demand in their professional activities.

The theoretical significance of the study lies in the fact that it developed a methodology for the formation of professionally directed foreign language communicative competence based on the method of project activity.

The study and analysis of research papers on the problem of teaching professionally oriented foreign language communication has established that professionally oriented foreign language communicative competence is a combination of linguistic, verbal, sociolinguistic, sociocultural knowledge, communicative and pragmatic skills of professionally oriented communication and interaction culture in various fields and situations, as well as personal qualities:



sociability, responsibility, tact, tolerance, reflection, identification, attraction, causal attribution, commitment.[6]

The concept of professionally directed foreign language communicative competence formulated in the study fully corresponds to the nature of the professional communicative foreign language activity of future specialists.

As indicators of the development of a social perception of a public relations specialist, a journalist, it is legitimate to consider the presence of a sustained interest in the personality of a communicator - a representative of a different linguistic culture ; longing for her in-depth understanding (from a psychological point of view); steady mastery of basic reflexive-perceptual skills, mechanisms of perception; openness to communicating with communicators- speakers of the language; cooperation position. For training professionally directed foreign language communicating future social relations specialists, journalists, the formation of social perception as a component of communicative competence seems to be relevant, as it will allow them to carry out adequate foreign language speech activities in a professionally directed interpersonal interaction.[7]

The process of formation of professionally directed foreign language communicative competence included sensitive training focused on the development of self-understanding, interpersonal sensitivity and empathy for partners in interaction. This is extremely important for the development of skills identified in the socio-perceptual component of communicative competence, which, in turn, has prepared future public relations specialists and journalists to participate in projects that simulate real professionally directed foreign language communication.

The dominant skills, the development of which was emphasized in the implementation of projects, include reproductive, productive and productive skills. With regard to the formation of professionally directed foreign language communicative competence, such skills are the ability to determine the main themes



of the information materials being prepared and their critical understanding, the ability of comparative analysis of information and facts, the ability of syntactic transformation and lexical paraphrasing of key information, the ability to use information in professionally oriented situations of real and language. communication skills of reflection, identification, attraction and causal attribution, the ability to predict the development of the process of professional interaction, the ability to achieve feedback with communication partners. The study found that in order to master the above-mentioned skills, which ensure a sufficiently high level of professionally directed foreign language communicative competence of future public relations specialists and journalists, a complex of specially designed tasks and exercises is necessary.[8]

Conclusion. In this regard, the goal of experiential learning was to establish the effectiveness of the developed methodology and technology for the formation of a professionally directed foreign language communicative competence.[9] The consistent presentation of the developed communicative-cognitive tasks and exercises, the inclusion in the experimental training sensitive training sessions, project assignments and monitoring the progress of experienced training showed methodical expediency of the developed technique. Confirmation of the correctness of the research hypothesis is supported by the results of the final student survey conducted after the completion of the experimental training. Project tasks and active forms of study have increased the motivation to learn a professionally oriented foreign language. Formation of such personal qualities as critical thinking, tolerance, respect for the national traditions and customs of other nations, openness and readiness specialist to interpersonal intercultural communication occurs in a cultural, political and economic context. The specifics of the future professional activity of students has a significant impact on the content of training for professionally directed foreign language communication and the



formation of students' abilities for intercultural communication in the context of a dialogue of cultures.[10]

Thus, perspective study also linked to the ability to use these theoretical positions a technique of formation of a professional orientation of foreign language communicative competence of students as a basis for the development of programs, tutorials, methodical recommendations, the purpose of which is the training of professionally directed foreign language communication.[11]

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ACMELINGUISTIC COMPETENCE IN THE STRUCTURE OF PROFESSIONAL EDUCATION (on the example of a foreign language)

Urazova Marina Batirovna
Professor, Department of Pedagogy,
Tashkent State University named after Nizami

Dzugaeva Zarina Ruslanovna
Lecturer, Department of "Languages"
Treatment faculty, Urgench branch of
Tashkent Medical Academy Uzbekistan,
E-mail address: bon_lorange@mail.ru

Annotatsiya: Maqolada, acmelingvistika bilan xorijiy tilni o'rganishning samarali texnologiyasini ifodalovchi asoslar keltirilgan. Bu asoslar esa talabalarga motivatsion



muhit, mustaqillik, ijodkorlik va bilim faolligini shakllantirishga zamin yaratishi yoritib berilgan.

Kalit so'zlar: Akmelinvistika, akmelingvistika printsiplari, samarali texnologiyalar, ijodkorlik, kasbiy ta'lim.

Аннотация: В статье рассматривается акмелингвистика как наука, представляющая продуктивные технологии освоения иностранного языка. Позволяющая сформировать у студентов мотивационную сферу, самостоятельность, креативность, и познавательную активность.

Ключевые слова: Акмелингвистика, принципы акмелингвистики, продуктивные технологии, креативность, профессиональное образование.

Annotation: The article deals with acmelinguistics as a science representing productive technologies of learning a foreign language. Allowing students to form a motivational sphere, autonomy, creativity, and cognitive activity.

Key words: Acmelinguistics, principles of acmelinguistics, productive technologies, creativity, professional education.

Introduction. Acmelinguistics is a sphere of not only scientific, but also practical activity of the teacher, which examines and uses the laws, factors and mechanisms of development and self-development of the student in order to achieve the highest results in teaching the language, that is, the language here acts as a means of achieving personal "Acme". Speaking of technology, we mean a system of actions that leads to the expected result. In the system of teaching foreign languages, methods have long been established that claim to be technology, i.e. with a high degree of productivity, reliability, stability and performance.



Productive technologies used in teaching a foreign language implement competency-based and personal-activity approaches that, in turn, contribute to the formation and development of:

- 1) multicultural linguistic personality, able to carry out effective communication with carriers of other cultures;
- 2) abilities of students to carry out various activities using a foreign language;
- 3) cognitive abilities of students;

The choice of productive technologies to achieve the goals and objectives set in the framework of the discipline "Foreign Language" is due to the need to form the student a set of general cultural competencies necessary for the implementation of interpersonal interaction and cooperation in intercultural communication, as well as to ensure the required quality of education at all stages.

Currently, there are many opinions about productive technologies in teaching a foreign language. This article will look at some of them. However, it is obvious that the use of any one technology of learning, no matter how perfect it may be, will not create the most effective conditions for the discovery and development of student abilities and creative search for a teacher. The complex combination and use of productive technologies in teaching a foreign language in the learning process intellectual activity, develops cognitive processes, contributes to the formation of competencies that a competitive specialist should possess. One of the ways to activate a student in the process of learning a foreign language is design (project technology), when a student independently plans, creates, protects his project, i.e. actively involved in the process of communicative activity. An educational project is a complex of prospecting, research, computational, graphic, and other types of work performed by a student independently in order to practical or theoretical solution of a



given problem. Currently, the world pays special attention to the mutual coordination of cooperation activities between customers and educational institutions in ensuring the quality of training and employment of personnel. The organization and development of cooperation in training on the basis of modern approaches creates a solid foundation for expanding the integrated pedagogical educational opportunities.

Research Methodology. In the pedagogical literature, the term acmelinguistics, which has recently appeared, is actively used. The name comes from the Greek "acme" - "peak" and the Latin "linguistics" - "linguistic knowledge." Historically, acmelinguistics arose from acmeology, a science that was formed at the junction of natural, social and humanitarian disciplines that study the laws and mechanisms of human development when it reaches the highest level. The latest achievements in psychology, pedagogy, sociology, psycholinguistics, linguodidactics allowed the formation of a new science, designed to solve actual problems of language teaching.

Acmelinguistics is a sphere of not only scientific, but also practical activity of the teacher, which examines and uses the laws, factors and mechanisms of development and self-development of an adult student in order to achieve the highest results in language learning, that is, the language here acts as a means of achieving personal "Acme". The following main features of this concept can be noted: a) Acmelinguistics "studies the laws of how a person achieves a level, productive manifestation in life of all the essential forces of an individual oriented to solving value-significant problems through the development of a language"; b) Acmelinguistics "not only used the general methodological principles of modern knowledge, but also" sets "Acme-centric vector orientation, which is able to determine its interaction with other sciences" c) Acmelinguistics "carries in itself some continuity of psychological categories of reflection in personality and activity student, carrying out a synthesis of psychology and pedagogy, however, in contrast to



them, acmelinguistics takes a "sub-eccentric" position, in which the learner from an object becomes the subject of learning with the establishment of integrative relations with all participants and components of the educational process. "Thus, the main features of acmelinguistics are recognized: the laws governing the achievement of acme by language through language, speech activity; subject-centric position of the learning process. The basic principles of Acmelinguistics are: a systematic approach to learning languages; accounting of psycho-physiological and other features of an adult learner; the observance of the irregularity in the supply of educational material; following acme etics.

The object of acmelinguistic is considered "linguistic activity, which is interpreted as a communicative relationship between subject-communicative and psycho-mental activity of a person, which depends on the vectorial orientation of the individual (that is, based on his world view, life principles and values).

Currently, the education of teachers of higher professional education, increasing their psychological and pedagogical qualifications is one of the priorities in pedagogical science. In this regard, there is a need to improve the content and structure of advanced training programs, taking into account the inclusion in them of issues of improving the cultural and speech component of pedagogical work. One such constituent, in our view, is professional-pedagogical communication, which involves the formation of the speech culture of all participants in the educational process. The need to comply with the norms of speech culture and speech etiquette is a necessary condition for an effective educational process, since it is through speech, correctly and correctly executed, that basic and necessary educational information is transmitted.

Analysis and results. This kind of professional communication involves a) a system of techniques and skills of organic socio-psychological interaction between teachers



and pupils, the content of which is the exchange of information, the provision of educational influence, the organization of relationships through various communication tools; b) a permanent solution by the teacher of communicative tasks using heuristic methods; at the same time, a professional teacher knows that communicative tasks are of two types - general communicative tasks (planned in advance) and current communicative tasks (arising during a lesson, events, etc.); c) professional communication of the teacher with students in a holistic pedagogical process, developing in two directions: the organization of relations with students and the management of communication in the student team. For productive professional and pedagogical communication, the following personality qualities that are formed during the period of training a future teacher are necessary: knowledge of the psychology of another person (his values, ideals, orientation, needs, interests, levels of aspirations); social orientation on a person (attraction); unconditional acceptance of the learner - the principle of anticipatory respect; developed attentiveness, observation, memory, thinking, intuition, imagination; education of the emotional sphere: the ability to empathize and sympathize - readiness for empathy; personality traits and individual psychological characteristics that determine the general pattern of behavior when communicating with other people.

Conclusion. Thus, acmelinguistic technology, being one of the innovative technologies of teaching foreign languages in a non-linguistic university. Acmelinguistics makes it possible to take a fresh look at the role and place of each type of speech activity in accordance with the real needs of the profession of the future specialist, i.e. It implies a restructuring of the goals and methods of training that would ensure that graduates achieve peaks in the professional, creative and spiritual-moral spheres of activity. Knowledge of the basics of the psychology of communication contributes to a more rapid entry of a young teacher in the educational process of the university, its better adaptation in the teaching staff.



Improving the preparation of students of medical education to acmeological competence in the process of teaching English is one of the neuro-linguistic programming techniques, based on identifying the correspondence of the Russian and English language structures and suggesting a change in the direction in which the process of teaching a foreign language traditionally begins, to the opposite, and to expand their knowledge, starting not from an unfamiliar foreign language, but from the familiar, native: if the student is maximally quickly and competently learned to translate, the incoming skills in the communicative set of the native language, into a foreign language, he mastered a foreign language.

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PROGRESSIVE METHODS OF RESULTING EFFECTIVENESS OF ACCEPTED BALLS IN THE VOLLEYBALL GAME

Ro`zmetov Roman
Lecturer, Urgench State University,
The Faculty of Physical Training
e-mail: roma.rozmetov@bk.ru

Аннотация. Мазкур мақолада, Волейболда ўйинга киритилган тўғри қабул қилиш самарадорлигини ошириш усулларини ўрганиш ва таҳлил қилиш орқали жисмоний тайёргарлигини оширишнинг самарадор шакллари топишдан иборат.

Калит сўзлар: машғулоти юкламалари, жисмоний тайёргарликнинг ўсиши, индивидуallashtiriш, жисмоний ривожланиш, педагогик кузатув, машғулотларни ташкил этиш, воситалари ва методлар, таълим, технология, малака.

Аннотация. В этой статье рассказывается об эффективных формах повышения физической подготовленности спортсменов посредством изучения и анализа некоторых эффективных способов приёма мяча в волейболе при подаче соперника.

Ключевые слова: тренировочные нагрузки, повышения физической подготовленности, индивидуализация, физическое развитие, педагогическое наблюдение, организация тренировок, средства и методы, образование, технология, опыт.

Annotation. This article discusses the effective forms of increasing physical



readiness of athletes by means of learning and analyzing some resulting methods of receiving the balls served by the opponent team.

Key words: training loads, increasing of physical readiness, individualization, physical development, pedagogical observation, organizing training, means and methods, education, technology, experience.

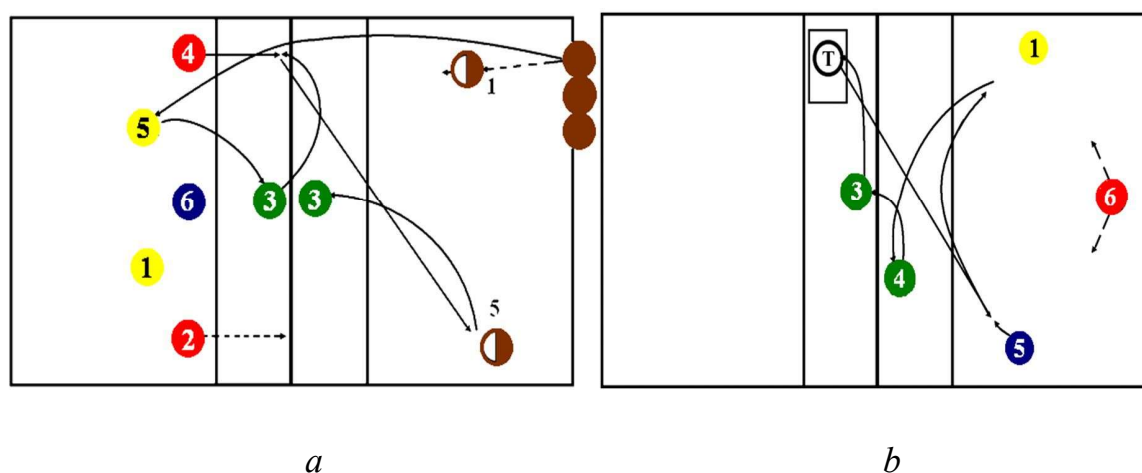
Introduction. Developing physical training and sport and bringing up perfect and unimpeachable younger generation is one of the state policies of our country. The laws of the Republic of Uzbekistan take important notice of improving effectiveness of physical training lessons in educational institutions. As a result of this attention great reforms are being done in the sphere of physical training and sport. Modern sport gyms have been built in every city, town and village of our country and the youth are training with their favorite kinds of sport. Sport is becoming necessity of their everyday life [1], [2].

In modern volleyball game effective performance and high results depend not only on physical readiness but also on highly developed technical and tactical skills[3].

Aim of the work. Aim of the work is learning and analyzing the methods of the effectiveness of receiving a ball in the volleyball game. The main aim of tactical movements of defense is to stop the attacks of the opponent and resist them.

Tactical movements of defense include team movement, group movement, and individual movement. Team movements can be seen in three situations: receiving the ball sent from the service area, receiving the opponent team's attack or the ball returning from the net not passing into the opposite court [4], [5].

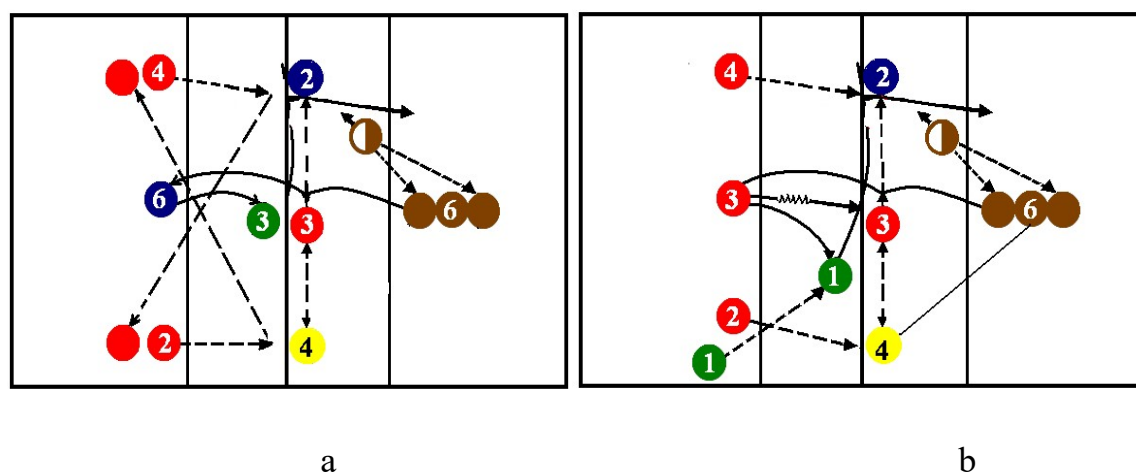
In modern volleyball game the team organizes its tactical defense as corner forward (picture- 1a) and corner backward system (picture-1b) .



picture – 1

According to the above mentioned factors and situations it is important to apply one of the acceptable tactics of defence in the game.

While receiving the ball the position of the players in the court is in two versions: linear version and stage version. Linear version (picture - 2) is applied when the players are qualified enough to receive the ball and when planning not difficult tactics during the attack[6],[7].





picture – 2

In this version players are placed evenly around the court. Stage version is practically observed in modern volleyball games. This version enables qualified players to receive the ball and organize successful attacks. If the player in the third stance is not skillful enough to receive the ball or if the player in the fourth stance is not skillful enough to attack well, this version is very acceptable [8],[9]. If the player in the third stance is skillful enough to receive the ball, he/she moves to the backward of the court.

Team position of the linking player moving from the fifth stance is also given. This position is a little bit difficult but is applied more frequently. In this position it is desirable that team apply 5+1 system.

There are three versions of organizing defense while receiving opponent team's attacks: along the line- in which one of the players in front defends the player blocking the opponent's attack. Front stage – in which the player in the sixth stance defends the players blocking. Back stage- in which the players in the first or fifth stance defend the blocking players. These are chosen according to the feature of blocks or attacks [10],[11].

According to the second table we can see that the total number of balls served during the game is -10, exactly received balls are- 7, lost balls are – 3, efficiency is – 70%.

The total number of balls served using oscillatory movement during one game is – 28, exactly received balls are – 15, lost balls are – 13, efficiency is – 53.5%.

Efficiency analysis of received balls of UrSU team during supreme league games

Table – 2



Ball serving types	Total number of balls during one game	Results of received balls		
		Exactly received balls	Lost balls	Efficiency %
Simple serving from standing position	10	7	3	70,0
Oscillatory movement	28	15	13	53,5
Jump serving with one or two steps	13	7	6	53,8
Jump serving with force	17	7	10	41,1
Total	68	36	32	52,9

The total number of balls served using jumps and one or two steps is – 13, exactly received balls are – 7, lost balls are – 6, efficiency is – 53.8%. The total number of balls using jump serving with force is -17, exactly received balls are – 7, lost balls are – 10, efficiency is – 41.1%. The total number of balls served by the opponent team is – 68, the number of received balls is – 36, lost balls are – 32, efficiency is – 52.9%.

We have conducted practical classes on ball receiving exercises with individuals, groups and teams, including sending and receiving balls upwards and downwards the wall using two hands, sending balls to a definite target on the wall and receiving them. We did this exercises ten times, playing ten minutes each time with two minutes.



Jump served balls are usually received from below using two hands as this type of serving is difficult to receive from above because of great speed. According to the type of serving different kinds of position, movements are chosen[12].

After applying different resulting methods, in the third table we can see that the total number of balls in three sets served simply from a standing position is – 13, exactly received balls are – 13, no lost balls, efficiency is – 100%.

The total number of balls using oscillatory movement is- 21, exactly received balls are – 18, lost balls are – 3, efficiency is – 85.7%.

The total number of balls using jump serving with one or two steps is –16, exactly received balls are – 13, lost balls are – 3, efficiency is – 81.2%.

The total number of balls using jump serving with force is – 13, exactly received balls are- 9, lost balls are – 4, efficiency is – 69.2%.

The total number of balls served by the opponent team is 63, the number of balls received by our team is-53, lost balls are – 10, receiving efficiency is – 84.1%

Table – 3

Efficiency analysis of received balls by UrSU team in one game

Ball serving types	Total number of balls during one game	Results of received balls		
		Exactly received balls	Lost balls	Efficiency %
Simple serving from standing position	13	13	-	100



Oscillatory movement	21	18	3	85.7
Jump serving with one or two steps	16	13	3	81.2
Jump serving with force	13	9	4	69.2
Total	63	53	10	84.1

Comparing the efficiency of received balls by UrSU team before and after the analyses we have observed the following results:

The total number of balls using simple serving from standing position before the research is – 10, after the research is – 13, exactly received balls before the research are- 7, after the research are – 13, lost balls before the research are – 3, no lost balls after the research, efficiency before the research is – 70%, efficiency after the research is – 100%.

The total number of balls using oscillatory movement before the research is – 28, after the research is – 21, exactly received balls before the research are – 15, after the research are – 18, lost balls before the research are – 13, after the research are – 3, efficiency before the research is – 53.5%, efficiency after the research is – 85.7%.

The total number of balls using jump serving with one or two steps before the research is – 13, after the research is – 16, exactly received balls before the research are – 7, after the research are – 13, lost balls before the research are – 6, lost balls after the research are – 3, efficiency before the research is – 53.8%, after the research is – 81.2%

The total number of balls using jump serving with force before the research is



– 17, after the research is – 13, exactly received balls before the research are – 7, after the research are – 9, lost balls before the research are – 10, lost balls after the research are – 4, efficiency before the research is – 41.1%, efficiency after the research is – 69.2%

Ball receiving results before and after the research (h=8)

Ball serving types	Total number of balls during one game	Results of received balls		
		Exactly received balls	Lost balls	Efficiency %
Simple serving from standing position	<u>10</u>	<u>7</u>	<u>3</u>	<u>70</u>
	13	13	0	100
Oscillatory movement	<u>28</u>	<u>15</u>	<u>13</u>	<u>53.5</u>
	21	18	3	85.7
Jump serving with one or two steps	<u>13</u>	<u>7</u>	<u>6</u>	<u>53.8</u>
	16	13	3	81.2
Jump serving with force	<u>17</u>	<u>7</u>	<u>10</u>	<u>41.1</u>
	13	9	4	69.2
Total	<u>68</u>	<u>36</u>	<u>32</u>	<u>52.9</u>
	63	53	10	84.1

The total number of balls served by the opponent team during one game



before the research – 68, after the research – 63, exactly received balls before the research – 36, after the research – 53, lost balls before the research – 32, after the research – 10, efficiency before the research – 52.9%, after the research – 84.1%.

The method carried out by us has proved to be efficient. The exercises in which the players received the balls served one after the other standing in the protection area showed high results and selected method seemed more efficient.

Conclusions. Analyses of literature, results of pedagogical experiments and their comparative analyses have made us come to the following conclusions: the exercises carried out during the pedagogical research helps not only to develop technical readiness effectively but also develop accuracy in doing tactic techniques efficiently. Receiving the balls from below with double hands is considered as a main method of receiving attack blows as well. Therefore, it is important to pay great attention to receiving the balls served with different speed, directions and power with double hands.

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UDC: 378

ADVANTAGES OF THE APPLICATION OF THE CREDIT SYSTEM TO IMPROVE THE QUALITY OF EDUCATION IN HIGHER EDUCATIONAL INSTITUTIONS

Allamuratov Sharapatdin Ziuatdinovich
Candidate of Physical and Mathematical Sciences,
Senior Lecturer, Nukus branch, Tashkent
University of Information Technology
named after Muhammad al-Khorazmi
E-mail: Sharapatdin@mail.ru

Djoldasbayeva Aksulu Bagitovna
Teacher, Nukus branch,
Tashkent University of Information
Technology named after
Muhammad al-Khorazmi
E-mail: aqsulu.bagit@mail.ru

Daniyarova Rakhatoy Seitmuratovna
High school math teacher number 12
Nukus, Uzbekistan.
E-mail: Raay@mail.ru

Аннотация: Мақолада олий таълим тизимида таълим сифатини оширишда кредит тизимини қўллаш афзалликлари, таълимда кредит тизимининг хусусиятлари ўрганилган. Шу билан бирга хорижий давлатлардаги мавжуд кредит тизими батафсил очиб берилган, кредит тизимидаги илғор хорижий тажрибалар мисоллар билан кенг ёритилган ва қиёсий таҳлил қилинган. Кредит тизимини ТАТУ ва унинг филиалларида қўллашда мавжуд афзалликлари ва муаммолари баён этилган.

Калит сўзлар: ECTS, USCS, UMAP, CATS, Балония жараёни



Аннотация: В статье рассматривается преимущество применения кредитной системы для повышения качества образования в системе высшего образования и изучены особенности кредитной системы в образовании.

Вместе с этим полностью раскрыты кредитные системы существующих передовых зарубежных стран и в то же время был проведен обширный охват и сравнительный анализ примеров передового зарубежного опыта в кредитной системе. Описаны преимущества и проблемы использования кредитной системы в ТУИТ и его филиалах.

Ключевые слова: ECTS, USCS, UMAP, CATS, процесс Болония

Annotation: The article highlights the advantages of applying the credit system to improve the quality of education in the higher education system, the features of the credit system in education.

At the same time, the credit systems of existing advanced foreign countries are fully disclosed, and at the same time, extensive coverage and comparative analysis of examples of advanced foreign experience in the credit system has been carried out. The advantages and problems of using the credit system in TUIT and its branches are described.

Keywords: ECTS, USCS, UMAP, CATS, Bologna process

Introduction. As you know, the education system should meet the modern requirements for the rapid development of the globalization process and development of the information process.

The existing system of education needs a new educational system and a new approach to the teaching process. One of the most pressing issues in the system of higher education is the training of qualified personnel.



Absence of a modern system for assessing the activities, knowledge and pedagogical skills of professor-teachers negatively affects the quality of education. The purpose of the credit system is to improve the quality of education, to ensure transparency and to recognize academic knowledge and skills.

Main part. There are several credit systems in the world of higher education. They are American Credit System (US CS), Credit Accumulation and Transfer System (CATS), European Credit Transfer System (ECTS), University Credit Transfer System in the Asia-Pacific region (UCTS) [3].

To get a bachelor's degree at USCS, a student must earn 120 credits, get 30-35 credit hours for a master's degree, and graduate students - 6-12 credit hours per semester [2], while CATS has 1200 academic hours of academic year or 120 credits where 1 British credit 10 hours. To get a bachelor's degree in British universities need to get 360 credits for 3 years.

The fourth year gives the opportunity to "bachelor of the highest degree." The educational process in medicine, dentistry and architecture has more than 7 years. Credit accumulation and transfer system (CATS) has spread to the UK, southern Africa and to the new Zealand. In the ECTS European credit system, each student must receive 60 credits per year [1].

The credit system in the Asia-Pacific region UCTS is based on the European credit system ECTS, a total of 60 credits per year. But Japan, which adopted the USCS credit system, replaced one credit hour with credits. To get a bachelor's degree in Japan, you need to dial 146 units. A postgraduate study in Japan consists of two stages: the "master's course" takes two years and receives a master's degree, and the "doctoral course" lasts 3 years and has a doctorate in philosophy.

China has adopted a three-tier education system, such as the American Credit System. 120 credits are granted for a bachelor's degree at universities in Beijing and Xinhua, and 30–60 for a master's degree. It takes 4-5 years of study at universities, 7-



8 years of study at medical universities and 2-3 years of study at vocational schools. Thus, the difference in foreign countries exists only in the credit system, and not in the educational system. For example, if a European loan covers all classroom and extracurricular hours, US loans only reflect classroom hours where it is assumed that the student is more likely to work on himself [3].

In the higher education system, credit hours are used in various forms, which is the basis for the preparation of financial estimates by the state. The load of teachers and students of the department is determined by the credit hours. Transfer of the student to the next course, payment for study is made on the basis of a credit hour. There are inconsistencies in the filing of credit hours, but in any case, credit is crucial in planning and budgeting estimates.

Despite its weaknesses, the “credit system” was widely used. It regulates the multifaceted activities of the university: the curriculum, schedule, assessment of students' knowledge, the award of a degree, tuition fees and so on. This system will help to realistically assess the performance of the teacher and student, allowing the teacher to determine the load and help the student to adjust the load. The credit system gives the freedom to learn, which corresponds to the relations of a market economy [6].

An analysis of the aforementioned world education system shows that the USCS is easily replaced by the European (ECTS) and the Asia-Pacific (UCTS):

1 American credit hour = 1 Chinese credit = 1 Japanese credit unit = 2 European credit = 2 Asia-Pacific credit = 4 British loans.

The European Credit Transfer and Accumulation System (ECTS) is the only universal European system of student supervision and accountability in the development of university education programs. This is a unique way of learning the lesson learned, using the accumulation of credit units [7].



University loans assess the level of student training required to achieve learning outcomes. These results must be accompanied by the ability of the student to score a certain number of points in each particular subject, until he finishes his studies at the university.

Any loan amount can be compared with the time spent on studying a particular topic. On average, during one school year a student can receive up to 60 credits, that is, spend 1500-1800 hours to master the subjects in the curriculum. So, one credit is 25-30 hours.

The European credit system is based on three elements: the curriculum, the activity and scope of the listener, its results.

The credit system includes the control of all types of education (classroom and out of classroom). The credit system shows the results achieved and not the number of hours. In the European credit system, a bachelor's degree can vary from 180 to 240 credits. The master's degree can vary from 90 to 120 credits.

A loan is a conditional test apparatus that provides a part of the curriculum for a student. For each subject a certain number of credit units is allocated.

Credits are issued for all the material or its components: outside semester courses, dissertations, state exams. The student receives various loans in various subjects. The importance of this subject depends on the time the student has to study. As a result, credit are collected and approved, confirming that they have successfully completed a bachelor's degree.

In some cases, collected credits may be transferred to another program within one training program. For example, when moving from one university to another, there is no need to study and reread subjects [5].

From the 2018-2019 school year, the ECTS crediting system was introduced at the Tashkent University of Information Technologies (TUIT) and its branches.

The main features of the introduction of the credit system of education.



- get a diploma.

The conditions of the diploma require that the student receive 240 credits for the 4-7-year period of study.

-academic period.

Academic semester lasts 15 weeks per semester. The attestation period lasts 1 week. At the end of each semester, students are given a 6-week vacation. During the winter and summer periods of study, retraining will be organized for 4 weeks to eliminate academic debt.

-transition from course to course

The transition from course to course is carried out at the expense of the GPA indicator which should not be less than 2.6 units.

$$GPA = \frac{K_1 * U_1 + K_2 * U_2 + K_3 * U_3 + \dots + K_n * U_n}{K_1 + K_2 + K_3 + \dots + K_n}$$

The study load of a student is 60 credits per academic year, and the schedule of studies for individual training and selection of teachers is made up of study subjects and teachers. Independent work of the student is not included in the educational schedule.

According to the rules of the educational process in the system of credit education, if 1 credit is 30 hours, then 15 academic hours will be continued with 15 hours of independent study.

The main advantage of the credit system is independent work. The free choice of teachers, the schedule of lessons and subjects allows students to be independent, active and mobile, as well as to plan and carry out their educational activities. It should be noted that the advantages of the credit system are connected with four parties - students, teachers, educational institutions and employers. Each side will benefit from it.



Benefits for students:

- selection of subjects, lecturers and course schedules;
- be able to assess knowledge in the learning process;
- communication capabilities, faster adaptation to the new environment, communication with others.

The teachers also have a crawl from the credit system:

- interests of students to subjects - greatly facilitates the work of the teacher;
- open rating system will allow the student to correctly and transparently assess their knowledge;

Teachers receive opinions and recommendations on self-assessment and the teaching of the subject.

As for the institution itself, the introduction of the credit system will significantly increase its flexibility in its policies. Unlike traditional universities, the new university has the ability to change its subject in accordance with the needs of a specialist in the labor market.

Employers will be able to get highly qualified specialists according to their needs.

One of the main problems is that students are not ready for independent work, adaptability to information flows and new situations, and also do not have enough literature to work independently.

Conclusions. The study and analysis of the introduction of credit education in foreign countries has shown that there are peculiar features in different countries of the world. Nevertheless, the effectiveness and relevance of the credit education system was confirmed by the spread of education in many countries around the world, since the curriculum is focused on developing independent work among students, increases the level of creative activity and stimulates learning, and thus improves the quality of education.



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10. <http://www.seec-office.org.uk/credit.html>; FEDA National Credit Network



UDK:61.51.204.0.24

VALEOLOGICAL ASPECTS OF HEALTHY LIFESTYLE OF YOUNG GENERATION

Ozod Khasanov,
Lecturer, Inter faculties of
Physical training Department,
Urgench State University,
E-mail: khasanovozod@mail.ru

Annotatsiya: Ushbu maqola Urganch davlat universiteti talabalarining valeologiya va jismoniy tarbiya masalalari bo'yicha bilimlarini o'rganish jarayonida talabalarning bilimlari tahlil qilingan.

Kalit so'zlar: Valeologiya, jismoniy tarbiya, sog'liqni saqlash, jismoniy mashqlar, jismoniy xususiyatlar, jismoniy tayyorgarlik.

Аннотация: В данной статье анализируются знания студентов в процессе тестирования студентов Ургенчского государственного университета при изучении предметов валеологии и физической культуры.

Ключевые слова: валеология, физическая культура, здоровье, физические упражнения, физические особенности, физическая подготовка.

Abstract: This article analyses knowledge of students in the process of testing of students Urgench State University, while learning Valeology and Physical training subjects.

Keywords: Valeology, physical training, health, physical exercises, physical features, physical preparation.

Introduction. The actuality of studying the problem of physical education at a university not as a physical profile is determined by the needs of modern society in the physical and spiritual improvement of students. The need to involve university students in various types of physical cultural activities: educational, sports, recreation and rehabilitation, are the focuses. Researchers studying the problem of physical



education of students, emphasize that it should occupy a worthy place in the education and professional training of students. [1,4,5,8,10].

The organization of physical education in higher education institutions, according to the recommendations given in the scientific and methodological literature, takes into account the health status, level of physical development and preparedness of students, as well as the conditions and nature of work of their upcoming professional activity. However, recent studies have shown that physical activity and physical fitness, as well as the health status of university students are at a very low level.

Currently, more and more researchers, trainers and teachers of physical culture come to the conclusion that the existing physical education programs for general education, secondary special and higher educational institutions do not contribute to solving the problems of rehabilitation, development and improvement of basic core qualities [3,4,6,7,9,11].

Literature review. In our article, the solution of the following tasks is set as follows:

1. To assess the level of knowledge of physical culture, testing was organized with assignments that assess knowledge on the subject of physical education among students enrolled in the faculty of physical education, as well as students enrolled in natural and humanities faculties of Urgench State University, after completing valeology course. Having created and delivered tests containing 16 questions with four answers for all 1-4 year students. More than 350 students participated in the testing. In addition, a survey was also conducted among the student audience in order to ascertain the significance of physical education.

2. Conducting a medical examination to diagnose the nature of deviations in the state of health of students.

3. Assessment of the initial level of physical development, physical fitness, as well as the functional state of the body of students, followed by the development of a



scale for evaluating the physical fitness of young men and women studying at non-sports faculties of Urgench State University.

The exceptional importance of physical education and sports is determined by two main reasons: firstly, studies in the framework of the university program provide no more than 20% - 25% of the necessary physical activity of students. Secondly, independent physical exercise, are the factors that shape not only social activity, but also the formation of the principles of a healthy lifestyle for students. A preliminary survey of Urgench State University students indicates that 30.2% of students studying in the humanities and natural faculties are engaged in sections of various sports, but most of the students ignore morning exercises, have bad habits, prefer a passive lifestyle, and do not have basics of valeological knowledge. It has been established that the level of motor activity decreases with an increase in the course, that is, there is an increase in the effects of hyperkinesia and hypodynamia, which to a certain extent contribute to the occurrence of overweight, disorders in the body's activity, in particular, from the cardiovascular and respiratory systems.

Managing the health process is impossible without owning valeological knowledge. The modern concept of health identifies three of its main components:

1. The physical that includes the level of growth and development of organs and systems, as well as the status of their operation;
2. Psychological - is a state of mental sphere, is determined by the motivational, emotional, thought-moral and spiritual factors. Its basis is the emotional comfort, providing adequate mental capacity and human behavior;
3. Behavioral - is an external manifestation of the human condition. It is expressed in the degree of adequacy of behavior, the ability to communicate. It is based on the life position and interpersonal relationships that determine the adequacy of interaction with the external environment and the ability to work effectively.



In the second position of the concept of health, an important component is the psychological state in which a certain importance is given to the need to develop a motivational sphere, that is, one cannot only be limited to the concepts of health, development of physical qualities and motor abilities. For this, it is necessary that the student at the university receive the necessary level of knowledge and skills for the formation of motor activity.

Research Methodology. Therefore, one of the objectives of the study was to assess the level of valeological knowledge is testing with tasks that evaluate knowledge of valeology among students studying at the faculty of physical education, as well as students studying at non-sports faculties of Urgench State University. Testing of students was carried out on practical exercises in physical culture, providing for self-control skills training in order to increase students' interest in improving functional health. Were developed 4 variants of test questions for students studying at 1-4 courses of Urgench State University faculties. Each option consists of 16 test questions. The developed questions on the content can be divided into the following groups:

1. Questions evaluating the level of theoretical knowledge in valeology among students of 1-4 courses.
2. Questions evaluating the attitude of students towards adhering to the principles of a healthy lifestyle
3. Evaluation by students of the importance of physical education and physical activity in maintaining physical activity and promoting health and their impact on the body.
4. Ways of health correction, independently developing health programs, taking into account the state of their own health.

The results of the test survey among all students in the faculties of physical education and the natural faculty revealed the following:



- To the question, “Modern formulation of the concept of health”, the number of correct answers was 92.7% among students of the faculty of physical education, and 69.8% of the correct answers were found among students of natural science of the faculty.
- Clearly formulated the answers to the questions "The purpose and objectives of valeology" 83.8% of students of the Faculty of Physical Culture, and only 67% of students of the Faculty of Natural, History.
- To the question, “What methods can be used to assess physical development?” 77.7% of students of the natural faculty indicated the correct answer, indicating that the level of physical development can be assessed based on anthropometric and functional studies.
- Only 38% of students of the physical education department gave correct answers.

It is paradoxical that the question “What changes do occur in the body under the influence of systematic physical exertion?” There was given a complete and precise formulation by the students of the Faculty of Physical Culture. Analysis of the distribution of the available answers to the questions asked, showed a competent approach on the part of the student’s sports audience. It showed that changes in one functional system cause changes in other systems. Those are structural changes occur at the level of the whole organism, although this question was expected clear and correct answers from students of the natural faculty. In assessing the influence of negative factors, including harmful habits on health, the like-mindedness was revealed among the students of the surveyed faculties. To the question “What kinds of sports do you practice and what physical qualities did you want to develop?” In the responses, one can note the manifestation of sexual dimorphism. So young men prefer to engage in sports such as national wrestling, athletics, that is, sports that would develop in the first place, strength, then speed capabilities and endurance.



Girls prefer to engage in sports, in particular, rhythmic gymnastics, swimming, tennis, contributing to the development of the right physique and the formation of a beautiful posture.

Students of the natural faculty, characterizing the influence of motor activity on the human body, were divided in their opinions. Thus, 90% of students believe that systematic physical activity causes adaptive changes in the type of hypertrophy and hyperplasia; 10% of students believe that positive changes occur only in the cardiovascular system; in particular, by increasing the chambers of the heart, improving blood flow, putting the reserve capillaries into operation, improving the blood supply. The survey we conducted confirms the interest of female students in physical education, but a small number of female students, in particular, 12.5%, prefers non-traditional sports like judo, boxing, sambo, football, etc. Because of the questionnaire to the question, “why do you practice physical culture?” Almost all students included in the preparatory group for health reasons, at the end of the school year indicated motives that have a health focus.

From the motives indicated by the students, it is clear that their attitude to their health has changed significantly. The motives of “Preservation of Mental and Physical Health” increased from 50% in the first year to 70% in the 4th year. “Notable decrease in the level of physical development” - from 65% in the first year to 40% in the 4th year. “Experienced a feeling of muscular joy from exercise”- from 40% (Liberal faculties) to 80% (Faculty of Physical Culture); depending on the training of the chosen specialization “increase in physical working capacity”, it was noted - from 35% to 78% of the students of these faculties, respectively. As can be seen from the responses to the fourth course, there is a deterioration in the state of physical health, both among girls and among young men. To the question, “What contributed to the deterioration of your health,” over 65% of 4th year students consider because of the lack of a physical culture subject in the educational process.



About 20% of students consider the deterioration of health due to their stay in most of the state of physical inactivity.

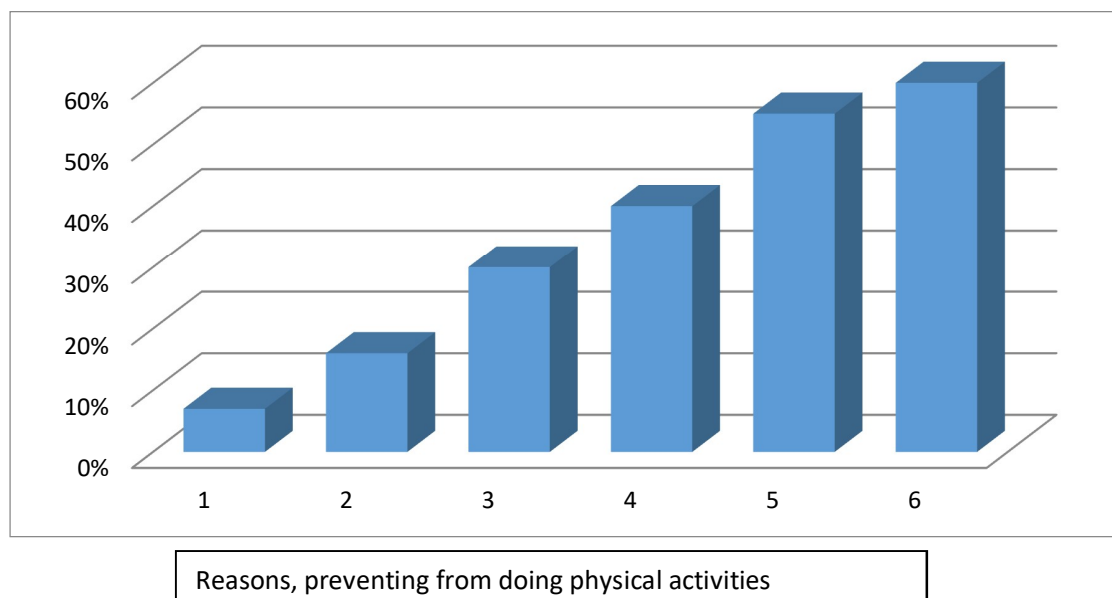
It is positive that after reading the lecture series “Methodological foundations of a healthy lifestyle”, as well as watching the videos “Drug addiction - the plague of the XXI century”, students changed their attitude to lifestyle, understanding how harmful bad habits are. Thus, the theoretical and methodological knowledge gained in the course of valeology, expanded the students' world outlook, allowed to understand properly the value of health, to understand the importance of the mechanisms of health-improving action of physical exercises not only to improve health, and to correct existing deviations.

Analysis and Results. One of the priorities of valeological education in the university is the preservation and strengthening of students' health, the formation of their concept of the value of a healthy lifestyle. Analysis of the personal data showed that the students of the Urgench State University consider physical exercises important for improving health, developing physical qualities, and improving body posture. However, in reality, their participation in physical culture and sports activities is not enough. Most students are engaged in physical culture only within the framework of the schedule. However, the number of additionally involved in sports in the faculties of natural history and humanities was about 30%. We tried to find out what prevents students from engaging in physical culture: Figure 1 shows the results of the student survey:

1. Prefer to fill their leisure time with other activities (computers, music)-7%.
2. Due to the feeling of constraint due to the figure flaws, or due to the low level of physical fitness - 16%
3. chronic fatigue after the classes, or because of the overload of educational tasks - 30%.
4. lack of motivation to play sports - 40%

5. The majority of students report a lack of time - 55%.
6. due to the lack of developed skills and abilities when performing certain exercises - 60%.

(pic. 1)



Testing of students is carried out in practical classes in physical culture, providing for self-control skills training with the aim of increasing students' interest in improving the functional state of their health. With the help of test technologies, we determined the attitude of students to their own health, physical activity, knowledge of the basic theoretical principles on valeology, methods and criteria for predicting health, the way, and most importantly, how lifestyle affects, in particular, the effect of negative and positive factors on health.

Conclusion. The introduction of complex pedagogical monitoring of students' health indicators throughout the whole period of training into mass physical culture and sport, as well as ensuring accurate organization of the valeology educational process for deeper development of the mechanism of the health effect of physical exercises and their use in order to correct the existing deviations in health status:



The valeological orientation of the university physical culture is effective not only for mastering theoretical knowledge and practical skills in assessing physical health, but also in terms of the formation of a healthy lifestyle.

The results of the survey of students indicate that the deterioration of the physical condition of students at UrSU for the 4th year is primarily because the subject of “physical education and sport” is not included in the curricula of the university. The content of the educational process in physical education at the university for all courses of study should be aimed at developing students' readiness to perform the physical activities necessary for the full functioning of the body, and at senior courses it is necessary to provide each student with the opportunity to choose the sport chosen by him. be sectional in nature with the interests of students.

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**REQUIREMENTS FOR PERSONNEL PURPOSE AND PRODUCER'S
PERSONNEL**

Jahongir Mamatkosimov
Associate Professor of the Uzbek
State Institute of Arts and Culture
E-mail: jahongir.80@mail.ru

Annotation: The article discusses the importance of independent learning in essence, the main goal and mission of independent work of students, as well as the quality of the curriculum. The classification of independent creative works, which the student and the director should do when forming the director, is presented. On this topic, developed guidelines.



Key words: student-director, director, stage director, course artistic director, theater, actor, independent study, independent director's work, director's analysis, instruction, scenario, book reading.

Аннотация: В статье рассматривается важность самостоятельного обучения в сущности, основной цели и миссии самостоятельной работы студентов, а также качество учебного плана. Представлена классификация самостоятельных творческих работ, которые студент и режиссер должны сделать при формировании режиссера. По этой теме разработаны методические рекомендации.

Ключевые слова: студент-режиссер, режиссер, режиссер, художественный руководитель курса, театр, актер, самостоятельная работа, работа независимого режиссера, режиссерский анализ, инстинкт, сценарий, чтение книг.

Аннотация: Мақолада талабалар мустақил ишининг моҳияти, асосий мақсади ва вазифаси, ўқув жараёни сифатини яхшилашда мустақил таълимнинг аҳамияти ўрганилган. Талаба-режиссёрнинг сахналаштирувчи режиссёр бўлиб шаклланишида амалга ошириши лозим бўлган мустақил ижодий ишлари таснифи берилган. Мавзу юзасидан услубий тавсиялар ишлаб чиқилган.

Калит сўзлар: талаба-режиссёр, режиссёр, сахналаштирувчи режиссёр, курс бадий раҳбари, театр, актёр, мустақил таълим, мустақил режиссёрлик иши, режиссёрлик таҳлили, инсценировка, сценарий, китоб мутолааси.

Introduction. The Law of the Republic of Uzbekistan "On Education" and the National Program of Training of Students, along with deep theoretical and practical knowledge of the students, will be able to independently perform their chosen field of knowledge, independently improve their knowledge and skills, and



correctly analyze and solve problem situations, one of the main objectives is to train professionals who can adapt quickly to their circumstances.

Planning, organizing and creating all necessary conditions for students to independently improve their education, as well as training students in their classroom, as well as providing them with the opportunity to pursue higher education, and providing guidance for independent learning is one of the main objectives of the higher education institution. This is evidenced by one-third of the total number of training curricula envisaged by the curriculum of higher education institutions.

Main part. Independent work of students without the direct participation or direct supervision of the teacher, the tasks given by them, the textbooks on the basis of the textbooks. The independent work of students is an integral part of the learning process. Without the need to improve the independent learning of the curriculum, the tasks of contemporary education can not be at the required level [3. - P. 26]. Independent work of students - a certain part of the knowledge, skills and qualifications specified in the curriculum of the student on the basis of the advice and recommendations of the teacher, from the audience and the audience. Independent learning creates competition in a positive way. Students learn from their own minds, powers, and time to do useful work. Specific aspects of student aspiration are created by preparing for various competitions, participating in science olympiads and seeking to win, participating in scientific and creative exhibitions [1. - P. 122]. As you know, active learning and research work requires the use of all types of independent research. The independent work of the student should be reflected in all forms of the educational process. The main objective of the student's independent work is to develop and develop the skills and knowledge necessary to independently perform specific educational activities in the student's leadership and supervision. Increasing the knowledge and experience of the modern



expert depends on the degree of personal qualities. Independent work is crucial in shaping such qualities, strengthening the knowledge and skills gained in the classroom work, developing new skills and developing creative skills.

5150400 - Organization of independent work of students on the subject "Direction of variety and mass spectacle", which is the main specialty of the direction of directing (variety and mass spectacular directing), approved by the order of the Ministry of Higher and Secondary Special Education of August 14, 2009 № 286 "Students are independent and the "Instruction on the organization and control of work". The creative features of the subject are taken into account.

The further development of creative abilities of the film-makers, the further development of knowledge in them, the formation of skills of independent thinking, and the ability to solve the problem, are among the most important tasks in the field of art education.

Naturally, when considering the basic principles of directing and organizing the student's independent work in the direction of directors, the focus is on developing and developing the strong self-study skills of teaching and scientific literature, most importantly, in directing independent filmmaking.

The following aspects should be considered when defining the form and size of students' independent work:

- reading stage;
- specificity of the specific science and the level of difficulty in mastering;
- The student's skill and theoretical and practical level of training (basic knowledge);
- Level of availability of information science;
- The level of student access to information resources;
- creative abilities of students [2].



Searching for the information required by the Internet mission requires the student to understand, analyze, to use the information needed to synthesize information and to make the results of the research, as well as to independently conduct tasks, research and scientific research, and control experiments and methodologies.

The purpose of the independent study from the film is to teach the students:

- training of highly qualified personnel in all spheres of the directing;
- understand students' perceptions and phenomena in socio-political processes and to be able to interpret them in scenic space;
- To teach methods of choice of ideological and artistic repertoire that can meet modern requirements;
- improving and continuing education of the current Uzbek National Theater Directorate based on the best practices of the World Theater Arts Directorate;
- The ability to perceive theatrical art and field art, the ability to deeply understand the psychology of images in color;
- Formation of skills and qualifications in the direction of directing;
- Realization of artistic ideas through performances and performances.

The aim of students' independent work is to teach the students the methods of modern teaching in this field, to create appropriate holidays and performances, to create scenes, to choose script and pesa selection, to instil the methods, to create scenes and create scenes.

The artistic director of the course has a great role in the implementation of independent work of the students in the effective and artistic way. The artistic director of the course is proficient in choosing a repertoire by the student-director because he knows the talent and creative abilities of each student.

The artistic director of the course is an independent observer and mentor in the artistic, social, educational and professional work of the stage director.



The organization of independent study on the subject of "Variety and Mass Performing Arts" is organized on the basis of the following creative processes, taking into account the academic ability and abilities of the student:

- preparing a program for independent filmmaking;
- Preparation of scenarios and scenarios;
- director's analysis of artistic work;
- Collecting audio and video materials and assembling them according to the chosen topic;
- watch and analyze national and international performances and celebrations;
- studying and analyzing internet data;
- getting acquainted with the latest foreign educational sources, etc.

Depending on the nature of the science, students may also have other tasks for independent work.

Preparation for independent filmmaking - 5150400 - Directing students (variety and mass spectacular directing) students study independently at the end of each semester. According to him,

- At the end of the first semester - written and creative observations;
- at the end of the second semester - the director's etiquette;
- at the end of the third semester - literary fragments;
- At the end of the fourth semester - dramatic fragments;
- at the end of the fifth semester - a playful play;
- At the end of the sixth semester - concert program;
- at the end of the seventh semester - a theatrical variety show;
- At the end of the eighth semester - a theatrical public show.

In these creative processes, students create a drama of the future stage, perform a director's analysis, work on the artistic expression of the work. Most



importantly, it creates an ensemble of actors and creates a complete artistic creation with them.

Independent director's work is taken by professors and teachers of the department. The student's independent filmmaking work is discussed and evaluated by the public.

Preparation of Instissors and Scenarios - Instead of the instructional instructions and instructions of the artistic director of the course, instinct or create scenarios on any subject, except in the case of exercises. Based on these works, it is possible to stage a student's independent work. The scenario and scenario are discussed and evaluated by the faculty members of the department.

The director's analysis of a work of art - based on the instructions and instructions of the artistic director, carries out the director's analysis of any artistic work except for the student filmmaker's training. In this process, the artistic review is carried out on the basis of the laws of dramatic art. Studying the social significance of the art work and analyzing educational aspects. It is learned at what stage the work was staged. The artistic style of the director is studied. The director's analysis of the literary work is discussed and evaluated by the faculty members of the department.

Collecting audio and video materials and assembling them according to the chosen topic - the audio and video materials are selected, analyzed and assembled in accordance with the instructions and instructions of the artistic director. Audio and video materials are used in independent filmmaking.

Conclusion. In order to strengthen the theme, performances and celebrations will be watched and analyzed on a national and international scale. Comprehensive creative processes are being studied in the field. Foreign and national experiences are interpreted in the learning process.



Studying and analyzing Internet content, getting acquainted with foreign educational sources - comparative analysis of national and international experiences in the study and analysis of positive developments and achievements in the world about the variety and popular holidays, interpretation of course artistic works.

Assessment of students' independent work is carried out in accordance with existing "Regulations on monitoring and evaluation of students in higher education institutions".

Experience shows that the student can deepen his knowledge only if he is self-employed and constantly working on himself. The basic knowledge, abilities and skills of the students are formed only in the process of independent learning, the ability to function independently, and their interest in creative work.

The following recommendations were given to the formation of a direct student-directorial director;

- further improvement of teacher-student traditions in the direction of directors;
- Strengthening literary literary dance and making this process "voluntary";
- integration of theory and practice, organization of practical exercises in creative institutions;
- master class, online meetings with participation of local and foreign experienced specialists;
- The necessary conditions for independent study, educational and methodical support, strengthening of information and technical support.

The timely, productive student-director's independent work is the guarantee of future artistic performances, holidays and performances, artistic and spiritual value of art and video.

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MODERN PROBLEMS OF INFORMATION AND COMMUNICATION TECHNOLOGIES

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ECONOMICAL PROFITABLE ORGANIZATION OF GSM 900 RADIO COVERAGE

**Matyokubov Utkir Karimbevich senior
lecturer Urgench branch of Tashkent
university of information technologies
named after Muhammad Al-khwarizmi.**

Email: otkir_matyokubov89@mail.ru

**Bekimetov Alisher Farxodovich
Assistant, Urgench branch of Tashkent
university of information technologies
named after Muhammad al-khwarizmi**

Annotatsiya - faol RAN almashuvi mobil tarmoq operatorlari uchun sarf-xarajatlarni va operatsion xarajatlarni kamaytirishning umid beruvchi usuli hisoblanadi. Qisman resurslarni zaxiraga olish - har bir operatorga resurslarning minimal ulushini kafolatlash imkonini beradi. Ushbu maqolada, uzoq muddatli LTE tarmoqlari uchun qisman resursni bron qilish sxemasini taklif qiladi.

Kalit so'zlar: Radioaloqa tarmoqlari, kirishni boshqarish, telekommunikatsiya trafigi, virtualizatsiya, uzoq muddatli rivojlanish, mobil aloqa, tarmoq kengligi.

Аннотация - Активное совместное использование RAN является перспективным способом сокращения как капитальных расходов (CAPEX), так и операционных расходов (OPEX) для операторов мобильных (виртуальных)



сетей. Частичное резервирование ресурсов — это гибкая технология активного совместного использования RAN, которая позволяет каждому оператору гарантироваться минимальная доля ресурсов при одновременном доступе к общим ресурсам в порядке очереди.

Ключевые слова: Сети радиодоступа, контроль доступа, телекоммуникационный трафик, виртуализация, долгосрочное развитие, мобильная связь, пропускная способность.

Abstract - Active RAN sharing is a promising way to reduce both Capital Expenditure (CAPEX) and Operational Expenditure (OPEX) for mobile (virtual) network operators. Partial resource reservation is a flexible active RAN sharing technique that allows each operator to be guaranteed a minimum share of resources whilst also having access to shared common resources on a first-come-first-served basis.

Keywords Radio access networks, Admission control, Telecommunication traffic, Virtualization, Long Term Evolution, Mobile communication, Throughput.

Introduction. Radio Access Network (RAN) sharing is an increasingly popular method used by carriers to cost-effectively increase their coverage. RAN sharing especially makes sense for carriers in markets with a mostly pre-paid customer base environment, where having more network availability means more revenue from more billable minutes. Simply put, if the network is not available, calls paid by the minute cannot be placed, and revenue is lost. 5G networks will also likely rely on RAN sharing to reduce the cost of a new RAN build out that may employ new millimeter wave spectrum, as well as sophisticated multi-tower, multi-carrier aggregation. Ad hoc RAN sharing arrangements emerge when two mobile operators agree to work together to gain increased coverage with each other network assets. As a fair means of sharing, this is a simple approach. But in practice, like-kind resources do not account for equal performance. For example, RF-backhauled sites can deliver



similar performance to fibered sites, whereas fibered sites do not guarantee higher performance is not properly configured or assured. To set up sharing in a way that's truly equal and value-based requires an equal exchange of assured performance, as opposed to similar assets. Such a solution is possible, with the right equipment, but the methods used depend on a variety of factors. This white paper explores the possibilities for RAN sharing PM monitoring, with several use cases that illustrate how it could be set up.

Purpose of the system. The system is designed to organize cellular coverage of the GSM standard (including GPRS, EDGE) of remote settlements, roads, railways, that is, zones where installing full-fledged base stations is not economically profitable in light traffic conditions.



1-figure. Coverage of rural settlements

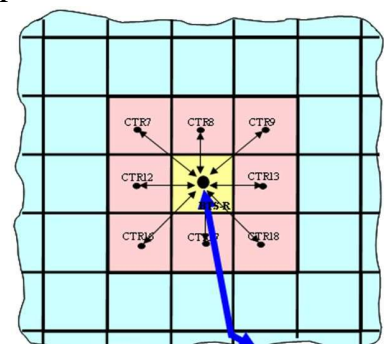


2-figure. Coverage of iron roads

Technical implementation. Repeaters with capacity transfer (CTR - Capacity Transfer Repeater) in cellular communication systems replaces base stations without reducing the service area and network capacity and do not require connection to them of transport channels based on Radio relay lines or Fiber optic line.

Cellular networks for localities

Standard cellular system 4 basic stations (BTS)

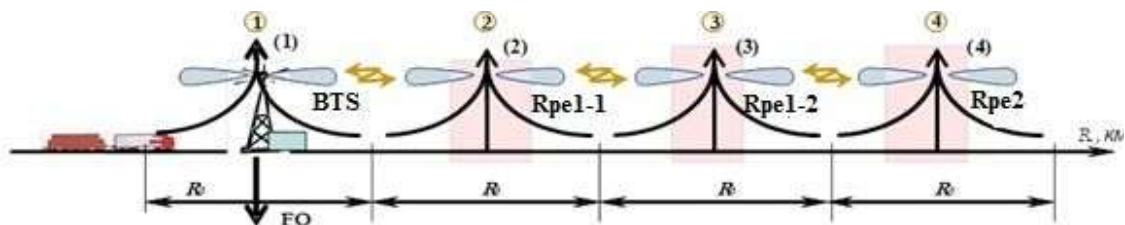


Cellular communication system with relay capacity

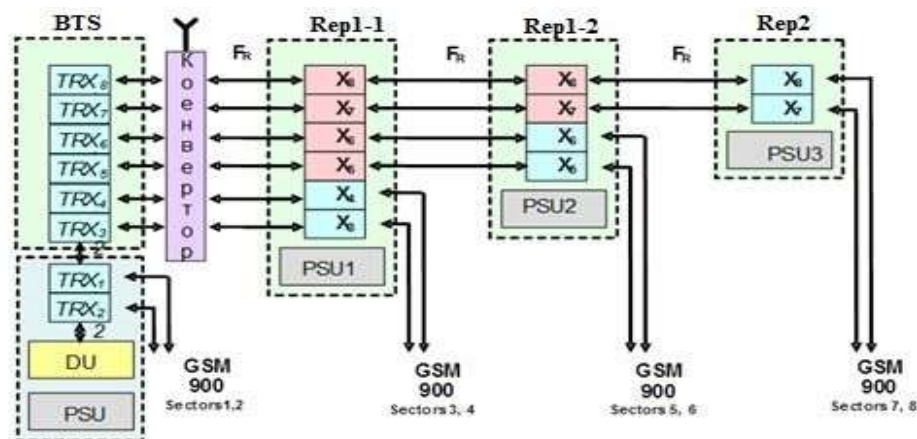
1 base station and 3 repeater

Relay technology base station capacity.

The system provides serial transmission of radio signals between the Base Station (BTS) and Mobile Stations (MS) subscribers. It is connected to the equipment of a standard GSM site (it is possible to connect to the equipment of any manufacturer) and ensures the transfer and distribution of up to 6 GSM carriers (TRX) of a base station (from 1 to 3 relays without retransmitting radio relay equipment) over the required territory.

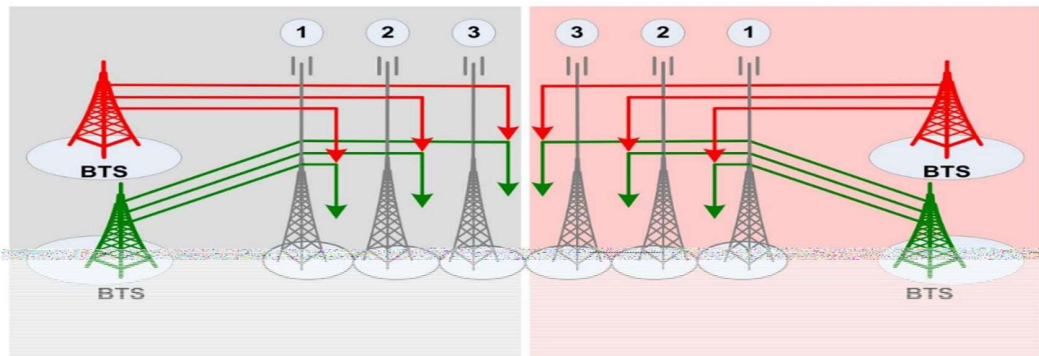


Converter - a unit that carries the GSM 900 carriers received from the BS into the relay channel (6 GHz); - CTR (repeater) - block with two-way duplex relay, 2 TRX GSM 900;



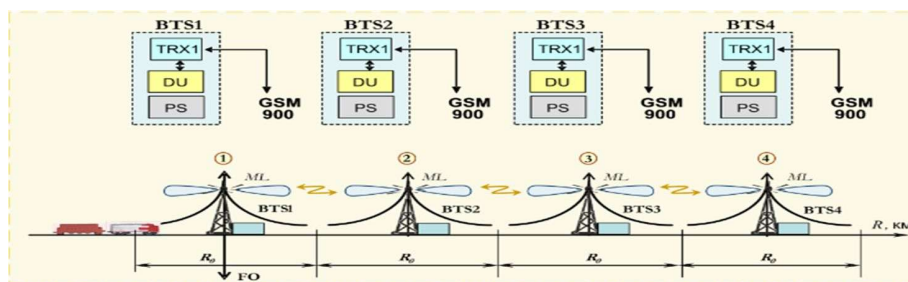
The converter is installed on the base station site. It transfers the carrier frequencies of the GSM base station to the relay range and transmits them to a remote distance.

the repeater on the remote side amplifies and retransmits the signal, and also transfers the signal back to GSM frequencies with the subsequent organization of 2 sectors,



similar to the base station (1 GSM carrier in each sector).

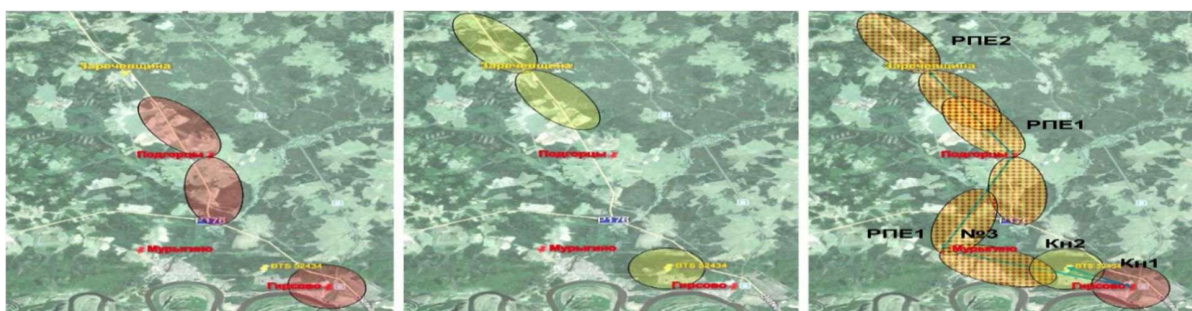
RAN Sharing. Using the system simultaneously by several operators.



The ability of the system's repeaters to work in conjunction with the base stations of any manufacturer makes it possible to implement a communication scheme with capacity transfer simultaneously for several operators (for example, for 2).

- For each operator, replace 6 GSM base stations and 6 radio relay lines with 6 common repeaters
- Reduce the number of towers and sites by 2 times
- Reduce power consumption to the site by 2-3 times
- Use lightweight masts - significantly speed up network construction

RAN Sharing. Joint coverage of the zone by two operators



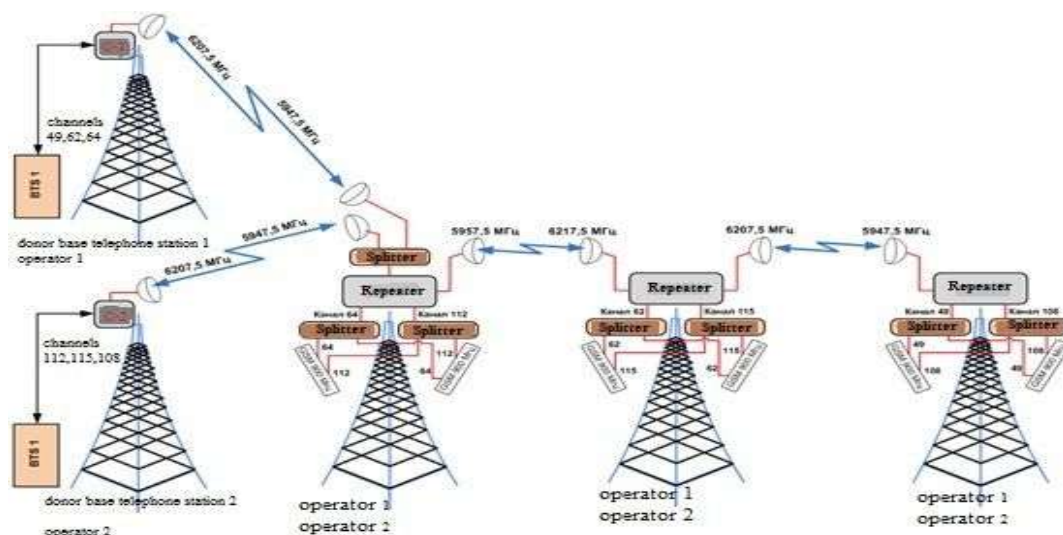
Operator 1

Operator 2

Operator 3

Installing repeaters with capacity transfers common to 2 operators, reduces the number of standard base stations and ensures multiple expansion of network coverage and network capacity for each of the operators.

RAN Sharing. Technical implementation



Organization of joint coverage for 2 operators:

- Each operator provides 3 TRX GSM signals of each of the operators are fed from the output of the repeater via splitters to 2 polarization service antennas - this ensures joint coverage of the selected territory

Economic effect

Communication scheme	Cost Reduction for the network segment		RAN Sharing number of operators	Cost Reduction for the network segment, for each operator	
	Equipment	Electricity		Equipment	Electricity
Line 3 site	1,29	2,3	2	1,73	2,6
Liney 5 sites	1,59	3,1	2	2,21	3,6
Liney 7 sites	1,72	3,6	2	2,82	4,2



Restangular sites	9 1,59	4,0	2	2,95	5,1
Restangular sites	25 1,72	5,2	2	4,3	7,0

Results of operation:

- Measurements performed showed that the main characteristics of a fragment of a GSM network deployed using an RPE system are not inferior to those of a network built on the basis of traditional equipment, both in terms of the coating being created and in quality of service.
- The technology of connecting the RPE system converter directly to the output of the base station radio module, makes it possible to apply the system together with the base stations of any manufacturer, with any versions of the firmware.
- The power consumption of the KN converter does not exceed 100 W (when processing 6 frequency channels), and the power consumption of the RPE2 does not exceed 250 W (when processing 2 frequency channels), which, all other things being the same, is much less than the power consumed by the standard base station.
- The system successfully performs a handover, both between sectors of each RPE, and between RPE and BS macro networks.
- Control over the operation of all component parts of the pilot zone was carried out remotely via GPRS channels using the repeater control system (RMS) located on the site of Intellect Telecom JSC.
- The measured MOS speech quality at 95% of the test drive area was over 3.2 (quality from “good” to “excellent”).

Results CCC with carrying capacity allows:

- ✓ Reduce capital and operating costs (in comparison with the standard method of organizing GSM coverage using base stations) per a single territory;



- ✓ Reduce the site's power consumption from 1.5-2 kW (using standard equipment) to 0.36 kW while maintaining the service area and network capacity;
- ✓ Reduce the number of communication breaks due to unsuccessful cross-site handover (the length of the communication zone of one base station working in conjunction with the system increases 4-6 times);
- ✓ Provide coverage in tunnels and enclosed spaces without connecting equipment to fiber optic lines;
- ✓ Reduce costs when sharing the equipment of the system at the same time by 2 mobile operators (RAN Sharing) to cover the selected territory without losing the quality of the services provided.

Conclusion. RAN sharing without segmented, per-operator usage and performance monitoring is at best an informal relationship that is limited by its ability to properly express and exchange the value of shared resources each operator offers and maintains. Gaining real-time visibility of each party's network, service and resource performance is a critical element of RAN sharing that can expand these relationships, build trust through accountability, and deliver sophisticated SLAs and reporting that allow equitable sharing and increased revenue opportunities for all involved. Instrumentation also permits both operators to share in troubleshooting and rapid fault isolation, plan network capacity and improve their own offerings' QoS and QoE, ultimately making them each more competitive in their core offerings, increasing opportunities for revenue and distinguishing their networks as highly reliable and higher performing than competitors' offerings. The methods used depend on each carrier's architecture and priorities, as well as capabilities desired by the end customer. Each set of choices comes with its own ramifications. A neutral third party approach may offer the most benefits, as the capital and operational expenditure related to instrumenting, monitoring and reporting on all shared service flows can be time-consuming and an added cost to expanding coverage while seeking to benefit



from the economies of RAN sharing. As a result, performance monitoring and reporting as a service often end up being the lowest cost, most effective option for governing the performance, accountability and value of resource sharing models.

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UDK 622.765:533.7

COMPUTER SIMULATION OF THE FLOTATION PROCESS TAKING INTO ACCOUNT THE HYDRODYNAMIC STRUCTURE OF INTERACTION FLOWS

**Nasirova Shaira Narmuradovna Associate
Professor of the Department "Teaching
Methods of Informatics",
Navoi State Pedagogical Institute,
E-mail: nasirova_61@mail.ru**

**Artikov Asqar Professor of the department
"Informatics, Automation and
Management" of the Tashkent Institute of
Chemical Technology,
E-mail: atigof@rambler.ru**

**Isakov Abror Faxriddinovich Applicant to
the department of "Informatics,
automation and control" of the Tashkent
Institute of Chemical Technology**

Annotation: This article discusses computer simulation of the flotation process, taking into account the hydrodynamic structure of the interacting flows. Various



variants are studied, the possibility of using differential equations of typical models of inertial and integral links is shown. This made it possible to justify a multistage method of identifying a flotation facility. The results obtained allowed us to develop acceptable computer models of the dynamics of the flotation process. Methods for modeling an object and a control system for flotation complexes based on computer models of the process occurring in the gas and liquid phase have been developed.

Keywords: modelirovanie. concentration, computer, model, software, flotation, apparatnoe obespechenie, parametr, protsess, analiticheskiy - eksperimentalnyy, optimalny.

Аннотация: В данной статье рассматривается компьютерное моделирование процесса флотации с учетом гидродинамической структуры взаимодействующих потоков. Изучены различные варианты, показана возможность использования дифференциальных уравнений типовых моделей инерционного и интегрального звеньев. Это позволило обосновать многоступенчатый метод идентификации объекта флотации. Полученные результаты позволили разработать приемлемые компьютерные модели динамики процесса флотации. Разработаны методы моделирования объекта и системы управления флотационными комплексами на основе компьютерных моделей процесса, протекающего в газовой и жидкой фазе.

Ключевые слова: моделирование, концентрация, компьютер, модель, программа, флотация, аппаратное обеспечение, параметр, процесс, аналитический - экспериментальный, оптимальный

Аннотация: Ушбу мақолада гидродинамик тизимини инобатга олган ҳолда ўзаро таъсирдаги оқимларнинг флотация жараёнини компьютер моделлаштириши кўрилган. Турли вариантлар ўрганилиб, инерциал ва



интеграл звеноларнинг типик моделларини тузишда дифференциал тенгламаларидан фойдаланиш имконияти кўрсатилган. Бу флотация муҳитини аниқлашнинг кўп босқичли идентификация усулини асослашга имкон берди. Олинган натижалар бизга флотация жараёнининг динамикасини мақбул компьютер моделларини ишлаб чиқишга имкон яратди. Жараённи суяқ ва газ фазаларидаги компьютер моделлари асосида флотацион комплекслар учун бошқарув тизимини ва объектни моделлаштириш усуллари ишлаб чиқилди.

Калит сўзлар: моделлаштириш, концентрация, компьютер, модел, дастур, флотация, аппарат, параметр, жараён, аналитик – экспериментал, оптимал.

Introduction. Today, in world practice, research and development in the field of the manufacturing industry, modeling and optimization of technological processes under the conditions of modern scientific and technical progress have allowed the industry to increase productivity by reducing energy consumption and improving product quality due to the wide use of modern technologies in creating high-performance, reliable and cost-effective technological equipment. At the same time, the search for optimal solutions for technological processes in practice is one of the main areas of technical development, focused on increasing productivity, improving product quality, reducing costs, facilitating working conditions and protecting the environment[1].

Technological processes at the processing plants are characterized by the complexity of circuit solutions, a large number of interacting parameters, the presence of uncontrolled external disturbances that vary randomly. Flotation processes, relatively slowly occurring, carried out in devices with significant capacities, are classified as inertial processes. All this causes a well-known phenomenon, when under the same, it would seem, conditions of the process, different results are obtained[2].



Literature review. At the present stage, the optimization of the technological process and the development of flotation apparatus is impossible without the widespread use of automation equipment and computer technology.

Studies on the technological processes of flotation and the development of analytical (deterministic) models of the process that obeys precise calculations are not yet sufficient. In this regard, flotation is more often viewed from the “black box” position as a probabilistic process without taking into account the internal essence [2], using the concepts and methods of probability theory and mathematical statistics. The use of statistical models for controlling the flotation processes has shown that in a number of cases, due to the drift of the characteristics of the control objects, the models are aging, reducing the latter’s adequacy to the actual process.

The current level of development of the theory of the flotation process shows an increasing demand for work on the analytical study of this process. In particular, taking into account the interaction of reagents with the surface of mineral particles and the determination, on the basis of such an analysis, of the necessary concentration of reagents in the flotation pulp. Of great importance are works devoted to the study of the dynamics of mass transfer, flotation kinetics [2, 3] and others. The theoretical models obtained in such studies on the basis of the use of physicochemical regularities are very useful for studying the internal interactions and the relations between the parameters of the flotation process. However, the lack of consideration of hydrodynamic structures reduces their accuracy in the calculation of flotation systems with specific processes. Therefore, it became necessary to create methods for the formalization of analytical models [3].

Research Methodology. Considering various options, the possibility of using differential equations in the form of an inertial link model or as an integral link is shown. This made it possible to justify a multistage method of identifying a flotation



facility. The results obtained allowed us to develop acceptable computer models of the dynamics of the flotation process.

The modern development of the techniques and methodology of systems thinking and analysis makes it possible to carry out a wider study of objects on the basis of the information principle of analysis. Each object can be considered an element processing information. Information input, its processing and information output are considered. The use of methods of systemic thinking and analysis allows us to specify the processes of information processing. In our opinion, the object of study consists of two components: the system itself, i.e. element, as the physical component of the object and the process in this system[4].

When building a computer model of a bubbling cube of a flotation device, a multistage system analysis was carried out. The bubble cube is taken as the main system. The computer model of the gas phase for the chosen quasi-layer is based on the material balance.

Here you can introduce the concept of the equilibrium concentration of valuable components. There is a real value of valuable components in the liquid phase, determined by the equilibrium concentration, which depends on the properties of the binders and the nature of the gas phase. Then the transition process, i.e. the mass transfer between the liquid and gas phases is characterized by the mass transfer equation:

$$\frac{dY_i}{d\tau} = Q_y k(y_i - y_{i-1}) + A_v V_a (x - y_i) \quad (1)$$

Here: y_i – is the concentration of the incoming gas, y_{i-1} – is the concentration of the outgoing gas, Q – is the gas flow rate, k – is the coefficient characterizing the state of the gas, A_v – is the coefficient of mass of recoil from the liquid to gas, V_a – is the

volume of the quasi-layer, x - is the concentration of the valuable component in the liquid[5,6].

Now you can make a material balance equation in the form:

$$((Qg \cdot u(3) \cdot (u(2) \cdot u(4))) + (Av \cdot Va \cdot (u(1) \cdot u(2)))) / (a \cdot rog \cdot u(3)) \quad (2)$$

The process in the gas phase in a quasicompleted model is described in the form shown in Figure 1.

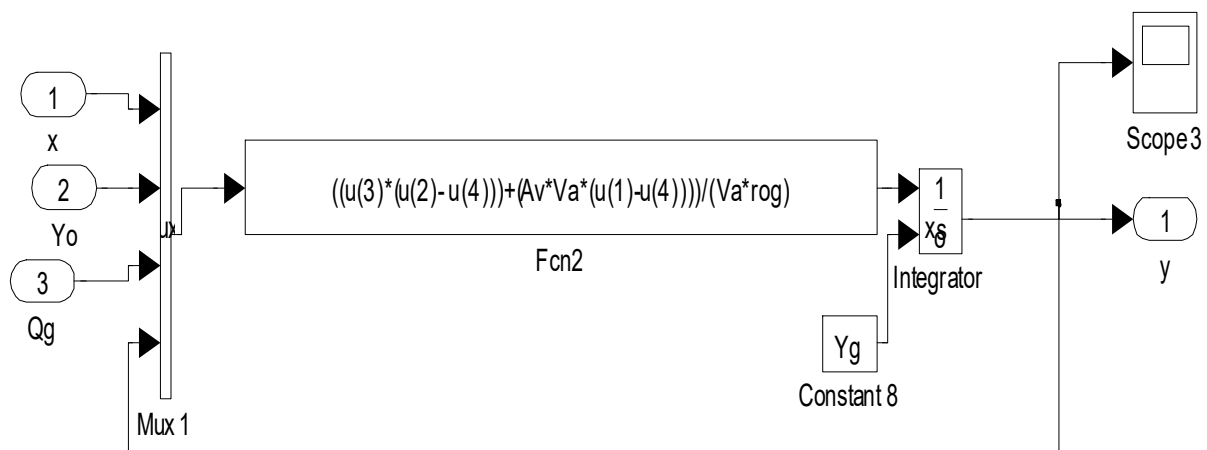


Fig. 1. Computer model of the process in the quasi-gas phase of the single-stage flotation apparatus

Introducing the above equations into a computer using the Matlab program, we obtain a flowchart for calculating the concentration of valuable components in the liquid phase of a bubbling cube.

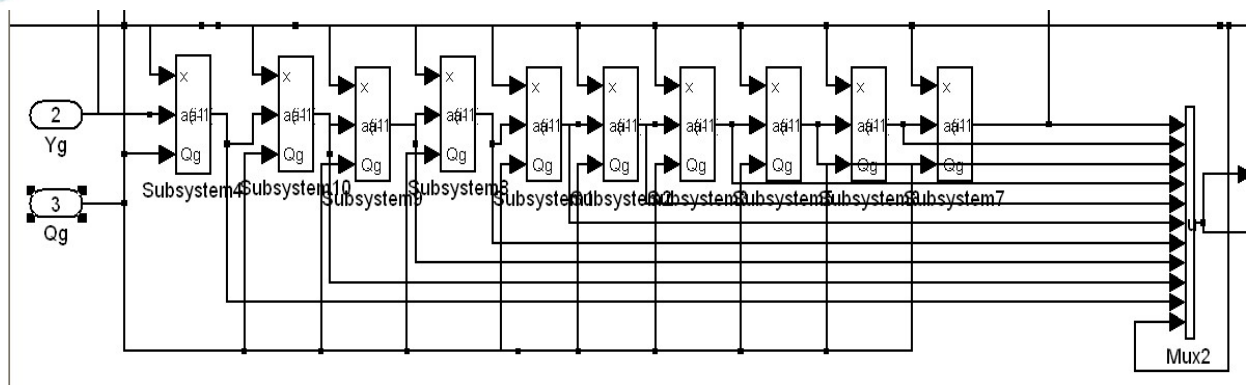


Fig. 2. A computer model of changes in the concentration of valuable components in the gas phase

In the multiquas layer representation of a bubbling cube, as a result, the combined computer models of individual quasi-objects, i.e. mathematical models of quasi-layers, a computer model was obtained for the gas phase of a bubbling cube of a flotation unit. (picture 2.)

The liquid phase in each quasic layer has common indicators. In the cube of the flotation apparatus, almost perfect mixing of the liquid occurs, in which the concentration of the valuable component at all points of the apparatus will be the same. Therefore, one mass transfer equation is applied for the liquid phase (or a unit that calculates the concentration in a flotation unit) [7,8]. (Figure 3.)

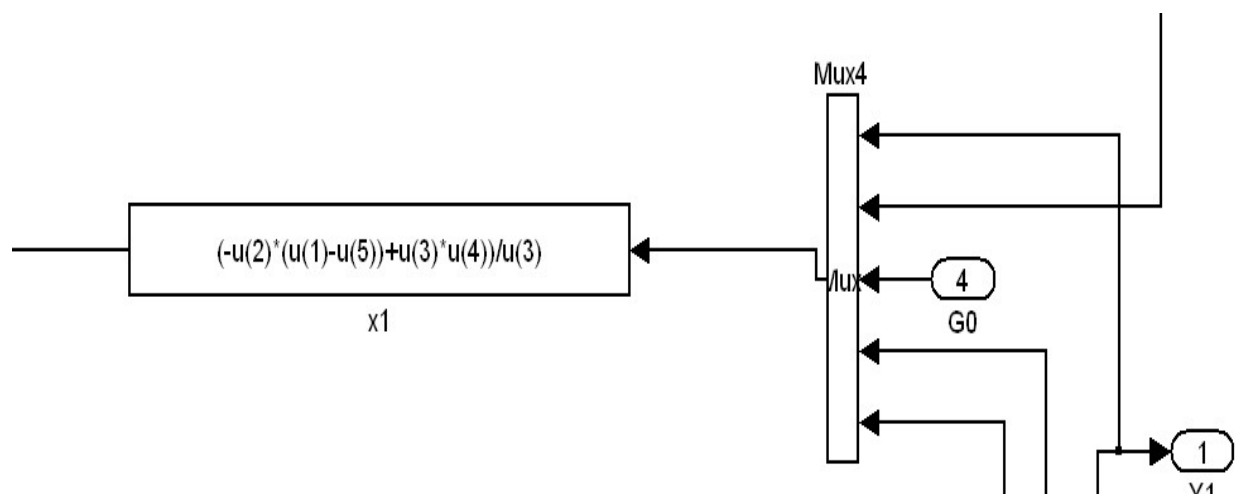


Fig. 3. The unit for calculating the change in the concentration of precious materials in the liquid phase of a flotation apparatus

The computer model of the process in the liquid phase of a single-stage flotation object is:

$$G_o X_o - G_g X = G_g y - G_g y_o$$

$$X = \frac{1}{G_o(-G_g y + G_g y_o + G_g X_o)}$$

The computer model of the process in a bubbling cube is formalized. The computer model reflects the change in the input concentration of valuable components in both the liquid and gas phases[9].

On the basis of the models of the gas phase and the bubbling cube, a computer model of the bubbling cube of the flotation apparatus was obtained (Fig.4).

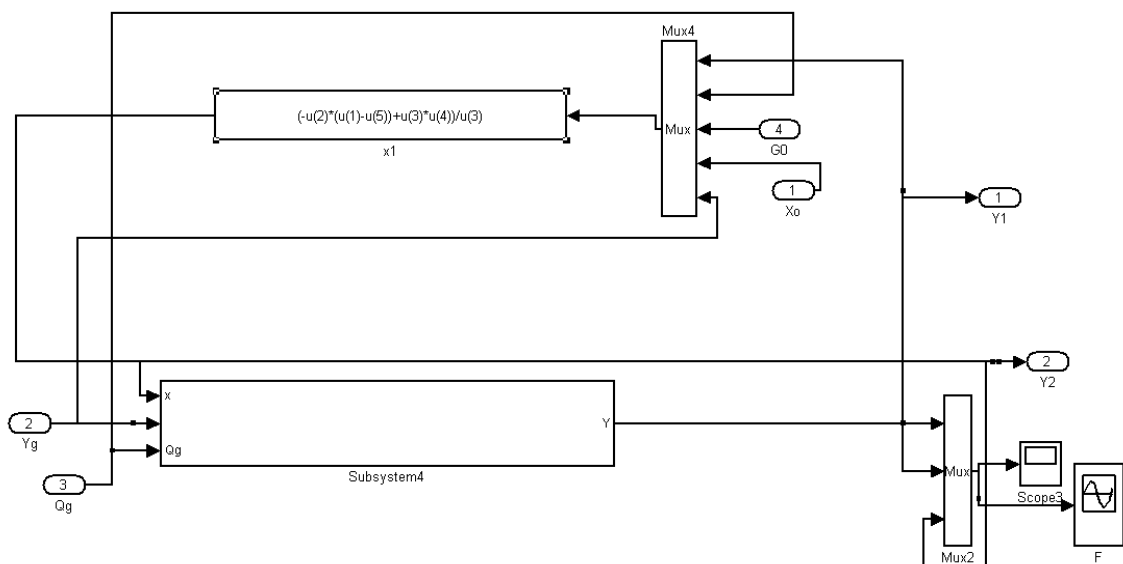


Fig. 4. Computer model of the flotation process based on the MATLAB application program

The obtained integral model characterizes a consistent change in the concentrations of valuable components in both liquid and gas, and in quasi-layers. For the computer model to work, it is necessary to set the initial conditions, which are: mass transfer coefficient, flow rate, initial concentration, volume, density[10].

The transients obtained using the computer model of the process for the periodic operation of the pressure cube are presented in Figure 5.

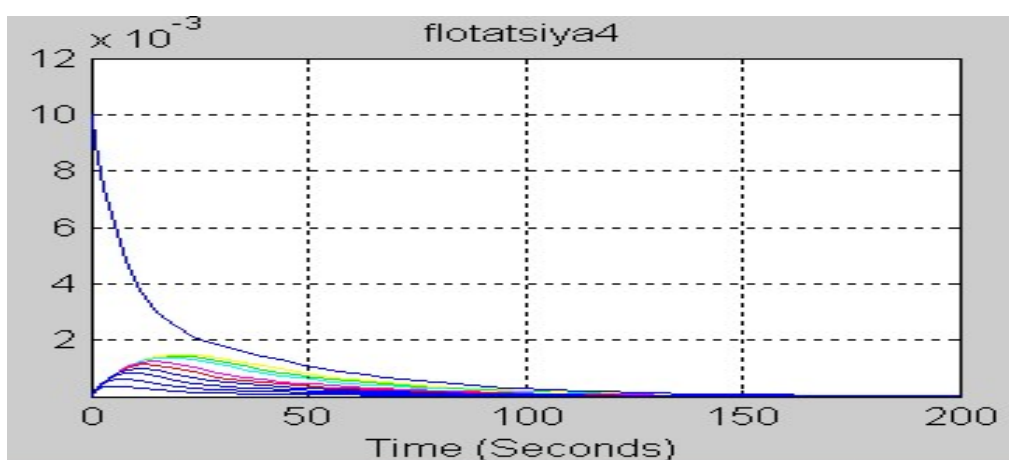


Fig. 5. Graph of changes in concentration in the liquid and gas phase during periodic flotation

Conclusion: As can be seen from Figure 5, the content of useful components in the liquid phase decreases with time of a periodic process, and the content of components in each layer of the gas phase increases to a maximum value; consistently decreases, towards the end of the process, the concentrations of valuable components in the liquid and gas phases approach zero.

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UDK 654.195.62

**ORGANIZATION LOCAL RADIO WAVES WITH A WAVELENGTH
 $\Lambda=160\text{M}$ AND FREQUENCY WITH $1,600 \div 1835 \text{ KHZ}$ MIDDLE-WAVE
DIAMETER**

To'lqin Matqurbanov Alimboyevich
Assistant, Urgench branch of Tashkent
University of information technologies
named after Muhammad al-Khwarizmi
E-mail: Toshkent.2013@mail.ru

Аннотация. Мақолада оптик толали алоқа линиялари базасидаги ахборот тизимларининг дунёда ва Ўзбекистондаги ривожланиш ҳолати ва истиқболлари баён қилинган. Шунингдек мақолада мавзуга оид адабиётлар таҳлил қилинган бўлиб, оптик толали алоқа линияларининг дунёда ва Ўзбекистондаги ҳолати келтирилган. Мақоланинг ёритиш методикаси сифатида ривожланган мамлакатлардаги оптик толали алоқа линияларининг ишлатилишдаги ютуқларнинг шарҳи ва таҳлили кўриб чиқилган.

Калит сўзлар: Оптик тола, спектр, ОТАЛ, POF, DWDM, PMMA, IP-TV, HDTV, TCTN (TASHKENT CITY TELEPHONE NETWORK), интернет, телекоммуникация.



Аннотация. В данной работе авторами излагаются состояние и перспективы развития информационных систем на базе ВОЛС в мире и в Узбекистане. А также в статье проанализированы литературы о тематике и приведены состояние волоконно-оптических линий связи в мире и в Узбекистане. В качестве методике изложения рассмотрены обзор и анализ достижения волоконно-оптических линий связи в развитых странах мира.

Ключевые слова: Оптическое волокно, спектр, ВОЛС, POF, DWDM, PMMA, IP-TV, HDTV, ТГТС (ТАШКЕНТСКАЯ ГОРОДСКАЯ ТЕЛЕФОННАЯ СЕТЬ), интернет, телекоммуникация.

Abstract: Abstract deals with use detecting and correcting errors in organization waves and radio communication lines, providing quality and reliable connection between central radio stations and their baseband units.

Keywords: Channel, frequency, radio, aerial, waves, magnification, system, connection.

Introduction. Before setting up medium radius ranges local radio lines with a wavelength $\lambda = 160\text{m}$ and frequency with $1,600 \div 1835 \text{ kHz}$, we first need to study radio systems in this range.

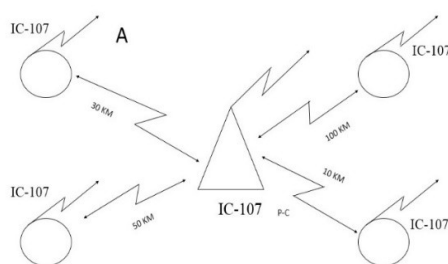
Short-to medium-wave electromagnetic radiation has a role and function in the radio. Using this feeder wave, we can create about 3000-2000 radio stations in long distances.

This characteristic of the short and medium wave is caused by the ionosphere waves of the waves and the properties of the barrier of the earth's globe. In the early days of the last century, in the radio communication, high-frequency radio equipment was not developed. There are also shortcomings in the middle and short circuits, one of which is the size of the antenna feeder devices. Therefore, the modeling of antenna feeder devices from the middle and the periphery is a process that requires much labor. At the stages of development of information technologies, modeling programs

are enough. Antenna feeder modeling software for broadcasting devices is now a MMANA program.

Literature review. Having a large library of ready-made antenna files allows not only to find a suitable antenna, but also to check for con. Specific examples of the level of development of the program. Also given, though not directly related to MMANA, but desirable for confident work and proper understanding results obtained, the basics of computer simulation antennas.

Research methodology. Central station radio waves of mid-wave range include “Transvir type” IC-107, operating at frequencies of 1.500mHz -30mHz on range of shortwave radios. For radio station (radio transmitting device), central station, established on basis of following scheme, should be centered in center or distribute radio waves in one direction.



Picture 1. Radio network structure operating in mid-wave diapason.

Antenna Types

You can use “delta loop” antenna for central station. Delta loop is called Delta in following sentences. Delta is a type of antenna or an “antenna” based antenna type. The word "Delta" is derived from Greek "D". A principal closed loop consists of three base points and the perimeter is in the form of a triangle $L_n = l$, which has equal wavelengths in most cases. This antenna was tested in the U.S.A in 1925.

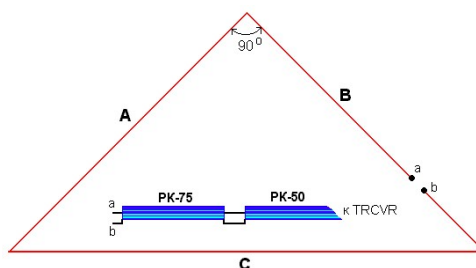
Here is a brief overview of Delta antenna specifications.

1) Delta-based antennas. Plate is an enlarged variant of vibrator type.

- 2) Magnification of antenna increases as a result of magnification of parameters of plate vibrator.
- 3) Antennas are classified as symmetrical antennas and can not be grounded, but at low frequencies, antenna is connected to ground with smaller frequencies less than wavelength.
- 4) Input resistance of Delta antenna is approximately $Z = 100 \div 400 \text{ Ohm}$. If height of the antenna is higher, input resistance of antenna may be reduced to $Z = 80 \div 60 \text{ ohm}$. In this case, antenna can be connected without coaxial cables with $Z = 50 \div 75 \text{ Om}$.

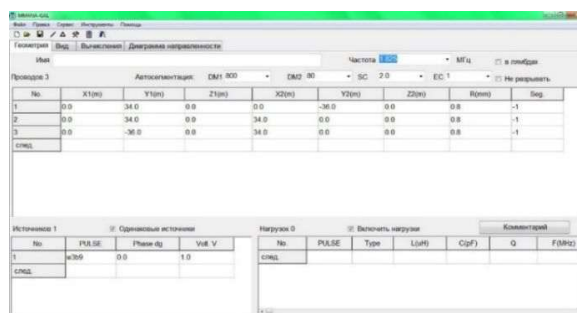
Analysis and results. Delta Loop Antenna Design.

Before installing the antenna, the soil type must be examined. We use the software built using the Delta Loop calculator to calculate the antenna perimeters. In this program, a 75Ω coaxial transformation is used between the antenna and the feeder when the antenna uses a 50-mm feeder (antenna and its connecting device).

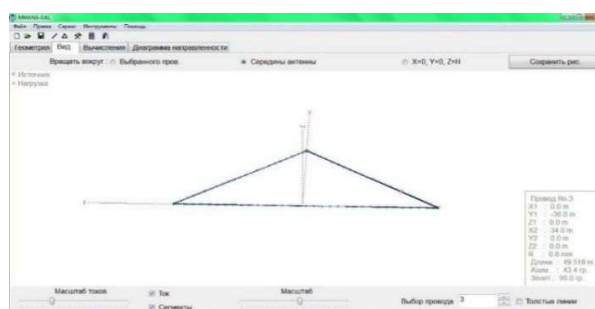


Picture 2. An image of the delta antenna in the Delta Loop calculator.

Entering antenna parameters in MMANA program and calculate antenna's electrical parameters.



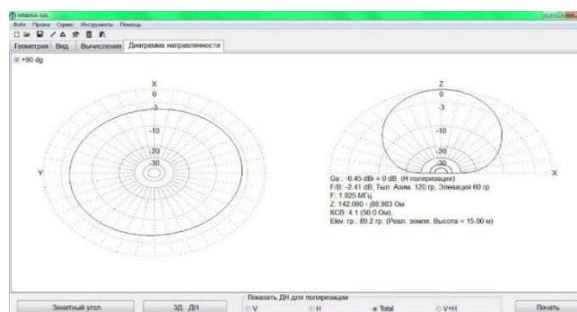
Picture 3. A description of the Geometry window of the Delta Loop antenna in the MMANA program.



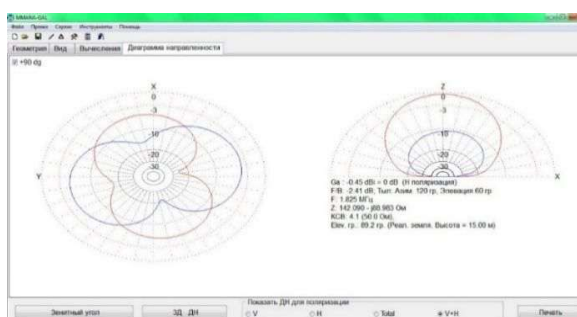
Picture 4. The image of the Delta Loop antenna in the MMANA program.



Picture 5. Image of the Delta Loop antenna in the MMANA Vicisleniya pane.

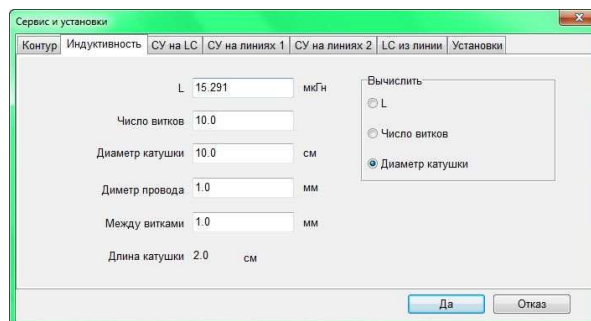


Picture 6. The schema of the Delta Loop antenna in the MMAN

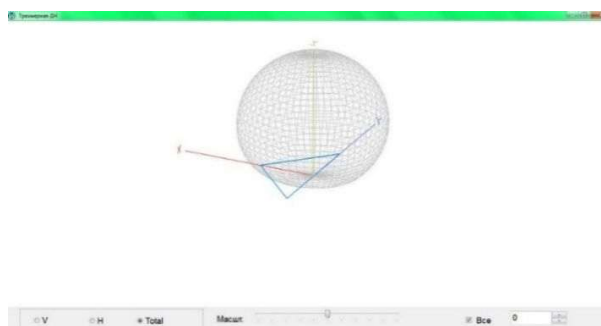




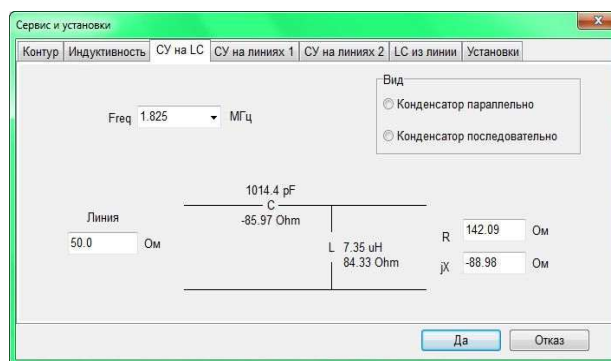
Picture 7. Vertical and horizontal wave propagation in the schema window of the Delta Loop antenna in MMAN



Picture 8. 3D view of the Delta Loop antenna in the MMANA schema window.



Picture 9. A connector for the Delta Loop antenna, a G-Simon Adjustable Inductive Roll Parameters tab.



Picture 10. Delta Loop Antenna Adapter Parameters.

T Shaped Aerials

The location of the radio station location of the subscriber and the constructive report of the antenna Subscriber stations are planned to be stationary (indoors) on the project, but stations can be installed in the vehicle body. Radio stations can be radio



transmitters with type IC-107 or short-wave transmitters. The experiment shows that T-shaped G-symmetrical antennas can provide good results in a 160-meter diameter wavelength with its simplicity of construction, electrical parameters. For T-cells, a T-Antenna is available. T shaped antenna was tested by American radiocrats Loven Windom in the 30s of the last century and achieved good results. That's why the name given to the antenna was named "WINDOM". In the 40s and 50s of the last century, it was called "American". One of the good things about the "T" antenna We can use the antenna for different antennas on small antennas. In these cases, the feeder can be connected to the antenna by a wire (in the classic version), the access point of the feeder determines the input resistance of the antenna. By changing the port, we can adjust the power of the transmitter connected to the antenna. We will consider the construction of the "T" shaped antenna. The design of the "T" shaped antenna is not so difficult. The length of the antenna is initially L, then the distance to the point of the feeder connected to the antenna is determined by X0. The length of the antenna is the antenna length L. below measures Lk The length of the antenna signal.

$$L = 0.95 * \lambda / 2 = 0.475 * \lambda$$

Here:

L-Antenna cable length (m)

l- Wavelength of Propositional Frequency (m)

Antenna's feeder port is determined by experiment. The probable connection point is determined by the following figure.

$$X_0 = 0.17 \text{ l (2)}$$

The wavelength range ranges from 160 to 1860 kHz for radio couples ranging from 160 m to about 1960 kHz.

Radio frequency spectators are allowed to experiment with the frequency range 1840-1960.

$$l(m) = 300 / (F) (3)$$

we calculate the frequency wave length for 1.840kHz.

$$l(m) = 300 / 1.840 \text{ kHz} = 163.04 \text{ m}$$

Antenna length L

$$L = 0.475 * l = 163 * 0.475 \sim 80\text{m}$$

The distance to the antenna point of the feeder

$$X_0 = 0.17 * l = 0.17 * 80 = 13.1\mu 13\text{m}$$

The resulting "T" shaped antenna looks like this.

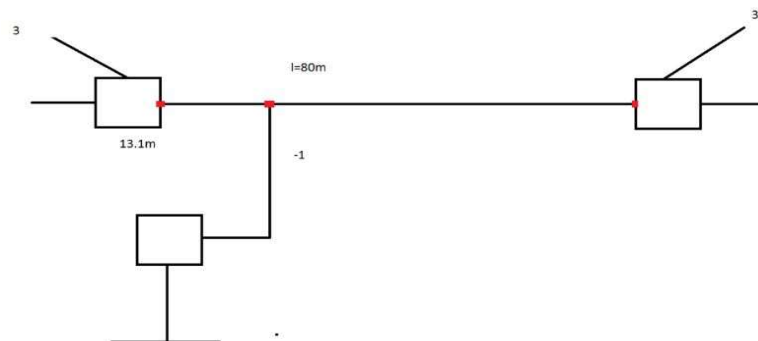


Figure 11. Designed T-shaped antenna's constructive look.

Conclusion/Recommendations

In summary , I can say that these studies and information can be used and taught as experimental training on “ Radiolocation Systems” which is in “ Telecommunication Technologies” .Also bands used in radio systems can be used in mobile and television standards.

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STATE AND PERSPECTIVES OF DEVELOPMENT OF INFORMATION SYSTEMS BASED ON CFL IN THE WORLD AND IN UZBEKISTAN

**Masharipov Otaboy Matyoqubovich,
doctoral student of Tashkent university
of information technologies named after
Muhammad Al Khwarizmi,
Email: otaboy_1963@mail.ru**

**Bekimetov Alisher Farhodovich,
Tashkent university of information
technologies named after Muhammad Al-
Khwarizmi, the assistant to chair
Telecommunication engineering, Email:
Mr.alisher13@gmail.com**

**Samandarov Bunyod G'ayratovich,
doctoral student of Tashkent university
of information technologies named after
Muhammad Al-Khwarizmi,
Email: bunyod931@mail.ru.**

Аннотация. Мақолада оптик толали алоқа линиялари базасидаги ахборот тизимларининг дунёда ва Ўзбекистондаги ривожланиш ҳолати ва истиқболлари баён қилинган. Шунингдек мақолада мавзуга оид адабиётлар таҳлил қилинган бўлиб, оптик толали алоқа линияларининг дунёда ва Ўзбекистондаги ҳолати келтирилган. Мақоланинг ёритиш методикаси сифатида ривожланган мамлакатлардаги оптик толали алоқа линияларининг ишлатилишдаги ютуқларнинг шарҳи ва таҳлили кўриб чиқилган.



Калит сўзлар: Оптик тола, спектр, ОТАЛ, POF, DWDM, PMMA, IP-TV, HDTV, TCTN (TASHKENT CITY TELEPHONE NETWORK), интернет, телекоммуникация.

Аннотация. В данной работе авторами излагаются состояние и перспективы развития информационных систем на базе ВОЛС в мире и в Узбекистане. А также в статье проанализированы литературы о тематике и приведены состояние волоконно-оптических линий связи в мире и в Узбекистане. В качестве методике изложения рассмотрены обзор и анализ достижения волоконно-оптических линий связи в развитых странах мира.

Ключевые слова: Оптическое волокно, спектр, ВОЛС, POF, DWDM, PMMA, IP-TV, HDTV, ТГТС (ТАШКЕНТСКАЯ ГОРОДСКАЯ ТЕЛЕФОННАЯ СЕТЬ), интернет, телекоммуникация.

Abstract. In the given work as authors are stated a condition and prospects of development of information systems on the basis of ВОЛС in the world and in Uzbekistan. And also in article literatures on subjects are analysed and resulted a condition of fiber-optical communication lines in the world and in Uzbekistan. In quality to a statement technique the review and the analysis of achievement of fiber-optical communication lines in the developed countries of the world are considered.

Keywords: Optical fiber, spectrum, FOCL, POF, DWDM, PMMA, IP-TV, HDTV, TCTN (TASHKENTCITYTELEPHONENETWORK), internet, telecommunication.

Introduction. Fiber-optic information transmission systems are one of the main transmission media in digital broadband systems with integrated services that connect urban PBX, as well as for transatlantic and intercontinental information exchange. Modern high-speed transmission technologies are based primarily on the use of fiber-optic media, which currently provide the highest possible throughput. That is why the



technology of fiber-optic transmission media is currently rapidly developing throughout the world.

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Research Methodology. The research methodology is the study and review of the prospects and development of fiber-optic communication lines in the world and in Uzbekistan Fiber-optical communication is a new technology for transmitting information over long distances without loss of signal quality. Due to its colossal bandwidth, fiber-optic communication lines are unique among other methods of transmitting large amounts of information. Research to improve the characteristics and parameters of FOCS and on the element, the base continues in all developed countries of the world. Nowadays, fiber-optic communication lines are being laid all over the world, which allow transmitting large amounts of information over considerable distances. This method became the basis of high-speed access to the Internet, significantly overtaking other popular methods of connection for key parameters.

For the next half a century incomplete, the construction of fiber-optic communication lines survived the present well-developed success:



In 1988, the construction of the first large-scale communication line between Japan and the USA was completed;

- In 2003, a signal transfer rate of about 11 Tbit/s was first achieved;
- In 2009, tests in the field of high-speed data transmission overcame a new frontier—scientists were able to broadcast a stream of 15.5Tbit/s without loss of speed over a distance of about 7,000 km.

Fiber-optic communication systems are now widely spread throughout the world, gradually crowding out other wired data transmission methods due to its features and unique characteristics. At present, communication lines based on fiber-optic connections are very popular all over the world. The demand for high-speed telecommunication technologies became apparent when mobile data consumption with 6 billion users is projected to grow to 40 trillion megabytes by 2016. As a result, today the telecommunications world operates with transmission networks at a speed of 100G (100Gbit/s). Therefore, progress does not stand still, and regularly there are messages about new technologies and achieved information transfer rates on telecommunication highways. Progress is mainly associated with the development of information transmission technology via modern fiber-optic cables. Hence, the basis of modern primary telecommunications networks has become an optical communication system. The creation of new-generation optical highways operating at multi-gigabit and terabit speeds required the development of a new network technology — compressed wave multiplexing (Dense Wave Division Multiplexing, DWDM). In this technology, the fiber-optical transmission system (FOTS) transmits information to the optical fiber at the same time by a large amount of light waves— λ . In addition, each wave is a separate spectral channel and carries its own information. Of particular note is that only DWDM technology performs multiplexing and switching of light signals without converting them into electrical



form The creation of the FOTS DWDM required the development of fiber-optic amplifiers that directly amplify light signals in the third window of optical transparency in the range $\lambda = 1528\text{--}1565\text{nm}$, which corresponds to the frequency interval 192–196THz. The entire modern line of FOTS equipment is built according to a simple scheme 10G - 40G - 100G-400G-1T-.When transmitting a binary digital signal over an optical fiber with a speed of, for example, 10G or 10 Gbit/s. A bandwidth of $\sim 30\text{GHz}$ is required, which is less than one percent of the 4 THz bandwidth. Therefore, a new principle of constructing FOTS-spectral separation (SP), called DWDM, appeared. The ITU-T standard establishes frequency plans that determine the values of the center frequencies of the spectral channels in the linear spectrum of FOTS-SP in increments of 100, 50, 25, 12.5GHz. Using wave (frequency) multiplexers based on optical multilayer amplifiers operating in the above frequency range, as well as reducing the step between waves, for example, to 50 GHz and 25 GHz, allows you to increase the number of simultaneously transmitted wavelengths to 80–160, i.e. It provides the transmission of traffic at speeds of 800Gbit/s – 1.6Tbit/s in one direction over one OF. The emergence of optical amplifiers operating in the above range, as well as the reduction of the step between the waves, allowed Huawei in 2012 to create the world's first 400G DWDM backbone transmission system with a bandwidth of up to 20Tbit/s. one fiber at a distance of up to 1000 km without intermediate electrical regeneration. The system has the highest efficiency since it used the minimum pitch of 12.5 GHz. According to the latest news, specialists from Eindhoven Institute of Technology (the Netherlands) and the University of Central Florida (USA) have developed a FOTS-SP with a throughput of up to 255 Tbit/s. At this speed, the information in 1GB will be transferred in 31 microseconds, and 1 terabyte in 0.03 seconds. In recent years, fiber made entirely from polymeric materials — plastic (polymer) optical fiber (POF — Plastic / Polymer Optical Fiber) has become increasingly popular. Although the



optical properties of polymeric materials do not allow plastic fiber to push quartz fiber out of the data transfer area, due to a number of distinctive features, it can compete with both quartz fiber and copper lines (twisted pair, coaxial cable) in some applications. Moreover, it is safe to say that POF has already taken a worthy place in the telecommunications market. The subsequent increase in the flow of transmitted information, the emergence of an increasing number of systems requiring the transmission of a digital signal over short distances, as well as the development of industrial automation, led to the fact that optical fiber was increasingly used in short communication lines, especially where copper lines do not provide high-quality transmission of information. In this case, the task was to create an environment for signal transmission, which has all the advantages of optical fiber, but at the same time has a competitive cost in comparison with copper lines. Plastic optical fiber is a multimode fiber of large diameter, the core, and sheath of which are made of polymeric materials IEC-60793-2-40 standard identifies eight types of plastic fiber, differing in their structure and, as a result, optical characteristics. However, the most widespread plastic fiber with a core and shell diameter of 980/1000 μm and a stepped refractive index. The outer containment usually has a diameter of 2.2 mm. Polymethyl methacrylate (PMMA) is used as the core material, which is also known as plexiglass, acrylic, plexiglass, etc. The outer shell is usually made of polyethylene. In a plastic optical fiber, whose diameter is much larger than the diameter of quartz fiber (standard multimode quartz fiber has a size of 50/125 μm), a huge number of spatial modes of optical radiation can simultaneously propagate. This number can reach several million. The numerical aperture of plastic fiber (NA) has a value of about 0.5. Single-mode plastic fiber is not produced. Due to the large aperture of the plastic fiber, radiation input into it is much easier than in the case of fibers with a small core. Therefore, instead of expensive narrow-focus lasers or special focusing optics, POF transmitters use cheap LEDs with a wide angle of divergence emitting in



the visible range. For POF, both standard connectors (ST, FC, SMA ...) and special design connectors (for example, the Versatile Link family from Avago Technologies) are manufactured. Since the polymer material is easier to process than quartz, working with it requires less skill and time. The process of terminating is reduced to removing the outer sheath of the cable, splitting the fiber, installing the connector and polishing the end. Crimping tools are also needed for mounting some connectors. All necessary fixtures have a significantly lower cost than in the case of quartz fiber. Epoxy glue is usually not used.

Despite all these advantages, the unresolved question remains: what to do with the huge attenuation in polymer materials that is huge by the standards of fiber optic links? Indeed, POF has noticeable limitations on the speed and range of information transfer. Usually, plastic fiber-based lines have a length of the order of several tens of meters, and the maximum transfer rate is limited to about 200 Mbps (the transfer rate can reach several Gbit / s, but fibers with a different refractive index profile and multiplexing technology are used).

However, it is these restrictions and determines the scope of plastic fiber. In terms of the range and speed of transmission, POF will never be able to compete with quartz fiber. However, in non-extended networks, which, in addition, do not require high speeds, the advantages of plastic fiber, which have been written above, are manifested.

It is of particular interest to consider how things are in terms of the introduction of fiber-optic communication lines in the Republic of Uzbekistan. Now, namely, the introduction of new information delivery environments based on fiber optic links to improve the reliability of communication. In Uzbekistan. According to the instructions of the President of the Republic of Uzbekistan Islam Abduganievich



Karimov (according to Resolution No. 307 of 1995 on August 1 of the Cabinet), the implementation of the national program for the reconstruction and development of the telecommunications network of the Republic of Uzbekistan began. The goal of the program was to reconstruct the existing network and provide access to the global telecommunications network. This task was successfully completed. One of the timely resolved important issues was the task of constructing and commissioning the national Trans-Asia-Europe fiber optic link (TAE FOL) of the large-scale Trans-Asia-T Europe Optical Fabre Cable project. According to this project, it is planned to build cable communication lines in Europe and in Southeast Asia. It consists of representatives of all states through which the fiber optic cable line passes, namely the participation of this project by the participation of this international commission.

The construction of TAE FOCL led even more developed economic and cultural cooperation between the states of Asia and Europe. The network is stretched from Shanghai to Frankfurt-Main and passes through the territory of 18 states: China, the Republic of Central Asia, the Republic of the Transcaucasus, Turkey, Ukraine, Belarus, Poland, Hungary, Romania, Austria, Germany. The cable is laid under the water of the Caspian and the Black Sea. TAE FOCL (fiber optic communication line) is a high-quality telecommunication network built on the basis of fiber-optic lines. Without erroneous and distorted signal transmission is ensured by the use of digital transmission systems in it. The transmission speed of digital information signals is 622 Mbit/s and this makes it possible to organize all types of communication services. To reach the international network, the sale of information flows of the national segment to the neighboring state constitutes a sizeable part of the income that these lines give us and this will speed up the self-repayment of all expenses. The connection of the FOCL to the international network provided an opportunity for the republic to use new types of communication and led the modernization of the economic and political structure of society. For the first time in Uzbekistan, fiber



optic lines are laid from the border of Kazakhstan (Abai village) to the border of Turkmenistan (Alat city) through the switching points of the city of Tashkent, Gulistan, Dzhizak, Samarkand, Karshi, Bukhara. For the first time in the Bukhara-Nukus highway, the construction of a cable line was completed. And this made it possible to create a high-speed and high-quality communication line a thousand times, connecting them with the number of growing subscribers, and through this line, four television and four radio programs from the territory of Uzbekistan are transmitted via a separate channel. To date, the branch TSHTT laid 598.8 km of fiber-optic communication lines to 2,075 buildings. In 873 buildings in the city of Tashkent, an opportunity has been created to provide services to the public with a capacity of 22,344 ports based on FTTB technology.

Analysis and results. The development of telecommunications and information technologies is becoming an important and integral element of structural transformations and the rise of the country's economy, the growth of business and intellectual activity of society, the strengthening of the country's authority in the international community, the gradual formation of the information society. By the Decree of the President of the Republic of Uzbekistan of May 3, 22, UP-38 “On the Further Development of Computerization and Introduction of Information and Communication Technologies”, the most important priorities for the communications and informatization industry were identified: the widespread introduction of computer and information technologies in the real economy management, business, science and education; the creation of conditions for the wide access of various strata of the population to modern computer and information systems; organization of training highly qualified human resources in the field of information and communication technologies; development of ICT technical infrastructure throughout the country; stimulation of the development of domestic production of software products. In order to implement the state policy, determine and implement priority



directions for the introduction and development of information and communication technologies, in 22 the Coordination Council was established under the Government of the Republic of Uzbekistan, and the Uzbek Agency of Post and Telecommunications was transformed into the Uzbek Agency of Communication and Information with additional tasks assigned to it. related to the creation and development of national information systems, information resources, information technologies, and services. As a result of these projects, digital long-distance stations were installed in all regional centers of the republic, analogs were replaced and digital exchanges with a capacity of 84 thousand numbers were installed, fiber optic cable was installed on intercity and intraregional communication lines with a total length of 62 km, and upgrades were made 95 television and 4 radio transmitters, cellular telephony is rapidly developing and the number of Internet users is increasing, a system of CDMA wired radio access in the regions of the republic. Currently, the local network of the Republic has more than two thousand PBXs with a total installed capacity of 1.974 million numbers, of which the share of digital is 46%. The number of main telephone sets is more than 1.715 million pieces, the telephone density of 6.85 telephones per 1 inhabitant. The level of coverage by digital telecommunication networks of cities of the republic is 96.4%, the district centers of the republic are 72.5%. The level of coverage of rural settlements with telecommunications networks is 77.2%, including 33.3% digital. In short, networks and telecommunications facilities of the Republic of Uzbekistan today are a developing network of networks. The telecommunications system of Uzbekistan has direct international channels in 28 directions with access to 18 countries of the world, using fiber-optic and satellite systems.

Conclusion. In order to develop (high-speed) broadband access to the Internet and back up existing networks, more than 1,800 km of fiber optic communication lines were built with the installation of channel-forming equipment, including the



development of a network using FTTB technology to over 4,000 administrative and residential facilities throughout the country bringing up to 105,116 ports.

The joint-stock company Uzbektelecom carried out work on the modernization of the IP / MPLS network of the TNTC branch, raising the speed at the trunk level to 100 Gbit/s based on the new DWDM transport network. The new network connected all districts of the city of Tashkent via high-speed optical channels. This project expanded dozens of times the capacity of the backbone data network, which ensured reliable and high-speed access for Tashkent city users to various services. This will contribute to the development of the provision of converged services such as the high-speed Internet, video telephony, IP-TV, Telecom TV, watching HDTV channels and others. A new DWDM line was commissioned at a speed of 100 Gbit/s in the Tashkent-Bukhara section. It should be noted that this is the first system operating at speeds up to 100 Gbit/s in the countries of Central Asia. In this system, the most advanced technologies of coherent reception and correction are applied, which significantly distinguishes the system from the traditional DWDM system operating at 10 Gbit/s.

Telecommunication networks of Uzbekistan today are experiencing a stage of the most active development and modernization. Full-scale and timely modernization of telecommunications networks is a necessary condition for the successful development of the country's economy. Based on the above, it follows that the large-scale implementation of fiber optic links in the Republic allows users to significantly reduce the need for a transmission medium for exchanging information of the necessary traffic. In light of the above, the problem of increasing the reliability of fiber optic links is relevant and timely in the Republic of Uzbekistan.



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USING THE METHODS OF NON-GPS NAVIGATION

Matyokubov Utkir Karimbeovich senior
lecturer Urgench branch of Tashkent
university of information technologies
named after Muhammad al-khwarizmi
Email: otkir_matyokubov89@mail.ru

Bekimetov Alisher Farxodovich
Assistant, Urgench branch of Tashkent
university of information technologies
named after Muhammad al-khwarizmi

Annotatsiya – Hozirda mobil aloqa tizimlarida mobil stantsiyalarning manzillarini aniq aniqlaydigan GPS texnologiyalari yordamisiz ishlash mexanizmlari kuchaytirilishi zarur hisoblanadi. Bu taklifni amalga oshirish uchun ushbu maqolada ishlatiladigan Okamura-Xata va Wolfish-Ikegami usullarini taklif qilamiz. Ushbu ishning maqsadi - GPS vositalaridan foydalanib, kompleks tadqiqotchilarni va nazorat qiluvchi tashkilotlarning ish samaradorligini oshirishdir.

Kalit so'zlar - GSM, GPS bo'lmagan, NLOS, LOS, WIM, BTS, mobil stantsiya, BTS chastotasi oralig'i, Chastota, Okamura-Xato va Wolfish-Ikegami.

Аннотация - Мобильная связь должна быть улучшена за счет внедрения технологии без GPS, которая может точно определять местоположение мобильных станций. В этой статье мы предлагаем методы использования Okamura-Hata и Wolfish-Ikegami. Целью данной работы является проведение комплексных исследований особенностей и организации наблюдения объектов с помощью GPS.

Ключевые слова - GSM, Non-GPS, NLOS, LOS, WIM, BTS, мобильная станция, Диапазон рабочих частот передачи BTS, Частота, Окамура-Хата и Вольфиш-Икегами.



Abstract — Mobile communications must be enhanced by establishing a non-GPS technology that can detect the positions of mobile stations precisely. In this paper, we propose methods of Okamura-Hata and Wolfish-Ikegami used. The purpose of this work is carrying out of complex researchers of features and the supervision organization objects by means of GPS.

Keywords — GSM, Non-GPS, NLOS, LOS, WIM, BTS, mobile station, Band of operational frequencies of transmission BTS, Frequency, Okamura-Hata and Wolfish-Ikegami.

INTRODUCTION. In mobile communications, the establishment of very precise mobile station detection technologies is an important goal. Some of the existing technologies utilize only the mobile communication system itself. One example is the cell-based mobile location approach. The subject of researchers in mobile systems GSM on Non-GPS navigation. The purpose of this work is carrying out of complex researchers of features and the supervision organization objects by means of GPS.

LITERATURE REVIEW. For the achievement of the given purpose, it was necessary to solve the following problems.

To consider types of control mobile systems and to show advantages of application GPS navigation control systems, mobile objects. At carrying out of researches in the given work results can be used practically for an authentic estimation capacity of supervision mobile objects on GPS and workings out of recommendations. Because of the spent researchers following scientific results are received.

Features and advantages of application and exact calculation of trajectory GPS by the mobile system and using method tensor are shown in a dual network. In the research the cover zone of one basic station two methods - a method the Okamura-Hata and a method Wolfish-Ikegami settles. During calculations, it will be proved



that the difference in calculations by the given methods is insignificant. At term performance, it is required to define cover zone BTS of standard GSM, allocated according to the job in regions of Tashkent, using two methods.

The covering cell radius is defined in three directions: the north, the southeast, and the southwest. It is necessary to define also the MS cover zone one of the offered methods (on a choice). On the drawing to specify the configurations of cover zones BTS received by various methods, and the MS cover zone. The height of the antenna a mobile station (MS) is accepted equal 1,5 m.

Table 1

Height suspension antennas BS

Height of rising of antenna BS h_{BTS} , m	40
Standard GSM	1800
Calculation models	COST231- Xata

Table 2

Standard values of parameters BTS and the MS

Designation	The name and unit of measure	Value
PT_x BTS	The capacity of transmitter BTS, dBWt	13
GT_x BTS	Factor transmitting antenna BTS gains, dB	18
f_{T_x} BTS	Band of operational frequencies of transmission BTS, MHz	935- 960
PR_x BTS	The sensitivity of receiver BTS, dBWt	-138
GR_x BTS	Factor receiving antenna BTS gains, dB	18
f_{R_x} BTS	Band of operational frequencies of reception BTS, MHz	890- 915



PT_x MS	The capacity of the transmitter of the MS, dBWt	-3
$G T_x$ MS	Factor gains of the transmitting antenna of the MS, dB	0
$f T_x$ MS	Band of operational frequencies of transmission of the MS, MHz	890-915
PR_x MS	The sensitivity of the receiver of the MS, dBWt	-104
GR_x MS	Factor gains of the receiving antenna of the MS, dBWt	0
fR_x MS	Band of operational frequencies of reception of the MS, MHz	935-960

The lay of the land in service area Δh_{BTS} systems of mobile radio service is defined on a district map taking into account layout of three-sector antenna K730380 in location BTS.

The coefficient of the coordination of the antenna with a wireless signal on polarization (for the transmitter and the receiver) is accepted by the equal

$$\zeta_{R_x} = \zeta_{T_x} = 0,9 \quad (1)$$

The efficiency of transferring and receiving feeders is accepted by the equal

$$\eta_{FT_x} = \eta_{FR_x} = 0,95 \quad (2)$$

Determination of a cover zone three-sector BTS by means of prediction models, the registration of propagation loss of radio-waves. The basis of territorial planning is made by energetic calculation in which process the architecture of a network and its space coordinates taking into account quality of service and information loading is defined. The given quality of the accepted signal is defined by the sensitivity of the receiver. In a general view, the transmission equation can be presented as:

$$P_{R_x} = \frac{P_{T_x} \eta_{T_x} G_{AT_x} \zeta_{T_x} G_{AR_x} \eta_{R_x} \zeta_{R_x}}{L_{\Sigma}} \quad (3)$$

Where P_{R_x} - capacity of a wireless signal on a receiver input (it is defined by sensitivity of the receiver);

P_{T_x} - The capacity of the transmitter;

η_{T_x}, η_{R_x} - efficiency of transferring and receiving feeders;

G_{AT_x}, G_{AR_x} - gain amounts of transferring and receiving antennas;

ζ_{T_x}, ζ_{R_x} - coefficients of the coordination of antennas with a wireless signal on polarization;

L_{Σ} - Total attenuation of radio-waves on a route.

Value of capacity of a wireless signal on a receiver input is convenient for expressing in decibels concerning watt. Thus, the equation becomes:

$$P_{R_x}(dB \text{ Wt}) = P_{T_x}(dB \text{ Wt}) + \eta_{T_x}(dB) + G_{AT_x}(dB) + \zeta_{T_x}(dB) + G_{AR_x}(dB) + \eta_{R_x}(dB) + \zeta_{R_x}(dB) - L_{\Sigma}(dB) \quad (4)$$

Under this formula, it is simple to define the total energetic losses arising on a route of radio propagation

$$L_{\Sigma}(dB) = P_{T_x} + \eta_{T_x} + G_{AT_x} + \zeta_{T_x} + G_{AR_x} + \eta_{R_x} + \zeta_{R_x} - P_{R_x} \quad (5)$$

For BTS total attenuation of radio-waves on a route is equal:

$$L_{\Sigma BTS}(dB) = P_{T_x BTS} + \eta_{T_x BTS} + G_{AT_x BTS} + \zeta_{T_x BTS} + G_{AR_x MS} + \eta_{R_x MS} + \zeta_{R_x MS} - P_{R_x MS} = 138,7(dB) \quad (6)$$

For the MS total attenuation of radio-waves on a route is equal:

$$L_{\Sigma MS}(dB) = P_{T_x MS} + \eta_{T_x MS} + G_{AT_x MS} + \zeta_{T_x MS} + G_{AR_x BTS} + \eta_{R_x BTS} + \zeta_{R_x BTS} - P_{R_x BTS} = 156,7(dB) \quad (7)$$

Let's define total attenuation of radio-waves as losses of propagation for the appropriate type of terrain L_c the correction and considering the lay of the land L_{CLL} :

$$L_{\Sigma} = L_c + L_{CLL} \quad (8)$$

Research methodology. Let's define the correction, considering a lay of the land. For this purpose around rough location BTS on a map of the city we select a

place which will satisfy simultaneously to following conditions:

In the given operation the three-sector antenna is used, we divide terrain into 3 sectors: sector A- 0° , sector B - 120° , sector C - 240° .

1. From BTS the MS:

$$f_0 = 1850 \text{ MHz}$$

$$a(h_m) = [1, 1 \log(1850) - 0,7] 1,5 - [1,56 \log(1850) - 0,8] = 0,044$$

$$A = A(f_0, h_b, h_m) = 46,3 + 33,9 \log(1850) - 13,83 \log(40) - 0,044 = 134,8566 \quad (9)$$

$$B = B(h_b) = 44,9 - 6,55 \log(40) = 34,40650 \quad (10)$$

$$L_C = A + B \log(r) \quad (11)$$

2. From the MS to BTS:

$$f_0 = 1750 \text{ MHz}$$

$$a(h_m) = [1, 1 \log(1750) - 0,7] 1,5 - [1,56 \log(1750) - 0,8] = 0,04187 \quad (12)$$

$$A = A(f_0, h_b, h_m) = 46,3 + 33,9 \log(1750) - 13,83 \log(40) - 0,04187 = 134,04063 \quad (13)$$

$$B = B(h_b) = 44,9 - 6,55 \log(40) = 34,40650$$

$$L_C = A + B \log(r) \quad (14)$$

From BTS_0 to the MS

$$\text{At } h = 81; L_{CLL} = \frac{2,5 + 3,5}{2} = 3 \text{ dB} \text{ -sector A-} 0^\circ \quad (15)$$

$$\text{At } h = 172; L_{CLL} = \frac{7,5 + 10}{2} = 8,75 \text{ dB} \text{ - sector B - } 120^\circ \quad (16)$$

$$\text{At } h = 142; L_{CLL} = \frac{6 + 8}{2} = 7 \text{ dB} \text{ - sector C - } 240^\circ \quad (17)$$

Let's define losses of propagation for the appropriate type of terrain:

From BTS_0 to the MS:

$$L_C = L_\Sigma - L_{CLL} = 138,7 - 3 = 135,7 \text{ dB} \text{ - Sector A - } 0^\circ \quad (18)$$

$$L_C = L_\Sigma - L_{CLL} = 138,7 - 8,75 = 130,2 \text{ dB} \text{ - Sector B - } 120^\circ \quad (19)$$

$$L_C = L_\Sigma - L_{CLL} = 138,7 - 7 = 131,7 \text{ dB} \text{ -Sector C- } 240^\circ \quad (20)$$



From the MS to BTS:

$$L_C = L_\Sigma - L_{CLL} = 156,7 - 3 = 134,7dB - \text{Sector A} - 0^\circ \quad (21)$$

Sector A - 0° :

$$r = 10^{\frac{L_C - A}{B}} = 10^{\frac{135,7 - 134,8566}{34,40650}} = 1,058km$$

From BTS₂ to the MS

$$\text{At } h = 136; L_{CLL} = \frac{5+7}{2} = 6dB - \text{sector C} - 240^\circ \quad (22)$$

Let's define losses of propagation for the appropriate type of terrain:

From BTS₂ to the MS:

$$L_C = L_\Sigma - L_{CLL} = 138,7 - 6 = 132,7dB - \text{Sector C} - 240^\circ \quad (23)$$

Sector A - 0° :

$$r = 10^{\frac{L_C - A}{B}} = 10^{\frac{132,7 - 134,8566}{34,40650}} = 0,473km$$

From the MS to BTS:

$$L_C = L_\Sigma - L_{CLL} = 156,7 - 6 = 150,7dB - \text{Sector C} - 240^\circ \quad (24)$$

$$r = 10^{\frac{L_C - A}{B}} = 10^{\frac{150,7 - 134,8566}{34,40650}} = 2,887km$$

From BTS₃ to the MS

$$\text{At } h = 175; L_{CLL} = \frac{7+10,1}{2} = 8,55dB - \text{sector B} - 120^\circ \quad (25)$$

Let's define losses of propagation for the appropriate type of terrain:

From BTS to the MS:

$$L_C = L_\Sigma - L_{CLL} = 138,7 - 8,55 = 130,15dB - \text{Sector B} - 120^\circ \quad (27)$$

Sector A - 0° :

$$r = 10^{\frac{L_C - A}{B}} = 10^{\frac{130,15 - 134,8566}{34,40650}} = 0,727km$$



From the MS to BTS:

$$L_C = L_\Sigma - L_{CLL} = 156,7 - 8,55 = 148,15dB - \text{Sector B} - 120^\circ \quad (28)$$

$$r = 10^{\frac{L_C - A}{B}} = 10^{\frac{148,15 - 134,8566}{34,40650}} = 2,434km$$

The model allows estimating attenuation under the formula

$$L_C = 46,3 + 33,9\log(f_0) - 13,83\log(h_b) - a(h_m) + [44,9 - 6,55\log(h_b)]\log r + C \quad (29)$$

Where With - a constant: for average cities and suburbs with moderate vegetation $C=0$ and for centres of big cities $C = 3$.

$h_b = 40$ m- Height of the antenna of the basic station

$h_m = 1,5$ m - Height of the antenna of the mobile station

Analysis and results

Table 3

Results of calculations of the model of Okomura and the Hut

The direction of sector BTS concerning the joint venture, hailstones.	Propagation loss, LP, дБ		The expected distance between BTS and the MS, km			The expected distance between the MS and BTS, km		
	BTS-MS	MS-BTS	BTS ₀	BTS ₂	BTS ₃	BTS ₀	BTS ₂	BTS ₃
Sector C	135,7	134,7	1,058			1,045		
Sector South-eastern	130,2		0,732		0,727			2,434
Sector South-east	131,7		0,809	0.473			2,887	

The model, WIM distinguishes two cases LOS (direct visibility) and NLOS (non-line-of-sight, i.e. in case of indirect visibility). In case of LOS if on a straight line of propagation of a signal from the transmitter and the receiver there are no barrages the WIM-model is described by the equation:

$$L_{LOS} = 42,64 + 26\log d_{km} + 20\log f_{MHz}, d_{km} \geq 0,02 \quad (30)$$



Losses in free space:

$$L_{f_s} = 32,45 + 20 \log d_{km} + 20 \log f_{MHz} \quad (31)$$

$$L_{LOS} = L_{f_s} + 10,19 + 6 \log d_{km} = L_{f_s} + 6 \log(50 d_{km}) = L_{f_s} + 6 \log\left(\frac{d_{km}}{20}\right) \quad (32)$$

The parameters also used in NLOS WIM: h_b - the height of the antenna of basic station (40-50 m from the earth); h_m - the height of the antenna of the subscriber (1-3 m from the earth); h_B - the height of buildings;

$\Delta h_b = h_b - h_B$ - Height of the antenna of the basic station from the level of roofs; distance between buildings (20-50);

ω - width of streets (it is normal $b/2$);

Now we consider some variants in case of NLOS WIM.

$\Delta h_b > 0$:

$$L_{NLOS} = 69,55 + 38 \log d_{km} + 26 \log f_{MHz} - 10 \log \omega - 9 \log b + 20 \log h_m - 18 \log(1 + h_b) + L_{LOS} \quad (33)$$

$\Delta h_b \leq 0, d_{km} \geq 0,5$:

$$L_{NLOS} = 69,55 + \quad (34)$$

$h_b \leq 0, d_{km} < 0,5$:

$$L_{NLOS} = 69,55 + \quad (35)$$

As a rule, city regions are built up by unequal height buildings. The width of streets and distance between buildings also fluctuate largely. Therefore at calculation on model WIM, some conditions are accepted:

The height of one floor in a residential building is accepted equal 3 m;

In one-storied residential buildings the height of a no planar roof is accepted equal 2m;

Distance between one-storied buildings is not less than 5 m;

Width of the streets which have been built up with one-storied houses not less 10m;

The distance between many-storied buildings is accepted equal 20m;



The width of the streets which have been built up with many-storied buildings is accepted region 20 m;

The height of one floor in office educational and etc. a location is accepted regions 3,5 m;

The height of one floor of the industrial enterprise is accepted regions 7,5 m.

Hence, it is necessary to know the per cent of the building of the region in which antenna BS, is allocated by buildings of various type. On the basis of it the average height of buildings, average distance between buildings and an average width of streets for all regions defined in the job is defined.

Building height on which antenna BS will be allocated, it is not recommended to average. Knowing the height of this building and height of position of antenna BS according to the job, it is possible to define h_b - the height of the antenna of the basic station from the level of roofs.

$$h_b = 40m, h_m = 1,5m$$

$$h_B = \frac{27 + 27 + 27 + 10}{4} = 22,75m \quad (36)$$

$$h_b = h_b - h_B = 40 - 22,75 = 17,25m \quad (37)$$

$$b = 24m, \omega = 12m$$

LOS:

$$d_{km} = 10^{\frac{L_C - 42,64 - 20 \log f}{26}} \quad (38)$$

NLOS:

$$d_{km} = 10^{\frac{L_C - 69,55 - 26 \log f + 10 \log \omega + 9 \log b - 20 \log h_m + 18 \log(1 + h_b)}{38}} \quad (39)$$

From BTS₀ to the MS: $f_0 = 1850MHz$ Sector A - 0°:

LOS:



$$d_{km} = 10^{\frac{135,7 - 42,64 - 20 \log 1850}{26}} = 11,641843 \text{ km}$$

NLOS: service station attendant

$$d_{km} = 10^{\frac{135,76 - 69,55 - 26 \log(1850) + 10 \log(12) + 9 \log(24) - 20 \log(1,5) + 18 \log(1 + 17,25)}{38}} = 4,233 \text{ km}$$

From the MS to BTS: $f_0 = 1750 \text{ MHz}$

Sector A- 0° :

$$d_{km} = 10^{\frac{134,7 - 69,55 - 26 \log(1750) + 10 \log(12) + 9 \log(24) - 20 \log(1,5) + 18 \log(1 + 21,4)}{38}} = 5,05 \text{ km}$$

BTS₃ to the MS: $f_0 = 1850 \text{ MHz}$ Sector B - 120° :

LOS:

$$d_{km} = 10^{\frac{130,15 - 42,64 - 20 \log 1850}{26}} = 7,1529 \text{ km}$$

NLOS:

$$d_{km} = 10^{\frac{130,15 - 69,55 - 26 \log(1850) + 10 \log(12) + 9 \log(24) - 20 \log(1,5) + 18 \log(1 + 21,4)}{38}} = 3,0123 \text{ km}$$

From the MS to BTS: $f_0 = 1750 \text{ MHz}$

Sector B- 120° :

$$d_{km} = 10^{\frac{148,169,55 - 26 \log(1750) + 10 \log(12) + 9 \log(24) - 20 \log(1,5) + 18 \log(1 + 21,4)}{38}} = 10,72 \text{ km}$$

From BTS₂ to the MS: $f_0 = 1850 \text{ MHz}$ Sector C - 240° :

LOS:

$$d_{km} = 10^{\frac{132,7 - 42,64 - 20 \log 1850}{26}} = 8,965 \text{ km}$$

NLOS:

$$d_{km} = 10^{\frac{132,7 - 69,55 - 26 \log(1850) + 10 \log(12) + 9 \log(24) - 20 \log(1,5) + 18 \log(1 + 21,4)}{38}} = 3,516 \text{ km}$$

From the MS to BTS: $f_0 = 1750 \text{ MHz}$

Sector A- 0° :



$$d_{km} = 10^{\frac{150,7 - 69,55 - 26\log(1750) + 10\log(12) + 9\log(24) - 20\log(1.5) + 18\log(1 + 21,4)}{38}} = 12,5 \text{ km}$$

Results of calculation we tabulate.

Table 4

Results of calculations of the model of Wolfish-Ikegami (WIM)

The direction of sector BTS concerning the joint venture, hailstones.	Propagation loss, LP, дБ		The expected distance between BTS and the MS, km			The expected distance between the MS and BTS, km		
	BTS-MS	MS-BTS	BTS ₀	BTS ₂	BTS ₃	BTS ₀	BTS ₂	BTS ₃
Sector C	135,7	134,7	4,238			5,056		
Sector South-eastern	130,2		3,022		7,1529 /3,012			10,72 1
Sector South-west	1131,7		3,309	8,965/ 3,516			12,51 3	

CONCLUSION. Maintenance of reliable and steady functioning of networks of mobile radiotelephone (cellular) communication with the account requirements of information security. Modern radio-electronic equipment GSM represents a difficult complex which structure except most GSM includes a control system of processes in GSM. Now, modern mobile systems are used for many purposes. This work is devoted to one of the types of information technology GPS, which gives the information from time and a position of investigated objects. Now, this technology is very important because it gives the information on navigation and management of objects and for the definition to people of ways in cities and everywhere where this inquiry is necessary for them. For reliable work GPS, it is necessary to demand much on the reliable work of mobile system GSM. Therefore, the research problem of methods of the check of the working capacity of mobile GPS object is actual.



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