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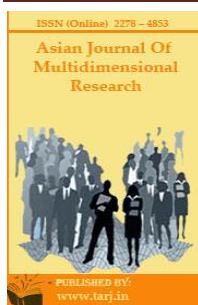
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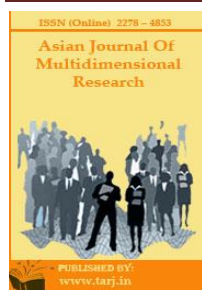
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**CRYSTAL GROWTH METHOD OF GALLIUM ARSENIDE
USING CZOCHRALSKI METHOD**

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ABSTRACT

Czochralski method for single crystal growth of gallium arsenide were carried out, the heat and mass transfer including defect formation in the crystal were also discussed. A reflector was used for separation of the heating and cooling areas in the furnace enabling the facilitation of crystal growth. The melt, flow to stabilize the temperature distribution in a crucible was controlled using transverse magnetic fields in a large-scale silicon Czochralski furnace. The setup allows for changes in important parameters of point defect formation to be made, such as vacancies and interstitials, by changing temperature and flow fields in the furnace.

KEYWORDS: *Facilitation, Czochralski*

1. INTRODUCTION

Single gallium arsenide crystals are used widely in applications such as the electronics, solar cells, and inverter power devices. Continuous developments in devices such as large scale integrated circuits (LSIs), solar cells, and inverters are required to improve the quality of life derived from the information, energy production and energy saving fields. To realize these improvements, we need to be able to grow gallium arsenide crystals without dislocations and point defects. Growing crystals remain in contact with the quartz crucible in which the melt is set, thereby making it easy to introduce defects during crystal growth and cooling from melting point to room temperature. Czochralski (1917) studied the growth velocity which affects defect formation.

The reason for growing single crystals is, many physical properties of solids are obscured or complicated by the effect of grain boundaries. The chief advantages are the anisotropy, uniformity of composition and the absence of boundaries between individual grains, which are inevitably present in polycrystalline materials. The strong influence of single crystals in the

present day technology is evident from the recent advancements in the above mentioned fields. Hence, in order to achieve high performance from the device, good quality single crystals are needed. Growth of single crystals and their characterization towards device fabrication have assumed great impetus due to their importance for both academic as well as applied research.

Crystalline materials are essential for modern electrical engineering. Apart from silicon there are other crystalline semiconductors that are very attractive for certain applications. One of these is gallium arsenide (GaAs). It has many remarkable properties which make it a very promising semiconductor material. Some of the potential applications of gallium arsenide (GaAs) are in high-temperature, -frequency, and -power electronic devices. Others make use of the wide band gap such as UV radiation detectors and blue-light lasers. Other electronic devices may become commercialised. The large-scale manufacturing of electronic devices requires a continuous production of good-quality wafers. In silicon carbide growth there are still some basic problems to be resolved that limit the commercial utilization of the material. These problems are related to crystal size and both macroscopic and microscopic defects, which is the most promising technique for growing gallium arsenide (GaAs) crystals. The growth is studied from a macroscopic point of view. This involves equations of change that describe how mass, energy and electric currents are transported in the growth apparatus. These are partial differential equations that are solved with the finite element method, (FEM). Also chemical reactions are considered, which lead to the minimization of Gibbs free energy.

Teal and Little (1950) worked on a method that allows growths which enhance free dislocation for single gallium arsenide crystal without dislocations. This development allowed crystal growth researchers and engineers to increase crystal production yield, with high crystal growth velocities and rapid cooling, Diggers, Hopkins, and Seidensticker (1975). The growth and cooling rates of crystals without dislocation can be increased compared with those with dislocation, as the deformation is elastic and residual stresses in the crystals are reduced at room temperature to non-existent. Another important point of the development is the control of point defects such as vacancies and interstitials in the crystals during crystal growth. The point defects form voids and/or dislocation loops during cooling after solidification of the crystals, which degrade oxide layer properties in the gallium arsenide. Akiya, and Ueki, (1995). Advances in information technology cannot be achieved without a reduction in void and/or dislocation loop formation. Therefore, the distribution and concentration of point defects should be controlled during crystal cooling. The Czochralski method is a key technology to achieving advances in information technology in sustainable energy production. In this paper, we report on the development of the Czochralski method of silicon crystals related to growth rate and temperature distribution and its influence on point defect formation.

2. Growth conditions

Conditions should be selected to produce crystals of high quality and yield during crystal growth. Yield is an important production cost parameter, and is affected directly by crystal growth rate. The left half of Fig. 1 shows the simple setup during the early stages of Czochralski growth of silicon, in which a purge tube is located at the top of the furnace. The furnace consists of the melt, a crystal, crucibles, a heater and insulators. The argon gas purge tube is used to control the argon gas flow in the furnace as shown in the left half of Fig. 1. The growing crystal diameter is monitored by a camera located at the top window, with data fed back to the heating system based on a resistive heater. During crystal growth, the power distribution of the heat flux from the heater to the melt was adjusted through the crucible in the furnace. The crucible was raised during

crystal growth to allow for the monitoring of the meniscus position by the camera at a fixed position, von Ammon, Dornberger, Oelkrug, and Weidner, (1995). Crystal growth requires a difference in chemical potential between the solid and the melt to promote crystallization. The driving force is equal to the temperature gradient in the furnace used in the Czochralski method. The use of a metal reactor located between the hot and cold parts in the furnace as shown in the right half of Fig. 1 was suggested to establish a temperature gradient in the furnace, Ogbonda(). The reflector should reflect the heat flux from the hot part of the furnace including the heater and crucible to the melt.

Lilov (2006), carried out investigation of the thermal conditions during silicon carbide crystal growth. In this work the analysis of the thermal conditions during silicon carbide crystal growth from vapour phase by sublimation method was carried out. The results from the calculation of the temperature distribution along the length of the growing crystal revealed that in order to decrease the density of dislocations in the growing crystals it is necessary to decrease the temperature gradients in the crucible for growing. This should reduce the heat transfer

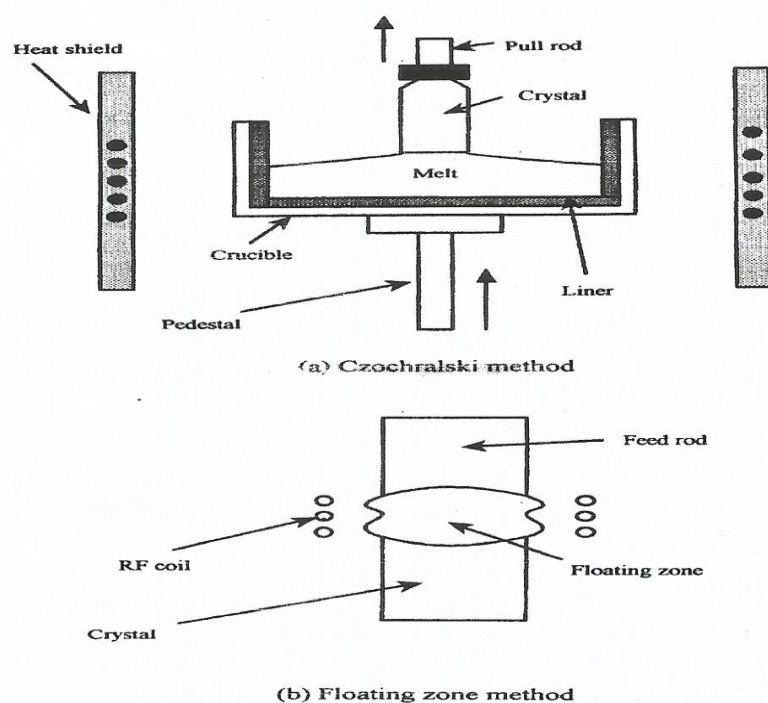


Fig. 1. Conventional and developed gallium arsenide icon Czochralski furnace (purge tube for controlling argon gas flow and reflector set between hot and cold portions of the furnace).

Using a reflector with small thermal conductivity such as carbon felt. A material with small thermal conductivity reduces the heat flux from the heater to the growing crystal and increases the temperature gradient near the solid-liquid interface, Lilov (2006),. Nowadays, crystal diameters are being increased to reduce Single from the hot to the cold part of the furnace by more effectively enhancing their separation. Heat transfer can be reduced by gallium arsenide production costs. A melt with large diameter is required to obtain large diameter crystals. However, melts with large diameter melt flows become unstable. The application of magnetic fields in the magnetic melts of silicon crystal growth is an effective method for controlling the

shape of the melt crystal interface and melt convection in a crucible and therefore for improving crystal quality. The method is effective for crystals with large diameter, since flow in a crucible becomes unstable and weakly turbulent because of the large mass of the melt in the crucible. A transverse magnetic field applied to silicon CZ growth processes (TMCZ) can be used for controlling the melt flow in a large diameter crucible. The melt flow in a large diameter crucible and, hence, the global thermal field in the growth furnace is three-dimensional (3D) under the influence of a transverse magnetic field. Because the TMCZ growth furnace is a highly nonlinear and conjugated system, 3D global modeling is necessary

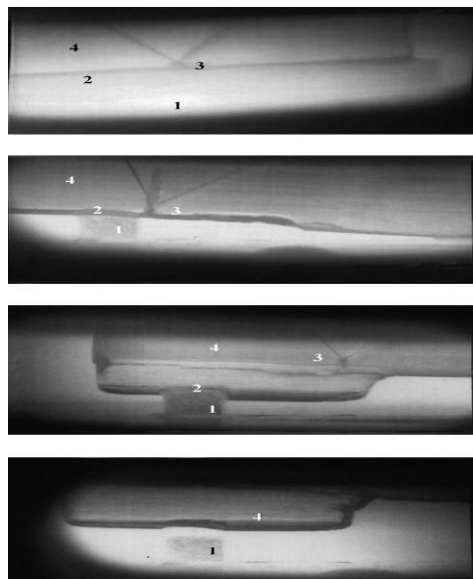


Fig 2. Melt flow, thermal field and melt, crystal interface profiles in symmetric planes $x = 0$ (right half-plane) and $y = 0$ the growth process made by TV camera.

Liu and Kakimoto (2005) studied a 3D global model which includes all convective and conductive heat transfer, radiative heat exchange between disuse surfaces and the Navier-Stokes equations for the melt phase which are coupled and solved together with a finite volume method in a 3D configuration. In this study, the 3D domain (shown by the shaded area in Fig. 2) includes the crystal, melt, crucible and heater. Diameter of the crystal was set to 32 mm in this calculation. The other regions in the furnace are included in the 2D domain. The melt crystal interface shapes are almost rotationally axisymmetric, Liu and Kakimoto (2005). Figure 3 shows the influence of crystal-pulling rate (0.3 and 1.5 mm/min) on the melt crystal interface shape and temperature distribution in the crystal and melt, voronkov (1982). Diameter of the crystal was set to 32 mm in this calculation. Figure shows the calculated interface shapes with the two different crystal-pulling rates. The intensity of the magnetic field is set to 0.2 T in both cases. The temperature distribution in the melt is less homogeneous and the interface is more convex to the melt when a lower pulling rate is applied to the crystal. This phenomenon is related to the heat balance between the solid and the liquid through their interface where the heat of solidification is generated. The similar results were obtained by experiment, Ogbona (2018).

3. Control of point defect

Kakimoto (2013), studied the development of crystal growth technique of silicon by the Czochralski method. In this study a reflector was used for separation of the heating and cooling areas in the furnace enabling it to speed up crystal growth. The result shows defect formation of

heat and mass transfer during the silicon single crystal growth by the Czochralski method. A reflector is used to separate heating and cooling areas in the furnace and increase crystal growth velocity. Transverse magnetic fields used in a large-scale silicon Czochralski furnace allow for control of the melt flow. The Transverse magnetic Czochralski Zone (TMCZ) system can allow for the modification of important parameters, for the formation of point defects such as vacancies and interstitials.

Zhang et al (2013), studied the morphology-controllable synthesis of Zinc Oxide (ZnO) nano/micro-structures by a solvothermal process in ethanol solution. The result shows that the effects of chloride ions have been observed in the formation of highly symmetrical 3-dimensional (3D) ZnO nanostructures. Also shown is a strong near-UV emission band centered at around 396 nm is observed in the photoluminescence spectrum of flower-like ZnO nanostructures, indicating of their high crystal quality. Figure 3 shows the results without convection in the melt, approximately corresponding to the case for an infinite magnetic field intensity. The arrows in Fig. 3 show the contribution. Voronkov and Falster (2002) reported that the ratio between the local crystal growth rate (V_g) and the temperature gradient in the crystal near the interface (G) are a key parameter in the formation of voids and interstitial clusters. The basis of the theory is the reaction between vacancies and interstitials. Vacancies are transferred mainly by advection, while interstitials are transferred by diffusion in a crystal during cooling. Therefore, the temperature gradient in a crystal, which affects the diffusion process, and the crystal growth velocity, which affects advection, are important parameters for controlling point defects in a crystal. Figure 3 shows the axial temperature gradients in both the crystal and the melt at the melt - crystal interface as a function of crystal pulling rate. Liu, and Kakimoto (2005). Diameter of the crystal was set to 32 mm in this calculation. Solid lines show results with and without the transverse magnetic field from convection in the melt. The values of axial temperature gradients in the melt and crystal were obtained by averaging the central area of the interface. These values are not identical even when the crystal-pulling rate is zero because of the difference in thermal conductivity between the crystal and the melt. These results show that the axial temperature gradients in the melt and crystal near the interface increase with increase in magnetic field intensity. The temperature gradient near the interface in the crystal increases, which agrees with Jordan, (1980).

While that in the melt decreases with increase in crystal-pulling rate. Meanwhile, the difference is reduced for the case with magnetic field intensity of finite value including zero and the case without melt convection. Since this difference occurs because of the melt convection, this result indicates that the contribution of melt flow is reduced with increase in crystal-pulling rate. These phenomena can be explained as follows. When we apply a magnetic field of large intensity, natural convection in the melt is suppressed, resulting in an inhomogeneous temperature distribution in the melt. Therefore, the temperature gradient in the melt increases with increase in magnetic field intensity. Meanwhile, because of the heat balance between the liquid and solid at the interface, the temperature gradient in the crystal near the interface also increases. However, melt convection still remains even if we apply a magnetic field with relatively large intensity to the melt. As a result, even when a relatively large magnetic field of 0.3 T is applied to the system, the temperature gradients near the interface in both the crystal and the melt are far from those without melt convection, as shown in Fig. 3. However, since a larger crystal growth rate always results in lower heater power, the temperature on the sidewall of the melt decreases because of the lower heater power. The temperature difference is reduced and

becomes more homogeneous in the melt. This leads to weaker melt convection because of a decrease in the thermal buoyant force induced by the temperature gradient in the melt. Therefore, with an increase in crystal-pulling rate, both the axial temperature gradient in the melt near the interface and the contribution from melt convection decrease in an agreement with Von Neida, et al (1986).

Geiser et al (2006), carried out transient numerical study of temperature gradients during sublimation growth of SiC. Their result shows that a smaller upper blind hole can reduce the temperature gradients both in the bulk and on the surface of the crystal without reducing the surface temperature itself. Temperature gradient in the bulk and on surface of the growing crystal can cause defect

However, since the heat release of solidification at the interface is proportional to the crystal growth rate and is transported away from the interface through the crystal, a larger axial temperature gradient field is generated in the crystal near the interface when the crystal pulling rate is increased. This tendency is consistent with that of the axial temperature gradient in the crystal near an interface. This is because the interface shape is determined mainly by the temperature distribution in the crystal close to the interface and the melt convection in a crucible. When a magnetic field of large intensity is applied to the system or a larger pulling rate is applied to the crystal, the melt convection is suppressed and the axial temperature gradient in the crystal near the interface increases. The melt-crystal interface then moves upward to the crystal side to accommodate the increased axial temperature gradient in the crystal near the interface and the contribution from the melt convection in the crucible decreases.

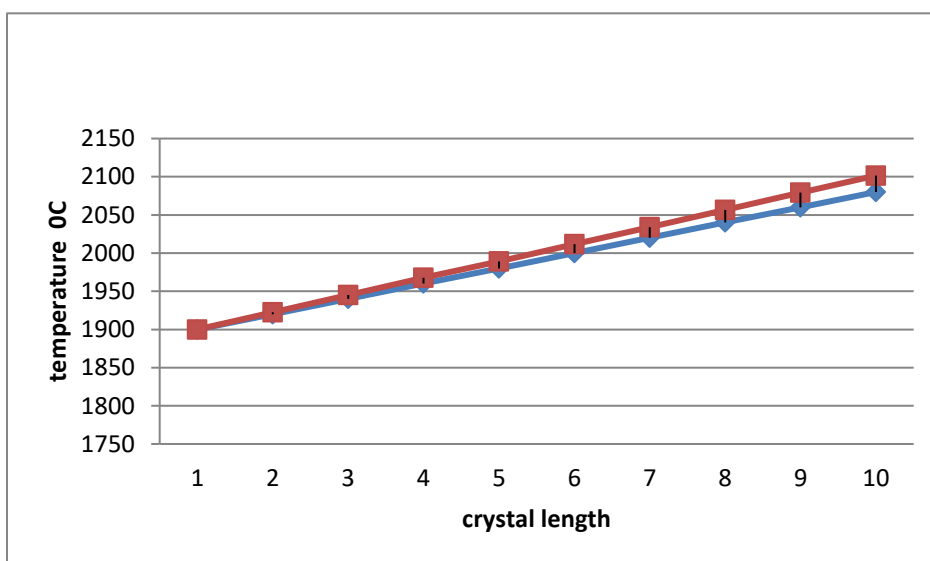


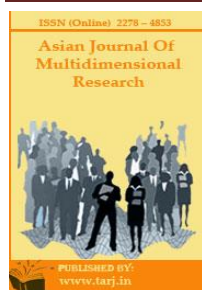
Fig 3. Growth temperature of crystal vs crystal length

4. CONCLUSION

Results of defect formation, heat and mass transfer during the gallium arsenide single crystal growth by the Czochralski method is reported. A reflector can be used to separate heating and cooling areas in the furnace and increase crystal growth velocity. Transverse magnetic fields used in a large-scale gallium arsenide, Czochralski furnace allow for control of the melt flow. The TMCZ system can allow for the modification of important parameters affecting the formation of point defects such as vacancies and interstitials.

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**DOI NUMBER: 10.5958/2278-4853.2020.00051.8****VIEWS ON CULTURE AND HISTORY****Abdulla Avloniy's*****UZBEKISTAN****ABSTRACT**

As Uzbekistan gained its independence, a new era in its spiritual life began - a phase of spiritual cleansing and awakening. "Today we have a historic opportunity to critically evaluate our paths, identify the foundations of our national statehood, return to the roots of our great culture, the roots of our ancient heritage, and apply our rich traditions from the past to the construction of new societies. The need for faith" is also reflected in the principles of "Strategy of Action for the Five Priorities of Development of the Republic of Uzbekistan in 2017-2021" aimed at ensuring inter-ethnic harmony and religious tolerance. He was educated in a regular school, and at the age of 12, he entered the madrasah. He began to write poems from 1894, as Avloni's autobiography says. Avloniy went on to become acquainted with newspapers and magazines published in different cities of Russia, which were news of that time. Abdulla Avloniy's Views on Culture and History. More than a dozen books written by Abdulla Avloniy from 1909 to 1917 for special school children were published around the world. His textbooks, such as "The First Teacher", "The Second Teacher", "The Turkish Gulistan or Morality", "School Guild" served as a textbook for the new method schools. In 1913, after the "Padarkush" new works in national playwriting were created. Among them was the repertoire of the plays by Abdulla Kadiri, such as "The Unhappy Groom", Abdullah Avloniy's "Easy to Advocate", "Pinak" and "Mazluma's Wife" by Hoji Moin. These theatres are based on the troubles of life at that time and are mainly portrayed by a spectacular audience.

KEYWORDS: *Historic Opportunity, Abdulla Avloniy, Culture and History, Madrasah, Independence.*

INTRODUCTION

At the beginning of the 20th century, the name of Abdulla Avloniy, one of the prominent figures in the field of science, education and culture, was a prominent figure. This is because the efforts of the person, the articles published in the national press, and his published works have, in a literal sense, served the nation's prosperity and are still relevant today.

Abdulla Avloniy was born on July 12, 1878, in the Mergancha neighbourhood of Shaykhantahur district of Tashkent in a family of ordinary weavers. He was educated in a regular school, and at the age of 12, he entered the madrasah. He began to write poems from 1894, as Avloni's autobiography says. Avloniy went on to become acquainted with newspapers and magazines published in different cities of Russia, which were news of that time. Abdulla Avloniy's Views on Culture and History

MAIN BODY

As Uzbekistan gained its independence, a new era in its spiritual life began - a phase of spiritual cleansing and awakening. "Today we have a historic opportunity to critically evaluate our paths, identify the foundations of our national statehood, return to the roots of our great culture, the roots of our ancient heritage, and apply our rich traditions from the past to the construction of new societies. The need for faith "is also reflected in the principles of" Strategy of Action for the Five Priorities of Development of the Republic of Uzbekistan in 2017-2021 "aimed at ensuring inter-ethnic harmony and religious tolerance.

At the beginning of the 20th century, the name of Abdulla Avloniy, one of the prominent figures in the field of science, education and culture, was a prominent figure. This is because the efforts of the person, the articles published in the national press, and his published works have, in a literal sense, served the nation's prosperity and are still relevant today.

Abdulla Avloni was born on July 12, 1878, in the Mergancha neighbourhood of Shaykhantahur district of Tashkent in a family of ordinary weavers. He was educated in a regular school, and at the age of 12, he entered the madrasah. He began to write poems from 1894, as Avloni's autobiography says. Avloniy went on to become acquainted with newspapers and magazines published in different cities of Russia, which were news of that time. He read the Translators newspaper and became aware of the times. At that time the readers of the newspaper were called "Mullah" by the Mullah. Abdulla Avloniy also joined the Jadid movement since 1904.

More than a dozen books written by Abdulla Avloniy from 1909 to 1917 for special school children were published around the world. His textbooks, such as "The First Teacher", "The Second Teacher", "The Turkish Gulistan or Morality", "School Guild" served as a textbook for the new method schools.

As is well known, one of the most famous works of Abdulla Avloni, sealing his name in history pages, is the Turkish book Gulistan or Ethics, published in 1914. He was highly regarded by his contemporaries and even mentioned in Soviet literature. The newspaper Sadoi Turkiston writes in the headline "Great Turkestan " and reads "... The long-awaited Turkestan ethical book" Turkestan Gulistan "in the open language, by Abdulla in Turkestan An important piece of 132 pages, written by Avloni, printed on stone, was published. The main purpose of his writings was the ethical interpretation of the issue of education. He views morality as a science that calls people for good and prohibits evil. Abdulla Avloniy, in his work, refers to the word ignorance - claiming that it is unreadable, uneducated and ignorant.

According to Abdulla Avloni, everyone should make changes in their everyday lives. After all, talking about culture and progress to people who are not wealthy and do not give it the expected results. First and foremost, economic culture should be developed. Because, "courage in today's world is rich in wealth, which state and state are the dominant one. Because, for the government, the people, skills for the people, knowledge for the profession, money for knowledge are needed.

According to him, the time when "our grandparents would be great or not" is over, and the time has come to replace it with "know and does not know." Americans sow one wheat, get twenty packs of wheat, and the Europeans bring us five cents of cotton and sell it for twenty-five kopecks. But we Asians, especially Turkestans sell dumplings, chew candles, give sour cream, milk, and bite on bread. In short, to be modern, it requires economics, honesty, endless effort and endless effort to equip people with science and education. He encourages them to take rhyme and sees the cause of dependency relentlessly.

One of the positive things that the author draws attention to is the Hafzi, that is, the issue of language. The progressive intelligentsia of that time repeatedly emphasized in the press that the language is as important as water and air to help indigenous children take their place in society, and become professionals who care for their motherland and nation. When it comes to language, we must remember our grandfather A. Navoi. "Why shouldn't the Turkish be so Persian, as it has become more affluent with the Persian language? There are so many beautiful works in Persia, and if their system is not understood by the Turkish, why should they be deprived of it and remain in such a state that it cannot be used. " From this, we can see just how much our grandfather was passionate about his language and wanted to spread it around the world.

Abdulla Avloniy says that "every nation has its own language and literature is not preserved" and it is called "linguistic protection." It is the language and literature of life that reflects the existence of every nation in the world. The loss of the national language, he argues, is the loss of the nation's spirit.

Another important feature of Avloni is her journalistic career. His Shukhrat and Asia newspapers have been published for a short time under his editorship. In the newspaper Sadoi Turkistan, Avloniy shared a pen with the pseudonym "Indamas". Avloniy addressed to young people in terms of culture: "a glittering, shivering pants, wearing a European cap," culture! " "It is a culture of ridicule, ridicule, a little bit of Muslim or semi-Russian," he said. Abdulla Avloniy divides the symbol of true culture into three parts: science, domestic life and morality. Naturally, these directions are vital components in the upbringing of the present and future generations, and we can learn how great our ancestors were.

The theatre was a great event in Turkestan cultural and educational life. At the same time, theatre is not only a place of spiritual education but also a major source of material support for the education sector. That is why the progressives have been trying hard to develop national theatre

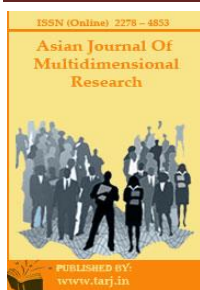
During this period, amateur theatre lovers had the opportunity to develop their own creative and troupe activities. In 1913, after the "Padarkush" new works in national playwriting were created. Among them was the repertoire of the plays by Abdulla Kadiri, such as "The Unhappy Groom", Abdullah Avloniy's "Easy to Advocate", "Pinak" and "Mazluma's Wife" by Hoji Moin. These theatres are based on the troubles of life at that time and are mainly portrayed by a spectacular audience. When we analyze Abdullah Avloniy's article "Discussing Theater," the writer tries to explain to young people what theatre is in simple terms. According to the author, "theatre is an idle game to eradicate the evil traditions and customs of every nation." Thus, in the eyes of the theatre industry, first of all, it was a "great school", a "temple", and promoted such ideas as education and knowledge, such as schools and the press. From 1921 to 1930 Abdulla Avloniy worked at various educational institutions. Abdulla Avloniy was awarded the title of "Hero of Labor" in 1927 and "People's Artist of Uzbekistan" in 1930. The untimely death has put an end to his intense activity.

CONCLUSION

In general, all the noble deeds of Abdulla Avloniy during his lifetime, including all articles written by ordinary people, contributed to the development of tomorrow.

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EFFECTIVENESS OF MEDICINAL PLANTS AGAINST BEES DISEASE

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ABSTRACT

This article presents the results of experiments on the healing properties of the local medicinal herb - cinnamon against bee diseases - American foulbrood and varroaosis. Long-term use of the same drugs against bacteria, insects, ticks and other parasitic pests has reduced the effectiveness of drugs, as a result of increasing their resistance (resistance). Based on the foregoing, various medicinal plants grown in our country will be studied. It is necessary to develop environmentally friendly, highly effective, harmless beekeeping products for bee families that will be effective against bacteria, insects and ticks. If in the experimental groups 4 days after treatment one infected bee family remained, then 8 families showed signs of the disease (the symptoms of the disease are still unpleasantly smelling, putrid odor, as well as a decrease in the number of perforated pupae and holes in the printed wax cells). Experiments were conducted to determine the effectiveness of the above cinnamon decoction. A decoction of cinnamon against bee varroaosis is prepared as follows: 100 grams of cinnamon is boiled in 500 ml of water for 15 minutes. Such cooked broth was injected in 10 grams between frames to 9 sick bee families.

KEYWORDS: Cinnamon, Varroayakobsoni, Varroaosis, American Foulbrood, Bacillalarve, Syrup, Powder, Powder, Broth, Bacteria, Insects.

INTRODUCTION

Relevance of the topic: Beekeeping is a highly profitable agricultural sector. When pollinating plants with bees, the yield increases by 25-50%. Uzbekistan is one of the historical centers for breeding bees. The sunny nature of the country allows it to develop beekeeping.

The development of beekeeping is often hindered by a number of infectious and invasive diseases, such as: acarapodosis, varroatosis, American and European decay, nosematosis, ascospherosis, aspergillosis, viral paralysis, pesticide poisoning and much more.

Varroatosis is an invasive disease of bees caused by the tick *Varroa destructor* of the order Parasitiformes Gamasidae. Ticks parasitize in the organs of working bees, drones and growing young larvae. The average length of the female tick is 1.1 mm and a width of 1.7 mm; the length of the male tick is 1.0 mm and the width is 0.9 mm. The main areas where ticks feed are located in bees between the head, chest, stomach and 3 anterior abdominal walls. 3 to 5 ticks can live on one working bee, drones or uterus.

American foulbrood is a disease caused by larvae and dead pupae of bee colonies. The causative agent of the disease is the rod-shaped bacterium *Bacillus larvae*, which produces spores. The length of the rod is 2–5 µm, the width is 0.5–0.7 µm. Dead larvae are a source of disease. A larva that dies from an American foulbrood has 2.5 billion spores in its body. Microbial bacilli are resistant to life for 10 years in dead bees or in black wax, where their spores can survive in the sun for 4 to 6 weeks, up to 900 °C in water for 3 hours and up to 13 minutes at 1000 °C. When heating honey with water in a ratio of 1: 1 they stand 20 minutes. The main distributor of this disease is a sick family of working bees infected with American foulbrood disease and adult working bee uterus and, in rare cases, drones, infected with bee worms.

Long-term use of the same drugs against bacteria, insects, ticks and other parasitic pests has reduced the effectiveness of drugs, as a result of increasing their resistance (resistance). Based on the foregoing, various medicinal plants grown in our country will be studied. It is necessary to develop environmentally friendly, highly effective, harmless beekeeping products for bee families that will be effective against bacteria, insects and ticks.

Purpose of the study

A study of the effectiveness of medicinal herbs cinnamon against varroatosis and American decay on beekeeping farms.

Task. Determining the effectiveness of cinnamon medicinal herbs against varroatosis and American foulbrood of bees.

The Results of The Study

To determine the healing properties of cinnamon versus American foulbearing bees, we prepared a syrup: for this, boiled 100 g of cinnamon in 1.1 l of water for 15 minutes with the addition of 1 kg of sugar. This syrup was given to each bee colony 200 ml daily for 3 days. 3 times with a 7-day interval, which is one treatment course. In total, 3 courses of treatment were carried out.

In total, 12 families of bees sick with American decay were selected for the experiment, which were divided into 4 groups with 3 infected families in each group. Cinnamon syrup was divided into 3 groups, i.e. on 9 families.

Three infected groups from 9 families received cinnamon syrup as described above, and one group was left as a control and cinnamon syrup was not given, and the following results were obtained:

If in the experimental groups 4 days after treatment one infected bee family remained, then 8 families showed signs of the disease (the symptoms of the disease are still unpleasantly smelling, putrid odor, as well as a decrease in the number of perforated pupae and holes in the printed wax cells). On the fourth day after the second experiment, 1 sick family, 4 families with symptoms of the disease, and 4 healthy families were observed.

On the third day of the fourth study, 1 patient (11.1%) family, 2 families (22.2%) with symptoms of the disease, and 6 healthy bee families (66.7%) were observed.

In the control group, the disease, on the contrary, began to develop.

In order to determine the healing properties of cinnamon against the disease of bee varroa, a powder was prepared from it. 12 sick bee families infected with varroa were divided into 4 groups. Prepared powder of 10 grams was sprayed between the frames of 9 infected bee colonies. Such spraying was carried out 3 times with a 7-day interval. 4th remained as a control.

After the experiment, the following results were obtained:

If in bee families, in 3 groups, before treatment with cinnamon powder, they were registered in 82 samples of 450 bees (18.2%) infected with Varroa Jacobson's tick, after the 1st and 2nd treatment, the number of ticks decreased, then after the 3rd treatment, it decreased to 18, i.e. (4%). Powder cinnamon treatment of the bees, as a result of 3 experiments, gave 78% efficiency.

In the control group of 29 samples (19.3%), 150 bees were infected with Varroa Jacobson ticks before the experiment; after the experiments, infection was observed in 30 samples (20%).

Experiments were conducted to determine the effectiveness of the above cinnamon decoction. A decoction of cinnamon against bee varroa is prepared as follows: 100 grams of cinnamon is boiled in 500 ml of water for 15 minutes. Such cooked broth was injected in 10 grams between frames to 9 sick bee families.

As a result, in 86 bee samples (19.1%) that were infected with Varroa Jacobson ticks before processing 450 bees with cinnamon decoction, the number of ticks decreased after the first and second treatment, and after the third treatment it decreased to 23 (5.1%)

According to the results of 3 experiments with boiled cinnamon, the overall efficiency was 75.5%.

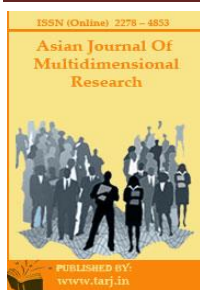
The control group was sprayed with 10 ml of water. As a result, in 150 samples, 150 bees (18%) were infected with Varroa Jacobsoni mites; after the experiment, infection was observed in 31 samples (20.6%).

CONCLUSIONS:

1. The effectiveness of cinnamon syrup against American decay was 66.7%,
2. The effectiveness of the powder against varroa - 78% and decoction - 75.5%.

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COMPOSITION AND SETTLEMENT OF CASTES IN DELHI PROVINCE UNDER THE MUGHALS

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ABSTRACT

The institution of caste may be mentioned as an important element in shaping the structure of the society. Each caste is a social unit in itself. India has been hospitable to numerous groups of immigrants from different parts of other countries. The stratification of rural society further strengthened due to the weakening of central government's control. The culture of each group has undergone a change over the centuries to become an integral part of Indian mosaic. The Muslim caste differs in some respects from the Hindu caste system. There are no ethico-religious ideas justifying the hierarchy or regulating inter-caste relations through ideas of purity and pollution and there are no Varna categories. Though Islam proclaims the idea of equality of all those who profess the faith but in India the Hindu caste system is entirely incompatible with the tenants of Islam. The main casts of the Delhi province were Rajput, Gujar, Jat, Ahir, Bhatti, Taga, Brahmin Afghans, Saiyyids etc. under the Mughals. The prestige of the Brahmin caste was the corner stone of the whole organization. The Sayyids and the Sheikhs belonged to the nobility of Islam which were traditionally occupying religious offices. On the other hand the Mughals and the Pathans had by tradition been warriors, feudal aristocrats and rulers. From a social structural view-point, by the time the Islamic expansion in India started, its tribal egalitarian character had changed. They were merely the names given to groups of tribes which were supposed to be of similar blood. This pattern of occupational differentiation had often significant exceptions, yet the fact remained that these four upper groups, which later evolved a caste like structure, together had been the bearers of the great tradition of Islam in India. The population of the Delhi province was composed of people of various casts and occupations. The caste composition of Delhi province particularly those who were dominating and controlling the land were very important. Different casts were mentioned in the different parganas but not as the sole zamindar, however, in some parganas they emerged as the dominant castes but in a few

parganas they had only acquired zamindari rights. In Indian context, the hereditary association of a caste with an occupation has been so striking that caste is nothing more than the systematization of occupational differentiation. Thus, to associate a caste invariably with a single occupation is an over, simplification. The custom by which it lived generally was different from other castes. An individual in a caste society lived in a hierarchical world. Elaborate rules governed the acceptance of cooked food and water from another caste. The hierarchical nature of the Indian social structure was a prime factor in the slow change in the country, whether social or economic. Thus, the chief land owing caste in the Delhi province was that of the Jats followed by the Gujars, the Brahmans, the Rajputs and the Afghans. But the position of the Rajputs deteriorated while the Gujars became far more important in this region. A large number of Afghan people settled in the area of Rohilkhand during the mughal period.

KEYWORDS: *Occupational, Simplification, Brahmans, Strengthened*

INTRODUCTION

The Indian social structure is characterized by unity as well as diversity. The population of the Delhi province was composed of people of various casts and occupations. Historically India has been hospitable to numerous groups of immigrants from different parts of other countries but the culture of each group has undergone a change over the centuries to become an integral part of Indian mosaic. The institution of caste may be mentioned as an important element in shaping the structure of the society. Each Caste was a social unit in itself. The main castes mentioned in Ain-i-Akbari by Abul Fazl in the Delhi province were, Rajput, Gujar, Jat, Ahir, Bhatti, Taga Brahmin etc. H.M. Elliot has attempted in 1844 a study of the various races and castes which predominated in the North West province of India. He however, grouped all the Rajput castes together and also ignored certain other minor castes specified in the Ain-i-Akbari.

Rajputs: There were many sub castes of the Rajputs like Muslim Rajputs, Gujar Rajputs, and Sove and Chokkar etc. in Safidon, Karnal, Tilpat, Palwal, Islamabad, and Garhmuktesher of Delhi sarkar. Rajputs were mentioned together with other castes. In most of the parganas of sarkar Sambhal, Saharanpur and Rewari these castes were mentioned but not as the sole zamindars in many parganas. In the parganas of Ajaon, Bareilly, Kant and Gola of Badaon sarkar, they emerged as the dominant castes. In Bhatner pargana they had acquired zamindari rights. In Sarhind sarkar amongst numerous castes the predominant castes seem to be that of the Rajputs. They were again Muslim Rajputs. Ranghar and Chauhans were also the Rajput castes. Ranghars were mentioned in the paraganas of Panipat, Safindon, Merrut, Muzaffarnagar, Hisar, Pundri, Thanesar, Sunam, and Habri of the sarkars of Delhi, Saharanpur and Sarhind. Rathors were mentioned in Hisar Firoza sarkar in Fatehabad Tosham and Bangiwal parganas. In the paraganas of Kotsalbahan and Aonla of Badaon sarkar, Kanwar and Tanwar Rajputs were mentioned as the zamindars.

Jats: Another main caste of Delhi province was that of the Jats. They were mentioned in the parganas of Palam, Beri Dobaldhan, Jhinjhanah, Jalalabad, Jalalpur, Rohtak, Sonapat, Safidon, Kutana, and Mandauthi of Delhi sarkar. They formed the dominating caste in these parganas in Sambhal sarkar. They were mentioned in the parganas of Ismailabad, Chandpur, Jhala and Jalalabad. In Rewari sarkar Jats were mentioned in Rewari and Bawal parganas. In Hisar Firoza sarkar they were mentioned in Agroha, Ahroni, Atkhera, Seoran, Dhatarat, Puniyan, Bhatu,

Tosham and Barwala. In Sarhind sarkar they were mentioned in the parganas of Pael, Bhader, Thanesar, Chark, Khizrabad, Sarhind, Samana, Guhram and Habri etc.

Gujars: Gujar was another important caste of Delhi province. Badgujar was its sub-caste. They were mentioned exclusively only in Jadwar, Majaulah and Naroli of Sarkar Sambhal and Hindan in Delhi Sarkar. Gujars were mentioned in the sarkar of Delhi, Deoband, Kairana, and Ambihita in Saharanpur, Bawal, Kot Qasim Ali parganas in Rewari sarkar, and Ahroni, Fatehabad in the sarkar of Hisar Firoza.

Tagas: The Taga caste was mentioned in the parganas of Siyana, Merrut and Ganaur of Delhi sarkar, parganas of Tahli, Sanas Mandah (Satasi Mundia) in Badaon sarkar, Bachharaom, Azampur, Bijnore, Chandpur, Sambhal, Kiratpur and Mughalpur parganas of Sambhal sarkar, in Budhana, Deoband, Khodi, Malhaipur, Rampur, Rurki, Sardhana parganas of Saharanpur sarkar.

Afghans: Afghans were mentioned in the parganas of Kharkhanda, Sonepat, Dadri, Panipat and Tilpat of Delhi Sarkar. They were mentioned in Tohana and Dhatarat of Hisar-Firoza sarkar, Nakor Nanauta, Malhaipur, Chautar of Saharanpur sarkar, Banor and Chahat of Sarhind Sarkar. There was no particular region in Delhi province where they were predominant zamindars. However, in some regions they formed the dominant land-holding class and in some others shared their position with dominant castes.

Sayyids: Sayyids were mentioned in Gangera, Kherah in Delhi sarkar, Amroha and Sirsi in Sambhal sarkar, Sanbalhera, Biduli and Jauli in Saharanpur sarkar and Barwala in Hisar sarkar.

Brahmins: Brahmins were mentioned with their sub-castes in Tilpat in Delhi sarkar, Nakor, Manglaur, Rurki and Malhaipur in Saharanpur sarkar, Shahbad in Sarhind, Sambhal, and Bijnor in Sambhal sarkar. They were mentioned in the parganas of Shahi Neodhanah and Lakhnour of Sambhal sarkar.

Bhattis: Bhattis were mentioned in parganas of Sikandrabad in Delhi sarkar, Khizrabad and Bhatinda in Sarhind sarkar. Some other castes which had acquired zamindari rights were mentioned as Shekhzadas, Kayath, Khokhar, Chandral, Pundirs, Sarir and Rahej etc. in the parganas of Barnawah, Barsar, Sambhal, Meerut, Muzaffrabad, Fatehpur, Dhaka and Purchapur, respectively in Saharnpur sarkar. Gahlots were mentioned in the middle parganas of Ganga-Yamuna region of Delhi sarkar.

The caste composition of Delhi province particularly those who were dominating and controlling the land were very important. Area around Delhi was mainly dominated by the Jats (Sonipat, Faridabad and Ballabgarh) who were holding nearly half of the cultivated land. Apart from the Jats, other castes who occupied land in this tract were the Gujars. The Brahmans were spread fairly over the same tract and they were co-sharers with the Jats in some of the villages. Similarly, the Tagas, originally the Brahmans were mainly found in Sonipat, s Fathpur and also in the south of Ballabgarh. But the Tagas did not intermarry with Brahmans. Likewise the Ahirs predominated Rewari sarkar and in some of the villages of Delhi sarkar. The Rajputs were scattered in the most parts of Delhi sarkar mostly in a few villages south to Delhi.

In Indian context, the hereditary association of a caste with an occupation has been so striking that caste is nothing more than the systematization of occupational differentiation. Even though a caste was not only associated with an occupation but had a limited kind of monopoly over it. This kind of association was suggested when, for instance, the term Kumhar was translated as potter and Dhobi as washerman. But generally most castes practised agriculture in addition to

their traditional occupations to supplement their income from their traditional occupations. Thus, to associate a caste invariably with a single occupation is an over, simplification. Each caste was a social unit in itself. The custom by which it lived generally was different from other castes.

An individual in a caste society lived in a hierarchical world. Elaborate rules governed the acceptance of cooked food and water from another caste. Food cooked with ghee, milk or butter was called pakka food and could be accepted from inferior castes. Kachcha food, on the other hand, was cooked with water and it may be accepted normally only from one's own or equivalent or superior castes. Caste was usually related to the exercise of differential rights in land. At the top were the castes who were either absentee or non cultivating owners. Next came the cultivating tenants and at the bottom of the hierarchy came the landless labourers. The caste structure in both villages and towns continued essentially to be the same as in the earlier period. In fact, the evidence for 'hereditary caste labour, in villages and towns was practically continuous from ancient times to the eighteenth century.

The Muslim caste differs in some respects from the Hindu caste system. There are no ethico-religious ideas justifying the hierarchy or regulating inter-caste relations through ideas of purity and pollution and there are no Varna categories. Though Islam proclaims the idea of equality of all those who profess the faith but in India the Hindu caste system is entirely incompatible with the tenants of Islam. It has been characterized by caste. Despite continuous wars of conquest and Islamic expansion, a more stable and sociologically more significant feature of Islam in India was its cultural co-existence with the Hindus and their traditions. From a social structural viewpoint, by the time the Islamic expansion in India started, its tribal egalitarian character had changed. Coming into contact with Persian society, its social structure was hierarchised and Islamic elites were now stratified into separate classes. These elites, who constituted the uppermost segment of the Islamic society, did not come from amongst the indigenous converts to this religion. Most of them were of foreign descent and belonged to the social hierarchy of the Ashrafs, or the four major immigrant groups of the Muslims called the Sayiad, Sheikh, Mughal and Pathan. Thus, the Muslim community in India during the eighteenth century was composed of four prominent racial and tribal groups-the Mughals, the Afghans, the Saiyids and the Sheikhs. All these four groups were regarded as Ashraf. The Sayiad, Sheikh, Mughal and Pathan were not the castes, though usually spoken of as such. They were merely the names given to groups of tribes which were supposed to be of similar blood. The descendants of the Mughals, whatever the city they hailed from, and those who were of gentle disposition and meek were called Mughal. The Sayyids and the Sheikhs belonged to the nobility of Islam which were traditionally occupying religious offices. They were considered the descendants of early Islamic nobility and thus were regarded as sacred almost like the Brahmins in the Hindu tradition. The prestige of the Brahmin caste was the corner stone of the whole organization. On the other hand, the Mughals and the Pathans had by tradition been warriors, feudal aristocrats and rulers. The stratification of rural society further strengthened due to the weakening of central government's control. This pattern of occupational differentiation had often significant exceptions, yet the fact remained that these four upper groups, which later evolved a caste-like structure, together had been the bearers of the great tradition of Islam in India.

The Pathans were holding the land mostly in the area around Delhi (Sonipat and Najabgarh). The Sayyids possessed land principally in the south of Delhi. The Meos was quite a small group owning a few villages near Ballabgarh and Gurgaon.

The sarkars of Hissar Firoza and Sarhind, though were having more than one zamindar caste mentioned against much of their mahals, witnessed nevertheless, the general predominance of a few castes. In sarkar Hissar-Firoza predominante zamidars were the Jats and the Rajputs. Similarly in sarkar Sarhind Ranghars possessed land along with Jats and Rajputs. The Jats were widespread all over the province and the other castes with Jats were Rajput, Bhattis, Afghans and Ranghars. They were uniformly predominant while being numerous in sarkar Sarhind, apart from constituting a significantly large section of intermediary zamindars in sarkar Hissar-Firoza. The Bhattis ranked next in importance in the eastern portion in sarkar Sarhind and their predominance was in only two mahals of this sarkar. Ranghar zamindars were in greatest numbers in Sarhind sarkar, occupying fourteen mahal. The sarkar of Sarhind and Hissar-Firoza did not appear to have any significant caste. An important exception in the case of Junah was the relatively large mahal of Sirsa in sarkar Hissar-Firoza where they were zamindars.

Thus, the chief land owing caste in the Delhi province was that of the Jats followed by the Gujars, the Brahmans, the Rajputs and the Afghans. But the position of the Rajputs deteriorated while the Gujars became far more important in this region. In the sixteenth and the seventeenth centuries in the sarkar of Rewari the dominant castes were the Ahirs and the Rajputs, followed by the Jats. However, the Jats emerged as dominant castes replacing the Rajputs up to the eighteenth centuries.

In the early periods of the Mughal empire, Rohilkhand was quite flourishing and of much political importance. Rohilkh and called Katehar, by and large consisted of the two sarkar of Badaon and Sambhal i.e. modern district of Bareilly Moradabad and Badaon. The prominent cities of this area were Shahjahanbad, Bareilly, Badaon Aonla, Moradabad, Bisauli and Sambhal. These cities fell in the sarkars of Sambhal and Badaon of Delhi province. In the pargana of Bareilly (originally it formed a pargana in sarkar Badaon) Rajputs, Chauhans, Gaurs and Kayaths were recorded as zamindars in the Ain-i-Akbari. The Afghans did not figure there as zamindar caste in any of the parganas with in the sarkar Sambhal and Badaon which approximately covered the modern Rohilkhand. Similarly Kanwars and Kayaths were the zamindars in Saneha and Barsir in the pargana of Aonla. The hold of Katehriya Rajputs over the area continued upto 1730 and after that Ali Muhammad Rohilla killed Duja and seized this area. Afghans settled in Shahjahanpur in Meerut pargana.

A large number of Afghan people settled in this area. Most of the lands in Moradabad (Farid Nagar) were possessed by the Rajputs, till the rise of Ali Muhammad Khan, who expelled Mohender Singh. The inhabitants of Pilibhit were Banjaras (sub clan of the Labhanas). In 1742 this area was seized by Rohilla Afghans under the leadership of Hafiz Rahmat Khan. Afghans were also settled in Sherkot and Nagina of sarkar Sambhal. Azampur and Najibabad in sarkar Sambhal also emerged as Afghan settlement.

The Bargujars were recorded as zamindars in sarkar Sambhal as mentioned in Ain-i-Akbari. However, Afghans were not referred as zamindars. The Shaikhzadas (local Muslims) were mentioned with the Kayaths in Badaon pargana. But later on they were pushed out of the area by the Afghans in the eighteenth century. The Rohillas became supreme in Islamnagar, Satasi and Salimpur. Sahaswan and kot Salbahan parganas of Badaon sarkar were seized by the Afghans and Kot Salbahan was assigned to Bakhshi Sardar Khan in 1748. Thereafter, it attracted many Afghan settlers. The Afghans also established themselves in Bijnor, Barhpur, Chandpur, Daranagar, Dhampur, Mandawar, Nagina and Nihtaur in Bijnore region. Bisauli accordingly became one of the most important Afghan settlements. In the Ain-i-Akbari the Afghans did not

figure as zamindar caste in any of the parganas within the sarkars of Sambhal and Badaun which approximately covered the modern Rohilkhand. The growth of Afghan zamindars in the adjacent regions of doab, notably Saharanpur, was largely associated with the rise of Rohilla power. Shahjahanpur was originally a part of Kant pargana. The Afghan settlement in Moradabad took place as a consequence of Rajput defiance of Mughal authority.

The process of social change that had set in during the long period of peace and order of the seventeenth century gained further momentum during the eighteenth century. The stratification of rural society further strengthened due to the weakening of central government's control. In the process of localization of power even posts of qazis and the rights of madad-i-maas holders tended to become hereditary during the eighteenth century. The hierarchical nature of the Indian social structure was a prime factor in the slow change in the country, whether social or economic.

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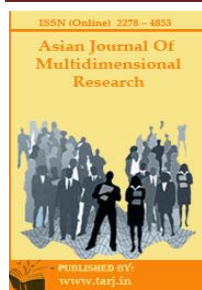
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TOBACCO PLANT GROWTH, DEVELOPMENT AND MICROWAVE INFLUENZALITY

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ABSTRACT

The article provides some data on the effect of micronutrients on the growth, development, yield and product quality of the tobacco in the soil and climatic conditions of Uzbekistan. The use of these fertilizers requires proper prescribing norms and the correct ratio of nitrogen, phosphorus and potassium. (D.W.Smith, R. Loren, O. Boyette, 1998). Nitrogen plays an important role in the development of the tobacco plant and affects the growth of yields. However, high yields have a negative effect on yields and leaf quality (Hashimov F.X 1987, Grinberg IP, Moldovan 1979). However, in the variant of copper microglides, the leaves showed a technically ripe appearance when compared to cobalt and molybdenum microelements. According to the results of biometric data, vegetable leaf levels were large and technically timely, in the variant of cobalt and molybdenum. The growth and development of plants fed by cobalt and molybdenum microgrants are closely related to the technical ripening of the leaves, but the plants with copper microelement are virtually no different from that of other varieties, while the color of the plant leaves much darker and the time of ripening is slightly longer. Molybdenum microchip yield was higher than the yield, leaf quality control and other variants.

KEYWORDS: Tobacco, Typical Sierozem, Nicotine, Microelement, Microfertilizer

INTRODUCTION

Microelements affect the growth, development, and productivity of the tobacco plant. According to A.V. Karajasova, the amount of alcohol has increased in the tuberculosis (VAVarajasova, 1978) when tobacco smells and flowering zinc micronutrients and zinc + manganese are used in the dubbing grade. According to K.Kalekenova and researchers, the use of manganese and boron microelements in smoky soils with low humus has been observed in the rapid development of the upper terrestrial organs of the plant and the quality characteristics of the raw material (Rajabov AI, 2002). However, present-day literature contains little information about the effects of

microelements - cobalt, copper and molybdenum on tobacco plant nutrition, development and other processes. Large-leaf virgin Virginia type tobacco is very demanding for organic and mineral fertilizers. The use of these fertilizers requires proper prescribing norms and the correct ratio of nitrogen, phosphorus and potassium. (D.W.Smith, R. Loren, O. Boyette, 1998). Nitrogen plays an important role in the development of the tobacco plant and affects the growth of yields. However, high yields have a negative effect on yields and leaf quality (Hashimov F.X 1987, Grinberg IP, Moldovan 1979). Virginia has a variety of nutritional products throughout the entire vegetation period. In the early stages of vegetation, the demand for foodstuffs is strong, and this period is a decisive one. The effect of microelements on the growth and development of virgin type K-326 tobacco in typical rugged soils and sharp continental climate has not been studied.

The purpose of the research is to study the effect of micronutrients on the growth of virgin species K-326 in typical gray soils, their development, productivity, chemical effect, and their optimal size.

RESEARCH METHODS

Virus-type K-326 tobacco plant was obtained for studying the effects of microelements on plants. The study was carried out on the experimental site UzBAT of Urgut district, Navoi MMTP, in typical gray soils. In field experiments, the effect of microorganisms on growth, development and productivity of plants was studied. The field experience was based on the following scheme: Control, N125 P135 K26 (ΦOH), $\Phi\text{OH}+\text{Co}^{0,5 \text{ Kr}}$, $\Phi\text{OH}+\text{Co}^{0,05\%}$, $\Phi\text{OH}+\text{Mo}^{0,5 \text{ Kr}}$, $\Phi\text{OH}+\text{Mo}^{0,05\%}$, $\Phi\text{OH}+\text{Cu}^{1 \text{ Kr}}$, $\Phi\text{OH}+\text{Cu}^{0,1\%}$.

In the experiment, the tobacco was planted in the virgin grade 90x60 cm in Virginia and was made in 8 variants, 4 replicates. Nitrogenous fertilizers were used as urea, phosphorous PS Agro, potassium nitrate and potassium sulphate as potassium fertilizers, microbes: cobalt sulfate, ammonium molybdate and copper sulphates. Percentage of microorganisms used were sprayed with herbal leaf. All investigations in the field were determined by agrochemical methods. Biometric measurements, phenological and physiologic observations have been identified in tobacco-related methods.

Before agrochemical analysis of field soil field experiments, the following results were obtained: 0-30 cm layer N-0,146%, P- 0,18%, K 2,4%, gumus-1,3%. The amount of vegetable-based nutrients in the soil (mg / kg) is as follows: 0-30 cm layer N - NO_3^- 17,6, N - NH_4^+ 9,74, P2 O5-33,1, K2O-360.

Experience results

The data showed that the micronutrients studied had a different effect. Specifically, the herbal leaves in the variant of copper microelement showed dark green and resistant to the plant leaves of the other variant. However, in the variant of copper microglides, the leaves showed a technically ripe appearance when compared to cobalt and molybdenum microelements. According to the results of biometric data, vegetable leaf levels were large and technically timely, in the variant of cobalt and molybdenum.

NPK (ΦOH) the leaf weight (60.1g) differed to 4.9g compared to the control version (55.2g) (Table 1). In the variant used by microgiants NPK ($\Phi\text{OH}+\text{Mo}^{0,5 \text{ Kr}}$) leaf weight (76,4 rp)

NPK (ΦOH) option (60,1 gr) 16,3 gr in difference. In the variant used by microgiants NPK ($\Phi\text{OH}+\text{Mo}^{0,05\%}$) productivity (35,2 ц/га) check up (16,4 ts/га) and NPK (ΦOH) (29,2 ts / e) were higher in comparison to variants (Table 2)

TABLE 1. THE EFFECTS OF MICROELEMENT NORMS AND APPLICATION METHODS ON THE BIOMETRIC MEASUREMENT OF CEREALS LEAF (PART 3)

Options	The average number of leaves per plant, pcs	Average per leaf weight, gr	Average leaf length, cm	Average leaf width, cm
Confirmation	16,2	55,2	50,1	20,5
NPK (ΦOH)	20,1	60,1	52,3	29,1
NPK (ΦOH) +Co^{0,5} кг	23,1	75,7	62,4	33,5
NPK (ΦOH)+Co^{0,05%}	23,2	75,6	62,6	33,5
NPK (ΦOH)+Mo^{0,5кг}	24,1	76,4	62,8	33,6
NPK (ΦOH)+Mo^{0,05%}	24,1	76,5	63,1	33,6
NPK (ΦOH)+Cu^{1кг}	23,0	75,4	62,2	33,2
NPK (ΦOH)+Cu^{0,1%}	23,1	75,5	62,3	33,3

TABLE 2. EFFECTS OF MICROORGANISMS ON TOBACCO PRODUCTIVITY TS / HA

Variants	Quantities				Average yield
	I	II	III	IV	
Confirmation	20	15,5	16	14,1	16,4
NPK (ΦOH)	27,8	30,1	26,9	32	29,2
NPK (ΦOH)+Co^{0,5} кг	32,8	33,1	34,8	35,3	34
NPK (ΦOH)+Co^{0,05%}	34,1	32,2	34,7	35	34
NPK (ΦOH) +Mo^{0,5кг}	33,5	34,2	34,8	35,5	34,5
NPK (ΦOH)+Mo^{0,05%}	36,4	35,4	35	34	35,2
NPK+Cu^{1кг}	36,4	33	32,5	32,1	33,5
NPK+Cu^{0,1%}	31,7	33,8	34,6	35,1	33,8

HCP05 -2,12081 Sx -0.7 Sx%-2,59 S d-1,01

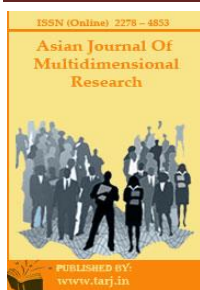
Specimen varieties of tobacco plant varieties of virgin varieties have been analyzed during the ripening period and when exposed to nicotine exposure in the dried state, it is found that in soil-climatic conditions of Uzbekistan, its grade is less than 2%.

CONCLUSION:

The influence of minerals and micro-fertilizers on tobacco plant growth and development is specific. The growth and development of plants fed by cobalt and molybdenum microgrants are closely related to the technical ripening of the leaves, but the plants with copper microelement are virtually no different from that of other varieties, while the color of the plant leaves much darker and the time of ripening is slightly longer. Molybdenum microchip yield was higher than the yield, leaf quality control and other variants.

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**ASSESSING THE INFECTIOUS DISEASES OF STUDENTS IN
DIFFERENT WEATHER SEASONS IN DIT UNIVERSITY DEHRADUN,
UTTARAKHAND (INDIA)**

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ABSTRACT

This study assess the influence of climatic factors on various infectious diseases of students in DIT University Dehradun. For this, it considers primary data based on daily survey of students who came for medical treatment for various infectious diseases in Hospital of DIT University during December 01, 2015 to November 30, 2016. Descriptive results of study indicate that seven types of seasonal diseases are apparent during aforesaid period. Accordingly, it measures the influence of climatic factors on recognised seven diseases using linear and non-linear regression models. Furthermore, empirical results provide an evidence that climatic factors have a negative impact on various infectious seasonal diseases. Hence, it can be claimed that climate change have a negative influence on human health. Therefore, it is very great concern for medical representative and national policy makers to prepare an effective and conducive climate policy plan to mitigate the adverse impact of climatic factors on seasonal infectious diseases of common people in India and other developing economies. Furthermore, it come up with viable and practical policy suggestions to avoid the negative consequences of climatic factors on human health. Finally, it provides an authentic research gap that can be considered by existing researchers in subsequent studies.

KEYWORDS: Climate Policy Action; Climatic Factors; Dehradun; Empirical Models; Human Health; India; Infected Students; Seasonal Infectious Diseases.

INTRODUCTION

BACKGROUND

Climate change is defined as long-term variation in weather factors from average which is observed in a long-period. It is observed in term of increasing maximum and minimum temperature, wind speed, solar radiation, sunshine, moisture, rainfall, precipitation, high occurrence in drought, floods, fog, humidity, earthquake, cyclones, hurricanes and heat waves in a specific region (Patz et al., 2005; Ackerman and Stanton, 2008; Wu et al., 2016; Raguraman et al., 2017; Liang and Gong, 2017; Amutha and Juilet, 2017; Muttarak and Dimitrova, 2019). Moreover, it is projected that climate change would bring extreme change in rainfall patterns, temperature, and evaporation at global level (Patz et al., 2005; Joon and Jaswal, 2012). Previous studies have claimed that change in climatic factors have a direct and indirect impact on physical, social and psychological health of human (Kovats and Akhtar, 2008; Raguraman et al., 2017; Amutha and Juilet, 2017). Also, earlier studies have detected that climate change have a negative impact on all sector of an economy (Kumar et al., 2008). However, up to a certain extent changing in climatic factors may have positive impact on human health (Epstein, 2001; Eriksson et al., 2008). In contrary, several studies have also observed that agricultural productivity, livelihood security and food security are negatively associated with climate change (Negi et al., 2012; Moors et al., 2013; Semenza, 2014; Raguraman et al., 2017). Subsequently, climate change have negative impact on human health and create several infectious diseases in humanity at greater level.

Moreover, it is likely to expect that crop yield and food-production will decline due to climate change (Eriksson et al., 2008). Subsequently, food and health security would be in alarming position due to variability in climatic factors (McMichael et al., 1996). Also, livestock and fishery production are likely to decrease due to rising seasonal temperatures and precipitation (Sorensen et al., 2018). Consequently, it would cause to increase nutritional insecurity of people, thereafter it have negative impact on human health (McMichael et al., 1996; Joon and Jaswal, 2012; Muttarak and Dimitrova, 2019). Earlier studies have also contended that extreme weather events are caused to increase loss of life, economic stability and human resources in most economies (Joon and Jaswal, 2012; Dutta and Chorsiya, 2013). Climate change have a negative impact on human health due to declining in agricultural food-grain production (Ackerman and Stanton, 2008; Singh and Dhiman, 2012; Joon and Jaswal, 2012; Dutta and Chorsiya, 2013; Amutha and Juilet, 2017). Rising temperature would be caused to increase food-borne infectious diseases in humanity (Patz et al., 2005). Vector-borne diseases (e.g., malaria and dengue fever, diarrhoea, leptospirosis, schistosomiasis) (Eriksson et al., 2008; Kumar et al., 2008), water-borne diseases (e.g., skin diseases, typhoid, nose, throat infection, dysentery, cholera, vomiting, and diarrheal), food-borne diseases (e.g., salmonella), and air-borne diseases increase due to climate change (McMichael et al., 1996; Epstein, 2001; Kovats and Akhtar, 2008; Markandya and Chiabai, 2009; Dhiman et al., 2010; Joon and Jaswal, 2012; Dhara et al., 2013; Bouzid et al., 2014; Wu et al., 2016; Raguraman et al., 2017; Sulistyawati et al., 2018; Abedin et al., 2019).

Malaria, dengue and other diseases in humanity would be more sensitive due to increasing mean temperature and changing in rainfall pattern (Patz et al., 2005; Resinger and Dogra, 2008; Eriksson et al., 2008; Markandya and Chiabai, 2009; Abedin et al., 2019). Water and food-borne diseases like diarrhoea and cholera will increase due to increasing rainfall (Resinger and Dogra, 2008). Existence of drought would lead to increase crop failure, subsequently malnutrition

specifically in children's will increase (Resinger and Dogra, 2008; Rahman, 2008). Impact of climate change on human health are witnessed as health threat, malaria, plague, dengue fever, chikungunya, cholera, dehydration, diarrhea and plague in humanity (Bhattacharya et al., 2006; Markandya and Chiabai, 2009; Dhiman et al., 2010; Singh and Dhiman, 2012; Moors et al., 2013; Dhara et al., 2013; Dutta and Chorsiya, 2013; Semenza, 2014; Wu et al., 2016; Arcanjo, 2019a). The possibility of malaria transmission may be high in humanity due to high fluctuation in temperature, rainfall pattern and immunity level (Patz et al., 2005; Dhara et al., 2013; Dutta and Chorsiya, 2013). Eye and ear diseases, pterygium, vernal keratoconjunctivitis and skin diseases in humanity increase due to high fluctuation in temperature and rainfall (Haines et al., 2006; Singh and Dhiman, 2012). As dengue fever is highly sensitive due to mosquito-borne virus (Patz et al., 2005), while mosquitoes increase as increasing temperature and excessive rainfall for long period (Patz et al., 2005; Resinger and Dogra, 2008; Dhiman et al., 2008), thus rainfall is a driver to germinate water-borne diseases in humanity (Wu et al., 2016). Pathogens of infectious diseases in people due to high relative humidity in atmosphere (Dhiman et al., 2010; Wu et al., 2016). Mental health issues (i.e. stress, anxiety, depression, psychological distress and suicide rates) in humanity increased due to polluted environment (McMichael et al., 1996; Dhara et al., 2013; Arcanjo, 2019b). Insomnia, fatigue and other diseases in humanity tend to be increased due to heat wave (McMichael et al., 1996; Haines et al., 2006; Singh and Dhiman, 2012; Yao-Dong et al., 2013; Semenza, 2014). Further, cold spell would be caused to increase injuries in humanity and more deaths (Yao-Dong et al., 2013). Further, economic capacity of individual will be in stress due to health problems induced by infectious diseases (Rahman, 2008). Hence, climate change has a multidimensional and multi-fold impact on human health (Joon and Jaswal, 2012).

In above-mentioned perspectives, prior studies have claimed that infectious diseases in humanity are associated with population growth, urbanization, human settlements, land use pattern, agricultural farm management practices, deforestation, and poor public health facilities, and other economic activities (Haines et al., 2006; Kovats and Akhtar, 2008; Dhara et al., 2013; Kaur and Upadhyay, 2018). Furthermore, infrastructure development related activities like dam and road construction, irrigation, depletion of fresh water and others also have a negative implications on human health (Haines et al., 2006; Eriksson et al., 2008; Resinger and Dogra, 2008; Dhiman et al., 2010; Singh and Dhiman, 2012). There are other factors such as population density, water supply, sewage and water management systems, irrigation system, low access to health care facilities, poverty, and environmental sanitation have a negative impact on human health (Kaur and Upadhyay, 2018).

Earlier studies have conceptually proved that human health is being adversely affecting due to climate change and natural disasters (Rahman, 2008; Liang and Gong, 2017; Abedin et al., 2019). Therefore, there is a requirement of active and effective climate policy action to mitigate the adverse impact of climate change on human health. However, limited studies could empirically assess the influence of climate change on human health in developing economies (Rahman, 2008; Abedin et al., 2019). Also, existing studies have directed to assess the impact of climate change on human health in order to make the future plan for sustainable adaptation to maintain human health (Sorensen et al., 2018; Yao-Dong et al., 2013). Dutta and Chorsiya (2013) have also reviewed that there is need to assess the temperature-diseases relationship in India. So, this study measures the influence of climatic factors on various seasonal diseases of students in DIT

University Dehradun using primary data. This study is envisioned to assess the answers on following research questions:

- What types of diseases germinate due to change in weather factors in various seasons?
- How researchers and scientists can estimate the impact of climatic factors on infectious diseases in humanity?
- What must be climate policy action and government's initiative to reduce the negative consequences of climate change on human health?

The present study is achieved following objectives:

- To assess the various infectious diseases of students in DIT University Dehradun.
- To examine the impact of climatic factors on identified infectious diseases using linear and non-linear regression models.
- To provide conclusive policy suggestions to mitigate the adverse impact of climate change on various infectious diseases.

METHODOLOGY

DATA AND SAMPLING TECHNIQUES

The present study is conducted in DIT University Dehradun, Uttarakhand (India). Students of DIT University are considered as respondents to collect the required data. It considers only those students who came for medical treatment for various infectious diseases in different weather seasons (i.e. winter, summer, rainy and autumn seasons) in Hospital of DIT University. Information collected through daily survey of students during December 01, 2015 to November 30, 2016 (366 Days). Total 4403 students came for medical treatment, while 434 students came for medical treatment for injury and accident. Thus, 3969 students are found suitable for this study. A systematic questionnaire is used to collect the data, while it comprises information on socio-economic activities (e.g., income, occupation of their parents, drinking and sanitation facilities, medical facilities, destination of students, others), geographic location (e.g., latitude and longitude), cultural (e.g., religion and festival), family background (e.g., joint or nuclear family, social status, political status and others) of the students, and awareness of students towards climate change and fluctuation weather condition in different seasons (e.g., maximum and minimum temperature, rainfall, extreme variability in weather factors and others). It comprises various health issues due to infectious diseases of students in different weather seasons. Daily-wise information on climatic factors i.e. minimum and maximum temperature and precipitation are taken from Indian Meteorological Department (IMD) Government of India.

FORMULATION OF EMPIRICAL MODEL

Scientific research community have discovered several techniques such as Production function model, Ricardian cross-sectional model, Agronomic-economic model, Agro-ecological zone model, Integrated assessment model and Computable general equilibrium model (Kumar and Sharma, 2014; Kumar et al., 2015; Singh, 2017; Singh and Narayanan, 2018; Kumar et al., 2020). Aforesaid methods have used to estimate the climate change impact on various activities of the economy. However, limited studies have assessed the impact of climatic factors on human health especially in developing economies. In this regards, Bouzid et al. (2014) have examined

the impact of climatic factors (i.e. maximum temperature and temperature, precipitation, and humidity) and socio-economic factors (i.e. population density, urbanization, GDP per capita and population size) on human health in Mexico using Generalized Additive Model. Several infectious diseases in humanity may increase due to increase in climatic factors. Therefore, number of patients for a specific infectious disease may be considered as a dependent variables to assess climate change impact on human health. The functional form of proposed model is specified as:

$$(ToPat) = f(MaxT, MinT, Prec)(1)$$

Here, $ToPat$ is number of infected students from a specific infectious disease; $MaxT$ and $MinT$ are the maximum and minimum temperature respectively; and $Prec$ is the precipitation. In empirical form the above-equation is specified as:

$$(ToPat)_d = \alpha_0 + \alpha_1 (MaxT)_d + \alpha_2 (MinT)_d + \alpha_3 (Prec)_d + u_i(2)$$

Here, $ToPat$ is number of infected students from a specific infectious disease in d^{th} day in undertaken time period; α_0 is the constant coefficient; $\alpha_1 \dots \alpha_3$ are the regression coefficients of associated explanatory variables; u_i is error term in equation (2). Non-linear regression model is also used to assess the long-term association of climatic factors with different infectious diseases. Thus, square terms of climatic factors are also included in the empirical models in following forms:

$$(ToPat)_d = \beta_0 + \beta_1 (MaxT)_d + \beta_2 (Sq. \text{ of } MaxT)_d + \beta_3 (MinT)_d + \beta_4 (Sq. \text{ of } MinT)_d + \beta_5 (Prec)_d + \beta_6 (Sq. \text{ of } Prec)_d + \mu_i \quad (3)$$

Here, β_0 is the constant coefficient; $\beta_1 \dots \beta_6$ are the regression coefficients of associated explanatory variables; μ_i is error term in equation (3). While, expression of remaining variables are given in equation (1).

Selection of An Appropriate Empirical Model: As present study is used linear and non-linear regression models to assess the influence of climatic factors on various infectious diseases in humanity, thus Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) are used to select the appropriate model (Kumar et al., 2017; Singh et al., 2016; Singh et al., 2019). While, appropriate functional form of proposed model is selected through Ramsay RESET test (Singh, 2017; Singh and Issac, 2018). Values of Variance Inflation Factor (VIF) is estimated to assess the presence of multi-correlation in data set.

Applications of Chi^2 Test: It measures the variation in observed and expected values for an events. Value of Chi^2 test also implies that how much difference exist between observed and expected values in a specific socio-economic and other activities (Singh et al., 2019). So, in this study, Chi^2 test is applied to check the variation in various infectious diseases of students in four different seasons.

DISCUSSION ON DESCRIPTIVE RESULTS

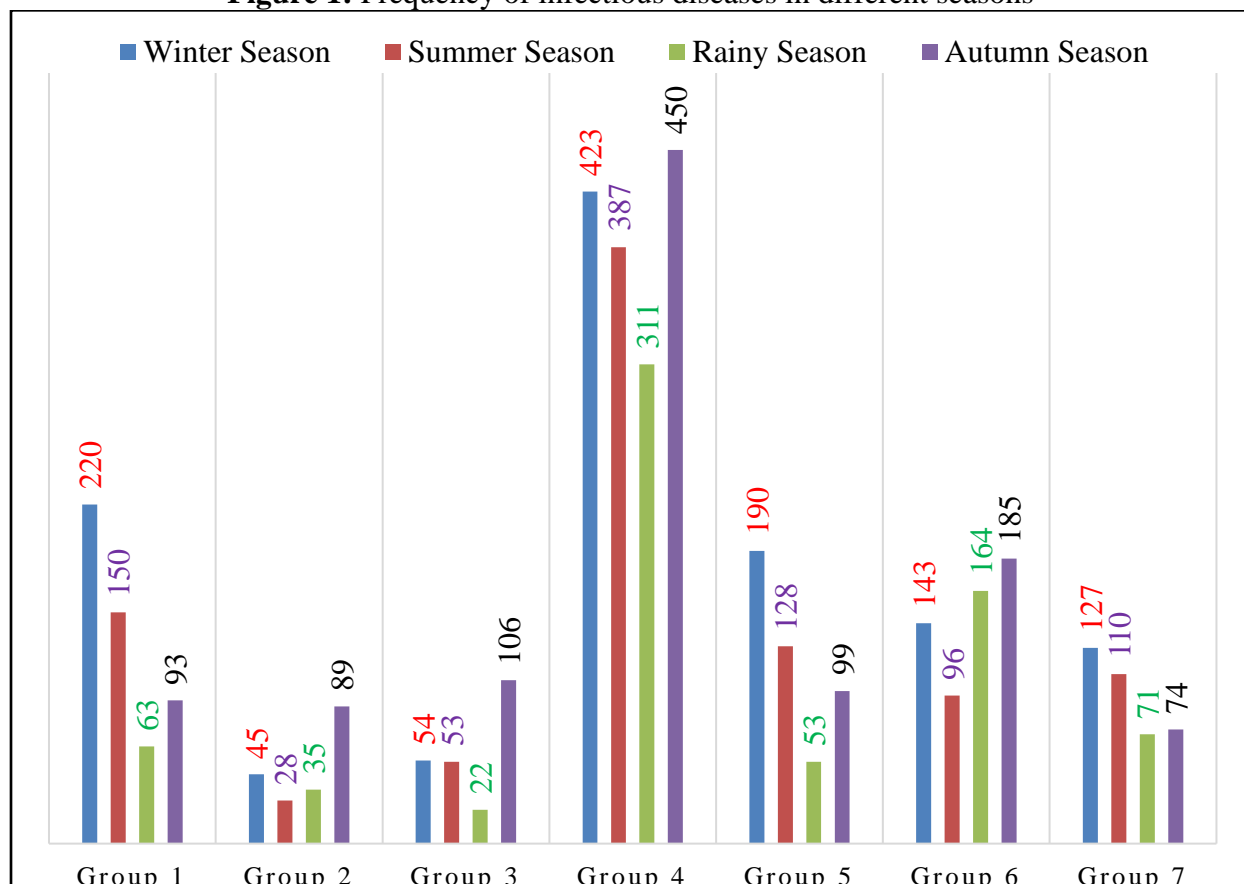
Descriptive results show that total 25 seasonal infectious diseases such as abdomen pain, acidity, allergy, asthmatic, body ache, body pain, cold, cough, dehydration, dysentery, ear infection, eye infection, fever, fungal infection, headache, itching, loose motion, nausea, sore throat, stomach pain, throat infection, throat pain, tonsillitis, tooth pain and vomiting are found in survey period. Aforementioned infectious diseases are divided in seven categories or groups i.e. (1) Abdomen pain/vomiting/stomach pain/acidity/loose motion, (2) Allergy/fungal infection/itching, (3) Body

pain/body ache/eye infection/ear infection/tooth pain, (4) Fever/cold, (5) Throat infection/throat pain/headache/nausea/weakness, (6) Cough/tonsillitis and (7) Dehydration/dysentery/asthmatic for empirical investigations. Monthly and season-wise distribution of students who are suffered from infectious diseases are given in Table – 1 and Figure – 1 respectively. Since estimated Chi^2 value is found statistically insignificant, thus it implies that there no statistically significant relationship between infectious diseases across seasons. Therefore, it shows that the incidence of various infectious diseases depend upon weather and climatic factors that must be considered in empirical investigations. As largest number of students (1571) are infected from fever and cold, thus both are found most sensitive diseases among other diseases. Further, it is seemed that fever and cold diseases are highly sensitive in all months (except June month). Results are also inferred that 135 students are suffered from abdomen pain/vomiting/stomach pain/acidity/loose motion infectious diseases in February; 58 students have diseases of allergy/fungal infection/itching in September; 41 students are facing the problems of body pain/body ache/eye infection/ear infection/tooth pain in October; 259 students are suffering from fever and cold; 90 students are observed patient of throat pain/headache/nausea/weakness in January; 147 students are found patient of cough/tonsillitis in August; and 69 students are facing the health issues of dehydration/dysentery/asthmatic diseases in February. Here, it can be concluded that the number of infected students of various diseases varies across months. Thus, it proposed that variation in number of infected students from various diseases may be due to change in climatic factors and weather conditions across months in study area.

TABLE 1: INCIDENCE OF VARIOUS INFECTIOUS DISEASES OF STUDENTS IN 12 MONTHS

Diseases/Months	Abdomen pain/vomiting/stomach pain/acidity/loose motion	Allergy/fungal infection/itching	Body pain/body ache/eye infection/ear infection/tooth pain	Fever/cold	Throat pain/headache/nausea/weakness	Cough/tonsillitis	Dehydration/dysentery/asthmatic	Total
Jan	73	21	29	163	90	62	56	494
Feb	135	18	22	233	86	76	69	639
March	87	12	20	135	71	41	68	434
April	53	14	25	221	51	53	30	447
May	10	2	8	31	6	2	12	71
June	3	0	0	3	0	4	0	10
July	4	3	2	49	8	13	6	85
Aug	56	32	20	259	45	147	65	624
Sep	44	58	36	189	35	100	44	506
Oct	16	24	41	152	34	52	24	343
Nov	33	7	29	109	30	33	6	247
Dec	12	6	3	27	14	5	2	69
Total	526	197	235	1571	470	588	382	3969

Source: Authors' observation. Estimated Value of $Chi^2 = 425.92$ that is statistically insignificant at 5% significance level.

Figure 1: Frequency of infectious diseases in different seasons

Source: Authors' observation. Estimated χ^2 Value = 425.92 that is statistically insignificant at 5% significance level. **Note-** Winter season: December to February, Summer Season: March to May, Rainy Season: June to September; Autumn Seasons: October to November. **Note: Group 1:** Abdomen pain/vomiting/stomach pain/acidity/loose motion; **Group 2:** Allergy/fungal infection/itching; **Group 3:** Body pain/body ache/eye and ear infection/tooth pain; **Group 4:** Fever and cold; **Group 5:** Throat pain/ headache/nausea/weakness; **Group 6:** Cough and tonsillitis; **Group 7:** Dehydration, dysentery and asthmatic.

DISCUSSION ON EMPIRICAL RESULTS

Empirical results which assess the impact of climatic factors on estimated 7 infectious diseases are presented here. Regression coefficients of explanatory variables are estimated using linear and non-linear regression models. Linear regression model produce lower values of *AIC* and *BIC* than non-linear regression model, thus this model provide better and consistent regression coefficients of explanatory variables. Regression coefficients of climatic factors with number of infected students of identified 7 different diseases are given in Table: 2. Regression coefficients of maximum temperature with number of infected students from infectious diseases are seemed positive. Thus it shows that rising maximum temperature may be effective to reduce the possibility of these diseases in humanity. It indicates that number of infected students from above-mentioned diseases tend to be declined as maximum temperature increases in Dehradun. As DIT University Dehradun is located at high latitude, thus maximum temperature might be helpful to maintain the health of students. Previous studies have also argued that maximum

temperature will be beneficial to maintain human health at high latitude. Regression coefficients of minimum temperature with infected students of 7 different diseases are found positive. It indicates that infected students from identified diseases are expected to be increased as increase in minimum temperature.

TABLE 2: ASSOCIATION OF CLIMATIC FACTORS WITH VARIOUS SEASONAL DISEASES

Diseases/Name of model	Abdomen pain/vomiting/stomach pain/acidity/loose motion		Allergy/fungal infection/itching		Body pain/body ache/eye and ear infection/tooth pain	
	<i>Linear Model</i>	<i>Non-Linear Model</i>	<i>Linear Model</i>	<i>Non-Linear Model</i>	<i>Linear Model</i>	<i>Non-Linear Model</i>
<i>Number of obs.</i>	366	366	366	366	366	366
<i>F-Values</i>	14.48	7.76	7.86	5.24	1.81	4.2
<i>Prob>F</i>	0.000	0.000	0.000	0.000	0.1453	0.0004
<i>R-squared</i>	0.1071	0.1148	0.0612	0.0805	0.0148	0.0655
<i>Adj. R-squared</i>	0.0997	0.1	0.0534	0.0651	0.0066	0.0499
<i>Mean VIF</i>	4.02	72.82	4.02	72.82	4.02	72.82
<i>AIC</i>	-1678.396	-1681.264	-1296.805	-1295.208	-1253.112	-1239.743
<i>BIC</i>	-1694.007	-1708.582	-1312.415	-1322.527	-1268.723	-1267.061
<i>topati</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>
<i>maxt</i>	-0.1632*	-0.4226***	-0.0768*	-0.1086	-0.0322	-0.1856
<i>(maxt)^2</i>	-	0.0044	-	0.0006	-	0.0020
<i>mint</i>	0.0242	0.2974	0.0534**	0.16974***	0.0049	0.3143*
<i>(mint)^2</i>	-	-0.0091***	-	-0.0048	-	-0.0102*
<i>pcp</i>	-0.0036	0.0056	0.0208**	0.0553*	0.0034	0.0012
<i>(pcp)^2</i>	-	-0.0001	-	-0.0005**	-	0.0001
<i>Con. Coef.</i>	5.1036*	7.0221*	1.6163*	1.4699	1.3712*	2.0307

TABLE 2: ASSOCIATION OF CLIMATIC FACTORS WITH VARIOUS SEASONAL DISEASES CONTI...

Disease s/Name of model	Fever and cold		Throat pain/headache/nausea/weakness		Cough and tonsillitis		Dehydration, dysentery and asthmatic	
	<i>Linear Model</i>	<i>Non-Linear Model</i>	<i>Linear Model</i>	<i>Non-Linear Model</i>	<i>Linear Model</i>	<i>Non-Linear Model</i>	<i>Linear Model</i>	<i>Non-Linear Model</i>
<i>Number of obs.</i>	366	366	366	366	366	366	366	366
<i>F-Values</i>	6.28	5.8	14.35	7.28	9.64	5.58	6.5	3.45
<i>Prob>F</i>	0.0004	0.000	0.000	0.000	0.000	0.000	0.0003	0.0025

<i>R-squared</i>	0.0494	0.0884	0.1063	0.1084	0.074	0.0853	0.0511	0.0545
<i>Adj. R-squared</i>	0.0416	0.0731	0.0989	0.0935	0.0663	0.07	0.0433	0.0387
<i>Mean VIF</i>	4.02	72.82	4.02	72.82	4.02	72.82	4.02	72.82
<i>AIC</i>	-2362.23	-2352.92	-1733.23	-1738.343	-1769.24	-1770.744	-1532.65	-1537.3
<i>BIC</i>	-2377.847	-2380.244	-1748.845	-1765.662	-1784.852	-1798.062	-1548.262	-1564.646
<i>topati</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>	<i>Reg. Coef.</i>
<i>(maxt)</i>	-0.4534*	-0.1618	-0.1643*	-0.3605	-0.2192*	-0.1792	-0.1109*	0.0349
<i>(maxt)²</i>	-	-0.0071	-	0.0036	-	-0.0015	-	-0.0030
<i>mint</i>	0.2774**	0.9366**	0.0149	0.1664	0.1437*	0.3522**	0.0362	0.03107
<i>(mint)²</i>	-	-0.026***	-	-0.0052	-	-0.0074	-	-0.0001
<i>pcp</i>	0.0056	0.1347**	-0.0032	0.0118	0.0246	0.0339	0.0010	0.0038
<i>(pcp)²</i>	-	-0.0017	-	-0.0002	-	-0.0001	-	-0.0001
<i>Con. Coef.</i>	11.4382*	5.5935	5.3339*	6.9475**	4.8159*	3.6417	3.2898*	1.6853

Source: Authors' estimation; **Note:** *, **, and *** indicate the parameter is statistically significant at the 1%, 5% and 10% significance level respectively.

observed positive and negative. Thus, estimates demonstrate that precipitation would be helpful to reduce the infected students from abdomen pain/vomiting/stomach pain/acidity/loose motion, and throat pain/headache/nausea/weakness. While, infected students from allergy/fungal infection/itching, body pain/body ache/eye infection/ear infection/tooth pain, fever and cold, cough and tonsillitis and dehydration/dysentery/asthmatic are expected to be increased as increase in minimum temperature. Here, it can be determined that climatic factors have a significant impact on different infectious diseases of students in the study area. Regression coefficients of original and square terms of climatic factors with infected students produce positive and negative sign. Thus, estimates express that maximum and minimum temperature, and precipitation have a non-linear relationship with infected students from various diseases. Maximum temperature have a hilly-shaped association with infected students from all infectious diseases (except dehydration/dysentery/asthmatic). This association show that maximum temperature would be effective to maintain human health up to a certain extent, thereafter it would cause to increase infected students from abdomen pain/vomiting/stomach pain/acidity/loose motion, allergy/fungal infection/itching, body pain/body ache/eye infection/ear

infection/tooth pain, fever/cold, throat pain/ headache/nausea/weakness and cough/tonsillitis. Minimum temperature and precipitation have a *U-shaped* association with infected students from all diseases. Estimates are suggested that infected students from these diseases are expected to be increased as increase in minimum temperature and precipitation in Dehradun.

CONCLUDING REMARK AND POLICY SUGGESTIONS

The main aim of this study was to assess the various infectious diseases of students in DIT University Dehradun and to examine the impact of climatic factors on identified infectious diseases using linear and non-linear regression models. Accordingly, it provides conclusive policy suggestions to mitigate the adverse impact of climate change on various infectious diseases based on empirical results and existing literature. For this, it considers primary data based on daily survey of students who came for medical treatment for infectious diseases in Hospital of DIT University during December 01, 2015 to November 30, 2016. Descriptive results of this study provide an indication that number of infected students from various diseases increases due to change in climatic factors and variability in weather conditions in different seasons. Number of infected students from different infectious diseases varies across months. Thus, it implies that sensitivity of infectious diseases fluctuates as change in maximum and minimum temperature, and precipitation. Hence, here it can be concluded that climate change has a negative impact on human health. Further, infectious diseases will be more sensitive due to extreme change in weather factors.

Empirical results based on linear and non-linear regression models show that maximum temperature has a negative, and minimum temperature has a positive impact on all infectious diseases. Precipitation shows positive impact on allergy/fungal infection/itching, body pain/body ache/eye infection/ear infection/tooth pain, fever and cold, cough and tonsillitis, dehydration, dysentery and asthmatic. Thus, estimates do specify that seasonal infectious diseases increase as change in climatic factors. Thus, it is a great concern for policy makers to take an effective climate policy action to mitigate the negative consequences of climate change on human health. The impact of climate change on human health can be avoided through effective governance and better implementation of climate policies at micro level in India. This can be avoided through effective good governance and better implementation of climate policy action in India. For this, there is requirement to take a conducive climate policy action like reduction in GHGs emissions, health education and medical facilities, extensive R&D expenditure in health sector, to create awareness towards climate change related issues, to preserve the quality of environmental and ecological factors, better communication, to control overwhelming urbanization and industrialization, and other actions to reduce the negative impact of climate change on human health in developing economies.

Moreover, scientific studies have claimed that climatic factors are fluctuating due to rising quantity of greenhouse gases (e.g., GHGs) like CO₂, CO, NH₃, CH₄, NO₂, CFCs, and water vapour emissions in atmosphere (Resinger and Dogra, 2008; Negi et al., 2012). While, GHGs emissions emit various human and natural activities. It also proposed that India needs to give more focus to reduce carbon emissions from various production activities to promote human health (Arcanjo, 2019a; Moosa, 2008; Dhara et al., 2013; Moors et al., 2013). It would be helpful to avoid the possibility for germination of various infectious diseases in human body. Further, there is requirement to abate GHGs emissions to reduce the climate change impact on human health, through implementing the efficient use of energy and green technologies in production

activities (Haines et al., 2006; Majra et al., 2009; Moors et al., 2013). This aforesaid proposal would be useful to reduce the possibilities of climate change and natural disasters in near future.

It is also suggested that policy makers needs to adopt scientific strategies like strengthening the surveillance of epidemic, improving environmental and health education to maintain health security of common citizen in developing economies (Bhattacharya et al., 2006; Singh and Dhiman, 2012; Yao-Dong et al., 2013; Sorensen et al., 2018). Other policy action must be taken to protect the environmental and natural resources, and ecosystem services to provide the appropriate health security to the humanity. Public and school education at primary level must be included climate change related issues and its consequences on human health to create more awareness on it in the community (Rahman, 2008; Eriksson et al., 2008). Also, developing economies needs to strengthen the public health infrastructure and health care services to mitigate the negative influence of climate change and extreme natural disasters on human health (Moosa, 2008). Subsequently, it would be beneficial to reduce the possibility to germinate new diseases in human body.

It is also observed that inappropriate financial support for medical resources, ineffective communication and poor public health education system are creating barriers to mitigate the adverse impact of climate change on human health (Joon et al., 2012; Singh and Dhiman, 2012; Wu et al., 2016). Thus, India needs to improve the accessibility capacity of common people to get effective benefits from health care facilities with affordable rate (Joon and Jaswal, 2012; Dhara et al., 2013; Abedin et al., 2019). For this, India needs to increase extensive investment in health sector to prevent human health from climate change and natural disasters (Kumar et al., 2008). India also needs to increase R&D in health sector (Joon and Jaswal, 2012; Amutha and Juliet, 2017). Indian Government is required to make public health strategies as an adaption technique to mitigate the climate change impact on human health (Haines et al., 2006). For this, India needs to develop effective health infrastructure to protect humanity from various infectious diseases that induce by extreme variability in climatic factors.

Developing economies are required to implement water sustainable policies such as rainwater harvesting, pond sand filters and other measures to meet the safe drinking water requirement of present and growing population in future. Safe drinking water is an essential component to maintain the human health, therefore provision to provide safe drinking water to large community would be effective to mitigate the adverse effect of climate change on human health (Abedin et al., 2019). Safe drinking would reduce the various water-borne diseases like cholera, diarrhoea in human health (Dutta and Chorsiya, 2013; Abedin et al., 2019). For this, GOs, NGOs and other organizations are essential to carrying out various adaptive actions to provide the safe drinking to the community to improve human health in rural areas (Rahman, 2008; Abedin et al., 2019). Furthermore, NGOs, research institutions and organizations are required to take an initiative to provide training programmes to the health professionals at greater level (Rahman, 2008). India needs to pursue energy, water conservation and energy efficient construction policies to maintain the human health in future (Haines et al., 2006; Kumar et al., 2008; Dhara et al., 2013). Renewable energy would be helpful to reduce air pollution, thus it would mitigate the adverse effect of climate change on human health (Haines et al., 2006). Public health security depend upon sufficient food, food accessibility, food utilization, secure shelter and better social conditions (Rahman, 2008). Thus, government need to be considered aforesaid activities in climate policy action. Furthermore, health insurance may be an effective policy initiative to maintain human health in presence of climate change (Rahman, 2008).

Moreover, socio-economic activities such as industrialization, urbanization, population growth, human development and rising demand of natural resources are also caused to increase GHGs emissions. Furthermore, applications of renewable energy and green technologies in production activities may be effective to reduce GHGs emissions. Subsequently, these activities have a negative impact on human health. So, conducive policy action must be formulated to reduce the adverse effects of aforementioned activities on human health. For this, existing industries must be given priority to apply green technologies in production activities and government needs to pursue a policy to control overwhelming urbanization and population growth in India.

As this study includes three climatic factors i.e. minimum and maximum temperature, and precipitation in empirical investigations. Nevertheless, there many climatic factors such a relative humidity, fog, sun intensity, solar radiation, air and water quality, hailstorm, floods, drought, cyclones, heat waves, and other natural disasters which might be affecting human health and may be caused to increase different seasonal diseases. But this study could not include aforementioned factors due to unavailability of data. Therefore, existing researchers can be considered these factors in further studies. Also, there are several socio-economic and geographical factors, medical facilities, sanitation, urbanization and industrialization, population growth, population density, human settlements, infrastructural development, labour migration and others activities which have significant impact on human health (Kovats and Akhtar, 2008; Eriksson et al., 2008; JoonandJaswal, 2012). However, this study could not deliberate these indicators in human health affecting determinants. Thus, existing researchers may be undertaken these indicators in human health affecting factors to provide better climate policy actions and to set a specific role of governance.

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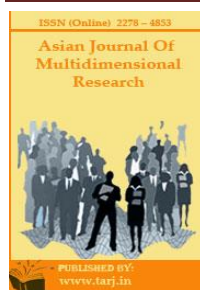
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USING GAMES TO TEACH MANAGEMENT IN HIGHER EDUCATION INSTITUTE

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ABSTRACT

As a routine, traditional methods of interaction are applied in the classroom and undoubtedly students take benefit of classroom discussions, analyzing case studies and doing the projects. Nevertheless, using games and simulations can strengthen students' motivation and interest towards studying that boost their performance in the study process. The article is about the use of games and simulations in the management courses at HEI. Students' feedback about the use of games in the classroom is very positive and they ask the games to be used more often in the teaching and learning process. Students commented that simulations and business games are motivating activities that help them develop their communication and leadership skills. Games and simulations provide the opportunity to engage students actively in the tasks and stimulate their interest in the subject.

KEYWORDS: Games, Management, Active Learning, Simulations, Communication, Leadership

INTRODUCTION AND LITERATURE REVIEW

In lectures and tutorials teachers usually apply traditional teaching methods such as discussions, reading case studies, Q&A sessions, setting quizzes and projects, etc. Undoubtedly, these methods serve teachers well enough and students are engaged in learning. However, there are also “non-traditional interventions in teaching like games and simulations” that help teachers to vary their teaching methods (Kumar and Lightner, 2007). Using games and activities in class encourage active learning, as well as collaboration, and interactivity (Reuben, 1999 cited in Kumar and Lightner, 2007). Many researchers have suggested the use of games to foster students

learning (Tan, 2006). Furthermore, students are motivated to attend and participate actively in class because most of them like to play games. Biggs stated that to promote deeper understanding of material, students should be engaged with what they are doing (Biggs, 2003). Games and simulations provide the opportunity to engage students actively in the tasks and stimulate their interest in the subject.

METHODOLOGY

The study has been done in the form of the action research and the purpose of the study is to find ways to enhance students' interest in the management courses. The study has been conducted with first year of undergraduate students and the technique was implemented during several years. Questionnaire and interviews were used to collect feedback and ways for improvement.

DISCUSSION

Here is a list of games and simulations that were already employed in the management modules such as Business Communications, Organisational Behaviour, Human Resources Management. They focus on communication, people management as well as behaviour within an organization and develop the skills and knowledge that students need to become effective managers.

Jeopardy game is mainly used to review the material covered. It can also be used to recap lecture at the beginning of the tutorial. It is a quiz that consists of several categories. Inside each category there are questions of different levels of difficulty starting from the easiest ones to the most complex. Each question is worth number of points that is relevant to the level of difficulty. The game can be played in groups and individually. It is necessary to articulate the rules before the game starts so that students can compete honestly respecting each other.

Who wants to be a millionaire game can also be used for review. A teacher can foster students' participation by giving prizes to the winners at the end of the game.

Blindfolded employees. This game involves two or three teams with one manager and two or three blindfolded employees. The task of the manager is to guide employees to accomplish the task (e.g. to find and bring something.). The winner is the manager whose employees complete the set task first. The purpose is to discuss the instruction giving and feedback to employees, setting goals and objectives, setting tactics.

Case studies with crosswords. Students are asked to read a case study and do the crossword where key concepts are to be guessed by students.

Simulations. Students are required to deal with the task or situation using their experience and simulating realistic conditions. Simulations are useful activities that help learners to develop skills or learn the concepts which can be applied in real world. Simulations can also be used as assessment component. For example, simulation of a business meeting is used as the assessment component. Students are asked to prepare and present their views, ideas and arguments on a specific topic at the meeting. The meeting lasts 35-40 minutes and it is prepared and attended by 5 or 6 students. Students are encouraged to work on some parts of the task with their group mates in order to support their learning. Each talk is, however, an individual piece of work – not jointly produced and is assessed individually.

Computer simulations – to practice skills acquired during the study, provide learning from experience opportunity and get feedback on the choices made during the game.

Playing educational games and using simulations in the class encourage active learning which is one of the central ideas for student-centered approach. The activities also provide social benefits for the learners because they have to work with others who may not be their friends to accomplish the goal of the activity. As is stated in the social constructivists' theory, social context is important to build and construct knowledge mutually. In the games and simulations students learn from each other as they usually come to classroom with different levels of knowledge about the topics discussed. Moreover, for many students, games are also less stressful than other learning opportunities, and they feel more confident working in groups because the responsibility for decision making is shared (e.g. jeopardy game). Additionally, students enhance their knowledge and develop their problem solving, conflict resolution, negotiation, listening and other skills in the process of the activities.

Using games and simulations provide feedback to both the students and the teachers. In the process students identify their achievements and weaknesses, and teachers can find out what aspects of the subject should be reinforced in their further teaching. With the help of these activities, teachers can reach students with different learning styles and address diversity in the classroom (Franklin, et al, 2003 cited in Kumar and Lightner, 2007). Games and simulations also help to promote transfer of the material presented in the classroom into actual learning the concepts.

Having participated in the activities mentioned above our students commented on the following (taken from questionnaires and interviews):

Students' interest towards the subject increased.

Students are more willing to attend and participate.

They can watch their progress in study.

They develop their skills and feel engaged.

As using games and simulations proved to be the effective practice, it can also be implemented in other modules such as marketing, economics, operations management, finance, and others.

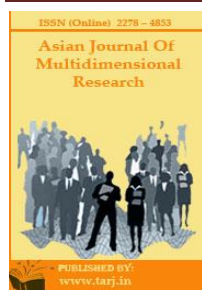
There are software simulations that allow students to practice day-to-day activities in starting and running small business. The simulations put learners in the role of founders of their own virtual business with elements of real world. This is an opportunity to experience business management skills on their own or compete with their classmates. Furthermore, it is a good chance for students to obtain practical experience and learn about their strengths and weaknesses before starting a real company.

CONCLUSION

Students' engagement and motivation is an ongoing challenge for the teachers (Glynn et al., 2005 cited in Kumar and Lightner, 2007). Undeniably, using games and simulation in teaching does not solve all problems, but it can be a useful tool to vary teaching methods. Kumar (2007) states that the student passively sitting in a lecture does not reach the level of stimulation required to promote effort. However, games and activities can engage and motivate students to be active participants in the classroom.

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MEAT PRODUCTIVITY OF KIDS OF DIFFERENT GENO TYPES

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ABSTRACT

The article presents the results of laughter of kids of different genotypes when selling them to meat at the age of 4,5 months. Material and research methodology: In the Sirdarya region in the Nasli Kumush Kurka farm, our studies were carried out in 2019. Slaughter of kids 3 heads from each group was carried out immediately after weaning them from the uterus, at the age of 4.5 months. The kids of the local breed were slaughtered. The control group and their crosses with goats of the Russian white breed in 1 and 2 generations. The meat productivity of goats is highly dependent on the breed of feeding and keeping conditions. In Uzbekistan, goat breeding is mainly carried out by small farms, receiving, in addition to meat, milk, wool and skins.

KEYWORDS: Kids, Live and Laughter Mass, Laughter Yield.

INTRODUCTION

Relevance

Goat husbandry, along with sheep farming, is traditionally a developed livestock industry in Uzbekistan. A significant part of the goat population (90%) falls on personal subsidiary plots.

The expansion of the economic use of goats in the milk direction of productivity implies the rational use of young animals for slaughter for meat. The meat of goats in taste and nutrition is not inferior to the meat of other farm animals. In recent years, the demand for high-quality low-fat meat with a pleasant taste, tenderness and juiciness has increased significantly. These properties are characteristic of the meat of young goats. [1]

The state of knowledge of the issue. The taste of goat meat is not inferior to lamb. Goat meat has a moderately pronounced brackish taste, and not sweetish, like beef. Young goat meat is lighter than other types of meat; it has a pale pink color. The meat of old animals is brick red and darkens in the air. Goat fat is pure white.

TABLE NUMBER 1 NUTRITIONAL VALUE OF DIFFERENT TYPES OF MEAT (PER 100G)

Indicators	Goat	A hen	Pork	Mutton
Energy value, kcal	143	190	211	206
	27	25	25	26
Proteins, g	3,1	7,4	9,6	9,5
	0,9	2,0	3,4	3,5
Fats, g	75	89	86	92

Goat meat at the age of 4-6 months, young animals, spring goats and castrated goats are eaten. The meat of young animals aged six to ten months is considered the best. The meat of adult goats is sharper.

The meat of adult uncastrated goats has a pronounced specific odor, the unpleasant odor in females and young animals may be due to improper processing of the carcass.

Compared to other types of red meat, goat meat is more lean. It has less cholesterol and fat than lamb and beef, it is less calorie than beef or chicken, and contains a lot of protein. Goat meat is rich in unsaturated fatty acids, minerals, amino acids. Goat is well digested and absorbed. It is hypoallergenic and suitable for baby and diet food.

Goat is a source of B vitamins, pantothenic, folic, paraaminobenzoic acids and choline. By the content of vitamins A, B1 and B2, goat meat is significantly superior to meat of other farm animals. [3]

In terms of meat productivity, goats are inferior to sheep. The slaughter yield of goat meat at the age of 8 months is about 43% (with a slaughter yield of mutton at the same age 47–49%), the weight of a pair of carcass is about 18 kg of castrated goats, the slaughter yield and the weight of the carcass are more. The meat productivity of goats is highly dependent on the breed of feeding and keeping conditions. In Uzbekistan, goat breeding is mainly carried out by small farms, receiving, in addition to meat, milk, wool and skins.

In this regard, the study of meat productivity of goats of different origin and directions of productivity is an urgent research task. [4]

Material and research methodology: In the Sirdarya region in the Nasli Kumush Kurka farm, our studies were carried out in 2019. Slaughter of kids 3 heads from each group was carried out immediately after weaning them from the uterus, at the age of 4.5 months. The kids of the local breed were slaughtered. The control group and their crosses with goats of the Russian white breed in 1 and 2 generations. The slaughter was carried out according to the standard VIZH technique (1978). An analysis of the data in table No. 2 shows that both the pre-slaughter mass and the mass of the pair of carcasses showed that the cross-country kids were 3.07 and 3.27 kilograms higher than the local ones. Accordingly, the yield of internal fat was approximately equal.

Slaughter mass and slaughter yield was also slightly higher than that of crossbreeds, which apparently is the result of heterosis. The data obtained are shown in table No. 2

TABLE NUMBER 2 INDICATORS OF MEAT PRODUCTIVITY OF KIDS OF DIFFERENT GENO TYPES

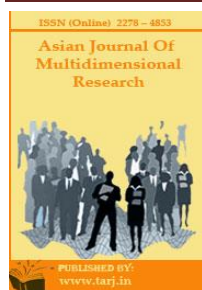
Indicators	Local	Cross	
		F ₁	F ₂
Slaughter mass, kg	18,23±0,77	21,30±0,79	21,50± 0,67
Weight of fresh carcass, kg	7,73± 0,42	10,13±,67	10,10±0,60
Mass of internal fat, kg	0,31±0,04	0,41±0,02	0,40±0,04
Slaughter weight, kg.	8,04±0,46	10,54±0,65	10,5±60,60
Slaughter yield,%	44,1	49,5	48,8

CONCLUSIONS

The results of the studies allow us to conclude that the crossbreeding of local goats with goats of the Russian white breed, improves the meat productivity of crossbreeds. This is a positive phenomenon, and it must be preserved in subsequent breeding work.

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**ARTISTIC RESEARCHES IN KARAKALPAK POETRY
(BASED ON THE MATERIAL OF THE KARAKALPAK POETRY OF THE
1930S)**

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ABSTRACT

This article discusses artistic searches in the Karakalpak poetry of the 1930s. Information is given on the foundations of the artistic forms of Karakalpak poetry and on the stages of its development. Opinions on literary connections in the study of the art form and problems of literary influence in Karakalpak poetry are given. As well as the study of form in folklore and the work of classical poets. The results of the influence and penetration of versification from Russian poetry to Karakalpak poetry are analyzed, and in this regard, the artistic search for a new form in Karakalpak poetry and the arrival of a new art form in the work of poets of that time were examined.

KEYWORDS: *Art Form, Tradition And Innovation, Artistic Search, Oral Folk Art, Written Literature, Form And Content, Description Method, Stanza, Size.*

INTRODUCTION

Everyone knows that the study and study of the features of Karakalpak poetry began in the early twentieth century. At the moment, there is a wide study of all genres of Karakalpak literature. This phenomenon in science shows the development of Karakalpak literary criticism.

The beginning of Karakalpak literature, as well as the history of literature of other Turkish-speaking peoples, rests on several eras. Today, one of the important problems is the study of the stages and sources of development of the form of our poetry that have survived such a long historical period.

For many centuries, poetry has served as an invaluable force, inspiring people with its sensitivity and graceful content, educating beautiful feelings in their spiritual world. Therefore, it has distant historical roots. How deeply we study poetry, we are so aware of its artistic secrets. Ever since ancient times, poetry defended the interests of a particular society, time, nation, and praised

them. Poetry served as a means of shaping loyalty, valor, love of the motherland in the minds of people.

When analyzing the artistic form of all lyric works, one can find the research of poets who lived in different eras. Because artistic creation does not mean the use in the finished form of a certain artistic form. Whether it is a poet or a storyteller, they all necessarily conduct a search from the side of the form. That is why in every highly artistic work, form is born again. And the highly artistic form that others created is a teaching school for every writer. In a work of art, form is investigated in comparison with content. Many literary scholars argued that the form and content of concepts are inseparable from each other and pointed to the relationship between them. However, there are many who study the form of a work of art separately. They were called representatives of the school of formalism in the late XIX and early XX centuries. Researchers provide information on the one-sided development of form research and non-compliance with the unity of content and form in Karakalpak poetry of the 30s of the XX century.

Indeed, in the listed names of poetry of that period, you can find that in the works of poets the search for artistic forms is built according to the scheme, instead of the content one feels the superiority of the form, this has been noted many times and these problems have not been given much attention. And in fact, in the poetry of that period it is known that poets, who used it as an ideological means, wrote poems built in empty appeals. It is no secret that poetry was considered a high degree of poetry only because it described phenomena in social and political life, although the high-flown empty appeals cited in them were not permeated with an aesthetic look. However, poets in those days were not removed from poetry. It is known that they wrote poems corresponding to the aesthetics of the people. We believe that one of the tasks awaiting solution is to study as a separate topic that among the works of poets of that period there are aesthetically valuable ones, and that these poems were the efforts of poets on the issue of form and content.

The formation of written literature, and its occupation of a leading place in the nineteenth century in Karakalpak poetry gave rise to the light of classical poets. Talented poets of that time were such masters of words as Kunhodzha, Azhiniyaz, Berdakh, Utesh and others. They mainly relied on oral folk art and developed creativity according to folk traditions, enriched Karakalpak poetry in terms of form and content. The main traditional forms in Karakalpak poetry were folklore genres and historical poem, and later four-line poems entered into Karakalpak literature.

In the twentieth century, there is a rapid development of Karakalpak literature. During this period, prose and drama developed along with poetry. That is, along with poets, writers and playwrights appeared. If until the twentieth century, representatives of Karakalpak literature presented their works to the people in oral and manuscript forms, then by the twentieth century this process changed, as a result we saw the rapid development of our literature. Each poet draws his work artistically, using all the possibilities of the folk language and his style. The poet's style can be found out how they can use the literary language and create some kind of novelty in their works. And the art form of the work is determined by the style [1]. In a work of art, content and form are studied comparatively. The dialectic unity of content and form is one of the most necessary laws of artistry.

The search for new forms has made many changes to the national poetry of the 30s of the XX century. Usually we feel the meaning of a work of art through its form. Karakalpak poetry, which has existed for several centuries, has embarked on the path of new searches. This, of course, is an example of the fact that national poetry took a sample from the poetics of world

poetry. New genres and forms borrowed in this era determined the development of Karakalpak poetry in the future. Usually, observation of a change in form in fiction is one of the main criteria in literary criticism. In fiction, instead of certain genres, rhythms, meters, new genres, new rhythms, new dimensions came. By comparing new forms, previously existing forms in the literature, one can determine the place of new forms. One of the representatives of formalism of the 30s of the twentieth century, Shklovsky gave the following explanation for this problem: "The new form not only expresses the meaning of the work, but also serves to replace obsolete, artless forms of the word" [2].

Representatives of this period A. Musaev, K. Avezov, S. Mazhitov, I. Fazylov, H. Akhmetov, A. Begimov, J. Aymurzaev, D. Nazarbergenov, M. Daribaev, N. Zhapakov made a huge contribution to the development of the new genre.

Karakalpak poetry in the process of its development was based on examples of folk art and classical poetry. Representatives of our poetry have enriched new traditions corresponding to the requirements of that time. Poems and historical poem from the works of JiyeZhyrau, Kunhodzha, Ajiniyaz, Berdakh, Otesh, Omar, Ayapbergen images in general poetry as examples of means of depiction are included in poetry.

These phenomena are especially pronounced in the works of talented poets. These tasks showed the innovation of poets in poetry. The achievements of our poets consist in the fact that, having achieved novelty in literary traditions, they brought literature to the required degree. There is no reason for poets to abandon any historically accepted national forms. It is known that, the previously existing traditional national form in the new meaning is supplemented, and changed, updated [3].

It is known that Karakalpak poetry assimilates all the good sides of previous traditions and continues to develop them. In Karakalpak classical poetry, the problem of the labor process, the friendship of peoples, the feminine theme, and the patriotic theme that have survived to this day have been widely discussed. But these topics as they were presented found their solution. The poem "My favorite work", written in 1931 by KhozhametAkhmetov, speaks of the theme of labor. The tasks that the poet raised were achieved to a high degree. Based on the verse, the poet was able to explain that the basis of everything is labor. The poet points out that in order to manage open new factories, factories, to get good products is possible only through hard work.

Good deeds are all thanks to work,
There will never be shortcomings in labor deed,
Knowledge, art, and so on deeds,
If you take the basis of labor. [4].

In the Karakalpak classic literature, the theme of labor mainly depicted shepherds leading a difficult life, or haymaking workers who could not get a salary for their work. In the example below, in the poem by Kunhoja "Shepherds," the poet describes very difficult working conditions. It depicts the fact that the condition of the working people was always difficult and there was no end no matter how hard they worked.

Day and night after the flock,
The face becomes pale,
Bloody drops in the eyes,
These shepherds walk on the steppes. [5].

Thus, we can conclude that, existing since ancient times, the form and content of poems, supplemented and subdivided into types and updated. And in reality, the Karakalpak poetry of the 20th century was distinguished by its thematic nature, forms, content and artistic unusualness. Professor K. Orazymbetov noted that “artistic creativity does not mean that it never used ready-made forms. For poets, perfection of forms means the effort to always be in the process of research, that is, ideas, consciousness, feelings, a complete and accurate transfer of the psychological states of the lyrical hero. And therefore, in every work of art form is born again, and art forms created by others remain as a school for the study of others” [6].

Below in the poem «Informants» of H. Akhmetov, the new meanings and the pattern of the new form coincide with each other. The poet paid attention to the internal form in order to enhance the expressiveness of the poem.

The most corrected work,
Will show with force,
Pencil as a spear,
Language as ostrog,
Who are they?
Informants... [7].

In the examples taken from Khodzhamet Akhmetov, artistic searches were used as “pencil as a spear” “language as spear” to convey the maximum effectiveness and art of the image. Because through the use of visual means, the poet also conveys the thought to readers, which make it possible to perceive quickly. The poet's innovation also consists in creating stanzas to the verse. Because the line break is “Who are they?» And «Informants» serves to enhance the expressiveness of the poem. Since it is true, separate reading of these lines gives special expressiveness. In free lines, in comparison with Aruz and syllabic, exaggerated inspiration is felt. The difference in the construction of the classic poem, strictly based on Aruz and syllabic harmony, is closed. But gives the poem artistry [8].

Researcher N. Karimov noted, “Uzbek poets as a source of new creative ideas, studied the works of such writers as Mayakovsky, Whitman, Verkharn. As a result, he noted that Uzbek classical literature included previously non-existing intonations, rhythms, and unknowns in poetry poetic forms [9]. Of course, this opinion is also inherent in Karakalpak poetry, and in reality, Karakalpak poetry of the 20th century was distinguished by its thematicity, forms, content and artistic uniqueness.

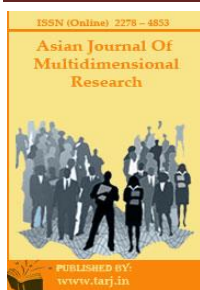
The novelty of this verse is the first duty is the novelty of form. The stanza consists of five lines. The syllables in these lines are different. In the poem, the shortest line consists of 4 syllables, and the longest line reaches 10 syllables.

Here, the author of the above lines could combine 4 and 5 lines into one, consisting of 8 syllables. But such a method in this poem was not convenient; therefore, it can be written separately.

To enrich the meaning and form of Karakalpak poetry, language, similarity, rhythm, and line are important. When we talk about the problem of mastery, we pay attention to these aspects. The art of versification is difficult to determine only by rhythm. This time was a very significant time for Karakalpak poetry. Because this is the period of transition of oral creativity into writing at the junction of two traditions. Each poet, despite what time he lived, left a literary legacy about history and the achievement of his time.

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CHARACTERISTICS, SIGNIFICANCE AND ROLE OF MOTIVATION PROBLEMS IN FOREIGN LANGUAGE LEARNING

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ABSTRACT

This article describes the types of motivations that occur during the learning of a foreign language, and a number of specific factors for their occurrence are explained by various theories, with a detailed reflection of their practice. From a psychological point of view, learner motivation is always high because they have a stronger tendency to cope with the difficulties of learning a particular language [6, 105b]. It is also an important factor for language learners to develop ways to help them achieve a wide range of success when dealing with complex language. For example, integrated orientation is a group of reasons that show what a person can do in the language learning process, while the target orientation is the desire to integrate and adapt to the language environment studied for a particular purpose. Clearly, this is just a goal that may or may not have the motivational power. On the other hand, this area includes motivational integrator, as well as motivation intensity, motivational intensity, and other relationship to the target language. Many texts often contain material that does not interest students because of the strong emphasis on vocabulary and grammar. However, many foreign texts designed for a foreign language learner often contain topics that create classroom interactions and help students develop their language skills.

KEYWORDS: Motivation, Motivation, Internal Factor, External Factor, Target Orientation, Integrated Orientation, Learning Strategies, Behavior, Motivation.

INTRODUCTION

English is the main language of global communication. Motivation, the concept of motivation, plays an important role in language learning. Motivation is seen as a key element in any activity and plays an important role in achieving the desired goals. The concept of motivation seems complicated because it requires a series of disciplines to have a reasonable understanding of its aspects. According to Dorne, the complexity of the concept of motivation lies not in the lack of theories to explain motivation, but also in the abundance of theories and models that are lacking in practical applications [2, 78 b].

Different people define motivation from different perspectives, and this is due to the existence of different contexts in language learning, but most importantly, motivation is the key to language learning. There are two motivations to consider when applying to learning a foreign language. They are: internal language motivation and external motivation, that is, through the language learning process. Language learning motivation is the motivation for learning or mastering a second language. Various researchers have come up with different opinions about the importance of motivation in learning foreign languages and a number of internal and external factors influencing it. The following are some of the experiences and theories that these scholars have made about their motivation to study foreign studies.

RESOURCES AND METHODS

According to Gardner, this is addressed in the socio-educational model of second language learning [4, 359 b]. Based on Clement's theory, it is considered in the model of social context and, in Clement and Noels's view, it is considered in the model of self-determination [1, 44 b]. This is a common form of motivation that is relevant in any second language learning context. Classroom Motivation is, in Gardner's view, the meaning of classroom motivation or any particular situation [4, 78 b]. This is influenced by many factors associated with the language teacher. Thus, teacher, course content, materials and tools influence individual learning motivation. Gardner believes that both education and cultural context play an important role in shaping motivation. In order to make the language learning process a stimulating experience, teachers need to pay much attention to curriculum that supports student interest and helps them achieve their long-term goals [4, 359 b].

From a psychological point of view, learner motivation is always high because they have a stronger tendency to cope with the difficulties of learning a particular language [6, 105b]. It is also an important factor for language learners to develop ways to help them achieve a wide range of success when dealing with complex language. However, there are still controversial factors that may affect this motivation for language learning [6, 28b]. For example, there is no clear evidence of how motivation affects language learning, that is, persistent interest, success or failure. Moreover, the problem of using teaching strategies that help motivate motivation has not been addressed, so every language teacher It is common for students to create their own methods and techniques based on the socio-moral and ethical backgrounds of their learners.

Initially, motivation research focused on only two main motivational areas, and recent research shows that factors in a more professional environment. It discusses two different models of motivation. The first is Gardner's [4, 368 b] first research approach in the field, and the second is Dorne's [3, 284 b] specially designed model for learning foreign languages. Finally, the results of the research to summarize the importance of strategies for learning foreign languages are summarized, collected, and categorized as follows. One of these forms of data collection is the

language diary, which is used to highlight existing motivational factors and language strategies and has a long-term impact. In this specific research, the theme and researcher are the same: motivation and learning strategies, their leading role in learning foreign languages.

RESULTS AND DISCUSSIONS

In the motivational literature, the only holistic definition of the term is rare. Instead, the word motivation is more commonly used. Ellis [3, 50 b], after examining motivation research, notes that motivation is the behavior that influences the level of language learners' persistence and their true success.

Wlodowski explains motivation: “(a) the processes that can stimulate and stimulate behavior; the driving force” [8, 2b].

There are two models that include a compilation of the words motivation, the first of which is the Gardner model. Gardner was one of the first researchers in the field of second language development to focus on motivation. He suggested defining motivation in four ways:

1. Purpose
2. Persistent efforts to achieve the goal
3. A desire to reach a goal
4. Positive attitude towards purpose [4, 50 b]

However, the goal should not be a measured component of motivation. Rather, the goal was the stimulus that produced the motivation. Gardner focused on a clear classification of the reasons for the focus on second language learning [4, 54 b]. In his research he developed two main areas:

1. Integrated orientation: the desire to enter and adapt to this language environment, culture using the second language studied.
2. Target orientation: The functional reason for learning a language is mostly functional, such as advertising or language requirement.

Gardner clearly describes the difference between this orientation and true motivation. Motivation means “a set of three different features that are associated with a particular direction. These characteristics are those related to language learning processes, language aspirations, and motivational intensity” [4, 54b]. For example, integrated orientation is a group of reasons that show what a person can do in the language learning process, while the target orientation is the desire to integrate and adapt to the language environment studied for a particular purpose. Clearly, this is just a goal that may or may not have the motivational power. On the other hand, this area includes motivational integrator, as well as motivation intensity, motivational intensity, and other relationship to the target language. Gardner's model of socio-educational motivation focuses on integrated motivation. Motivation is a central concept of the model, but some factors have also influenced it, such as integrativeness and attitudes. These are other personal and complex factors that may affect a person. Gardner was criticized for putting too much emphasis on integrative reason. But I think some of his views were misinterpreted. Gardner himself states: “Given the complexity of the motivation behind language learning, it is important to remember that the language learning process is also complex. Motivation should be analyzed in terms of individual characteristics as a whole. In my opinion, Gardner did not want to limit any

of the two areas he investigated, simply saying that the results of the integrated route from the study were more predictable than the target [4, 53b]. Clement and Kruidenier [1, 283 b] have developed a study to shed light on the factors influencing motivation. The study revealed four different areas of language learning.

1. Targeting is at the forefront of factors such as traveling, making new friends and learning.
2. They have also emphasized the presence and existence of certain orientations in the target environment for the language learner [1, 283b].
3. The task is integrated and purposeful, but more often "you have to pay attention to who is learning in what environment" [1, p. 288].

Krokes and Schmidt sought to examine motivation beyond the target range, and they focused mainly on internal and external factors of motivation [5, 237 b]. As a result, they identified four types of external factors:

1. Interest in language based on experience and fundamental knowledge.
2. Communication (some language-related needs are met through language learning, for example: various tests, exams).
3. Expect success or failure
4. Results (external and internal awards)

The three intrinsic features they highlight are:

1. A student learns to learn a language.
2. The learner continues the language with time and breaks.
3. The learner becomes highly active through this process.

According to experts such as Oxford and Nyikos, motivational factors are always reflected in the different educational strategies and techniques. Their research has shown that mastering such strategies by language learners is a key and important factor that contributes to a thorough and purposeful learning of the language [7, 19b].

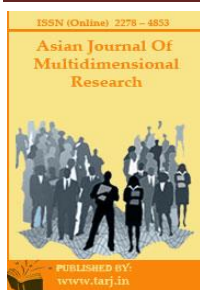
Learning strategies are "operations used by language learners to facilitate language acquisition, that is, storing, retrieving, and using information, such as how a learner acquires knowledge in a new, clearer, easier, faster, more independent, efficient way. [7, 34 b]".

Based on the theories of the above scholars, it should be concluded that motivating students to be more active in the classroom sometimes helps them to aim for improvement in their communication skills. Successful communication with the target language will make the students feel a sense of accomplishment. Using fun text can also help increase students' motivation in the classroom. Many texts often contain material that does not interest students because of the strong emphasis on vocabulary and grammar. However, many foreign texts designed for a foreign language learner often contain topics that create classroom interactions and help students develop their language skills. It is important to keep in mind that even if a teacher uses such discussion topics and students do not need to speak a second language, learning another language or culture can enhance their understanding and understanding. Probably the most important way to improve motivation is to have some fun English classes. This is a practical reflection of theories on teaching foreign languages in an integrated manner. For example, reading a good book in English, listening to songs, watching an interesting movie,

easily responding to a computer problem, using email with citizens of English-speaking countries, etc., is very helpful and interesting. the more they use the language to try to speak fluently, the better the result will be, which in turn will give a greater impetus to learning the language. i.

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BIOLOGICAL NITROGEN

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ABSTRACT

In recent years, the production of environmentally friendly products using plant-based resources and energy-saving technologies has been one of the most pressing issues, and has been used by scientists to save energy for low-cost, environmentally friendly products. Technology for the production of biologically pure, pesticide-free, nitrate-free products is being developed and these problems need to be addressed and addressed in a comprehensive manner. The decomposition of organic matter activates soil microflora and reduces the amount of humus in the soil. Some of the nitrogen is added to the reservoirs and some to the groundwater. Nitrates in nourishment in food and fodder also increase in metabolism, metabolism, musculoskeletal system, nervous system activity, and heredity. Bush was 12.2 grams in the welding phase and 12.9 grams in the flowering phase. Or, the average weight of the bushings in the baking phase is 1.6 grams, and 0.9 g more than the flowering buds. The weight of tubers formed at the root of the chickpea varied not only between varieties, but also in terms of planting time and stages of development. The optimum period of formation of root buds was observed on March 15, when it was found that late April 15, weighing more than 4.0 grams was found in the roots. Nitrates in nourishment in food and fodder also increase in metabolism, metabolism, musculoskeletal system, nervous system activity, and heredity.

KEYWORDS: *Metabolism, Metabolism, Musculoskeletal System, Comprehensive*

INTRODUCTION

As a result of the use of valuable chemical fertilizers and pesticides for higher yields, the pollution of the environment, ie soil, air and groundwater, increases, and the content of the products contained nitrates, herbicides, fungicides, insecticides, residues. There is. The use of high nitrogen fertilizers in plants is harmful to the environment. The decomposition of organic matter activates soil microflora and reduces the amount of humus in the soil. Some of the nitrogen is added to the reservoirs and some to the groundwater. Nitrates in nourishment in food and fodder also increase in metabolism, metabolism, musculoskeletal system, nervous system activity, and heredity.

The bacteria that live on the roots of legumes grow biological nitrogen, which improves soil organic matter, water-physical properties of soil, and increases soil fertility. Nitrogen accumulated by legumes is a biological nitrogen that helps prevent nitrates accumulation in plants, the growth of harmful microflora in the soil, and the production of clean products. On technologies designed for the production of low nitrogen fertilizers, non-accumulated, rapidly decaying pesticides while maintaining the ecological balance, without contaminating soil, wastewater, and sewage water. Several scientific studies are underway. We have also done similar studies.

Cultivation of chickpea in irrigated lands enriches the soil with biological nitrogen, organic matter, improves the water-physical properties of soil, increases its fertility, and also satisfies the population's protein needs.

Humans cannot give up their crops. In the future, with the increase in crop yields, their nitrogen demand will increase.

Biological nitrogen increases crop yields and eliminates the harmful effects of nitrogen on the environment. One of these biological nitrogen legumes is the pea plant.

RESEARCH OBJECT AND METHODS

When we study the technological elements of cultivation of pea from irrigated lands in Samarkand region, we have also studied the activity of root system and root bacteria. Pea, like other legume plants, is nitrogen-fixing bacteria (*Rizobium cicer*) in the soil, enriches the soil with nitrogen compounds and increases soil fertility. (IH Khamdamov, M. Haitova, 2005). According to Shukurullayev (1969), the germ bacteria on the roots of chickpea develop until the flowering period. After flowering, bacteria die and the tissues decompose, and organic matter accumulates in them. However, IH Khamdamov, M. Haitova (2005) and Polikarpova (2008) have noted that the formation of toxic bacteria on the roots of chickpeas continues until the rooting phase. Even according to Polikarpova (2008), the greatest number of holes was in the pea-phase. (For example, he wrote, the number of rootstocks was 154 in the flowering phase when sowing 06 million seeds per 1m² of space, while this was 134 units at the time of weeding. The effect of seeding time on the formation, number and weight of the stem at the roots of Star, Uzbekistan-32 and Umid varieties was determined by a 60x6 optimization scheme. For example, in the Umid variety of peas we planted on February 25, weighed 13.8 grams, and on March 5 it was 15.9; 15.3 in March, 13.2 in March 25, 12.0 in April 5, and 11.9 grams in April 15. The optimal time for the formation of root buds is in the planted on 5 March. b, when planted late on April 15, it was found that the roots formed in the roots weighed more than 4.0 grams. The same pattern was observed in Yulduz and Uzbekistan-32 varieties. When we analyze

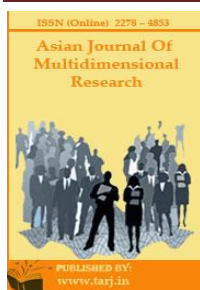
the formation of the bones by the phases of the plant, the greatest number of bones was observed in the legume phase. For example, when the Umid variety was planted on February 25, the average weight of the bush was 12.2 grams in the welding phase and 12.9 grams in the flowering phase. Or, the average weight of the bushings in the baking phase is 1.6 grams, and 0.9 g more than the flowering buds. The same law was observed in all planting periods and in the varieties studied. In the analysis of bones by grades, the average weight of beds in the average three years is shown in the Umid grade, which was 16.5 grams on March 5. The star's weight was 15.9 grams, and Uzbekistan's 32 grams 15.3 grams. It is more than 0.6 in the star grade and 1.2 grams in Uzbekistan 32. Continuation of the seedlings to the sprouting stage indicates optimum moisture and temperature in the soil.

Summary

The weight of tubers formed at the root of the chickpea varied not only between varieties, but also in terms of planting time and stages of development. The optimum period of formation of root buds was observed on March 15, when it was found that late April 15, weighing more than 4.0 grams was found in the roots. When analyzing the formation of the bones by the phases of the development of the bones, the most heavy weights were found in the legume phase.

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**DOI NUMBER: 10.5958/2278-4853.2020.00061.0****POLITICAL UPHEAVALS 1526 TO 1707: DELHI PROVINCE****Dr. Shashi kiran****Associate Professor History,
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ABSTRACT

Babur laid the foundation of Mughal rule in India. Humayun and he could not develop some distinct Mughal institutions and practices due to the political turmoils of the period and their hectic military engagements. Delhi remained provincial city during the reign of Babur. For the smooth running of administration he divided his empire in sarkars. The reign of Humayun was broken into two, by an interlude of fifteen years during which Shershah founded the Sur dynasty in 1540 and ruled up to 1545. He established his dominion over most parts of the north India. But Babur and his son and successor Humayun could not develop institutions and practices because of political turmoil and military campaigns. A state of utter confusion and disorders prevailed in all around at news of Humayun's death. Afghans were defeated and Hemu was put to death in the second battle of Panipat in November 1556. In the end of 1561 the army and the government were taken under the direct control of Akbar. He then transformed the nature of the regime and established Mughal Empire for generations quelling several revolts of governors, commanders and Rajputs and Muslim nobles. The vastness of the area and the diversity of the problems made the application of any single uniform pattern impracticable. To meet such a situation, provinces with different nomenclatures in different periods came into existence, soon after a ruler succeeded in bringing under his sway any substantial portion of territory. The Empire was divided by Akbar after the expansion, into the provinces, sarkars and parganas with well defined limits. Delhi province was a core province. During the reign of his son Jahangir Delhi province was one of the fifteen provinces. Jahangir assigned the sarkar of Hisar-Firoza to Prince Khurram who was now the heir apparent to the throne. Delhi city was found ruined city due to bubonic plague 1616-1624 and retained secondary importance till the reign of Shahjahan. Construction of Delhi was regarded most magnificent, started in 1638 and completed and established as imperial capital at Delhi in April, 1648. The entire territory was dotted with a number of stone, brick and mud-fortresses under the control of regional magnates, the zamindars

or the Mughal officials. Shahjahan introduced a new administrative unit called Chakla comprised of an amalgamation of some parganas and it was carved out in the sarkar of Hissar for the first time. The limits of the sub-divisions of the empire were revised from time to time in several provinces. The land tax and other miscellaneous taxes were remitted only to the imperial exchequer and to any other agency unconnected with the government. Aurangzeb's exploitation and religious harassment led the Satnamis of Narnaul to challenge his authority. All this left the field open for other people of the region to continue the struggle against oppression for a long time. In the region the cultivators suffered to pay heavy taxes to the changing masters. People refused to pay the revenue and the seeds of disintegration had sown in Aurangzeb's reign. Under the patronage of Akbar, Jahangir and Shahjahan, the region continued to march on the road of peace and prosperity, however, the policy of religious persecution launched by Aurangzeb reversed all the developments of the province.

KEYWORDS: *Inmagnificent, Administrative, Sub-Divisions*

INTRODUCTION

It was in 1580 when the entire territory under Mughal authority, was parcelled out in twelve divisions called subahs viz. Allhabad, Agra, Ajmer, Awadh, Ahmadabad, Bihar, Bengal, Delhi, Kabul, Lahore, Multa and Malwa. Akbar and his administrative officials developed the administrative institutions, political pattern and behaviour which we call 'Mughal'. A new concept of kingship and the constitution of government and society, a new military system and norms of political behavior matured during the first half of his reign and these survived, with circumstantial necessary modifications, up to the Aurangzeb's reign, imparting their dynamic impact on the socio-economic and cultural life of the period.

As the core province of the empire, the province of Delhi comprised almost the entire territory of present day Haryana, some territory of the Uttar Pradesh, i.e. Saharanpur, Badaon, Bulandshahar, Moradabad, Bareilly, Bijnore etc. and that of Punjab Sarhind, Patiala, and Ludhiana etc. also fell under this province. Thus the province was bounded in northeast by Khairabad (in the province of Awadh), on the north by mountains, on the south by Agra and Ajmer and on the west by Ludhiana, the river Sutlej broadly separating it from the province of Lahore. Its length from Palwal to Ludhiana on the bank of Satlej was 165kos and breadth from sarkar of Rewari to Khizrabad was 130 Kos. Its principal rivers were the Ganga and the Yamuna, besides numerous other streams including the Ghaggar which having acquired the position of a lesser stream and other like Chitang, Western Yamuna canal, Shahnahar etc. In the words of Abul Fazl its climate was nearly temperate, and rains were usually plentiful resulting in good harvest. Much of the land was subjected to inundation and in some places there were three harvests. Abundant flowers of various kinds and the fruits of Turan and Hindustan were grown here. Among the important towns were Hansi, Hissar, Sarhind, Thanesar, Saharanpur, Muzafarnagar, Hardwar etc. The measured land of the province was 2 krores 5 lakhs 46816 bighas and 16 biswahs. The amount of the revenue was 60 krors 16 lakhs 15555 dams (Rs. 15040388.14) out of which 3 krors, 30 lakhs, 7579 dams (Rs. 826893-77) were Suyurghal or Madad-i-maash grants. The province was subdivided into eight sarkars, i.e., Delhi, Badaun, Kumaon, Sambhal, Saharanpur, Rewari, Hissar and Sarhind. These were subdivided into 232 parganas. This number of parganas had been excluded the five unsettled mahals of Kumaon.

Kumaon sarkar was also with in the province of Delhi but the raja of Garhwal virtually enjoyed the full independence up to the reign of Aurangzeb. He neither paid tribute nor supplied any contingents to the Mughals. The entire territory was dotted with a number of stone, brick and mud-fortresses under the control of regional magnates, the zamindars or the Mughal officials.

The main structure of the mass of the land, once shaped and designed, remained unchanged. The limits of the sub-divisions of the empire were revised from time to time in several provinces. Thus, the boundaries of Delhi province were changed when the sarkars of Tizara and Narnaul had been transferred from Agra province to Dehli before the close of Aurangzeb's reign. Shahjahan introduced a new administrative unit called Chakla comprised of an amalgamation of some parganas and it was carved out in the sarkar of Hissar for the first time. The provincial government operated through the several imperial officials, i.e. a subahdar, a diwan, a bakhshi, a mir-adl, a sadr, a kotwal, a mir bahar and a waqianawis etc. at provincial level and a faujdar, an amil, a qanungo, chaudhary, and muqaddam etc. (at the lower levels of a locality and village of the province). For the collection of land revenue different dasturs were established for each dastur circle. The land tax and other miscellaneous taxes were remitted only to the imperial exchequer and to no other agency unconnected with the government. Details of the revenue of Kumaon sarkar is not recorded in the Ain-i-Akbari, which shows that it was not in the direct control of the central government and it enjoyed internal autonomy in their principality. The Rajput kings of Kumaon accepted only the suzerainty of the Mughal kings.

In fact the geographical or physical features influenced the course of the history of a particular region. This region remained under the hold of many dynasties and after the death of Shihab-ud-din Ghori Qutb-ud-din Aibak inaugurated an independent Sultanate in the north India. The different Sultans of Sultanate period entrenched their hold over Delhi but the confused state affairs during Sultan Ibrahim Lodhi afforded an opportunity to Babur, a descendent of Timur with a Mughal army to invade India in 1526. Leaving Ambala via Shahbad, Karnal marched towards Delhi. Then Babur having seized his stronghold in the Siwalik crossed the Sutlej, leaving Ambala via Shahbad, Karnal marched towards Delhi and overthrew Ibrahim Lodhi at Panipat. Then Babur made his hold all over the region e.g. Hissar-Firoza, Tizara, Sirsa, Bhiwani, Saharanpur, Hansi etc. The Mandhar Rajputs in the neighbourhood of Sarhind were not prepared to reconcile themselves to the political change. The people of Kaithal were also not to lag behind. They revolted under Mohan Singh Mandhar. Babur ordered Aliquli of Hamadan to advance towards Mohan's village but after hearing of the discomfiture he sent reinforcement under Tursam Bahadur and Naurang Beg. Rajputs were defeated, a pillar of their heads was raised, and Mohan Singh Mandhar was captured and put to death. Delhi remained provincial city during the reign of Babur. For the smooth running of administration, he divided his empire in sarkars. He appointed his faithful officers Ashan Timur and Bughra Sultan to look after the jagirs of Narnaul and Samsabad respectively. The Mughals, new rulers of Delhi established a strong government at Sarhind to which Ludhiana and country around it was attached as a mahal. Then he brought the area of Samana, Sunam, Hissar and Sarhind inclusive of the area of present Ambala district under his effective control. Hansi and Hissar, that ever since Delhi became the capital of India, are lying so close to it must have been profoundly affected by the events of the dynastic annals.

Humayun succeeded Babur on December 26, 1530 and he appointed his brothers Mirza Hindal and Mirza Kamran as governors of Mewat and Sarhind-Hisar respectively. Sambhal was now conferred on younger brother Mirza Askari. Hindal revolted when Humayun was busy in

fighting with the Afghans at Gaur. He wavered between Agra and Delhi. The reign of Humayun was broken into two by an interlude of fifteen years during which Shershah founded the Sur dynasty in 1540. He established his dominion over most parts of northern India. Kamran annexed Punjab, though the Afghan power was still far from crushed and Saharanpur remained in his possession. During this period Baban revolted in Sambhal. Mulla Qasim and Amir Kirtal Beg were sent to suppress the revolt. The fort was besieged, however, the occupation did not last long. In 1539 Haibat Khan Niazi and other Afghans drove all the Mughals out of Rohilkhand and captured Sambhal. Later on Haibat Khan joined Sher Shah. Subsequently Sher Shah placed Sambhal under Nasir Khan. Humayun was then defeated first at Chausa in 1539 then at Bilgram in 1540 and finally routed out from his empire. . Rohtak region, with its population of Jats and Rajputs, was a source of strength and weakness during the Mughal period and its territories were often changed as a consequence of constant fighting between the Sikhs, the Jats and the Rajputs. On a later occasion when Humayun fled, he met his brother Hindal at Rohtak and made plans for the future. The restless chief of the area, ready to assert their independence were kept in check. However, after the victory of Sarhind and the second conquest of India, Humayun entered in India. Then capturing Delhi, Hisar was assigned to his son Akbar. Being this province Humayun himself had received from Babur when he first entered India. Sambhal was given to Ali Quli Khan Shaibani. Like other parts, Humayun had made no change in the existing arrangement of Sirsa, however, his rule was short lived here. Bhiwani tract was placed in the central province of Delhi. Rustom Khan and another Afghan noble held the parganas of Kant and Gola and its suburbs. Qambar had plundered Badaon and advanced as far as Kant and Gola. Bairam Khan had already won the battle of Machhiwara and had received Sambhal and surrounding region as a jagir. With a detachment he was sent against an Afghan detachment and he captured Hoshiarpur and surrounding region from the Afghans. He had already been appointed the ataliq of Prince Akbar.

Sikander Sur had retreated to Kangra hills when Akbar received the news of the death of Humayun in 1556. A state of utter confusion and disorders prevailed in all around; he at once marched to meet the Afghan army. After his accession at Kalanaur Akbar, promoted Tardi Beg one of the most experienced and influenced officer under Humayun, to the office of governor of Delhi. He was sent to Mewat and the other parganas which later on, had been brought under the royal authority were also kept under his control. When Sikander was in trenched at Mankot, his wazir Hemu had seized Delhi from Tardi Beg. The decisive victory over Tardi Beg and the capture of Delhi and Agra considerably enhanced political power of Hemu. After receiving the news Akbar sent firman to Tardi Beg and other officers to keep up their hearts and to stand firm. As a matter of extreme caution they assembled at the town of Thanesar and awaited the arrival of imperial army.

Meanwhile the imperial army moved from Jalandhar, encamped at Sarhind where Ali Quli Khan Saibani and other defeated officers, were to be dealt with. Tardi Beg soon after his arrival at Sarhind was executed. The imperial army reached Thanesar with 26000 horsemen. Badagh Khan with 4000 horsemen was sent as an advance party and was directed to keep always one march ahead of the emperor. The mughal army halted at Thanesar for few days. Then he arranged his army ten miles north of Karnal and marched to Panipat. The imperial army encamped at a place situated nearly two Kos to the west of the city where Hemu had already encamped. Afghans were defeated and Hemu was put to death in the second battle of Panipat. Then Mewat, Tardi Beg's Jagir was conferred on Pir Muhammad. In the end of 1561 the army and the government

were taken under the direct control of Akbar. He then transformed the nature of the regime and established Mughal Empire for generations quelling several revolts by governors and commanders, Rajput, Muslim nobles. They were forced to accept Mughal suzerainty. In 1569 Atga Khan was removed from Punjab and Khan-i-Khana received it as a jagir.

Ali Quli who had already received the title of Khan Zaman next to Bairam Khan got Sambhal as jagir. He then cleared whole of northern India upto Lakhnau of the Afghans and acquired an immense fortune by plunder. Later on Muzaffar Khan received the title of Farzand, and made a commander of five thousand. He also received the jagir of Sambhal which was worth more than all Qandhar. Subsequently Said Khan received Sambhal as Tuyul. Muhammad Husain Mirza, Shah Mirza and Ibrahim Husain Mirza, Akbar's relatives had held the pargana of Azampur as jagir in Sambhal. They revolted and plundered the region and then Munim Khan able commander of Akbar was sent from Delhi to punish them. Before the arrival of Munim Khan they had left the place, however, returned in 1573 and occupied Azampur. They also attacked at Amboha but on the arrival of Husain Khan Tukaria, they fled by the ferry of Gar-Mukteshwar. During Akbar's reign the governorship of Sambhal was held successively by Mir Muhammad Hakim Ain-ul-Mulk, Said Khan Chaghtai, Quliz Khan Anandajani, and Mirza Muzafar Husain. Later on it was held by some great nobles at the Mughal court through their deputies. At last the governorship was given to Mirza Ali Beg who also continued to hold Sambhal during the early years of Jahangir's reign.

During the early years of Akbar's reign Kant-o-Gola was a sarkar in Badaon and was administered by Husain Khan Tukaria. In 1576 Kant-o-Gola was merged in the sarkar of Badaon. Badaon itself converted into a sarkar which contained 13 mahals. A few of them were within Badaon, the rest being included in Bareilly, Pilibhit and Shahjahanpur while a small portion was extended beyond Ganga into Etah. The region of Shahjahanpur was laid in the sarkar of Badaon; however, the area of Jalalabad was included in Samsabad the pargana of Kanauj. The mahal of Kant comprised the region of Shahjahanpur, pargana of Tilhar and part of Jalalabad Kher Bajhera. The mahal of Gola embraced the pargana Nigohi, area of Powayan and part of Lakhimpur kheri and Pilibhit regions. A portion of Khera-Bajhera was included in the Mahal of Bareilly.

Kumaon sarkar was also with in the province of Delhi. It comprised of 21 parganas within the territory of raja of Garhwal. He was exempted from payment of tribute and his territories from the assessment of revenue to be paid into imperial treasury. So the raja of Garhwal virtually enjoyed the full independence. He neither paid tribute nor supplied any contingents to the Mughals.

During the reign of his son Jahangir 1605-1627, Delhi province was one of the fifteen provinces. Delhi city was found ruined city due to bubonic plague 1616-1624 and retained secondary importance till the reign of Shahjahan. Sarhind continued to develop because he used to visit this place many times. The history of Shahjahanpur, Kant-o-Gola in the sarkar of Badaon remained obscure for a considerable period. The subahdars paid less attention and local Katehriya chieftains continued to enjoy undisturbed possession in their territories, as long as they did not create disturbances. Bijnore was administered from Sambhal through a deputy. In 1624 Raja Ram, a Katehriya Rajput, attacked on the Tarai region and he was defeated and killed by Rustam Khan Dakhani who founded the city of Moradabad in 1625. In 1625 Jahangir came to Hardwar, though his stay was very brief. Towards the end of his reign Sultan Ali Khan was incharge of Badaon for one year and in 1628 he was replaced by Ali Quli Khan. In Jind, Sirsa,

Bhiwani, Rohtak, Gurgaon, Mahendragarh, the administrative set-up remained intact during his reign. In 1606 Khusro revolted, plundering and pillaging Delhi reached Panipat, where he was joined by Abul Rahim and Dilawar Ali Khan. Then he marched to Lahore. Jahangir himself shortly followed in pursuit and moralized upon the success which Panipat had always brought to his family. In the words of Farishta, it appeared that an impression of the great wealth of hill states was generally prevalent among the Muslims in the plains. For the chief of Kumaon, he used the term "Raja of Kumaon". Although the raja paid tribute to the Mughals, yet he paid little regards to Jahangir and his wazir Asaf Khan. Jahangir assigned the sarkar of Hisar-Firoza to Prince Khurram who was now the heir apparent to the throne. Shahjahan struck another blow to the prosperity of Badaon, by shifting the headquarter of local government to Bareilly. The successive officials who held sway over Bareilly were Abdullah Khan, Manik Chand and Nazar Muhammad Khan. In 1657 Raja Makrand Rai, the son of Manik Chand was posted to Bareilly. Badaon and Sambhal were united under the old name Kateher. During his governorship the Katehriyas again rose in revolt, however, they were thoroughly suppressed. Prithvi Sah a successor of Manipal Sah who ascended the throne of Garhwal about 1630-31, extended and fixed the western boundaries of his kingdom. In 1635-36 a huge army under the command of Mirza Shuja Najabat Khan Badakhshi invaded Garhwal, however, the Mughal expedition totally failed. In 1647 the Mughal prince Dara Shukoh was sent on behalf of the Emperor Shahjahan with a robe of honour to the raja who seemed to have by then been reconciled to the Mughal Court. In 1654-55 another imperial general Khalilullah Khan, was dispatched to coerce the zamindar of Srinagar, Prithvi Sah. Baj Bahadur Chand the Raja of Kumaon, also joined hands with the Mughals in chastising his traditional enemy, the raja of Garhwal. The Mughal army could not penetrate further into the hills and their commander, giving up the attempt, returned to the imperial court. A third attempt caused the raja to send his son to the Mughal court to offer submission. The power of the Chand raja was chiefly confined to the hill tracts. Baj Bahadur (1638-78) visited Shahjahan at Delhi and in 1655 joined the Mughal forces against Garhwal and recovered the region of Tarai. In the beginning of Shahjahan's reign, raja of Kumaon complained to the emperor that raja Ram Sukh, the Katehriya chief who held the fort of Chaupala had encroached upon the territory of Kumaon. Rustam Khan was ordered to punish the offender. After seizing Chaupala he established a new city to which he gave the name Rustam Nagar. And then he was subsequently required by Shahjahan to explain why he had usurped the authority and given his own name to the new city. He evaded giving a reply to the first charge and appeased the monarch regarding the second by saying that he had done so, but now he had named it Moradabad in honour of the younger prince Murad. Rustam Khan retained charge of Sambhal till his death in 1658.

Shahjahan shifted the head quarter of Badaon sarkar from Badaon to Bareilly. A more serious rebellion broke out by the Katehriyas at the end of Shahjahan's reign and it was put down by Makrand Rai, the faujdar of Bareilly. Bahadur Khan laid the foundation of Shahjahanpur town and gave to it the name of the emperor. Diler Khan attacked the Rajputs Bachhils and Gaurs in 1647 to punish them for plundering a treasure. He defeated them at Chinaur and the emperor bestowed fourteen villages on him and ordered him to build a fort. He selected Noner-Khera near the junction of Garr and Khannaut, established the Muhallas of Diler-Ganj and Bahadur-Ganj in Sahajahanpur. Since March 1635 Hissar-Firoza had been in the possession of Dara. He mostly stayed at Palwal where his trusted lieutenant, Firoz Khan Mewati lived. In Jind, Rohtak, Bhiwani, Gurgaon, Mahendragarh and Hissar, the prior administrative set-up remained intact. During his reign, peace and tranquility was all around. The small mahal of Jahangirabad was

separated from Raipur Tatal and later its name was changed to Faizabad which became the capital of the sarkar. Bijnore continued to be administered from Sambhal through the deputies of the nobles who resided at the imperial court.

It was left to the great emperor and prodigal builder who restored Delhi to its former glory and prestige. He built it his capital and equipped with the citadel and royal residence. Its construction was regarded most magnificent, started in 1638 and completed in 1648. Shahjahanabad a new city soon grew around it with a number of fine places which were built by the nobles and the merchants. Delhi became the premier city. Shahjahan visited Sarhind many times and was attracted by its magnificent garden and hunting place. Todarmal, a native and a businessman of Sarhind was appointed by Shahjahan as faujdar of Sarhind. He was also entrusted with the duties of amin, diwan because of his rich and varied experience in different administrative spheres. This celebrated official discharged his functions so efficiently that imperial favours continued to be poured on him in quick and rapid successions. He became the recipient of a distinction which added considerably to the material as well as official prestige. The faujdar of lakhi jungle was also added to his existing charge. Under his able and versatile administration Sarhind made progress till the year 1634 and Emperor Shahjahan again visited this place. Todarmal was elevated to the mansab of 1000/1000 and in 1648 the title of raja was conferred upon him.

In the reign of Aurangzeb, the sarkar of Saharanpur was bestowed upon Sheikh Muhammad Baka, a scholar of note and the reputed author of Mirat-i-Alam. He held this post till his death in 1683. He erected many buildings in the town of Saharanpur, including several mosques, wells and the houses by the side of the Raiwala tank in the suburbs. The Bakapura muhalla of the town was renamed after him. It was in the seventeenth century that the Pirzada family of the Saiyids of Ambhta gained prominence under their leader Shah Abdul Mali. The Rajputs of Pundir clan also appeared to have been wealthy and powerful, in the Muzaffarabad and Faizabad parganas. And in the western parganas of the district, the Gujars headed by the chieftain of the Khubar gotra, seemed to have carved out a principality. Under the patronage of Akbar, Jahangir and Shahjahan, Sirhind continued to march on the road of peace and prosperity and it became one of the most flourishing towns of the Mughal Empire. However, the policy of religious persecution launched by Aurangzeb reversed all the developments of Sarhind. The practice of vesting, all the three powers in the same hands, just as it was in the case of Todarmal, was followed. Wazir Khan was made faujdar, amin and as well as diwan of the sarkar of Sirhind. Wazir Khan, taking clue from the fanaticism of Aurangzeb, started persecuting non-Muslim population of Sarhind. Consequently, the Kateharias of Shahjahanpur region once again created the trouble in 1679 and refused to pay the revenue. Muhammad Rafi, the Nazim of Bareilly was able to suppress them with great difficulty. Rustam Khan continued to hold Bijnore region till 1658 when he was defeated and killed at Samugarh. His jagir was given to pardoned rebel Muhammad Qasim Khan, the mir-atish. During the flourishing times of the Mughal Empire Gurgaon was not in the lime light of history. In 1685, Aurangzeb had sent a powerful army under the command of Raja Jai Singh to Mewat region against Ikram Khan who had started giving trouble to the Mughal administration. Heavy casualties were inflicted on his followers. Hissar-Firoza region remained peaceful upto the death of Aurangzeb in 1707. Hissar sarkar was under nawab Shahbad Khan. The parganas of Hissar sarkar were administrative-cum-fiscal units under the charge of Shiqdars. Muhammad Qasim Khan succeeded Rustam Khan who retained the charge of Sambhal till his death. He supported Dara in the war of succession but was subsequently pardoned by Aurangzeb and continued to hold his charge of both Moradabad and

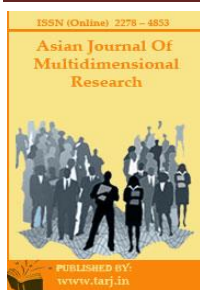
Bareilly for some time. Faizullah Khan was appointed faujdar of Moradabad and after his death in 1681 Afrasiab Khan was appointed. Afrasiab was followed by Masnad Khan in 1688.

In the time of Makrand Rai Badaon and Sambhal were united under the old name Katehar. During Makrand Rai's governorship the Katehariyas again rose in revolt but were thoroughly suppressed. In 1679, Muhammad Rafi was appointed governor when Aurangzeb punished mere the Katehariyas and Jhanghars who had once again withheld the tribute. The nazim suppressed the trouble but with great difficulty. In 1685 Fidai Khan Muhammad Saleh held the charge of faujdar and diwan of Bareilly. Aurangzeb's exploitation and religious harassment led the Satnamis of Narnaul to challenge his authority. In 1672, a petty quarrel between a cultivator and a Mughal foot soldier of the local revenue collector led to the rebellion. The high-handedness of the soldiers was too much for them to bear and the wrangling soon developed into a rebellion. The rebels took position in the town and also in the region. When this alarming news reached the emperor, he sent a large force under Radandaz Khan, equipped with artillery. The Satnamis fought with courage and determination but could not succeed against the well organised and equipped Mughal force. Two thousand Satnamis fell fighting on the field and many of them were killed during the pursuit. The rebellion was crushed and the affected area brought under control. Thus, one of the most spectacular popular rising of the region, ended against the oppressive rule of Aurangzeb. Although failed to produce a hierarchy of able leadership which could have revived it even after disaster. All this left the field open for other people of the region to continue the struggle against oppression for a long time. Who so ever was given jagirs in the region but it were the cultivators who suffered to pay heavy taxes to the changing *masters*. *For example, Maham bestowed by Akbar in jagir on Shahbaz Khan Afgan* but it was plundered by the Rajputs under Durga Das in Aurangzeb's time.

During the early years of Aurangzeb, for more than one year Raja Prithvi Sah of Garhwal remained firm in his promise of protecting the prince Sulaiman Shukoh. He did not yield to Aurangzeb's threats. The resultant invasions of the Dun made by the imperial forces and the aggressions made by the Rajas of Kumaon and Sirmore from the east and the west at the instance of the emperor or to the persuasion of his own ministers and the crown prince Medini Sah disturbed the peace of the region. At last the force of circumstances prevailed upon the Raja and he reluctantly handed over Sulaim Shukoh to Ram Singh, the agent of Aurangzeb and a son of Raja Jai Singh of Amber. Baz Bahadur Chand of Kumaon continued his aggressive policy against Garhwal and for a time succeeded in annexing some of its border areas but Prithvi Sah shortly after recovered. In his last campaign the Raja of Kumaon seemed to have been more successful but a peace was concluded between the two Rajas. In 1664 Prithvi Sah died and was succeeded by his grandson, Fateh Sah, who was a minor of only seven years old. As far as Fateh Sah ascended the throne, Aurangzeb issued a firman on January 16, 1664 in favour of his mother Rani Bartwali as his regent. The Chand Rajas of Kumaon, Baz Bahadur Chand and his successor Udyot Chand continued to remain hostile towards Garhwal but now Aurangzeb appeared to have sided with and gave his moral support to the Garhwal rulers against the Chands of Kumaon. It was in 1684 that Fateh Sah took the government in his own hands and appeared to have remained on friendly terms with Aurangzeb till 1707. To meet this critical situation the Kumaon kings adopted a very wise, practical and diplomatic approach.

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THE INTERACTIVE MEANS OF LEARNING ORIENTAL LANGUAGES

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ABSTRACT

Nowadays in the globalized world of internet and technology opportunities no matter in which part of the world you are placed, it adequately possible to obtain a high-quality education even without leaving home. The experience of leading universities in the world shows that the modern form of education is becoming more popular nowadays and the main interests of the world's leading universities focus on distance learning. In particular, the role of computer and pedagogical software in teaching oriental languages is invaluable. The article provides an overview of the effective ways, advantages and disadvantages of using pedagogical software in teaching the oriental languages – regarding “Rosetta Stone” Lingualeo,” “Smart-Notebook.” There will also be an overview of oriental languages, normative legal acts, decrees and orders of the President, their actual expression, and pedagogical software tools as well as their working mechanisms for learning Eastern languages. Currently, there are number of options around the world for a deep investigation of foreign languages, especially, regarding the oriental languages, many of which are processed online, at the request of the applicants. In other words, there are pedagogical software tools, which are available to language learners that help them both to save time and money, and improve their knowledge, according to their level of knowledge. The introduction of pedagogical and information technologies in the educational process is important, due to the importance of the new generation of educational tools and the latest types of education. The use of multimedia, which is a complementary learning tool, is now being used in the educational process. Such instructional, electronic pedagogical software products should also ensure the speed and quality of teaching. Consequently, in our country

today, learning foreign languages by means of pedagogical software has evolved into a specific system, and this process is justified by the relevance of our article. So, there were presented the concepts, regarding the pedagogical curriculum tools and their performance, as well as the disadvantages and positive sides of teaching of foreign languages, also it mentioned about the processes of application of pedagogical programs and there were given the proposals, concerning the practical usage of the pedagogical curriculums.

KEYWORDS AND PHRASES. *Oriental Languages, Pedagogical Software, Rosetta Stone, Linguleo, Smartnotebook, Internet, Distance Learning, Interactive Methods, Reading Skills, Writing, Speaking, Listening Skills.*

I. INTRODUCTION

Today, in the conditions of an independent Uzbekistan, radical changes in the economy and society cannot be achieved without the advanced cadres possessing modern knowledge and Oriental languages. The President of the Republic of Uzbekistan Sh. Mirziyoev in his address to the Oliy Majlis on the most important priorities for 2019, emphasized the problems that should be solved in the higher education system: it needs to be underlined.”[1].

This requirement is one of the topical issues for all universities. This is due to improvement of relations between countries and their activation of political and social processes, which depends on the level and skills of specialists. There is a growing need for specialists in the field of diplomacy, with profound knowledge of the oriental languages, to address strategic and political situations between countries and to establish relations between them.

Articles were published in the leading international scientific journals, and they also inform about the system of higher education and the factors of its development [2].

In addition, the current integration, the globalization processes, and direct access to the world require learning of several world languages. In this case, it is required that the learner gets a complete and in-depth training in a short period of time, a systematic analysis of all the elements of the oriental languages which have been learned, and at the lowest cost effective investigation of this language.

The internationally recognized International Level of Foreign Languages (CEFR): Learning, Teaching and Assessment defines basic skills such as writing, reading, speaking, listening and, through which the learners of the Oriental languages are assessed and identified in four categories.

Nowadays, language skills for teachers are being assessed through these four stages by the State Testing Center (STC), which then causes teachers to be extra paid as an addition to their salaries. This helps teachers to work on their language skills on one hand, and on the other, to earn extra money. In addition, the translation of educational literature of teachers into the oriental language promotes the self-realization of the teaching staff themselves.

Currently, there are number of options around the world in deep learning of the oriental language, many of which are available online at the request of the applicants. In other words, there are pedagogical software tools available to language learners that help them save both time and money, and improve their knowledge according to their levels.

In addition, the conclusions reached by this research in the implementation of the objectives were set out in the Decree of the President of the Republic of Uzbekistan, dated by December 10th 2012, No PP/ 1875 [3] and other legal acts related to this activity.

II. RESULT AND DISCUSSION

The aim is to study the scientific and effective bases of learning foreign languages, in particular the oriental languages based on CEFR requirements and levels through pedagogical software tools such as Rosetta STONE, Lingualeo, Smart-Notebook. The following tasks have been identified for this purpose:

The familiarization with the normative legal documents on teaching of the oriental languages;

Studying of the pedagogical software and working mechanisms for their investigation of the oriental languages

_ the analysis of the pedagogical software such as: Rosetta Stone, Lingualeo, Smart-Notebook; to determine the effectiveness of the pedagogical software in teaching of the oriental languages;

Deep clarification of the achievements and disadvantages of pedagogical software in teaching of the oriental languages;

Making conclusions and proposals on the necessity of pedagogical software in studying of the foreign languages, in particular, the oriental languages.

Methods. The research methods used by analytical and comparative methods, mainly as a result of the comparison of pedagogical software tools for the analysis, reading, writing, speaking and listening skills.

Results and feedback. On December 10th 2012, it was released the Decree of the President of the Republic of Uzbekistan “On Measures for Further Improvement of the System of Learning of the Foreign Languages” No 1875, the adopted decree envisages the implementation of the Law on Education and the National Program for Personnel Training, as well as the creation of a complex system [3; 4; 5]. It is also stated that the organization of continuous learning of foreign languages at all levels of the education system will be further enhanced, including development of teachers’ training and modern teaching materials [6]

As a continuation of these auspices, the Decree No. 2909 of the President of the Republic of Uzbekistan “creates new generation of educational literature and its wide implementation in the educational process of higher educational institutions, which provides higher education institutions with modern educational, methodological and scientific literature, and also , acquisition and translation of the latest foreign literature, regular renewal of information resource centers, and the provision of up-to-date classrooms for teaching of the oriental languages.”[7].

The Ministry of Labor and Social Protection of the Republic of Uzbekistan and the Ministry of Higher and Secondary Special Education of the Republic of Uzbekistan the Center for Secondary Special Vocational Education of the Ministry of Foreign Affairs of the Republic of Uzbekistan by the decision of the State Testing Center under the Cabinet of Ministers of the Republic of Uzbekistan provide with the additional bonuses professors and teachers, who know foreign languages. (3)

Nowadays, there are presented the view points, regarding the pedagogical programs and tools, as well the research processes in teaching in the class, in particular, there were expresses the

ideas of G.A. Kodirova and N.H. Samigova, who demonstrated in their article the tools of pedagogic programs through the computer technologies and the process of automatization of the educational process. (9)

It has been noted in the literature that the pedagogical software is based on the interconnectedness of the conceptual, figurative and mobile components of teaching material [10]. A great number of researches have come up with this topic.

An interesting study on our article is an extract by Khamidov V.S., published on the Internet in 2009 on "Four (4) programs that have led to a drastic change in the education system", which describes the basics of pedagogical software and their use for physics and chemistry. the features of the software, its principles of operation and all opportunities for independent learning of students [11]. The article notes that "the actual methodological issues are to raise the educational standards in the educational system to the level of world standards, to create a methodology for the widespread introduction of modern pedagogical and information technologies in the country."

In order to popularize the above mentioned programs and to provide them with multimedia lectures in the classroom, the author created a site under the slogan "New look at education". From this site, the students and teachers could download the electronic versions of physics lectures and perform virtual laboratories online.

The articles reviewed a few information about the upcoming pedagogical software tools for learning foreign languages. However, there are many language learning tools available, and in our view, they are far from perfect. Therefore, their analysis of their pros and cons will serve as a vibrant future for other emerging pedagogical software tools.

All of the above are the basis for the introduction of modern education systems in teaching foreign languages, in particular the Oriental languages, as well as establishing a new level of language learning with the use of new pedagogical software.

Language Skills Integration facilitates the development of four language skills according to CEFR: reading, writing, speaking, listening with emphasis on oral practice. The European Council's gradual implementation of the foreign languages according to the generally recognized international standards (CEFR) on "European Competencies of Learning Foreign Languages: Teaching, Learning and Assessment" is a top step in the study of Oriental languages. CEFR levels require integrated learning of oral and written forms of language, developing communication skills in different contexts, in particular improving the practical and theoretical knowledge of the foreign language skills studied and freely applying the acquired knowledge, skills and abilities in professional and scientific activities.

Requirements for students' knowledge, skills s in teaching the Oriental languages include:

- 1) Mastering of foreign (eastern) languages, according to the European standards at level C1;
- 2) Acquires skills of reading, listening, comprehending, speaking and writing in the studied foreign (eastern) language;
- 3) Developing trans-verbal skills in addition to improving language skills;
- 4) assess their language development skills and be able to apply reflection skills;

5) Must possess the necessary knowledge, skills, competences and competences in oral and written language in the foreign (eastern) language.

Each pedagogical software that is being created today must ensure that this goal is perfected. Otherwise, modern pedagogical software tools, regardless of the size and level of their effectiveness, cannot be effective. Due to this demand, the software is being adapted for PCs, tablets and even mobile devices, which enables them to receive effective education in all conditions and situations, as well as gaining an access to the global marketplace in the context of globalization.

Rosetta Stone is the first pedagogical software tool to analyze. This pedagogical software is designed to teach more than 30 foreign languages and aims at developing CEFR skills such as reading, listening, and grammar exercises. Their theme range and exercises packages are extensive.

Unlike other textbooks and manuals, Rosetta STONE provides an explanation of grammar rules only in foreign languages. It also facilitates the study of grammar rules through exercise [8:14].

It contains a series of exercises aimed at increasing the vocabulary, with the vocabulary up to B2. The main problem here is the need to use them effectively in developing their speaking skills. With this in mind, the programmers also use phrases that are used in everyday life. In addition, there are a number of sound exercises for listening skills that will help you to have a sound understanding of the language, phonetic and morphological structure of the language being studied.

Lingua-Leo software. Lingua-Leo is an educational software tool with more than 17,000 languages, with more than 18,000,000 subscribers. This software is a computer-aided software that offers simultaneous versions of both mobile phones and tablets. This provides a number of benefits for language learners.

International Standard for Language Learning - CEFR Skills: 1) Reading; 2) writing; 3) Comprehension; 4) Developed skills such as a vocabulary. It also covers topics ranging from A + and A1 to B2 and B2 +. This software is registered by e-mail for downloading and a ticket for the first A + barrel is available. But first, though, first of all, exercises are required to determine the level of knowledge of the learners. Each exercise consists of sentences containing grammatical rules, which, after successful completion of the exercises, the software automatically determines the learner's knowledge, and the program determines the next level of knowledge. In the next step, no matter what the CEFR level is, questions and tasks will be easier or more difficult, with only one error or right answer. CEFR needs to pay a certain fee to take the A + and A1 levels to the next level.

The settings section of the Lingua-Leo software has a number of benefits and tricks that will allow the learner to get to know them at the same time. In addition, there are a number of articles on lectures, cartoons and videos, business, scientific and technical advancements, and glossaries, from the beginning level of a particular language. This will help them to develop the skills of listening, reading, understanding and speaking.

The Lingua-Leo software is animated and colorful and can appeal to students, and middlemen alike. This program operates according to CEFR levels as follows:

- To develop Listening skills:

Depending on the level of language proficiency, it should provide a specific audio, movie or cartoon (including a few sentences), then give a number of words and place them in the order of audio recording. The program determines whether the problem is done correctly or not. In this case, the program must be connected to the Internet. Thus, if the task is done correctly, the subsequent tasks may become easier or vice versa.

- Speaking skills:

Depending on the language level, a specific audio file will be read out and then given the time and opportunity to repeat them. When the task is done accurately (i.e. pronounced correctly), the next level of speaking skills is passed.

- In developing reading (reading) skills:

The text of a particular difficulty will be given according to the selected level. This text can contain from 200 to 2000 characters depending on the language level. Certain words are omitted from the sentences and are given below. Time is set according to the level of knowledge of the recipient. The learner will have to complete the task by substituting words that have been omitted during reading this text. The task will not be completed until every word is put in its proper place. A student who wishes to continue this level is given the task again with increasing difficulty.

- When developing your Writing skills:

Readers are given ready-made words when applying this skill, and the linguist can do the task by selecting one of them.

Like other pedagogical software, this software has a number of conveniences and simplifications that regulate all aspects of language learning, regardless of age and level of learning.

Smart Notebook software. This software helps to strengthen exercises in the teaching of the Oriental language, as well as the organization of independent learning for students or students, and to draw conclusions on how to master them after learning a particular topic. It also helps the teacher to make presentations on a specific topic or lesson, and at the end of the topic to create questions and assignments within the "brainstorming version."

In reviewing the Smart-Notebook software structure, we have concluded that over 7,000 PDFs, thematic images, rich archives of audio and video files, templates and samples, 3D animations, illustrative and interactive materials make the subject matter much easier to prepare. There is also a large-scale set of mathematical, physical and chemical formulas and a set of functions that are implemented within them. Smart-Notebook software is basically a great way to provide interactive learning, as well as in-game tutorials. This software includes ready-to-use templates for quiz questions, crosswords, and animation questions. This will provide the teacher with a good opportunity to prepare for lessons and facilitate his / her work [8:22].

Rosetta STONE, Lingua-Leo and Smart-Notebook software, as mentioned above, are a pedagogical software tool for teaching the Oriental language through skills such as grammar, spelling, vocabulary enhancement, exercises, word recognition, and listening. The principles of each of them are analyzed above. Below are provided their advantages and disadvantages:

The program-based pedagogical tools

<i>Advantages:</i>	<i>Drawbacks:</i>
<ul style="list-style-type: none"> ➤ Increases the cost savings (i.e. protects the tutor from spending more); ➤ Teaches oriental language from the beginning; ➤ The organized CEFR exercises, of an international requirement for language learning; ➤ Software works under the motto "Give up paper and pen and learn language"; ➤ Explains grammar rules in software only through exercises; ➤ Helps the students to develop listening and comprehension skills; ➤ promotes maximum learning and self-study skills; ➤ 	<ul style="list-style-type: none"> ➤ Reduces opportunities for mentoring, livelihood education; ➤ It is possible to obtain CEFR levels from to B1 and B2 in Oriental language teaching; ➤ it prevents the reader or learner from developing their writing skills; ➤ The rules are taught in a constructive manner (only if the student understands that it is enough); ➤ You can use other audio files in this case; ➤ the reader can find audio and video files elsewhere for listening and comprehension skills; ➤ Only a certain part of the pedagogical software is free, and the rest is purchased for a certain amount of money This level of education is not guaranteed; ➤ The use of pedagogical software prevents students from developing writing skills. On the contrary, students need to develop writing skills correctly.

CONCLUSION

A new model of teaching in today's leading learning technologies is based on the changing role of students and teachers in the education system. It is mainly intended for students to study independently and using modern pedagogical tools. The following conclusions were made about the effectiveness of using pedagogical software in teaching Oriental languages to students in higher education:

1. Today's integration, the processes of globalization, and the ability to go directly into the world require learning several world languages. In this case, it is required that the learner gets a complete and in-depth training in a short period of time, and systematic analysis of all the elements of the Oriental languages studied, and at the lowest cost-effective study of this language. Furthermore, the acquisition of the internationally recognized international level (CEFR) on the "European Competencies of Foreign Language Learning: Learning, Teaching and Assessment" is becoming a daily task.

2. The Decree of the President of the Republic of Uzbekistan December 10th 2012 No, PP 1875 "On measures to further improve the system of learning foreign languages" and other legal acts, Presidential Decrees Technologies - Proposals and instructions on effective introduction of the

system of ICT use are accepted, they use modern methods of learning Oriental languages Set on the ground. In this regard, pedagogical software comes to the.

3. There are a number of options around the world in deep learning of Oriental language, many of which are available online at the request of the applicant. That is, modern pedagogical software tools are being developed for language learners that help both students save time and spend money, and improve their knowledge according to their level of knowledge. Pedagogical software is the use of computer technology with the use of didactic tools for partial or complete automation of the learning process and facilitates the use of oriental languages.

4. To date, more than 50 pedagogical software has been created for the study of Oriental languages, of which only Rosetta STONE, Lingua-LEO and Smart-Notebooks have been analyzed. In addition, they have a relatively large number of users.

5. Orientation of Oriental languages by pedagogical software allows to determine the level of students' language proficiency and to determine their upper, middle and lower levels. This will enable future linguists to continue their education according to their language proficiency.

6. Pedagogical software tools provide individual learning and provide learning opportunities in the student's free time.

7. Traditional teaching and standardized testing can achieve the following:

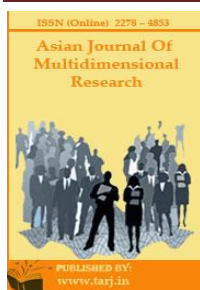
We offer the following suggestions for making pedagogical software more effective in teaching Oriental languages:

1. The pedagogical software can be actively be used in the teaching of the oriental languages. It should not be considered as a substitution for a teacher.
2. Pedagogical software can be considered as an additional language learning tool in the early stages of learning of the oriental languages.
3. As language is required to meet CEFR levels, pedagogical software can serve as an additional resource in this regard. But it does not ensure that writing skills are advanced. With the use of "Smart Writing" in pedagogical software, the learner will have the opportunity to improve his writing skills.
4. In view of the fact that the higher education system should train highly qualified specialists in all areas, pedagogical software should not be considered as a secondary tool in teaching and should as well be considered as a primary tool.
5. It is seen a great of number of the independent users of pedagogical software today, an increase in CEFR-level exercises should be improved so that they can be taught to the most subtle aspects of each language.

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THE PROFESSIONAL DEVELOPMENT OF TEACHERS OF PRIMARY EDUCATION, IMPROVEMENT OF THE PROFESSIONAL QUALIFICATIONS AND SKILLS

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ABSTRACT

Initial education is about making suggestions and recommendations for improving teachers' development mechanisms. Identification of pedagogical and psychological features and factors of pedagogical skills development in teachers; development of scientifically based suggestions and recommendations on pedagogical development of teachers' abilities. Creating a person-centered free learning environment for creative self-promotion of teachers through innovative education and information and communication technologies VASlastenin, G. Chijakova I It is based on scientific researches of Ridanova, Y. Kruglova, J. Yuldashev, N. Azizkhodjaeva, U. Tolipov. Their research explores the socio-psychological issues of creativity and creativity, the psychodiagnostics, the relationship between intellectual and pedagogical, through a comparative analysis of concepts such as creative process, creative product, creative personality and creative environment. On the basis of in-depth analysis of pedagogical abilities, it was found that their constituents are directly related to communicative competence: didactic, perceptual, suggestive, empathic, acmeological, cognitive abilities and so on. . It is this aspect that indicates the need for a holistic systematic set of pedagogical skills. Pedagogical ability is a special ability that determines the ability of a specialist to carry out pedagogical activity and the competence to successfully engage in this type of work.

KEYWORDS: Pedagogical Ability, Methodological Approach, Professional Qualities, Creative Personality, Competence Approach, Communicative Competence.

INTRODUCTION

Problems of training of teachers, formation of necessary professional qualities and skills in them were studied by E.Haydarova and F.Yuzlikaev. Psychological features of improvement of pedagogical skills of teachers are widely covered in the scientific researches of J. Gilford, E. Torrens, A. Leontev, N. Ilin, M. Davletshin, E. Goziyev. Their research explores the socio-psychological issues of creativity and creativity, the psychodiagnostics, the relationship between intellectual and pedagogical, through a comparative analysis of concepts such as creative process, creative product, creative personality and creative environment.

Impact of pedagogical scholars on improvement of pedagogical skills, improvement of pedagogical skills, improvement of pedagogical skills of teachers in scientific researches of N. Shodiev, O. Musurmonova, H. Ibragimov, Sh. Sharipov, N. Egamberdieva, Sh. Social factors, social activity, as well as ways of developing critical, creative thinking in teachers, pedagogical conditions, as well as axiological and pedagogical content.

Creating a person-centered free learning environment for creative self-promotion of teachers through innovative education and information and communication technologies VASlastenin, G. Chijakova I It is based on scientific researches of Ridanova, Y. Kruglova, J. Yuldashev, N. Azizkhodjaeva, U. Tolipov.

The analysis of the above studies shows the need for teachers to study the pedagogical and psychological aspects of pedagogical skills development, the contrasuggestive, thesaurus and interactive factors, to improve the pedagogical skills of teachers based on interactive learning, to develop predictive and quantitative recommendations. . Factors of pedagogical skills development (conditions, continuous communication and relationships, collaborative activities, self-development and evaluation) in elementary education teachers related to the composition of academic, cognitive and social competences and academic activities defined on the basis of the relationship of pedagogical abilities; Integrated methodological support for the development of pedagogical skills (content of reproductive, creative and exploratory and innovative stages) was improved on the basis of prioritization of the predictive features of the quantum parameters; the pedagogical efficacy of interactive methods is enhanced by the grading of the content of the teacher's positioning actions (supervisor, expert, direction, advisor, organizer, observer);

Organizational-pedagogical processes of development of pedagogical skills are developed on the basis of the development of a set of tasks and situational exercises for elements of creative activity (integrated approach, design, technology).

The scientific significance of the article is explained by the methodological approaches used to develop teachers' pedagogical abilities and their use in improving pedagogical conditions.

It promotes the development of pedagogical skills of teachers through interactive teaching methods, improving the information-methodological system for creating an interactive learning environment, and the formation of teachers' professional competence. Recommendations on improving pedagogical skills based on a competency-based approach to the case of primary school teachers to clarify the development of pedagogical skills in primary school teachers "Qualification requirements for retraining and advanced training of managers and teachers of secondary educational institutions" approved by the Decree Number 242 of the Cabinet of Ministers of the Republic of Uzbekistan dated August 20, 2020, 242. As a result, the content of

teachers' pedagogical potential has been improved and the effectiveness of their pedagogical skills development through interactive teaching methods and technologies has improved.

In pedagogy, there is a tendency to use a number of definitions that are closely related to the teacher's ability. Insufficient attention is paid to the complex approach to theoretical and experimental study of the problem of pedagogical skills. It is understood that the requirements for a holistic, holistic approach are not to be confused with the process of increasing the components or elements of a system. However, the notion of pedagogical ability cannot be precise without a comprehensive approach that is important for clarifying the essence of data collection, which is the collection of extensive data related to factors that are not integrated into a particular system of theory and practice. This requires the improvement of the pedagogical skills complex based on the competence approach.

In any modern research in the field of pedagogy, the term pedagogical ability is an expression of the concept used to determine the effectiveness of a teaching activity. This situation leads to a general understanding of pedagogical ability. It is this aspect that indicates the need for a holistic systematic set of pedagogical skills. Pedagogical ability is a special ability that determines the ability of a specialist to carry out pedagogical activity and the competence to successfully engage in this type of work. Based on scientific research in the field of pedagogy and psychology, the teacher's pedagogical skills are summarized as follows: cognitive, gnostic, didactic, constructive, project, organizational, management, creative, acme logic, research, suggestive, communicative. Secretive, empathic. This set of pedagogical abilities is categorized by the following components: gnoseologic-project (cognitive, gnostic, didactic, constructive, project); initiative-creativity (organizational, management, creative, acmeological, research); communicative (perceptual, communicative, empathic). It has been established that improvement of the pedagogical skills of elementary school teachers requires the presence of the following qualities of professional importance: personal orientation, professional and moral qualities, responsible attitude to pedagogical activity, interests and spiritual needs. 'culture and speech culture.

Elementary teachers have identified two categories of comprehensive improvement of pedagogical skills - social and vocational.

1. Social criteria (social adaptation, psychological flexibility, communicative flexibility);
2. Professional-pedagogical criteria (positive emotional-evaluative attitude to pedagogical profession and pedagogical activity, professional-moral qualities, personal-pedagogical self-management, successful mastering of professional environment, professional-pedagogical approach Continuous improvement of skills):

The condition of the set of pedagogical abilities in elementary school teachers shows that the pedagogical and psychological features and factors of comprehensive improvement of pedagogical skills in elementary school teachers, definition of criteria for evaluation of their level of development, methods of interactive teaching and There is a need for teachers to improve the didactic system of pedagogical skills development. In this context, specific tasks have been identified, and the findings and results have a direct impact on the quality and effectiveness of primary education.

The development of communicative competence in elementary school teachers is the basis for the improvement of pedagogical skills, the development of the teachers' pedagogical skills based on interactive learning, and the didactic aspects of improving the pedagogical skills of teachers.

On the basis of in-depth analysis of pedagogical abilities, it was found that their constituents are directly related to communicative competence: didactic, perceptual, suggestive, empathic, acmeological, cognitive abilities and so on. Therefore, communicative competence is defined as a didactic parameter of a set of pedagogical abilities. Communicative competence is increasingly developed by the teacher in the process of acquiring social-communicative experience. Communicative experience is, first and foremost, the use of speech communication in a variety of ways, reflecting the mechanism of intensive interpersonal communication. The basis for this is the changing behavior of the participants in the dialogue (teacher, team coach, staff member, tutor, moderator, listener).

Communicative competence should be based on the professional knowledge and emotional and moral qualities of the teacher, and he / she will be able to identify the direction of communication in the pedagogical process; to be able to organize effective activities together, to analyze the behavior of oneself and others, to understand the quality of interpersonal communication and the social context, the importance of psychological orientation.

The concept of communicative competence of the elementary school teacher reflects the following competencies in their content: assessment of interpersonal perception and communicative (perceptual component) situations; self-analysis and self-assessment in the course of communicative communication (reflexive component); choosing appropriate means for interpersonal communication; communication process management, pedagogical ethics and tactics (ethical component).

The absence of a comprehensive approach to theoretical and empirical analysis of the problem of pedagogical competence has shown that the possibility of structural and structural research of this process is complex. It is desirable to identify an important type of competence to improve the complex of pedagogical skills. In the present study, the methodological framework for improving the pedagogical skills of teachers based on a competence-based approach was used.

2. Pedagogical ability is a special ability that determines the specialist's ability to carry out pedagogical activity and the competence to successfully engage in this type of work.

The set of pedagogical skills that should be improved on the basis of competence-based approach was defined as: cognitive, gnostic, didactic, constructive, project, organizational, management, creative, acmeologic, research, suggestive, perceptual, communicative effects, empathic.

3. The main components of the improvement of pedagogical skills are defined as: gnoseologic-project (cognitive, gnostic, didactic, constructive, project); initiative-creativity (organizational, management, creative, acmeological, research); communicative (perceptual, communicative, empathic). At the same time, their high level of development in the context of innovative learning has been shown to be related to intellectual research, organizational, project and communicative competence.

4. On the basis of a deep analysis of the pedagogical abilities, it was determined that their content is directly related to communicative competence. Therefore, communicative competence is defined as a didactic parameter of a set of pedagogical abilities. The concept of communicative competence of the teacher reflected the following adaptive competences: interpersonal perceptual and communicative communication; analyze and evaluate self-efficacy in communicative communication; choosing appropriate means for interpersonal communication; communication process management, pedagogical ethics and tactics.

5. Improvement of teachers' pedagogical skills is directly related to the independent training process based on interactive learning. This is because interactive teaching creates interaction, understanding and solidarity between the moderator (andragogue), the moderator and the listener as well as the listener-listener. The collaborative interaction between the moderator and the audience, the interaction, and the collaborative creative process are the basis for the development of pedagogical skills.

6. While the basis for improving pedagogical skills is communicative competence, we can conclude that it is a set of communicative forms that, from the point of view of the organization, are based on the personal interests of participants in interactive learning. In this regard, it is advisable for teachers to use business and management games aimed at developing new skills and adaptation to subjects.

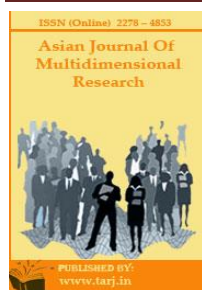
7. Improve the quality of teaching and pedagogical skills in accordance with the activities of the teacher as a game developer (game technologist), consultant, organizer of interactive games, communicator, facilitator, psychologist. and improves efficiency.

The ability to master the secrets of any profession is required. Pedagogical abilities are formed by all teachers. However, it can be high, medium and low. Some of the features and traits embodied in these varying abilities play a supporting role. Auxiliary features and features included in the system of pedagogical skills include:

- Certain types of intelligence: responsiveness, critical attention to deficiencies, persistence;
- Teacher's speech: eloquence, depth of vocabulary;
- The nature of the action: the use of facial expressions and pantomimics, the use of imaginary fantasy, the ability to control the emotional state, the pedagogical throne and pedagogical control.

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USING INTERACTIVE TRAINING AIDS FOREIGN LANGUAGES AT UNIVERSITY

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ABSTRACT

The article discusses the history of the emergence of interactive approaches to teaching a foreign language. Interactive forms and teaching methods used in classes in a foreign language are described. The adjective "interactive" (Eng. Inter - inter, active - active, interacting) in the literal translation from English means "interacting", "dialogue". Interactive learning is learning that is interactive, based on real-life experiences, including the exchange of views between students, between students and the teacher, and allowing students to develop critical thinking. One of the elements of a modern electronic learning tool is an electronic test. This issue has already been dealt with by many researchers. With regard to the study of foreign languages, it should be noted that electronic tests can be effectively used both during classroom lessons and for students' self-control. At present, such technical means that allow replacing a traditional whiteboard with an interactive device with wide possibilities of use are becoming more widespread. An electronic whiteboard is a very effective way to use the electronic content of educational material and multimedia information in the learning process. The introduction of information technology in training greatly diversifies the process of perception and processing of information. Thanks to the computer, the Internet and multimedia tools, students are given a unique opportunity to master a large amount of information with its subsequent analysis and sorting. The use of multimedia interactive technologies in communicative teaching of a foreign language significantly increases the quality of the presentation of the material and the effectiveness of its mastery.

KEYWORDS: *Interactive Approach To Learning, Interactive Learning Method, Foreign Language, Interactive Whiteboard, Thought Activity, Meaning-Making, Overcoming Cognitive Conflict*

INTRODUCTION

As practice shows, to ensure the necessary language training for specialists of the internal affairs bodies, it is necessary to use the most effective forms and methods to optimize the educational process. Recently, in the methodology of teaching a foreign language there has been a tendency to move from a communicative approach to its variety - an interactive approach. The adjective "interactive" (Eng. Inter - inter, active - active, interacting) in the literal translation from English means "interacting", "dialogue". Interactive learning is learning that is interactive, based on real-life experiences, including the exchange of views between students, between students and the teacher, and allowing students to develop critical thinking. In other words, unlike active methods, interactive ones are focused on a wider interaction of cadets not only with the teacher, but also with each other, as well as to increase the activity of cadets in the learning process. [1]

Some authors identify it with a communicative approach, believing that "the interactive model of language acquisition assumes that learning occurs during and during participation in language acts (speech events)." Others define an interactive method as a modified direct method, including a number of other methods [2]. It is important that when using an interactive approach to teaching foreign languages, the main attention is paid to the process of communication and the learning situation in the classroom, while communicative learning puts the focus on the communicative functions of the language. The main goal of the interactive methodology is to instill the skills of independent search for answers and learning through interaction. In this case, the main emphasis should be placed on the interaction of students with each other. Through interaction, students can increase their vocabulary in the process of reading or listening to authentic linguistic material, as well as the statements of other students in the process of discussion, performing joint tasks [3]. In general, an interactive approach to teaching a foreign language produces a cumulative effect, expressed in the fact that, against the background of an adequate knowledge development program, the following are formed:

- Ability to collaborate;
- Communicative competence;
- Tolerance (acceptance of others) [4].

One of the elements of a modern electronic learning tool is an electronic test. This issue has already been dealt with by many researchers. With regard to the study of foreign languages, it should be noted that electronic tests can be effectively used both during classroom lessons and for students' self-control. However, in order to achieve high efficiency, electronic tests must meet a number of requirements, the observance of which will prevent students from treating electronic testing as a "mechanical" work in choosing the right answer from several proposed ones. Therefore, electronic tests should include the widest possible range of tasks (to choose one correct option, to compare, to restore the correct sequence, as well as tasks using audio and video materials to test the understanding of foreign speech by ear). In addition, with the availability of technical capabilities, testing can be organized remotely (as an additional or independent work outside the audience).

The essence of interactive learning is that the educational process is organized in such a way that almost all students are involved in the cognitive process, they have the ability to understand and reflect on what they know and think. The joint activity of students in the process of cognition, the development of educational material means that everyone makes their own individual

individual contribution, there is an exchange of knowledge, ideas, ways of activity. Moreover, this happens in an atmosphere of goodwill and mutual support, which allows not only to obtain new knowledge, but also develops the cognitive activity itself, translates it into higher forms of cooperation and cooperation.

When using interactive methods, the student becomes a full participant in the process of perception, his experience serves as the main source of educational knowledge. The teacher does not give ready-made knowledge, but encourages students to search independently. Compared with traditional forms of conducting classes, the interaction between the teacher and the student changes in interactive learning: the activity of the teacher gives way to the activity of the students, and the task of the teacher is to create conditions for their initiative.

At present, such technical means that allow replacing a traditional whiteboard with an interactive device with wide possibilities of use are becoming more widespread. An electronic whiteboard is a very effective way to use the electronic content of educational material and multimedia information in the learning process. Pre-prepared material in a colorful and easy to read form helps to increase the steady attention and interest of students in educational material throughout the lesson. The interactive whiteboard allows you to work without using a keyboard, mouse and computer monitor. All necessary actions can be done directly on the board / screen using a special marker or pointer. At the same time, the teacher is not distracted by the necessary manipulations at the computer. This has a positive effect on the quality of the teaching material.

Interactive learning includes a variety of technologies.

Among the most common methods / technologies for interactive learning include: problem statement method, project method, case-study method, Jigsaw method (saw method), brainstorm session method, critical thinking method, Sincwain method, business and role-playing games, the six-hat method, the Insert method (individual tagging method, active reading), the blitz survey method, and many others [5].

Unlike conventional technical teaching aids, ICTs can not only saturate a student with a large number of ready-made, strictly selected, appropriately organized knowledge, but also develop students' intellectual, creative abilities, their ability to independently acquire new knowledge, work with various sources of information [6] .

It is noteworthy that when using interactive teaching methods, the role of the teacher is minimized. He becomes only the organizer of the learning process, motivating and guiding students, encouraging their initiatives. In this case, the teacher only organizes the learning process, creating the conditions for student initiative.

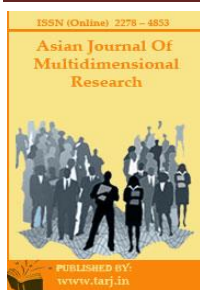
Having assessed all the advantages and summarizing what has been said, we can conclude that the use of ICT contributes to the creation of favorable conditions not only for student learning, but also for the qualitative growth of the teacher himself. And the possession of information and communication technologies makes it possible to improve language competence and intercultural communication.

The introduction of information technology in training greatly diversifies the process of perception and processing of information. Thanks to the computer, the Internet and multimedia tools, students are given a unique opportunity to master a large amount of information with its subsequent analysis and sorting. The motivational basis of educational activity is also expanding significantly. In the context of using multimedia, students receive information from newspapers,

television, interview themselves and conduct television bridges. Interactive learning allows you to simultaneously solve several problems: the development of communicative skills through the active use of authentic audiovisual information, the establishment of emotional contact between students, solving communicative problems (teamwork, exchange of opinions, etc.). The use of interactive tools in the process of the lesson, as practice shows, helps to reduce students' emotional stress, makes it possible to change forms of activity, and switch attention to key issues of the lesson. The use of multimedia interactive technologies in communicative teaching of a foreign language significantly increases the quality of the presentation of the material and the effectiveness of its mastery.

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INFORMATION TECHNOLOGY'S ROLE IN THE STUDY OF FOREIGN LANGUAGES

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ABSTRACT

Nowadays, Information Technologies are being used more and more in education, and these changes in the learning process have brought a special concern. This article deals with the importance in the future for social and intellectual development of learners. Our Methodist scholars have noted that students can express the content of the text in a figurative way, in addition to expressing the opinions expressed in the text, as well as the opinions of the characters involved, as well as adding their own thoughts to the conversation. It will help you to think correctly in English. Since the 1990s, the field of informatization has grown dramatically. Our century, in the 21st century, is not accidentally called the age of information and communication. We will try to explain the content of information technology with a simple example below. According to the Decree of the former President of the country "On measures to further improve the system of learning foreign languages" dated December 10, 2012, English is being taught from the first grade. Classes are conducted in a variety of games, in the form of oral presentations, using multimedia technologies and interactive methods to make children understandable and interesting.

KEYWORDS: *Information Technologies, Pedagogical Technologies, Interpersonal Communication, Telecommunications, Software Resources.*

INTRODUCTION

Nowadays one of the main requirements of high professional qualification is to have a good command of foreign languages. It is no coincidence that international communication pays special attention to the study of English, a leading language among languages. The education system of the Republic of Uzbekistan is upgrading to a new level based on the scientific approach to teaching and teaching English language, with the introduction of new information and communication and pedagogical technologies that meet the modern requirements.

According to the Decree of the former President of the country "On measures to further improve the system of learning foreign languages" dated December 10, 2012, English is being taught from the first grade. Classes are conducted in a variety of games, in the form of oral presentations, using multimedia technologies and interactive methods to make children understandable and interesting. For example, children enjoy English video programs, cartoons, color pictures, songs and poems. Scenic scenes are organized using simple words. This is an important factor in their ability to speak English quickly and well.

Consequently, it is important to ensure the priority of the education system in the training of specialists, including the introduction of new technologies and mechanisms for teaching foreign languages. It is well known that the expression of thought, the communication, interpersonal and spiritual communication between the peoples is manifested by language. The terms of a foreign language indicate that knowledge of many types of speech, and additional professional texts is a requirement of the time. Annotations, abstracts, and exchanges of written information, without sacrificing the essence of other languages, especially in English, reading comprehension and writing, speech practice, reading a wide range of professional and professional literature. The importance of information and communication technologies is clearly demonstrated and established.

Since the 1990s, the field of informatization has grown dramatically. Our century, in the 21st century, is not accidentally called the age of information and communication. We will try to explain the content of information technology with a simple example below. We would like to share some information with your spouse from another province (republic, continent). You can do this in a variety of ways. You can send your feedback to your partner (who in turn responds to you) in the following ways:

- 1) Through the communication department (in writing);
- 2) Via telephone networks (oral);
- 3) By means of modern telecommunications.

Currently, great attention is paid to the automation of education. The use of modern teaching technology in the classroom has a very positive effect. The program of automation (informatization) or use of information technologies can include:

- to provide the leading level of informatization at all levels of the education system;
- design and creation of monitoring of informatization in all areas of education, resource center system;
- Creation of normative bases in the field of informatization (coordination, methods, scientific and methodological associations, etc.);

- technical maintenance - computers, other information technology equipment (from camera to microscope), materials for their maintenance;
- telecommunications networks (satellite, earth satellites and other communication channels);
- Software resources (software, internet data, directories, etc.).

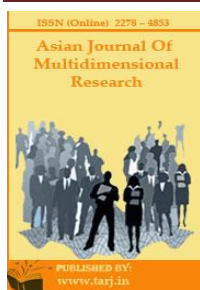
Our Methodist scholars have noted that students can express the content of the text in a figurative way, in addition to expressing the opinions expressed in the text, as well as the opinions of the characters involved, as well as adding their own thoughts to the conversation. It will help you to think correctly in English. When used properly in the learning process, this approach can lead to positive results, both in terms of learning, in terms of training and in English.

Therefore, learning foreign languages is a requirement of the modern age, and it is up to scientists and specialists to develop and that recommend new methods of learning to the younger generation based on the National Program for Personnel Training. is one of the issues. For talented young people to become skilled professionals in their areas of interest, they must first have a good command of foreign languages, including English.

Knowledge of foreign languages provides access to world cultural achievements and information resources, and opens the door to international communication. Today, young people who are learning foreign languages are being shaped by such a high potential and inferior generation.

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FORMS AND METHODS FOR ENHANCING STUDENTS' KNOWLEDGE IN THEIR NATIVE LANGUAGE CLASSES

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ABSTRACT

The article highlights the importance of forms and methods for enhancing students' knowledge in primary language classes, the use of methods, methods, and didactic materials to enhance classroom performance. Every elementary school student has a passion for something, a thrill of talent. In this process, the task of the teacher increases the effectiveness of identifying and developing these talents. This process is very complex and primary education differs from other stages of education due to this complexity. At the beginning of the lesson, beginning with a general understanding of speech in language, students will have the opportunity to explain to students the importance of language in their lives, as well as the main purpose of language learning. The purpose of language learning is to learn to express and express ideas correctly, to read and write correctly. During this period, students are mainly taught the following concepts, skills and abilities: Vowel and consonant sounds, informing about differences in their pronunciation, introducing students to the concepts of letter and sound, cross-letter and vowel. Pupils in the elementary grades have a number of flaws with the phonetic composition of the words, dividing the words into syllables and meaningful parts, word clauses and sentence types. They will be familiar with the rules of writing. The program is intended to introduce students to the lexical meanings of words, ie synonyms, antonyms, and many meanings. The words "Person and thing names", "Words expressing person and thing movement", "Person and thing symbols" and "Person and item count words" The methodological approaches to learning are interconnected. It prepares students to study vocabulary categories in subsequent classes.

KEYWORDS: School, Elementary School, Native Language Textbook, Didactic Materials, Exhibitions, Handouts, Student Oral And Written Speech, Student Participation In The Classroom.

INTRODUCTION

Primary education is the cornerstone of secondary education. These are all life-related principles that apply to all aspects of the native language and studies. Mother tongue treats these important issues and aims to solve them.

To date, the interdependence of native language, lexicography, mathematics, natural sciences, and ethics in primary education has been instrumental in enhancing students' interest in learning and teaching, oral and written skills. The teacher will discuss ways to increase student activity during preparation for the lesson, how to navigate the assigned topics, the techniques used in the classroom, exhibitions, didactic tools to enhance the effectiveness of the lesson, or The instructions can be identified and planned in advance.

The concept of primary education clearly outlines the purpose and objectives of education, identifying and developing hidden opportunities that exist in students' minds, shaping new opportunities for early childhood education, and to form an interest in learning and learning in students.

Every elementary school student has a passion for something, a thrill of talent. In this process, the task of the teacher increases the effectiveness of identifying and developing these talents. This process is very complex and primary education differs from other stages of education due to this complexity. From the very first day of school, the boy feels like he is gone, and his teacher accepts that he is the great one.

Native language lessons should provide ways in which students can develop speech in the school and explain the social role of language comprehension. Consequently, speaking is an important function of educating students in school. It is based on the theory of cognition based on the recommendations of interdisciplinary subjects based on the task of teaching students the language, nurturing them, and developing a comprehensive speech. For example, spelling literacy may be impaired when native language lessons are not given sufficient attention to phonetic skills. Understanding words, morphemes, vocabulary, and speech is the definition of the link between certain events in the universe.

A prerequisite for understanding the meaning of language is to study all aspects of the language, including all related disciplines, grammar, vocabulary, phonetics, orthography, and stylistics. For example, morphology can be learned only if it relies on speech. When it comes to speaking, it relies on morphology, orthography, phonetics, grammar, and word processing.

Morphological analysis of the word helps to understand its meaning. All aspects of the language are interconnected, and this should be taken into account when teaching. In the principle of language sensitivity, the language is a complex phenomenon, without knowing its structure, system, and without maintaining its laws and similarities. The child collects language materials by speaking, reading, listening and mastering his / her laws. As a result, a person develops a sensitivity to language sensitivity.

Native language - skills and abilities in speaking, reading and writing, is a necessary prerequisite and tool for students' learning. With the acquisition of reading skills, it is important for the child to learn his native language first. Because the native language is the key to knowledge and understanding. The native language textbook also plays an important role in the general development of the child, in the promotion of knowledge and work. Language is an important

educational tool. After reading fiction, newspapers and magazines, a child develops the best qualities in himself. Through this they acquire a culture of communication.

The prerequisite for learning the native language is to learn all aspects of the language and to enable students to understand that language is a means of communication. This principle takes into account possible connections between departments. First, the whole textbook will be based on the syntax of words and texts. Second, the vocabulary of the word is related to the study of all sections of the letter. Third, there is a comprehensive approach to word learning. Learn how the pronunciation, spelling, vocabulary and grammar of the word mean the name, movement, symbol, count, who, what, who, what, what, or what? !? How? will be answered.

The textbook contains phonetic and grammatical concepts, graphic and orthographic rules, visual aids, and various exercises. According to the nature of the students' activities, these exercises are of analytical and syntactic nature, and they are used for analysis, comparison, simple summarization of language materials, justification of words and their use in speech.

Textual materials are designed to enhance student learning about the environment, form national concepts, and educate children. In addition to reinforcing the knowledge gained by the children during the literacy training, several lessons were provided at the beginning of the school year, enabling them to lay the groundwork for new material. It is advisable to summarize knowledge of sounds and letters.

Learning new material starts with simple observation of the structure of the speech and how it serves as a means of communication. Students observe the sentence as a unit of speech. It is about who or what it is, and what it means. The word is compared to the word that denotes the name, movement, count, or symbol. Consequently, speech monitoring shifts from word to speech, and word is a unit of speech.

At the beginning of the lesson, beginning with a general understanding of speech in language, students will have the opportunity to explain to students the importance of language in their lives, as well as the main purpose of language learning. The purpose of language learning is to learn to express and express ideas correctly, to read and write correctly. This textbook gives the students the scientific basis for oral and written speech, so much emphasis is placed on phonetics and graphics. The study begins with an explanation of the characteristics of the part of the word that is part of the word. The knowledge of the tiger is the basis for the formation of the skills of proper copying by sticking together a small part of the word.

In the section "Sounds and letters" the word is learned mainly in terms of syllables, sounds and letters, in the "Word" section read the grammatical symbols of a particular category. The basis for learning is provided. This is the initial stage of the study of the word category and does not give a definition.

The words "Person and thing names", "Words expressing person and thing movement", "Person and thing symbols" and "Person and item count words" The methodological approaches to learning are interconnected. It prepares students to study vocabulary categories in subsequent classes. The knowledge of word categories is very low, and students can ask words, ask words and interpret words, such as? What is the answer to the question? differentiate the answer to the question, and use the capital letters of the nouns.

Even though the course of the school year is focused on the course and integrated into the entire learning process, learning the language material ends with learning the Gap topic. In this final step, we will summarize some observations on the sentence that is used in the text.

It focuses on native language learning and the ability to develop storytelling based on a particular picture or series of images. Working on Sunday skills is educational, that is, you can ask questions to write a text, and then give a brief outline. The story explains where to begin, more verbal phrases, and copying or writing the text of the exercise into portions.

In order to stimulate the interest of the students in the study of the material and to organize the research activities, it is necessary to think through the textbook. Summarizing responses are given in the textbook as a summary and are highlighted separately. Requires working with the material in both the textbook and the manuals. In each lesson, it is important to teach students how to work effectively with the textbook, to develop the skills they need to quickly find the topic, exercises, and rules that they are learning.

The teacher specifically teaches students to perform any task consciously. For this purpose, the first part of the textbook will explain to students how many parts of a given exercise and how to do it. When doing the exercise in the classroom or at home, you will be told what to do awkwardly, how to do the tasks, and how to do it in the recommended manner. Students are instructed to check the correctness of their work. By exercising consciously, students understand the purpose, purpose and purpose of the exercise. In this class, students will learn how to write words that match their spelling. Teaching words without typing or dropping words is an important part of language teaching. Phonetic knowledge and skills are the basis for graphic skills. Therefore, in the development of writing skills, phonetic material is taught in practical ways. With this in mind, the textbook contains many exercises: preparation of words or phrases, careful reading, precise pronunciation, interpretation, and examination of the textbook. It is required to teach students the ability to comprehend the letter, to write the letter, and to develop the skills from the first day of the language classes.

As for elementary school mother tongue textbooks, they are: 4 hours of preparation during the first grade.

Adapting students to school education through textbooks and additional illustrations, teaching materials, hands-on writing, speech, syllables and sounds. The emphasis is on teaching based on movement, game elements.

During this period, students are mainly taught the following concepts, skills and abilities: Vowel and consonant sounds, informing about differences in their pronunciation, introducing students to the concepts of letter and sound, cross-letter and vowel. The formation of words on the basis of words, the correct reading of structured words, the ability to read words first and then in syllables to teach them to read well, to observe the rules of hygiene which are to be followed in the learning process, and so on.

Write the capital and lower case letters of the vowel and the consecutive letters, the quality of the letter in the reader, write the alphabet with correct connect, the lettering on the designated slope, the uniformity of the letters in each line, the elements of the letter, It is the formation of the same distance between letters and words.

To develop theoretical and practical understanding and skills of linking each letter or letter, by interpreting it verbally or on a blackboard, where to place a hand, where to turn or disassemble it,

and to position the letters along the lines is taught. First you need to hold hands on the letters represented by the dots and then teach them how to write on the pattern.

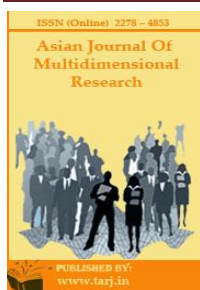
Teaching writing based on imaginative typing, the pronunciation and spelling of one or more syllables teaches you to write the same words, 2-3 sentences.

The primary purpose of teaching the native language in primary school is to develop children's age and writing skills, to develop their thinking, to develop their interest in learning, to be active, independent, hardworking and coping skills. Successful development of children's mental and speaking abilities will allow them to further master the subjects in the future.

Elementary classes in elementary school, such as phonetics, grammar, spelling, and speaking, are linked to the materials of the native language courses taught in high schools. Pupils in the elementary grades have a number of flaws with the phonetic composition of the words, dividing the words into syllables and meaningful parts, word clauses and sentence types. They will be familiar with the rules of writing. The program is intended to introduce students to the lexical meanings of words, ie synonyms, antonyms, and many meanings.

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FORMATION OF PERSONALITY TRAITS IN SCHOOL CHILDREN

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ABSTRACT

This article provides opinions and research on self-esteem. Methods are given for solving problems among students of excellent students and those who remain. Psychologists conducted one interesting study. The children were offered to solve two problems, the same in difficulty. In the process, some children were constantly praised, approved of their correct actions and "did not notice" errors. Do not be afraid. This forms a cautious self-esteem as a peculiar mechanism of protection, internal readiness to receive not only good, but also critical assessments. This internal readiness secures the child, removes emotional barriers, prevents affects and, in general, makes his life easier. These children do not know how to well understand their abilities and capabilities; therefore they are more often mistaken in the prognosis. Children often see the reasons for their failures in unfavorable circumstances. Their self-esteem judgments are more categorical than those of the children of the first group, they are less prone to doubt and reflection on this subject. In children of the third, lowest level of self-knowledge group, self-satisfaction is as ambiguous as in children of the first group, but the reasons for this are completely different. Most children of the third group are dissatisfied with themselves, alas, quite reasonably. They are accustomed to the fact that they are always in last place both in study and in the attitude of the teacher, and in the position in the class. A kind person, for example, is characterized by first-graders as a defender and assistant: "He understands when a friend is in trouble, he can protect a girl or a weak boy." True, first-graders sometimes associate the manifestation of kindness with success in school: "A good person who works well in the classroom, gets a lot of fives."

KEYWORDS: Reasoned, Position, Ability, Opportunity, Over-Positive Attitude, Disciplined, Emotional Breakdown.

INTRODUCTION

In the structure of self-esteem, as noted above, two components interact - cognitive and emotional. An important task of forming the optimal structure of self-esteem is the development of a differentiated, deep and accurate knowledge of oneself in a child, the ability to use various characteristics in assessing oneself, and to adequately understand the content of the qualities being evaluated.

It is also necessary to teach children to independently and reasonably evaluate their capabilities, abilities and personal qualities both from their own point of view and from the point of view of another person; more precisely, more adequately and more stably assess their knowledge and skills, manifested both in educational and in labor activity. Great opportunities for the formation of these abilities in a child are also any artistic activity of the child, having a creative nature.

How to do it? There is a widespread belief that a child is very successful when he is praised. Indeed, support and a favorable emotional atmosphere are very important for the success of any type of activity. But we must not forget that the real results of labor must be real and evaluated, the child must be taught to analyze his work, the means used and the results achieved.

Psychologists conducted one interesting study. The children were offered to solve two problems, the same in difficulty. In the process, some children were constantly praised, approved of their correct actions and “did not notice” errors. Another group of children worked under more severe conditions: they were pointed out errors, encouraged to search for ways out of the dead ends, “not noticed” or, rather, taken for granted successful actions.

What was the result? In the first group, 68% of the children could not cope with the solution of the problem, in the second - almost half as much, 38%. After some time, the experiment was repeated. It turned out that in the first group 43% of the children failed to solve the problem, in the second - only 12%.

The result of this experiment affected another one. Self-esteem in children of the first group turned out to be overestimated, uncritical, of little content and quite categorical. They did not remember their mistakes, they searched for the right actions by random selection, and at the same time they were sure that everything was fine and they were working as they should. In the children of the second group, self-esteem turned out to be substantial and critical, they knew their mistakes and purposefully searched for ways to correct them. Moreover, the form of their statements was far from categorical.

Thus, the level of self-esteem formed by the way an adult interacts with a child has had a decisive influence on the success of the activity and, more importantly, on the formation of those personality characteristics that will allow the child to continue to act wisely and productively.

This is one of the ways in which a child has an optimal way of self-esteem. The basis of this cooperation is analysis and joint discussion with the adult of the content aspects of the activity.

Psychological studies show that the formation of objective, diverse knowledge of oneself has some other consequences. The child's attitude toward himself is changing: “seeing” his own strengths and weaknesses reduces his level of satisfaction with himself. Do not be afraid. This forms a cautious self-esteem as a peculiar mechanism of protection, internal readiness to receive not only good, but also critical assessments. This internal readiness secures the child, removes emotional barriers, prevents affects and, in general, makes his life easier.

Insufficient development of knowledge about oneself, their inaccuracy and incompleteness make the child defenseless against negative external evaluations, he takes them on faith, which leads to the development of negative self-attitude, blocks his activity. Negative external assessments, not encountering opposition in the form of an exact knowledge of themselves, accumulate and bend it to the ground with a heavy load.

How does all this look in real life for children? The knowledge about oneself in children of the same age is different. We discovered three levels of their development. The first level - self-esteem is realistic. Children are well aware of their characteristics. At the same time, they see them not only in individual situations of today, but already quite generalized knowledge ("In such cases, I always do this"). Children well know their abilities and therefore can predict their actions - what happens, what doesn't.

They attribute the causes of their failures to their own shortcomings. They are not characterized by categorical self-confidence. Speaking about themselves, they tend to use cautious expressions: "I think," "it seems to me," "maybe."

The second level - realistic self-esteem becomes less. Self-knowledge increasingly reflects the opinions of others, becoming less independent. The basis for isolating and evaluating one's own qualities is based on specific facts, individual cases, and the list of these qualities is poor. These children do not know how to well understand their abilities and capabilities; therefore they are more often mistaken in the prognosis. Children often see the reasons for their failures in unfavorable circumstances. Their self-esteem judgments are more categorical than those of the children of the first group, they are less prone to doubt and reflection on this subject.

The third level - self-esteem is predominantly inadequate, while the child always wants to evaluate himself higher. He has no other justification - "I want it so much." He cannot cite even concrete, albeit isolated, facts in support of self-esteem. But in general, the real self-esteem of such children is low due to the fact that they hear daily from the mouth of the teacher or parents. The accumulation of only negative experience of external evaluations leads such children to absolute confusion: they no longer consider themselves capable of anything good. At the same time, they see the reasons for their failures only in a combination of malicious circumstances ("The dictation wrote poorly because the pen was flowing and the neighbor was in the way"; "I got a deuce because me. Fedka made me laugh").

As we see, from the first group to the third, children's thoughts about themselves are becoming paler. If in the first group the children analyze their life situations, their actions and relationships, then in the second they believe more in extraneous judgments, and in the third there isn't this either: the children don't think about themselves and know almost nothing about their real qualities and capabilities.

It is interesting to compare the development of self-knowledge in children of different groups with the measure of their self-satisfaction. As it turned out, the children of the first group, that is, those who know themselves well, treat themselves differently: some children are satisfied with themselves (which is quite justified), others are dissatisfied because they present themselves with higher demands. Is it good or bad? Of course, self-satisfaction, even quite justified, is not very good for the development of a child. This is an inhibitory factor: "I am already good." Much more fruitful is that dissatisfaction, the "holy dissatisfaction with oneself" experienced by other children of this group. It gives an incentive to further development, to self-improvement.

Children of the second group have an average level of satisfaction with themselves. They are not too happy with themselves, but they do not consider themselves to be so bad either. This is a very successful combination: they always have a “light at the end of the tunnel”. Such children, as a rule, really work on themselves, at least to the extent of their skills.

In children of the third, lowest level of self-knowledge group, self-satisfaction is as ambiguous as in children of the first group, but the reasons for this are completely different. Most children of the third group are dissatisfied with themselves, alas, quite reasonably. They are accustomed to the fact that they are always in last place both in study and in the attitude of the teacher, and in the position in the class. They do not expect changes in their sad fate. But in this group there are also those children who, despite all their subsequent failures and blows of fate, highly value themselves and do not want to agree with a low assessment of their personality. They are quite satisfied with themselves, although there is no apparent reason for this. These children are closed to criticism, but something inside them resists poor grades, rebelling against declaring themselves bad.

It should be noted that both positions of children in this group are unproductive: both complete doom and complete disregard for reality can lead the child into a dead end. He needs urgent help.

And the help here can only be one: it is necessary to open the child's eyes to himself, to teach him to see what he can and cannot, what he can and cannot. It is necessary to teach him to analyze his actions and relationships, to pose questions to himself and to answer them, to teach him to see the qualities of people and their own, manifested in some situations of friendly communication, to evaluate these qualities, to resolve conflict situations, to do independent moral choice.

Only real and sufficiently complete knowledge of oneself will give the child a real footing in life, help him to increase his status, realize his abilities, and become a person.

Total self-esteem is born twice. In young children, this is a developed over-positive attitude towards themselves as to the center of their universe. Over time, life changes the characteristics of this self-esteem, the world ceases to revolve around a child, and private self-esteem appears - evaluations of one's real, daily achievements and failures, manifested qualities, emerging relationships, actions and their motives. The accumulation of experience in the assessments obtained and the resulting self-esteem leads to the fact that the child has a certain system in which there is something important (and for each his own) and secondary, not so important for the life attitudes of the person.

This second birth of self-esteem occurs already at school age, and changes in it are very noticeable from I to III class. First-graders still have a children's idea of the self-worth of their personality, and private self-esteem still cannot correct it. The way of expressing these particular self-esteem is characteristic, they often contain the word “but”: “I do not solve problems well, but I sing well”. Initially, a high overall self-esteem increases the level of private ones. First-graders, for example, rate themselves better in all qualities than third-graders.

Grade III is already undergoing major changes. The experience of real activity is accumulating, changing the characteristics of private self-esteem, and all of them together, gathered in some unity, cannot but change the general. Her level to grade III is significantly reduced.

In addition, the qualitative content of general self-esteem is changing: it is affected by self-esteem according to qualities that are significant for the child.

A third-grader has already highlighted those areas of his life that are more interesting for him or in which he is successful. The qualities necessary for such an activity acquire special significance for the child, and, accordingly, self-esteem for these qualities becomes the object of his special thoughts. It can be high or low, but it always encourages the child to change in himself.

Clarification of the child's ideas about himself, about his qualities and capabilities, as it were, divides his private self-esteem: they become more independent from each other and selectively affect the overall self-esteem. Such selectivity of interaction between general and private self-esteem is an important achievement of age, thanks to it, general self-esteem becomes more accurate, filled with concrete content, based on private self-esteem that is significant for the child.

If for first graders such qualities as "attentive", "disciplined", "good student" are still important, then in third graders these qualities go into the shadows, and qualities like "good comrade" come first. , "Smart," "kind." The qualities of appearance become more significant for them - this is already a pre-teen quality.

By grade III, the level of understanding of personality traits also changes significantly. Only one third of children (34%) found a complete and accurate understanding of qualities in grade I, and most children (84%) in grade III. Accordingly, a complete lack of understanding of personality qualities among first-graders was found by 23% of children, and among third-graders - only two people.

A kind person, for example, is characterized by first-graders as a defender and assistant: "He understands when a friend is in trouble, he can protect a girl or a weak boy." True, first-graders sometimes associate the manifestation of kindness with success in school: "A good person who works well in the classroom, gets a lot of fives." Along with this, children express deep and generalized judgments: "He loves people, wants to live for others and for himself." Important for first-graders was such an aspect of kindness as a good attitude towards people: "Befriends everyone", "Has a lot of friends".

For third-graders, generalized judgments sound more often: "Good - he who helps, gives advice and does good deeds", "This is the one who understands everyone and will not regret anything for anyone."

And, for example, the concept of "justice" turned out to be more difficult for younger students, since an adequate understanding of it requires more social maturity. When determining this concept, first-graders most often refer to specific situations: "When the boys fight, he (just) takes them apart." Third-graders often express generalized judgments: "The just is a person who does not make preferences to anyone." However, they also have characteristics with reference to specific situations: "This is a judge who appoints a penalty and a penalty on time."

Increasing the level of understanding of the qualities of a person with age leads to the fact that children more deeply understand themselves, 'and others, better see the differences between people. If for a first grader comparing himself with a friend is difficult, because he perceives himself and his friend as equal, then for a third grader this is no longer an assessment of peers in status, but an analysis, and sometimes very subtle. Analyzing their own qualities and those of a friend, older children more often begin to value a friend higher than themselves, that is, show a critical attitude toward themselves. An increase in the level of self-criticism means, first of all, an

increase in self-demand. Having realized his shortcomings, unused opportunities, the child, as it were, outlines a program for himself to remake himself: he sees what he needs to change, and this is very important. It is also important that a critical attitude towards oneself improves the attitude towards others: children become more friendly, like “attentive”, “disciplined”, “good student”, then in third graders these qualities disappear, and such qualities as “good companion”, “smart”, “kind” come first. The qualities of appearance become more significant for them - this is already a pre-teen quality.

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And, finally, the fourth and best way out of a conflict situation is a consistent and directed self-education, changing oneself for the better. Few children are capable of this alone. This is where the help of an adult is needed. The main thing here is to see which way the child got out of the conflict. To see this is not easy, for this the teacher or parents need to know the characteristics of the child, his abilities and, most importantly, to know how he evaluates himself.

The presence of a conflicting self-esteem in a child is always an alarm for an adult. In such situations, a delicate, delicate intervention is required that can lead the child to the path of self-nutrition, arm him with an optimistic perspective.

What is a “good” self-esteem? Most often, when talking about self-assessment, it is characterized as adequate or inadequate. What is the “adequacy” of self-esteem? In dictionaries, the word “adequate” is explained as equal, true, appropriate, accurate. There are a lot of questions: what should self-esteem be equal to, what should it correspond to, what is the measure of its accuracy, that is, how to measure it and who is the judge who will determine its loyalty?

Let's try to answer these questions using an example of a situation far from school life. A famous musician gives an interview before a responsible competition. “Do you expect to win?” - ask him. “Of course, otherwise why am I here?” - he answers. His self-esteem is quite high. Soon, his performance is heard by a competent and representative jury, and it is precisely it that decides the question of what level of skill it is: whether it meets the requirements, whether it is equal to the highest standards, what place does it occupy among others. The contestant's performance is evaluated by a whole series of characteristics by all members of the jury, and the overall assessment is made up of their opinions. It reflects a lot of factors, it is complex and, by virtue of this, is that final “sentence” that determines the adequacy of the competitor's self-esteem.

In this case, the competent jury plays the role of a group of independent experts, the opinions of which are most often taken by psychologists in determining the adequacy of self-esteem. Here,

of course, there are underwater reefs. And judges are not always right, and the applicant does not always agree with the “verdict”. But on the whole, a more accurate way to determine the adequacy of self-esteem as a correspondence to external assessments has not yet been invented. The thing is who evaluates - the smarter and friendlier the judges will be and the more there will be, the better.! The more accurate the external assessment will be, the, therefore, the adequacy of self-assessment will be more accurately determined. For students, such external judges are teachers, parents, and peers. Their combined opinion is that public opinion, which often determines the fate of the child, and - alas! - often unfair.

Studies show that in any selection of test subjects adequate self-esteem is not more than 25-30%. Why? They can't, do not want or do not need to give true self-esteem? For “they can't” say that even an adult is not easy to assess themselves adequately, and even more difficult for a child to do so. For “do not want” speaks – resistance to low ratings, the desire to see yourself at least a little better, in a word, protective mechanisms come into force. But “do you need”? Is it always necessary to take care to comply with an external assessment, to be its obedient slave, because the independence of independent experts is by no means always such (examples of unexpected decisions by high juries of various contests are well known) . Isn't it better to learn to determine your abilities and evaluate achievements yourself? There is only one way for this - analysis, analysis, and also its results, their own mistakes and achievements, actions and relationships, motives of behavior. “The main thing is not to let go of yourself,” Leo Tolstoy wrote to his future wife.

So, we found out that adequate self-esteem is not always obtained and not always needed. But what then means inadequate self-esteem? It is clear that first of all it is overstated or understated. Is there anything good or bad about her?

We have already talked about such types of self-esteem as retrospective and prognostic. Retrospective is when a person reflects on the past and evaluates what he has already done, accomplished, survived. It is better here that self-esteem be a little underestimated, that is, let the person critically evaluate what was in his life. It is no accident that with age precisely such self-esteem in a child becomes greater. The analysis of errors is always useful - they learn from mistakes, analyzing missed opportunities, incorrectly chosen ways or means. Critical analysis of the past increases the reliability of the future.

Predictive self-esteem is a kind of “remembrance of the future”. What goals to set, what paths to achieve, what means to use, and how to take into account all your capabilities — this is the meaning of prognostic self-esteem. She, of course, also needs to be critical and cautious, but it's important not to go too far: overly critical self-esteem cuts wings, inhibits activity, becomes an objective obstacle to success, and narrows the prospects for personal development.

Of course, we do not call for the formation of inflated prognostic self-esteem in children: unreasonable self-esteem is always bad. It confronts the child with reality and the devastating effect of such a collision can turn out to be a disaster for him. But still, there should be a little more optimism in prognostic self-esteem.

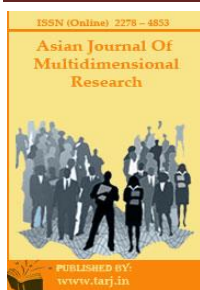
If you manage to teach your child constant self-control, consider that you have taken a very important step - you put him on an escalator that will take him to the heights of independence.

Often there is such a rationale for self-esteem as the desire to achieve success. Psychologically, this motive is two-faced. On the one hand, it stimulates action to succeed, and many believe:

ambition is good. But, on the other hand, the desire for success can form unprepared actions, undermine weak strengths, which ultimately leads to stress and emotional breakdown.

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METHODS OF TEACHING THE NAME OF THE ADJECTIVE IN RUSSIAN LANGUAGE LESSONS IN ELEMENTARY SCHOOL

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ABSTRACT

The system for studying adjective names involves the gradual complication and expansion of material from both vocabulary and grammar. At the same time, in the lessons of the Russian language and reading, new adjectives are introduced into the speech of children, the meaning of previously known ones is clarified. The ability to correctly use them in coherent speech is being formed. As noted in linguistic literature, the categories of gender and number in the names of adjectives do not have the independent meaning that is characteristic of nouns, and are only expressors of the connection of the adjective with the noun. Therefore, to assimilate to the students the gender and number of adjectives - this means, first of all, to assimilate the essence of the connection between these two parts of speech. The grammatical signs of adjectives (gender, number, case) also depend on the noun. Therefore, to understand the names of adjectives, it is important to direct the attention of children to establishing the dependence of the adjective on the noun. Initial familiarization with adjectives (as yet without a term), of course, begins with observations of the lexical meaning of adjectives and the questions they answer. The signs of objects are diverse and can characterize an object from the side of color, shape, size, material, purpose, accessory, etc. Therefore, to form a concept, it is necessary to reveal this multilateral meaning of adjectives. Thus, the adoption of adjectives is based on an active study of the relationship of this part of speech with nouns from vocabulary, grammar, and spelling. The subject of study and language analysis is for students a wide range of information relating to different sides of the language: vocabulary, phonetics, graphics, spelling, word formation, morphology, syntax, speech culture, style.

KEYWORDS: Russian Language, Part Of Speech, Subject, Gender, Number, Case, Noun, Adjective.

INTRODUCTION

The subject of study and language analysis is for students a wide range of information relating to different sides of the language: vocabulary, phonetics, graphics, spelling, word formation, morphology, syntax, speech culture, style.

The system of studying the names of adjectives involves a gradual complication and expansion of the material, both from the vocabulary and from the grammar. The methodology for studying adjective names is primarily due to their linguistic features. Adjectives indicate the sign of the subject. The essence of the semantic meaning of adjectives requires considering them in connection with nouns. The grammatical signs of adjectives (gender, number, case) also depend on the noun. Therefore, to understand the names of adjectives, it is important to direct the attention of children to establishing the dependence of the adjective on the noun.

Specifically, this is expressed in the fact that students, firstly, select a sign for the subject and, secondly, develop the ability to establish the connection of words in a sentence using a question, that is, to highlight phrases consisting of an adjective and a noun. Later this dependence is more and more concretized: in what number, gender, case the noun is, in the same gender, number, case the adjective is also used. Thus, work on adjectives should go both in terms of vocabulary and in terms of morphology and syntax.

Initial familiarization with adjectives (as yet without a term), of course, begins with observations of the lexical meaning of adjectives and the questions they answer. The signs of objects are diverse and can characterize an object from the side of color, shape, size, material, purpose, accessory, etc. Therefore, to form a concept, it is necessary to reveal this multilateral meaning of adjectives.

The teacher shows the subject or drawing of the subject, students name its signs and write down, for example: a ball (what?) Red, round, rubber, light, small. The tape (what?) Is blue, wide ...

It must be noted that the words are written, and the subject with its signs is in life that surrounds us.

The students' awareness of the role in our speech of words that answer what questions? which one? Which one? What?, contributes, for example, to a comparison of text without adjectives and adjectives. The accuracy of the description is greatly improved if words are used that indicate the signs of objects.

A great place in the study of adjective names is occupied by creative works, both oral and written: a description of the excursion to the forest, park, description of trees, birds, animals. Widespread use in the lessons is visual in the form of objects, paintings, subject drawings. During observations of certain phenomena, students learn to highlight the signs of objects and choose the exact words that call these signs. The following types of exercises are effective:

- Distribution of offers.
- Recovery of deformed offers.
- Compilation of stories from the picture and reference words.

This type of exercise develops the ability not only to accurately use words, but also grammatically correctly, given the connection of the adjective with the noun.

In the future, the learning process is aimed at solving three problems: the formation of the concept of "adjective name", the development of the ability to accurately use adjectives in speech, the formation of the spelling skill of the generic endings of adjectives. All three tasks are solved in interrelation.

The study of the entire topic "Adjective Name" is directly related to the development of speech. The enrichment of the children's dictionary is carried out not only by clarifying the meaning of words representing high-quality adjectives, but also by means of relative and possessive adjectives. It is especially important to use adjectives for observations, denoting the various qualities of people and characterizing them from different sides (sensitive, responsive, curious, neat, perspicacious, kind, hardworking, etc.). Great opportunities for work are opened up for the teacher if he skillfully uses the connection between reading lessons and Russian language lessons.

As noted in linguistic literature, the categories of gender and number in the names of adjectives do not have the independent meaning that is characteristic of nouns, and are only expressors of the connection of the adjective with the noun. Therefore, to assimilate to the students the gender and number of adjectives - this means, first of all, to assimilate the essence of the connection between these two parts of speech. The means of expressing communication are endings. The attention of children should be directed to the endings, for example: What day? Warm. What night? warm. What morning? warm.

In the exercises, students determine the gender of nouns and adjectives and draw conclusions about adjectives.

Adjectives in the singular change by gender (as opposed to nouns).

- The gender of the adjective depends on the gender of the noun with which it is associated. If the noun is masculine, then the adjective is masculine, etc.
- The masculine adjective answers the question what? and has the ending of the second. The feminine adjective name answers the question what? and has an ending (s). The middle adjective name answers the question what? and has an ending (s).

Observing the change in the plural adjectives, students are convinced that in the plural adjectives by gender do not change.

In the course of work on endings, it is necessary to draw the attention of students to the following fact: after hard consonants, the ending is written th, th, th, th, after soft ones, th, th, th, th, th.

Students develop the ability to write generic endings of adjectives. The mastery of students by the algorithm of actions that ensure the application of knowledge has a positive effect on the formation of this skill.

- I find out what noun the adjective is associated with and determine its gender.
- By the gender of the noun I recognize the gender of the adjective.
- I recall the ending of the name of an adjective of this kind and write.
- Compare the end of the adjective and the end of the question.

The system of exercises, providing for not only the analysis of sentences, but also their compilation with subsequent recording, contributes to the development of the spelling skills of endings and at the same time the accurate use of adjectives in speech.

The following knowledge and skills form the basis for the formation of spelling cases of case endings of adjective names: the ability to connect words in a sentence and find the noun on which the adjective depends (in other words, the ability to highlight a phrase), the knowledge that the adjective is used in the same way, including the case in which the noun is used, knowledge of the endings of the cases (for example, -th, -th in the instrumental case, -th, -th in the prepositional, etc.), the ability to correctly put the question to the name of the applicant nnom and compare the ending of the name of the adjective with the ending in the question.

No less important is the application of this knowledge and operating skills in a certain sequence:

- The student establishes the connection of words, that is, finds with what noun the adjective is associated.
- Defines the gender, number, case of the noun.
- Based on a noun, it learns the number, gender, case of the adjective.
- Recalls the ending in this case and writes the ending.

At the first stage of work on the skill, it is advisable for students to record the course of their reasoning, that is, write in brackets in detail everything about the adjective (what? T. p., Unit, cf. R. - In the early morning we went camping).

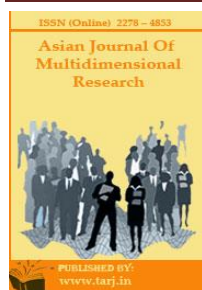
The formation of a skill in this way requires a good knowledge of the endings. Therefore, a case table of case endings of adjectives, common for the class, and each student for himself on the sheet is compiled. The table is compiled gradually as you become familiar with the declension of adjectives.

Based on the theoretical principles, exercises are carried out with gradually more complicated tasks: a) to change the cases of words given in brackets, for example: A plane flew over (North Pole); b) commented writing and auditory dictations; c) preparation of sentences with the phrases given by the teacher, etc.

Thus, the adoption of adjectives is based on an active study of the relationship of this part of speech with nouns from vocabulary, grammar, and spelling.

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THE EFFECTS OF MUSIC ON THE HUMAN BODY MUSIC THERAPY

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ABSTRACT

The existence of humanity has been closely associated with art since ancient times. In antiquity, music was the most important component of human life and the true embodiment of beauty. Music has a direct impact on various systems of the human body - it affects the frequency and depth of respiration, the heart rate, brain tissues and muscles. Hippocrates also spoke of the effects of music on the human body. In ancient times, doctors used to treat fever and headache. In general, music still has a profound effect on people. Nowadays everyone wants to have their own way of life. A group of scientists examined the effect of listening to music, unpleasant odors, and pain tolerance in the experiment. They invited 54 individuals to participate in the experiment. Participants had to be tested with cold water. each participant had to be tested 3 times: listening to the music they loved during the first process and listening to the specific music selected by the scientists. More than half the world pays for good and quality music, and only a small number of these people create their own. Music unites humanity and brings it together. Each of these pleasant sounds gives us a certain feeling. Music always moves in parallel with our memories. The American route focuses on the study of some of the musical compositions that affect the human mind. The Swedish School of Music Therapy focuses on the physical effects of a person and looks for ways to become competent. It is used as a means to establish a connection to music. Music therapy is capable of repairing a wide range of moods. In addition, music therapy helps to create new ways of expressing emotions in the world, as well as new life strategies and social relationships. "Perfect music touches the heart so that it gives the brightest happiness in the world." Says research scientist Stendal. Yes, music really motivates people to live and move, and of course, the impact it has on us.

KEYWORDS: *Hippocrates, Antiquity,*

INTRODUCTION

Music has a direct impact on various systems of the human body - it affects the frequency and depth of respiration, the heart rate, brain tissues and muscles. Hippocrates also spoke of the effects of music on the human body. In ancient times, doctors used to treat fever and headache. In general, music still has a profound effect on people. Nowadays everyone wants to have their own way of life. Human life is divided into two parts: the world around us and the unique world in the human heart. Each of us thinks, imagines, dreams and communicates with humanity. music that evolves in parallel parallel our minds. Throughout the centuries, music has also been able to determine the character of a person.

Music is not only a sound we hear, but it is also a means of relieving pain, relieving stress, helping you to understand yourself, and relieving the stress of communication. According to scholars, listening to music is a good way to help yourself and improve your mood. Favorite music can even reduce the pain. A group of scientists examined the effect of listening to music, unpleasant odors, and pain tolerance in the experiment. They invited 54 individuals to participate in the experiment. Participants had to be tested with cold water. each participant had to be tested 3 times: listening to the music they loved during the first process and listening to the specific music selected by the scientists. In the third, only hearing the noise. It is well known that people are able to endure the pain most of all by listening to the music they love. This is why most people listen to the music they like when running or exercising in the gym. Delightful music really increases the stamina and reduces the pain.

"If you want to get rid of stress, you have to choose the songs that are less chordy, with a slight difference in tone and a little bass," says Georgetown University scholars.

"Which musical instruments have a positive effect on people's members?" The question arises. Of course, not every musical instrument has a positive effect on a person's body. For example, harp music instruments for the lungs, saxophone for the kidneys, gastric keys, pancreas, violin for the small intestine, drums for the spinal cord, heartbeat for the liver, wooden instruments for the gallbladder. , colonoscopy blisters are very positive and help the body function properly. Researchers at Stanford University say, "It's better to listen to music than to listen to it." Music is often a reflection of one's mood. For example, music is best for a person on a wheelchair. Scientists recommend pregnant women to listen to classical music. After all, this kind of music serves to nurture a child's future musical taste. The music is especially useful for children with autism, that is, their communication and communication abilities. Music also has a greater impact on the health and body of creative people, and they are often inspired by music. Music that encourages moods encourages people to live, have fun and believe in good. It sheds light on the world, and listening to it is a favorite activity of the people on the planet.

More than half the world pays for good and quality music, and only a small number of these people create their own. Music unites humanity and brings it together. Each of these pleasant sounds gives us a certain feeling. Music always moves in parallel with our memories. Music is a powerful associative factor because it can be remembered for the rest of your life as soon as you hear it once and we know how it will last when we hear it again.

"There is science behind music," says Pellingner, an American scientist. In medicine, there is a particular direction of music therapy. Music Therapy is a therapeutic area used to address the disadvantages and develop the necessary qualities in the field of somatic and psychotherapy based on musical compositions and their bodily effects. Music therapy demonstrates creative

abilities and contributes to the organic process of the pedagogical process. From ancient times music has been used in medicine to cure many diseases.

Today, music therapy is defined as "Targeted use of music in therapeutic relationships to promote, support and encourage mental and physical health." Currently, music therapy is divided into two main schools: America and Sweden. The American route focuses on the study of some of the musical compositions that affect the human mind. The Swedish School of Music Therapy focuses on the physical effects of a person and looks for ways to become competent. It is used as a means to establish a connection to music. Music therapy is capable of repairing a wide range of moods. In addition, music therapy helps to create new ways of expressing emotions in the world, as well as new life strategies and social relationships. German researchers used music therapy to treat stomach ulcers. The vibration caused by the tone of the music has the ability to move the internal organs. Music therapy for the elderly has truly become a breakthrough. Older people have been able to get their blood pressure back to normal by listening to music. Music therapy has proven effective in developing intellectual functions as music improves brain tissue function. Music Therapy allows you to find new ways to release your accumulated emotions. Music therapy has many benefits and is also used in working with children. Music therapy has been used since the first days of life, especially for children affected by oxygen deficiency. The peculiarity of the brain's structure is that it lacks enzymes, and that music therapy stimulates their production activity. Can improve not only the outer but also the cellular function in vascular system problems. Music therapy is used in combination with other therapies to help patients who are seriously ill. Therefore, coma is used as an adjunct therapy. For example, one study investigated the effects of music therapy on cancer patients. They came together as improvisational performers on various musical instruments. As a result, there is joy, self-confidence, and stress.

In this way, music helps to adjust the amount of energy and blood pressure in the body, which helps keep the body from taking medication.

"Perfect music touches the heart so that it gives the brightest happiness in the world." says research scientist Stendal. Yes, music really motivates people to live and move, and of course, the impact it has on us.

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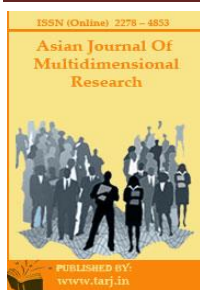
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TEACHING ETHICS TO STUDENTS IN TECHNOLOGY EDUCATION

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ABSTRACT

As stated in the Law of the Republic of Uzbekistan on Education and the Concept of Elementary Education, it is now time to give students an in-depth knowledge of the ways in which students can develop independent thinking and develop their creative and aesthetic thinking. ' One of the main objectives of in-house education and technology education. This is especially emphasized in the historic speeches of the First President of the Republic Islam Karimov at the nationwide session entitled "Harmoniously Developed Generation is the Pillar of the Development of Uzbekistan", especially for primary school teachers who have a higher education and a deep knowledge of their subject. The first initiative is to promote the interest of young people in music, painting, literature, theater and other arts, as well as reveal their talents. The second initiative is aimed at creating the necessary conditions for the physical education of young people and their sports. At the moment, strengthening of independence of Uzbekistan and development of the future prospects for independence, first of all, depends on the most perfect people. Because of these people, science and culture, industry and agriculture are developing. After all, one of the tasks of moral education is to bring up and bring up a fully developed person. The restoration and development of morals and ethics is primarily dependent on the formation and development of various traditions and customs. Labor traditions are a combination of the moral and psychological characteristics of people who have been formed and usually turned around as a result of the repeated repetition of job skills and labor.

KEYWORDS: *Creative and Esthetic Thinking, Mental, Physical, Esthetic, Moral, Ethical, Technology.*

INTRODUCTION

Primary education plays a solid role in the creation of a creative person who will bring the future of our country to a great state level. The teacher's role in educating healthy, spiritually mature and spiritually mature individuals is all-inclusive. This is especially emphasized in the historic speeches of the First President of the Republic Islam Karimov at the nationwide session entitled

“Harmoniously Developed Generation is the Pillar of the Development of Uzbekistan”, especially for primary school teachers who have a higher education and a deep knowledge of their subject. They need to be creative, well-educated, well-versed in modern technology, with high pedagogical and organizational skills.

In our country, the attention paid to young people is huge. As it is known, the head of state has put forward five important initiatives on social, spiritual and educational activities. The first initiative is to promote the interest of young people in music, painting, literature, theater and other arts, as well as reveal their talents. The second initiative is aimed at creating the necessary conditions for the physical education of young people and their sports. A third initiative is to promote the effective use of computer technology and the Internet between the population and young people. The Fourth Initiative aims at creating a systematic work to enhance the spirituality of young people, and to promote wider reading among them. The Fifth Initiative addresses employment of women. He is a perfect person, with a high level of mental, physical, aesthetic and moral education. The importance of technology training in the education of a harmonious person is immeasurable.

As noted in the first initiative, technology will help young people to become more interested in music, painting, literature, theater and other arts, and to develop their talents. Because technology is a creative subject, students are very interested in it. The tasks of creative sciences are important for the development of a child as a fully developed adult. As a perfect person, we mean a person who is both physically and spiritually mature, strong, well-mannered, and able-bodied. One of the factors that makes a person perfect is his work ethic. In elementary school technology, students engage in hands-on activities during their hands-on activities, and they are physically hard-working, pure-minded, brave, hard-working, and hard-working, able to defend their homeland. They are brought up into a fully developed personality.

When a person is physically strong and healthy - he / she is well aware of the beauty of life, improves his / her mind, and is aware of the environment. From this point of view, work is an important factor in ensuring a healthy and strong human being, which is the basis for mental, moral and aesthetic education.

Moral upbringing develops in all aspects of a person's vigor, vigilance, and ability, so that the wise moral education is the nurture of beauty. It is important for a person to work in a systematic manner, with a specific goal for physical and physical development, to travel in nature, to work in agriculture - all of which give him a sense of elegance, mental nurture the concept and aesthetic taste. Undoubtedly, or in a variety of clear, expressive exercises, aesthetic experiences and feelings are created.

It is the task of moral education to form a person's attitude towards society, to incite hatred against the negative, to cultivate conscious discipline, to bring up a fully developed personality. One of the main tasks of moral education is to elevate a person's attitude towards society.

At the moment, strengthening of independence of Uzbekistan and development of the future prospects for independence, first of all, depends on the most perfect people. Because of these people, science and culture, industry and agriculture are developing. After all, one of the tasks of moral education is to bring up and bring up a fully developed person. Adolescents are distinguished by their beliefs, their enthusiasm, their culture, their knowledge and the ability to apply them to strengthen Uzbekistan's independence. It seeks to create an environment in the community, community, nations and nations to promote friendship and healthy lifestyles. It is

important for a school, family, and a healthy spiritual environment to build a sound personality. After all, a healthy family, a healthy environment, and healthy people are all about moral qualities.

Parents' upbringing of their children is a way for them to develop a sense of loyalty, sincerity and sincerity in their love for the motherland, their dedication to work for others. The well-being of our children and their parents' love for our children are also influenced by this. The more a person strives for moral maturity in his life, the more he will realize the flaws of his error.

Central Asian thinkers are so powerful in their ideas and teachings that they help students to grow and embark on a larger life, giving them spiritual strength. It creates human qualities, such as doing good to the people and relatives, respecting them. It is the main purpose of the formation of a believer, a believer, a proud, a good man, and a perfect man.

The restoration and development of morals and ethics is primarily dependent on the formation and development of various traditions and customs. Labor traditions are a combination of the moral and psychological characteristics of people who have been formed and usually turned around as a result of the repeated repetition of job skills and labor. Labor traditions of the people form an independent sphere of firmly established methods of work ethical relations. The collection of ideas, feelings, and structures that make up the spiritual content of labor traditions includes the following elements. 1. The qualities of the most highly regarded labor pioneers of the nation. 2. Elements belonging to the people should enjoy labor as the meaning of life, enjoying the achievements of other people.

Our ancestors have honored hard work for centuries, and have done their best. All the treasures that we have inherited from them are science fiction books, various works of art, architectural monuments, and so on. Our great ancestors, such as al-Khorezmi, Ibn Sina, Bukhari, Mirzo Ulugbek, Alisher Navoi, Zahriddin Muhammad Babur, who made invaluable contribution to the development of world science, achieved great success and urged young people to be hardworking and hardworking.

Labor paves the way for the light of life. The hardworking bird slows down. Failure to work always leads to laziness and lethargy, and it can lead to ignorance. Labor is a key factor in the comprehensive development of an individual. Therefore, children should be taught to work from an early age, and they must cultivate respect for those who work. The great representative of the Oriental culture, Mirzo Ulugbek, also emphasized the need for the younger generation to learn about nature and its protection, and the conservation of nature's benefits.

Our people have been honoring morals since ancient times, because morality has given man a charm, grace and elegance. Central Asian thinkers have always glorified ethical ideas in their works, and have called upon the people to reach the level of originality, character, and perfection.

According to Farobi, the acquisition of knowledge is essential for a person to be moral, generous, and intelligent. Man can only achieve his purpose through knowledge. He paid particular attention to the issue of welfare, which is one of the virtues of the Persian culture. He was not indifferent to the injustices of his day. According to the great thinker, mutual aid, friendship and brotherhood, good health and freedom are the keys to well-being. Ibn Sina has outlined in his book The Treatise on Allah the virtues of humanity, the causes of good and evil. In his work,

Alamah argues that good and bad behavior can be caused by the habits of people and the negative effects of the authorities.

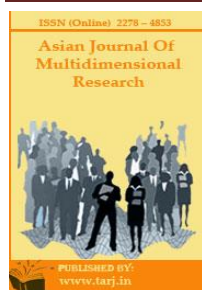
It has been shown that it is important for young people to acquire knowledge and to gain confidence through the direct observation of the correctness of their views. In general, educators pay special attention to the issues of technology education and upbringing, and on a variety of grounds, such noble qualities as youth curiosity, austerity, friendship, and humanity are vibrated through labor, and they can be used to educate young people. interested and encouraged to do their part. The hardworking man has suggested that power does not depend on time.

Ethics is the basis for the moral education and maturity of the child.

Thanks to the independence of Uzbekistan, the national spirit of our people, which is the essence of moral education, opens up ample opportunities for the enlightenment of high spirituality and high hopes. The main goal of the emerging state of Uzbekistan is the spiritual development of society, upbringing a civilized, harmoniously developed person and the formation of moral values in young people.

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INFLUENCE OF VITAMIN D ON THE FORMATION OF THE MENSTRUAL FUNCTION IN TEENAGE GIRLS

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ABSTRACT

The data of Russian and foreign literature on the role of vitamin D in the regulation of health and the participation of vitamin D in the reproductive health of teenage girls are analyzed. Evidence has been provided that vitamin D can affect steroidogenesis of sex hormones (estradiol and progesterone), which contributes to follicular development and endometrial growth. Low levels of 25-hydroxyvitamin D (25 (OH) D) affect hormonal and metabolic disorders, and the inclusion of vitamin D in complex therapy can help regulate the menstrual cycle and metabolic disorders.

KEYWORDS: *Vitamin D, Reproductive System, Teenage Girls.*

INTRODUCTION

Vitamin D is traditionally assigned to the group of fat-soluble vitamins [1]. It is known that it participates in calcium-phosphorus homeostasis and affects the mineral density of bone tissue [1,2,3], therefore it is widely used for the prevention and treatment of rickets in children, osteoporosis in adults [2]. However, unlike all other vitamins, vitamin D is not actually a vitamin in the classical sense of the term, since: a) it is biologically inactive; b) due to a two-stage metabolism in the body turns into an active - hormonal form; c) has diverse biological effects due to interaction with specific receptors located in the nuclei of cells of many tissues and organs. In this regard, the active metabolite of vitamin D behaves like a true hormone, and therefore it is called D-hormone. Moreover, following the historical tradition, in the scientific literature it is called vitamin D [1,3,4].

The term "vitamin D" unites a group of similar chemical structures (seco-steroids) and several substances that exist in nature:

- Vitamin D1 (the substance was discovered in 1913 by E.V. McCollum in cod liver oil, which is a compound of ergocalciferol and lumisterol in a 1: 1 ratio);
- Vitamin D2 - ergocalciferol, formed from ergosterol under the action of sunlight, mainly in plants; can be obtained only from food of plant origin (yeast, bread, mushrooms, some vegetables) [2]; represents, along with vitamin D3, one of the 2 most common natural forms of vitamin D;
- Vitamin D3 - cholecalciferol formed in animals and humans under the action of sunlight from 7-dehydrocholesterol; it is that which is considered as “true” vitamin D, while other representatives of this group are considered modified derivatives of vitamin D;
- Vitamin D4 - dihydrotachysterol or 22,23-dihydroergocalciferol;
- Vitamin D5 - Sitocalciferol (formed from 7-dehydrositosterol)[1,3,4].

Vitamin D3 (cholecalciferol) is synthesized in human skin from 7-dehydrocholesterol (a derivative of cholesterol — 7-DHC) under the influence of ultraviolet rays of sunlight [2,5]. Vitamin D is transported in the blood through a protein that binds vitamin D (DBP, a specific protein that binds vitamin D and its metabolites in serum) to the liver (Fig. 1).

Figure 1. The formation of vitamin D 3 in the skin. UV = ultraviolet [6].

In the liver, vitamin D is hydroxylated in C-25 by one or more of the vitamin D 25 hydroxylases of cytochrome P450 (including CYP2R1, CYP2D11 and CYP2D25), resulting in the formation of 25-hydroxyvitamin D 3 (25 (OH) D 3), known as calcidol [2 , 5] (Fig. 2).

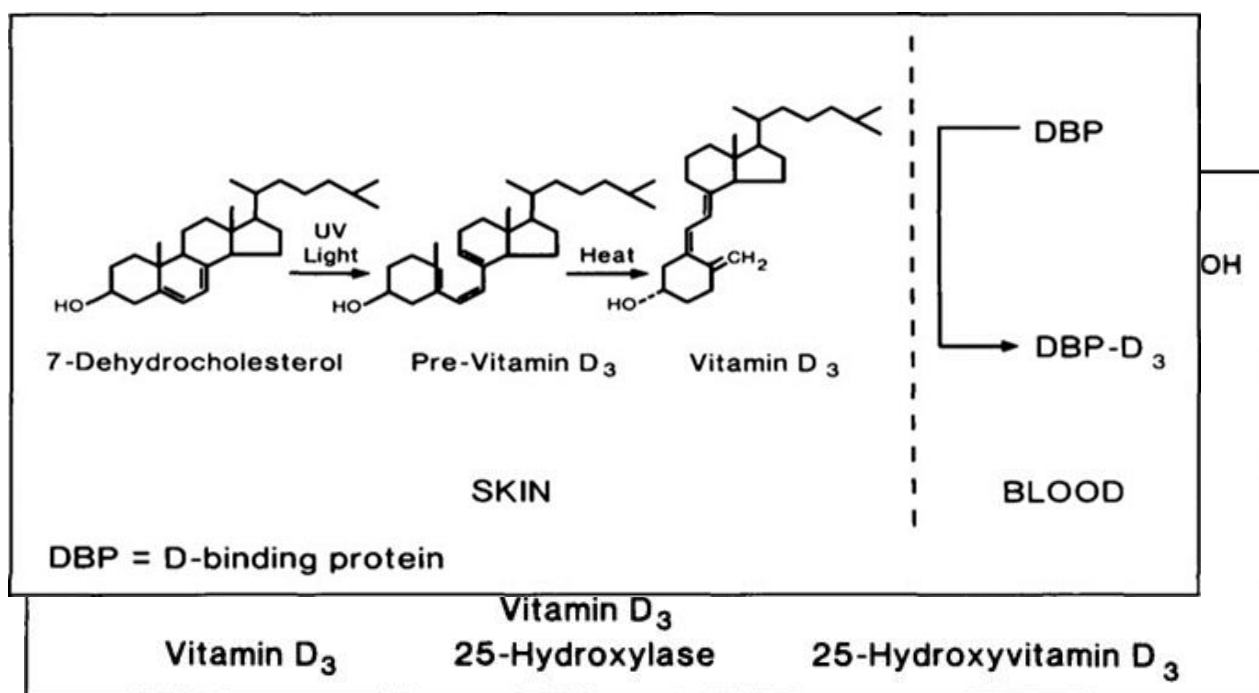


Figure 2. The formation of 25-hydroxyvitamin D in the liver. (From Kumar R. Metabolism of Vitamin D. In Clinical Medicine. Volume 8. Chapter 10. Edited by J. A. Spittell Jr. Philadelphia, Harper and Row, Publishing House, 1982. With permission.) 25 (OH) D₃, the main circulating form of vitamin D, is transported by DBP to the kidney. In the kidneys with the participation of CYP27B1 enzyme, α -hydroxylase, and its result is the synthesis of biologically active 1,25-dihydroxyvitamin D [1,25 (OH) 2D], or calcitriol [2] (Fig. 3).

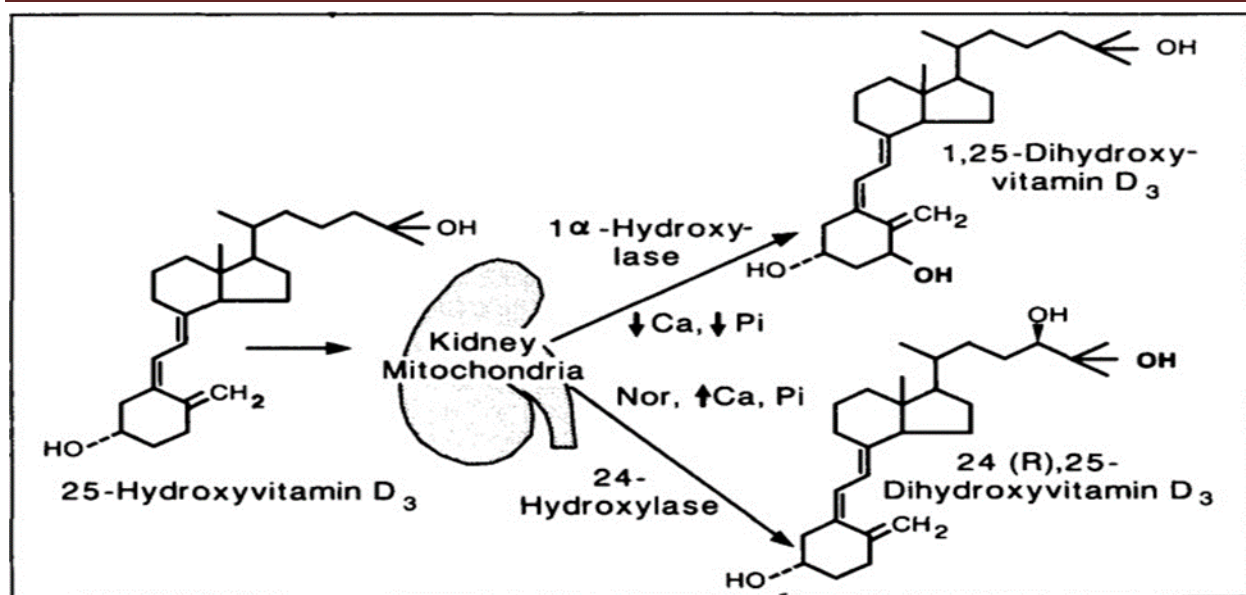


Figure 3. The formation of 1,25-dihydroxyvitamin D₃ in the mitochondria of the cells of the proximal tubule of the kidney. Ca = calcium; Ni = normal; Pi = inorganic phosphate.

(From Kumar R. *Metabolism of Vitamin D. In Clinical Medicine. Volume 8. Chapter 10. Edited by J. A. Spittell Jr. Philadelphia, Harper and Row, Publishing House, 1982. With permission.*)

Stimulation of the active form of the vitamin is facilitated by stimulation of the enzyme CYP24A1 (24-hydroxylase), which turns calcitriol into an inactive, water-soluble form of calcitroic acid, which is subsequently excreted from the body with bile [2] (Fig. 4).

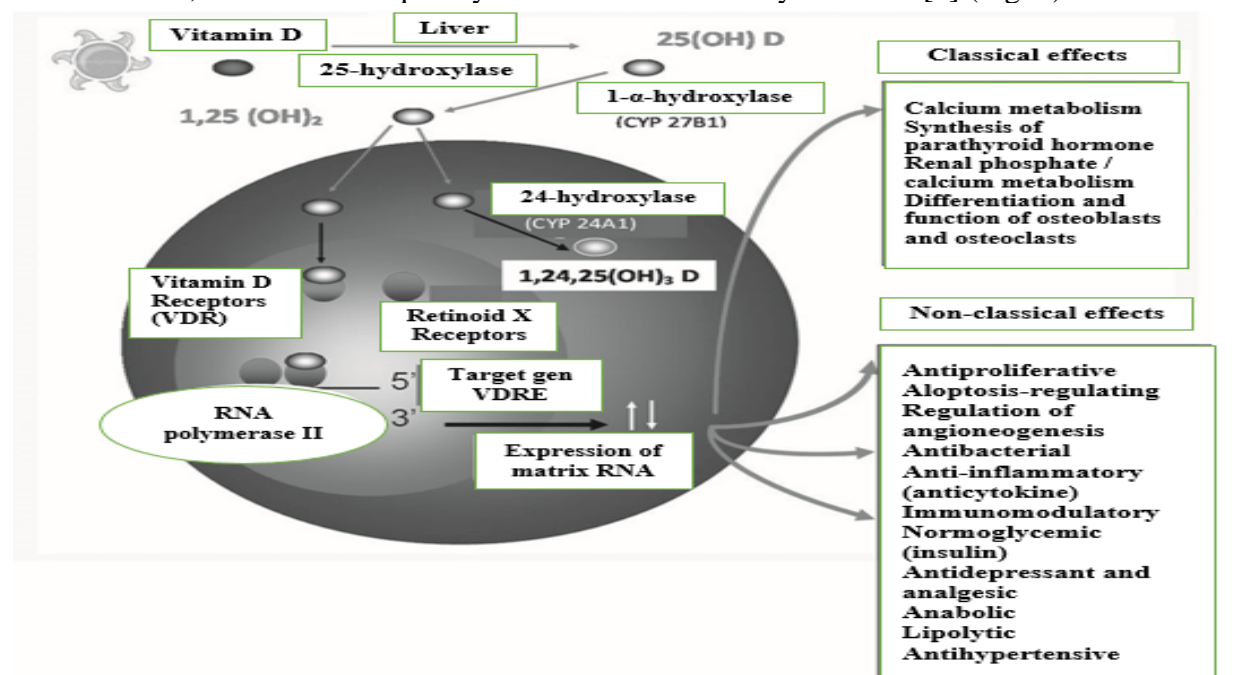


Figure 4. "Classic" and "non-classical" effects of vitamin (hormone) D [1,2].

Unlike vitamins, in the active form of vitamin D [1,25 (OH)₂D, or calcitriol], specific receptors (Vitamin D Receptors, or VDR) were detected in the cells of various organs and tissues, which makes it possible to classify vitamin D as a D-hormone, whose functions are the ability to

generate and modulate biological reactions in target tissues due to the regulation of gene transcription. VDR belongs to the family of nuclear receptors necessary for the realization of the action of steroid hormones (testosterone, estradiol, cortisol, aldosterone) [2,4,5,6]. A friendly VDR is the retinoid X receptor (RXR), a nuclear receptor for vitamin A. The VDR — RXR complex formed by these two receptors in the presence of the active form of vitamin D [1,25 (OH) 2D] binds to the corresponding part of the genome and triggers the mechanism of gene transcription followed by translation of the corresponding protein molecules. Thus, the chain closes - exposure to vitamin D leads to the synthesis of specific proteins that determine the course of metabolic processes in cells and tissues [2] (see Fig. 4).

The classical effect of D-hormone associated with its effect on calcium-phosphorus metabolism and bone mineral density [2], which in childhood and adolescence, adequate levels of vitamin (hormone) D are necessary to ensure cell growth, skeleton formation and growth [3]. The period of rapid skeletal growth occurs during puberty and increases the need not in vitamin D itself, but in the active form of 1.25- (OH) 2 D. This is necessary as a result of increased conversion of 25-OH-D to 1.25- (OH) 2 D in adolescents [8]. Inadequate Vitamin D stores during these periods of increased growth can lead to Vitamin D deficiency.[9].

In 2002-2003, in Moscow, a group of researchers conducted clinical examinations and studied the frequency of vitamin D deficiency among 318 adolescents aged 14-18 (139 m and 179 d) in the Moscow sample and its possible effect on the mineral density of bone tissue. A higher calcium intake with dairy products was revealed for boys as compared to girls ($p < 0.0001$) in boys; it was also significantly higher. The frequency of vitamin D deficiency in girls was 53.6%, which was 10 times higher than in boys. The frequency of hypovitaminosis and vitamin D deficiency was significantly higher among girls examined in February-March, and the frequency of vitamin D deficiency significantly prevailed in the group examined in November-December (58.8%). A correlation between serum 25 (OH) D concentrations and age, height, weight, body mass index, daily calcium intake, total and ionized calcium levels, and bone mineral density has not been established. In the group of girls aged 14-15 with vitamin D deficiency, an increase in bone mineral density in the proximal femur was revealed [7].

Vitamin D receptor enzymes that metabolize vitamin D are expressed in both central and peripheral reproductive organs. Most studies show that vitamin D may be directly or indirectly related to the functions of the gonads.[10].

D-hormone is able to affect the reproductive organs both directly, by binding to its receptor (VDR in women is detected in ovarian tissue, endometrium, fallopian tubes, as well as in the decidual membrane and placenta; in men, VDRs are expressed in the smooth muscles of the epididymis, spermatogonia, Sertoli cells, seminiferous tubules, prostate gland and seminal vesicles), and indirectly, through stimulation of the synthesis of steroid hormones (estrogen, progesterone, testosterone), which are necessary for the proper maturation of follicles and endometrium in women and normal spermatogenesis in men [11-16].

1, 25 (OH) 2D₃ regulates the expression of human chorionic gonadotropin and secretion in human syncytiotrophoblasts [17], it also increases the production of placental sex hormones [18]. Calcitriol promotes calcium transport in the placenta [19], stimulates the expression of placental lactogen [20] and regulates the expression of HOXA10 in human endometrial stroma cells [21]. HOXA10 expression is necessary for the development of the uterus and plays an important role

in the functioning of the endometrium, increasing the susceptibility to implantation.[22]. Improving the demographic situation in the country is impossible without strengthening the reproductive health of young people. Particular attention must be paid to the health of girls from an early age.[23].

Based on the above data, vitamin D affects the steroidogenesis of sex hormones (estradiol and progesterone), which contributes to the development of follicles and the growth of the endometrium. At a low concentration of vitamin D, the receptor activity of the follicles and endometrium decreases, which leads to impaired perception of hormones by the body. Girls with low levels of vitamin D experience delayed sexual development. They are prone to rickety changes in the musculoskeletal system, which leads to changes in anthropometric indicators.

Currently, everywhere there is an increase in gynecological pathology, and a 2-3 times increase in the frequency of menstrual irregularities (menstrual irregularities) among women of reproductive age and teenage girls [24]. Disorders such as amenorrhea, uterine bleeding (cyclic and acyclic), and dysmenorrhea are most common among teenage girls.[25]

On average, the first menstruation begins in girls aged 11–13 years, which is equivalent to the time when they study at school. At this time, dysmenorrhea ranks first among the reasons for the absence of teenage girls in school. The pathogenesis of dysmenorrhea is impaired by the exchange of arachidonic acid with pathological accumulation in the endometrium on the eve or during menstruation of eicosanoids - prostaglandins, leukotrienes and thromboxanes [26,27]. Arachidonic acid is released from the phospholipids of the cytoplasmic membrane of cells under the influence of the enzyme phospholipase A2, the activity of which increases due to the action of a protein that activates phospholipase A2. And this protein is activated by the pro-inflammatory cytokines IL-1, -6, -8, TNF- α [28]. Then, under the action of cyclooxygenase (COX), phospholipase A2 is converted to prostaglandins (PG) - PGF2 α , PGE. Excessive accumulation of GH in the endometrium during menstruation leads to pathological contractile activity of the myometrium and vascular vasoconstriction, which increase intrauterine pressure, its ischemia and hypoxia, activating uterine afferent fibers that conduct impulses in the central nervous system, which provokes pain[26,27].

Q. Wang et al. [29] in their studies showed that vitamin D inhibits COX-2, thereby inhibiting the synthesis of pro-inflammatory cytokines - IL-1, -6, TNF- α in macrophages.

M. Ataee et al. [30] in a double-blind, randomized, placebo-controlled study showed that vitamin D significantly reduces pain in primary dysmenorrhea and can be used as monotherapy for this disease.

In adolescence, it is important to notice in time various violations of the menstrual cycle, which can lead to irreversible consequences, including infertility. [31].

A study by *Sahereh Arabian & Zahra Raoofi*, who evaluated the effect of serum vitamin D levels on endometrial thickness and follicle growth parameters in infertile women undergoing ovulation induction, showed that there was a correlation between endometrial thickness and the number of antral follicles and vitamin D. It can be concluded that the rich status of vitamin D is associated with a better state of endometrial thickness and the number of antral follicles, but this study did not reveal a key effect of serum vitamin D levels on pregnancy[32].

Jing Xu et al. [33] in their studies on primates showed that vitamin D can regulate ovarian function by modulating the expression of VDR and vitamin D intracavitary enzymes. The effects of vitamin D as an endocrine and paracrine / autocrine factor are highly dependent on the context

and affect the survival, growth and function of the follicles. Factors that modulate the intracellular function of vitamin D *in vivo* may include the follicle developmental stage, circulating baseline vitamin D status, and pharmacological levels of vitamin D exposure.

As mentioned above, the relationship of vitamin D with reproductive organs is being investigated worldwide. Similar studies are needed to maintain reproductive health in teenage girls. The inclusion of vitamin D in complex therapy in the treatment of menstrual dysfunction in teenage girls contributes to the rapid development of menstrual function, improving the quality of life, and preventing infertility.

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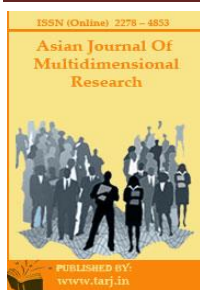
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LOGICAL-STRUCTURAL MODEL OF VOCATIONAL EMPLOYMENT MEMBERSHIP

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ABSTRACT

In this article, the author describes the logical-structural model of ensuring the continuity of vocational education and the conditions for its implementation. The following aspects are taken into account in the development of a logical-structural model of ensuring the continuity of vocational education: preparation of the training material to be taught on the basis of chapters and topics that are clearly and sequentially analyzed; a list of topics and chapters of another subject required in this course; a list of courses required for mastering the subject; the time required to master each subject of the subject; teaching materials according to the schedule and independently mastered materials; methods and forms of control over the integration of chapters, topics and paragraphs of the subject.

KEYWORDS: Education, Vocational Training, Membership, Integration, Interdisciplinary Connection, Model, Structure, Logic, Content, Stage, Conditions.

I. INTRODUCTION

It was stressed that serious work needs to be done at all levels of continuing education, including higher pedagogical education, that is, to increase efficiency in the education system based on a certain continuity.

In order for students to have a complete understanding of the science being studied, it is necessary to find the internal and external logical foundations of the science on the basis of organizational logical analysis.

The process of studying this subject becomes complicated unless there is continuity and continuity in the content of each subject. Therefore, first of all it is necessary to choose the coherence of the content of education, that is, the set of knowledge that the learner needs to learn and place it correctly. The determining factor in the outcome of this process is the model of logical connection that needs to be formed in the learner's mind.

II. ANALYTICAL MATERIALS

It is known that the system of continuing education: expands the spiritual and intellectual potential of society; In the process of rapid exchange of information technologies, everyone will have the opportunity to ensure the continuity and continuity of the education system, to improve their professional training and skills.

Ensuring consistency and coherence between all links in the system of continuing education requires identifying the scope of problems specific to each, identifying the causes and shortcomings that negatively affect the quality of education and achieving educational effectiveness, identifying specific measures to address them and identify effective ways.

Pedagogical affiliation is explained as follows:

1. Didactic principle (as a basic rule that determines the content, organizational form and methods of the learning process).
2. Conditions (as conditions that contribute to the effective organization of the educational process).
3. Motivational force (a factor that contributes to the implementation of the educational process).
4. As a mandatory requirement in the process of education, development and upbringing [1].

One of the most effective factors in the introduction of a continuing education system is to ensure continuity between its stages. Therefore, the issue of continuity in education has always been one of the most pressing issues in pedagogy. Today, there is an urgent problem in the higher pedagogical educational institutions of the country, such as ensuring the continuity of the content of vocational education, based on the requirements of today's continuing education, to add scientifically-based clarifications to the views on this issue and the continuity of the content of vocational education. the time has come to implement the provision.

There are different approaches to defining the concept of membership in education. A number of researchers have given different definitions to the concept of membership.

In particular, according to Sh.I. Ganelin, "... membership is the practical application and development of the existing knowledge, skills and abilities that form the basis for the learning material studied by students, on the basis of which various connections between knowledge are formed, the main ideas of the course, the interdependence of old and new knowledge is ensured, as a result of which a thorough and in-depth system of knowledge is formed in students "[2, p. 4].

V.E. Tamarin emphasizes that coherence is the absence of repetitions in a new topic to be realized not only in form but also in content, not to allow mechanical repetitions of the same exercises in content, but rather to achieve the development of the theme [3, p. 14].

According to S.L. Rubinstein, the essence of membership is that each stage of the learning process is based on the previous one, so there is a correlation between all stages, as it forms its internal conditions [4].

According to S.M. Godnik, the process of integration between higher and general secondary schools has its own characteristics. They are related to the following specific features of these educational institutions: the multifaceted nature of membership, the complexity and multifaceted nature of the problem, the ambiguity of the concept of "membership" [5].

Yu.A. Kustov explained most of the laws of implementation of the principle of membership, the most important of which are:

- Distinguish the main stages of personality formation, its quality and types of activities;
- determine the initial and achievable levels of quality or type of activity to be formed;
- to identify the contradictions between the prospects of development of the person and his current state;
- Separation of the main structural elements (factors, concepts, laws) of the course, section, topic, which must be mastered in the process of studying a particular subject (subject);
- activation of pre-formed basic concepts and methods of work in the minds of students;
- selection of an effective combination of methods, forms and means of teaching and on their basis to carry out the "transfer" of students from the initial level to the established level, ie management;
- to reveal the connection between the studied concepts and previously acquired knowledge and skills;
- "introduction" of newly formed concepts;
- Wider use of public and professional issues in the formation of new concepts [6].

VN Prosvirkin solved the problem of membership 1) interdisciplinary membership; 2) membership in the subject matter; 3) shows that learning is possible in the form of continuity between stages of learning [7, p. 4].

According to RK Nimatov, QH Abdullaeva, membership provides research and management of multifaceted educational process and creates opportunities for the realization of the goals of science. The solution of the problems of interdependence is aimed at determining the interdisciplinary, the state and possibilities of interdependence of a particular science [8].

According to O. Tolipov and R. Choriev, consistency and coherence are important principles of didactics, the tools that make up the content of education: program, methodical recommendations, logical connection of additional visual materials, assimilation of new information on the basis of basic knowledge, knowledge, skills and requires interdependence in the formation of skills [9].

Membership means the placement of educational material in a certain sequence, systematization, reliance on existing knowledge in the acquisition of knowledge, the application of educational material to a certain extent in the next stages, the duration of the stages of the educational process. This event promotes the effective selection of activities for the placement of materials of the subject and the basics of the subject (science). In this process, the following two factors: the content of a particular subject, logic (aspects that determine the existence of continuity in the subject - the concept, law and evidence that make up the content of the subject, gradually revealing the essence of knowledge in a certain sequence? actions that ensure the transfer of knowledge) and the laws of the process of acquisition of knowledge (didactic processing does not allow the direct integration of knowledge in a particular subject into the subject; n action, action) is important to consider.

Continuity and continuity are inherent in the curricula of educational institutions, ensuring that students in each type of education receive a certain level of knowledge and continuity of education.

Ensuring interdisciplinary links in the system of vocational education allows to connect concepts, laws and theories of different disciplines, and through these relationships to form general, professional and pedagogical knowledge, deepen and enrich their content.

To ensure the continuity of the content of vocational education, it is necessary to adhere to the following guiding principles:

- professional pedagogical education meets the requirements of the state and society for the quality of training;
- Compliance of all educational programs in the system of professional pedagogical education with the requirements of state educational standards;
- to ensure the integrity of the educational system and the forms, methods and means of education of the learner's cognitive activity;
- Topics in the curriculum provide for the intellectual, professional, spiritual and cultural development of the learner;
- Ensuring inter-course membership in the system of professional and pedagogical education;
- Ensuring interdisciplinary integration in vocational education;
- Implementation of interdisciplinary integration in the framework of educational programs in the system of vocational education:
- The curriculum is based on the principle of teaching materials from simple to complex;
- The idea of national independence in the context of education, the consistent and integral expression of theoretical, spiritual and moral knowledge aimed at the formation of national ideology.

Consideration of the following subjective and objective factors in the successful process of ensuring the continuity of the content of higher pedagogical education serves to ensure the effectiveness of activities in this area:

- 1) full knowledge of the essence of ensuring the continuity of the content of professional and pedagogical education of specialists-teachers who organize and conduct educational processes in the system of professional and pedagogical education;
- 2) they have the ability and skills to participate in the process of ensuring the continuity of the content of vocational education;
- 3) the activity of students in the educational process in ensuring the continuity of the content of professional and pedagogical education, as well as their ability to work on themselves;
- 4) systematic, continuous and consistent implementation of the process of ensuring the continuity of the content of professional and pedagogical education in the educational process of the system of higher pedagogical education, etc.

Objective factors:

- 1) availability of convenience in use of material and technical means allowing to provide continuity of the content of professional and pedagogical education;
- 2) adequacy of educational resources;
- 3) provision of interdisciplinary interactions, etc.

It can also be said that in order to solve the problem of ensuring the continuity of the content of professional pedagogical education and to achieve the effectiveness of education, higher pedagogical educational institutions:

- Curriculum and teaching materials based on the principles of organic, interdisciplinary connection and integration;
- highly qualified personnel;
- provide modern logistics.

Sh. Research method and methodology

“Modeling serves to reflect a holistic range of research activities. The researcher carefully examines the essence of the series. Indeed, it enriches the theory with conclusions and ideas as a final model. Thus, modeling allows you to visualize the selected object in the form of a series” [10].

The term "model" should describe a system (sample, template), reflect its specific features, its relationship with another, so-called real system, and replace it in a certain sense.

The concept of "model" is used in many areas of science. A model is an artificially created object in the form of diagrams, physical constructions, definite shapes and formulas, which is similar to the object under study, its structure, properties, interactions between the elements of the object, the relationship in a simple and clear way [11].

A model is a symbolically created object that is similar to the object under study in the form of a picture, table, diagram, etc., and reflects and demonstrates its structure, properties, interactions and relationships between elements in a simple, reduced form.

From the above it can be seen that the descriptions of the models vary. The model we want to consider is a model that relates to the content of education and logically demonstrates that the sequence of learning materials is located in a particular system.

A course of study is a specially selected part of the whole unit of the subject, laws, theories and methods of a particular field of knowledge. Learning it is a gradual transition from well-known concepts to new ones.

The main purpose of developing a model of methodological support of teaching the educational process is to address the following two issues:

First of all, it is necessary to develop working programs in all disciplines, taking into account the sequence of topics and periods of teaching according to the plan (this allows the return of one subject in another subject and teaching subjects in the correct methodological sequence). they need to be shown what they need to know, what they can do, and what knowledge they have.

Secondly, science should be taught by adding new information, removing certain topics, or combining them, without breaking the operational and logical connection, depending on the specific conditions of the academic year.

Based on the above, by the logical structure of science we mean a growth plan that reflects the external and internal relationships of the sciences. Therefore, we believe that it is necessary to develop a logical-structural model of ensuring continuity in the process of vocational education.

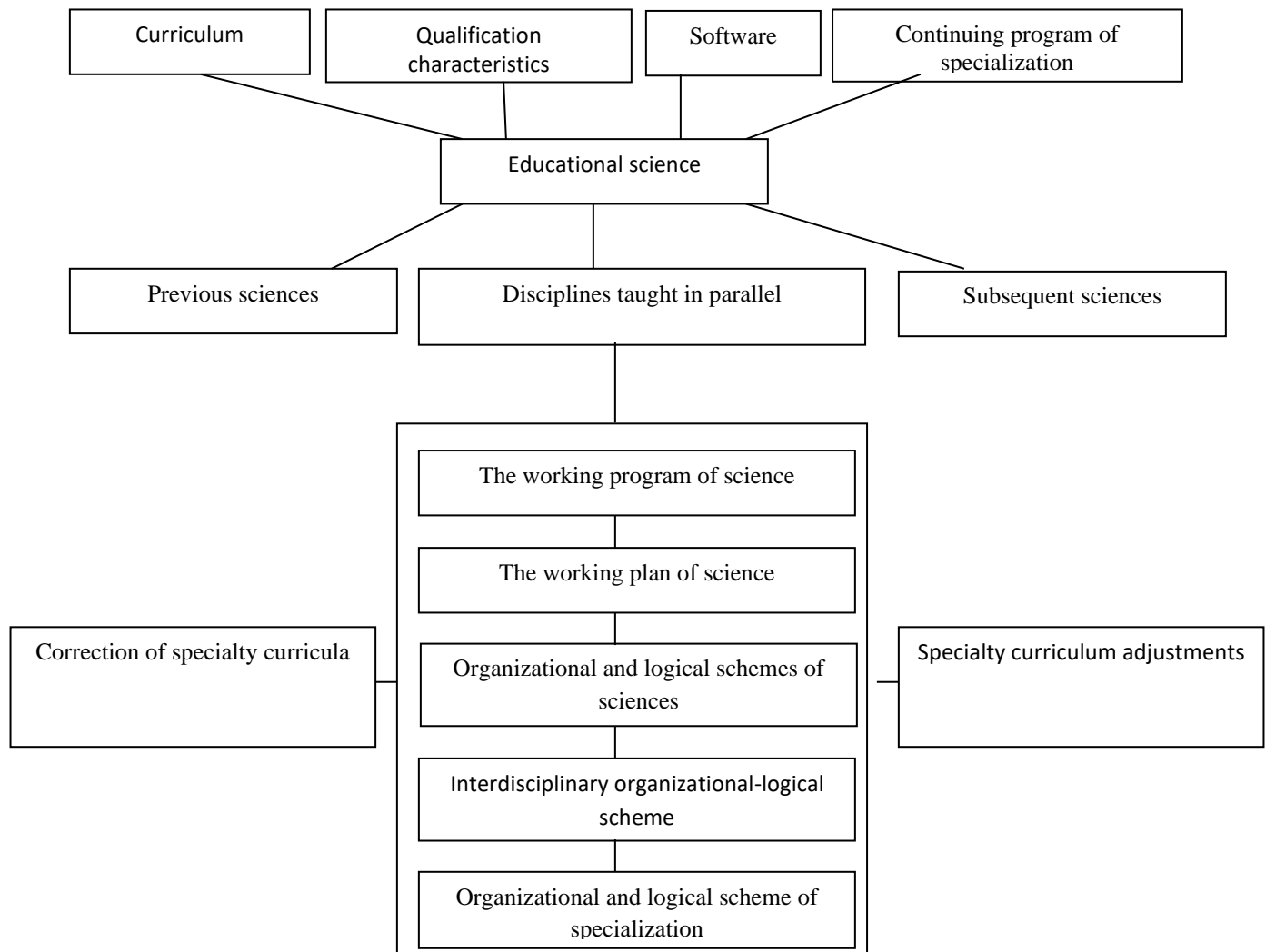
IV. The result.

Based on the analytical materials and observation of educational practices, the following logical structured model of vocational education continuity has been developed (see Figure 1).

The logical-structural model of ensuring the continuity of vocational education must meet the following requirements:

1. It is stable i.e. the learning process is stable regardless of the inevitable change of the schedule due to various reasons (say, the course duration is reduced to a few hours or the teacher gives up some cases by telling the audience new achievements of science, etc.).
2. The model of methodological support of teaching the educational process should have the features of completeness and openness, visibility, and the organizational structure should be clear and concise. This will help you interpret the basic information that needs to be conveyed correctly.
3. The model of methodological support of teaching the educational process should have internal flexibility, which allows to change the sequence of sections and topics, ie interact with:
 - Relationship with previous courses, indicating which course should be studied based on which topic;
 - Relation to subsequent courses, indicating which course may contribute to the study of the subject.
4. The model should be compact, that is, concise and understandable, even for those who are not experts in the subject.

The importance of these requirements increases when agreeing on the sequence of teaching different subjects.



1-picture. A logical-structural model of ensuring the continuity of vocational education

A logical-structural model of ensuring the continuity of vocational education is necessary for planning bodies (dean's office, department) and teachers.

Both teachers and students will need a model of methodological support for the teaching of the subject. A model of methodological support for teaching the learning process for students will be needed as a document that will allow them to work independently.

In developing the logical-structural model of ensuring the continuity of vocational education, special attention was paid to the following aspects:

- ☐ Preparation of teaching materials on the basis of chapters and topics that are clearly and sequentially analyzed;
- ☐ a list of topics and chapters of another subject required in this course;
- ☐ list of courses required for mastering the subject;

- ☐ The time required to master each subject of the subject;
- ☐ Teaching materials according to the lesson schedule and independently mastered materials;
- ☐ Methods and forms of control over the integration of chapters, topics and paragraphs of the subject.

The analysis of the logical scheme of general and special sciences shows that some topics do not have internal connections; they reflect only the material that is not related to this science. One of the reasons for this is the lack of a theoretical basis for the subject in other scientific disciplines. In such cases, it is advisable to revise the working curricula of scientific courses. To determine the local location of a science, the number of its interactions with other related sciences is estimated. Courses that are not related to the subject at all may also be included as related disciplines. In such cases, the number and composition of related disciplines are determined, and their logical scheme is corrected.

V. CONCLUSION.

The logical-structural model of ensuring the continuity of vocational education provides a high level of communication between the departments of all disciplines, regulates the structure of the discipline, ensures the completeness of interdependent disciplines, clearly highlights the need for separate disciplines and the relevance of the discipline. At the same time, its importance in the education system is enhanced by the creation of a strong, solid theoretical basis, mastering the scientific methodology, a schematic approach to pedagogical issues, expanding the pedagogical and scientific outlook and clearly defining the future development of the field.

The general structure of the specialty program can be summarized as follows: the semester of teaching on the horizontal, the cycle of science on the vertical.

At the intersection of cycles and semesters, this brief program or part of it is displayed. After that, science-based teaching hours are divided into lectures, practical and laboratory classes, indicating the object of each chapter of the course.

Such a program is reflected in the continuous training plan for the cycles of science, which facilitates the identification of interdisciplinary and intradisciplinary interdependencies.

The complete program of sciences, the logical structure of science is accepted as an application of the program structured on a specialty.

Proper program structured by specialization allows you to master different sections of different disciplines in a way that does not contradict logic. Naturally, then there is an opportunity to adjust the curriculum, which logically organizes the student's activities.

Based on the analysis of organizational logic schemes of educational disciplines, adjustments are made to the structure of disciplines and teaching sequence in the curriculum. This serves to increase the audience time, learn new educational information, assimilate knowledge, avoid interruptions in their practical application, the teaching of logically related topics and disciplines.

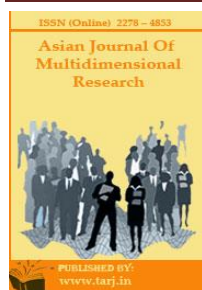
The growing interdisciplinary interdependence, such as the interdependence of mathematics, physics, and theoretical mechanics, serves to strengthen the theoretical basis in the study of practical cases in the theoretical sciences and vice versa. Therefore, a step-by-step logical connection will need to be reconsidered.

The analysis of the relationship between the model of methodological support of the teaching process and the topics of the disciplines simplifies the management of the learning process. Such an analysis also allows for the assessment of students' level of preparation, interrelated future chapters, and mastery of entire courses through tests.

The logical structure of the sciences will then be the basis for the development of complex work programs. It also allows you to create a technological map of the learning process. This card will be the basis for the correct distribution of time in the technology of the learning process.

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IN THE PAGES OF THE PAST - SOURCES OF LAW

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ABSTRACT

This article analyzes the sources of law in the ancient world and the ideas and opinions reflected in them on the basis of historical sources. For example, in ancient Egypt, Mesopotamia, China, India, there was information about the legal system and what it covers. In ancient Greece, the development of law was carried out within separate police. -slowly emerged as a result of getting rid of religious-mythological masks. Thus, law has become a set of authoritative and mandatory norms governing police life in the ancient world. In particular, the ancient period of the Uzbek legal process covered the period from the emergence and development of the state and law from its territory to the establishment of Muslim law (from the 1st millennium BC to the 7th century AD), which is recognized as the period of Turan civilization. Thus the teachings of the great Greek philosophers Aristotle and Plato on the state and law form one of the central points of their worldview. Ancient world law sources give us information about the legal sources of the ancient world, their origin, their application.

KEYWORDS: *Egypt, Mesopotamia, China, Plato, Avesto, The laws of Ur-Nammu.*

INTRODUCTION

Since the emergence of human society, the organic connections, relationships, and collaborations between people have given rise to their need for law. The legal sources of the most ancient period are radically different from the legal sources of the present period in terms of their origin, form and content. The oldest legal sources have emerged in a unique way as a result and an integral part of the socio-economic, material, spiritual, political and educational processes of that period. In particular, the ancient period of the Uzbek legal process covered the period from the emergence and development of the state and law from its territory to the establishment of Muslim law (from the 1st millennium BC to the 7th century AD), which is recognized as the period of Turan civilization.

It is noteworthy that with the emergence of the first states in the East between the two rivers and the Nile Valley, the relationship between them acquired a legal character. This is how a set of

legal norms and international law and resources that regulate the relations and relations between states and regulate their interaction came into being.

"International law is an achievement of world civilization and the most important universal value."

"The oldest interstate legal document is the treaty between the rulers of the Mesopotamian cities of Logash and Umma (3100 BC). This treaty confirmed the existing borders between the states. The parties undertook to resolve the conflict. This contractual law is written in the Sumerian language. By the middle of the 1st millennium BC, no state was considered an equal participant in international treaties. During this period, the kingdoms of Egypt, Babylon and Hed appealed to each other, "I am prosperous, you and your family, your wives and sons are prosperous" 2, which shows that they are equal in international treaties.

In the second and first millennia BC, separate centers of international life emerged in India, China, and Central Asia, and later in ancient Greece and Rome. Stands out.

In the VII-VI centuries BC in China formed a special policy called "Sanshi" 3. It was also during this period that principles such as "military march and criminal punishment" emerged in the Chinese tradition.⁴

In 1932, more than 80 documents dating back to the VII-VIII centuries were found. The fulfillment of the terms of the contract in them defined the rights and duties of the parties, such as the protection of the rights of persons in mutual legal relations.

It is known from the sources that the laws of Hammurabi and Achaemenids were influenced by the political and legal ideas of Plato and Aristotle, the Hellenistic polytheists, the Greco-Bactrian and Parthian branches of the Kushan Empire and the Turkish Khanate.⁵

As a result of studying the sacred book of Zoroastrianism, the Avesto, we all know that it was the legal source of the peoples of Central Asia in ancient times.

"In a number of the Avesta's poems, the instructions on the rules of conduct, family and marriage, crime and punishment, especially the 'ordalya' 6, are noteworthy." According to the Avesto, a person who has reached the age of 15 is considered a minor. In the Avesta, if someone does not return the debt to its owner, his action is tantamount to stealing that deposit.⁷

The importance of the Avesto was also important in the formation of the political and legal views of Plato, Aristotle, and other thinkers on Greek soil, the cradle of Western civilization.

The great Greek scholar Plato, in his political and legal views, paid great attention to the issues of state and law.

According to Plato, "a perfect state must have four main glories": 1) Wisdom; 2) Heroism; 3) Restraining norm; 4) Justice.⁸

Another Greek scholar, Aristotle, also focused on legal norms and state-building in his political legal theories and views.

"In his school, Aristotle, together with his colleagues, consistently studied the constitutions of many Greek city-states. He reportedly read 158 constitutions. Only one of them was found in Egypt in 1890 under the name of the "Athenian policy" of the Athenian constitution.

Aristotle sharply criticized the state political structures of his time, especially the Athenian democracy, the Spartan state, and the Macedonian monarchy.⁹

It is the content and value of the Athenian democracy of that period that is notable for the fact that the welfare of the people expressed its interests.

In Athens, all male citizens were able to express their views on how to govern the state, ensure its permanent peaceful life, as well as the interests of the people. They meet four times a month at the Acropolis to discuss any problems or new laws.

In his political views, Aristotle sees the main flaw of the Spartan system in his system. He said that his legislation was intended only for military bravery, and that the same courage would be useful in capturing a governor.

In the Spartan state, laws were enacted that included issues such as a clearly planned lifestyle and compassion for the defeated, which were extremely strict and perfect for all, which helped to keep the independence of the Spartan state in check. Aristotle thinks about the three rights in the political system. 1. Legislative right; 2. Administrative law; 3. Judicial law. ¹⁰

Aristotle said in his book "Politics" that a political system is based on the rule of law, that there is no political system where the rule of law does not rule, and that laws help rulers to rule and protect those who violate the law.

He also said, "Aristotle refers to a citizen as someone who has been involved in court and administration.

Citizens are the ones who perform the four acts. 1. Military executors; 2. Executors of administrative bodies; 3. Bailiffs; 4. Those who do the work of coxswains. "¹¹

Thus the teachings of the great Greek philosophers Aristotle and Plato on the state and law form one of the central points of their worldview. Ancient world law sources give us information about the legal sources of the ancient world, their origin, their application.

In the III-II millennia BC, the southern states of the Balkan Peninsula and the Aegean coast were occupied by the Greco-Achaemenid states. These processes have given rise to a number of growing or crisising states, such as the Knossos and Mycenaean kingdoms. It can be seen that the factors are intertwined. The formation of statehood in the ancient world in many respects minor - geografic defined factors.

The ancient police were a closed state in terms of its internal structure. Not only slaves, but also foreigners from other Greek cities were not allowed inside the state.

In ancient times, the law was not perfected as one of the factors strengthening civil society and its culture. In the early stages of its development, the law was similar to the legal system of the East. In ancient Greece, the development of law was carried out within separate police. -slowly emerged as a result of getting rid of religious-mythological masks. Thus, law has become a set of authoritative and mandatory norms governing police life in the ancient world.

Ancient Mesopotamian law can also be considered one of the oldest sources of law. Although the earliest records do not reflect the existing laws, the rulers wrote the laws and laid the groundwork for them. "Among the laws of this movement was the founder of the Ur dynasty. In the 3rd millennium, the laws of King Ur-Nammu, the laws of Lipid-Ishtar, the ruler of the Iina kingdom and finally, the most important legal document of Mesopotamia, a great

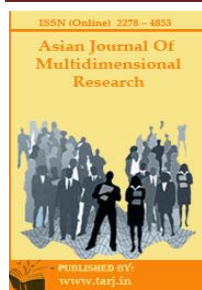
monument of ancient legal views and legal system - the largest state between the two rivers The laws of King Hammurabi of Babylon are included. ”¹² These laws served as the main document in solving all the problems of social life. So, in the past there was a unique and appropriate legal system, which is the pillar of the state, the protector of the people. That is the standard of the law of justice.

The great Greek philosopher Plato said that law is a great work. Such greatness requires strict discipline. Plato's Laws deals extensively with the issues of the ideal state, governance, law, civil society, elections, and obedience to the law, and cannot be a praiseworthy master: therefore it is better to boast of the doctrine of good obedience than the doctrine of good domination: first - the doctrine of obedience to the laws, which means obedience to the gods; then it is the right of young people to obey adults who have lived their whole lives. ”

Our main focus should be on the origin of ancient sources of law, the study of their roots, the comparison with modern sources of law with a deep understanding of their content.

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RIGHT IN ANCIENT WORLD HISTORY

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ABSTRACT

The noble man must treat everything according to duty. If a leader has good qualities, he will govern the state, based on the rights and interests of its citizens. Management means putting everyone in the right position. The noble man must treat everything according to duty. If a leader has good qualities, he will govern the state, based on the rights and interests of its citizens. With these considerations of exploitation, Sitseron envisages the establishment of equality of the state and guarantee of the rights of citizens, as justice in this society will always be found. Roman law later served as a model for the European legal system. " Ancient Roman law plays an important role in the history of human rights. Therefore, it reflects the highest level of legal development in ancient society and in the history of the ancient world in general, from the earliest and most recent periods. The Roman right is distinguished by its wide coverage of various social relations and events. One of its distinctive features is the extensive use of contract institute. The development of new forms of contracts, the provision of real and proper implementation of contractual provisions, in particular, recognition of the equality of the parties to the contract, is based on the imposition of the most severe property responsibility on the debtor, the debtor. Today, the state pays special attention to human rights. Establishment of the Authorized Person for Human Rights (Ombudsman) in our country is a confirmation of the above statement. Today, many of our citizens are exposed to various foreign elements because of poor knowledge of their rights. It is necessary to recognize that the Roman law has developed various methods of protection of the interests of participants and their relations with the use and disposal of private property.

KEYWORDS: *Exploitation, Implementation, Considerations, Contractual Provisions*

INTRODUCTION

We know that in the history of the ancient world there were different forms of law. This commitment was observed in the form of behavior. Unfortunately, in the ancient world, human rights are virtually neglected. Slaves were regarded as a simple livelihood. How can we see this? Take the ancient Chinese state. Science and culture were developing in ancient China. By the middle of the second millennium BC, in Shan In the state of slavery economy was established. At that time, blood relatives played an important role in farming. Community members worked on public land.

As a result of wars in the 12th century BC, the Shan-In state fell into the hands of the Zhou tribe. This power continued to exist until the third century BC and the slavery system was strengthened. Slaves were not only engaged in animal husbandry and farming, but also engaged in digging canals and handicrafts. At the same time, the religious mythological worldview was dominated.

As you can see, the slavery in ancient China was very painful for slaves. Let them be ashamed of their rights and not even interested. Even the non-slavery population is misunderstood by what the head of the state is saying.

Because people have lived under religious beliefs. They had the impression that they would experience the wrath of God if they were to experience the wrath of the ruler. It is a duty of rights.

This period did not continue, and there were born individuals who fought against the existing regime and protected human rights. One of them is Confucius.

Confucius criticized the social realities of his time and left the past to be the image of a perfect, perfect human being that all people should aspire to. He sought to create an ideal of a noble, noble man who, in the face of all the injustice in the world around him. The sides have begun to take the lead

According to Confucius, there must be wise men at the top of the State, who should bring up those who are subordinate with their own examples. Management means putting everyone in the right position. The noble man must treat everything according to duty. If a leader has good qualities, he will govern the state, based on the rights and interests of its citizens. This is what Mahmud Kashgari says; If a lion is headed for dogs, the dogs also feel a little like a lion, but if a dog is like a lion, the lions become a dog. "

If the head of the state is a just ruler, the representatives of the population living in it will seek to imitate the ruler. He follows her. If the ruler is selfish, the people will not be pleased with him.

In his social views, where many ideas of public administration arose in ancient Rome, Sitseron believed that the best society as a representative of the upper classes of Rome would be formed by three basic forms of state, namely, the inter-synthesis of monarchy, aristocracy and democracy. With these considerations of exploitation, Sitseron envisages the establishment of equality of the state and guarantee of the rights of citizens, as justice in this society will always be found.

There are many reasons for the development of law in ancient Rome. The high level of development of the Roman right is explained not only by theoretical reasons, but also by practical requirements for creation of the uniform legal system for the empire, which includes

many different ethnic and cultural groups. It should also be remembered that many of the Roman Stoics leaders were active statesmen with deep knowledge of the legal system (Mark Aurelius was Emperor, Seneca Senator, and Siseron worked in various government posts). Roman law later served as a model for the European legal system. " Ancient Roman law plays an important role in the history of human rights. Therefore, it reflects the highest level of legal development in ancient society and in the history of the ancient world in general, from the earliest and most recent periods. The Roman right is distinguished by its wide coverage of various social relations and events

The reason for this is that it was created by famous scientists and lawyers of the time, based on strong knowledge and experience. Priests played a significant role in the formation and development of the Roman right. Especially among them were pontifical (Roman priests). The Pontiffs regulated their legal affairs for a period of time. Although the secular foundations of the Roman right gradually increased as a result of further improvement of their social relations, it maintained a great deal of luxury and ritual, as well as initial norms. At the same time, it was characterized by demanding, even ruthless, precision. The peculiarity of the ancient Roman civil law is that property relations are primarily regulated by private property rights. Private ownership means fiber ownership over the owner's little property.

But civil is important for family land and other economic rights, and is of family nature. The civil rights of the Roman state of slavery were conservative, despite its social nature, but began to be confronted with the needs of the slave system as a result of further enhancement of foreign trade legal relations. and, in this regard, certain rights were granted to foreign citizens or persons without Roman citizenship, that is, the rights of peoples. Thus, equality was established between released persons and other citizens, albeit somewhat limited. In Ancient Greece the role of law was very high. This is why the rule of law in Greece was dominated by the rule of law.

Regarding public administration, Aristotle said: Each case must be carried out in accordance with the law of the state, so that it does not change, because there is no power other than the law that makes it lawful. It is not only customary law that is formed for a long time. Here Aristotle emphasizes that human rights should not be overstated by the laws of the state. If the state has established a law, everyone must obey it. After all, laws that violate human rights are never enacted in a democracy. Aristotle deals with three rights in the political system: 1) The law; 2) Administrative law; 3) The Right of the Court".⁷ All power in the political system is concentrated in one person, but not all.

Fewer of the above three rights. This will result in the violation of the rights. On the contrary, if the government is left behind, they will be consulted and it will be beneficial to the society. The fact that the above rights are in full compliance with the current legal functions (installation, protection, regulation) shows that the legal awareness of people was even higher than thousands of years ago.

We have seen in the ancient world the role of rights in the worldt. One of the greatest contributors to the development of law is the Babylonian ruler Hamurappi. The Law of Hamurappi", in terms of size, covers every aspect of life and surpasses all existing ones. It was the same for the rich and poor people for the Hamurappi Laws. Despite its rigidity and cruelty, Hamurappi's laws have made it possible for the society to flourish, for crimes such as looting, burglary and embezzlement are practically non-existent.

In ancient Rome the law developed more rapidly than in any other country. Mill First The fact that Rome was a republic after the end of the VII century is a clear confirmation of this. The Senate, which is now the main governing body in many countries, also appeared in ancient Rome. In the Roman Republic, all important matters in the state are considered in the senate, which is a small part of the existing system of state governance. a popular post in the Roman Republic

It was established. The tribunals represented the interests of the poorer Romans. They were elected at the meetings by an equal and secret vote of all citizens. The tribunal could have vetoed it, and in that case, the law would not have been adopted.” Moreover, the laws of the 12 tables adopted in Rome play an important role in the development of Roman law. In ancient Roman law, oral law was based. In courts, patriarchs often make unjust decisions. After lengthy discussions at the request of the plebeians (ordinary people), the senate will issue laws. They were engraved on 10 copper boards and hanged for all to see

Patricians were not satisfied with these laws because they were based on the laws of the Greek ruler Solon and protected the interests of the poor. Natural laws are abolished. Roman soldiers, mostly Plebeians, rebelled. They settle on the Holy Mountain around Rome and warn them to build a new city with little laws. Thus, patrons will have to pass new 12-point laws. The laws declare private property inviolable. Mill First Although the first Roman law of about 450 years envisages the use of oaths and other religious rituals in Act XII, it is secular and secular. The laws of Table XII are engraved on 12 copper plates and hung on a forum for all to see. Knowledge of these laws was obligatory for all. According to the law of Table XII, the role of the Roman private law in the development of the law can be explained by two cases:

This right is the first worldwide right of the Commodity Producers' Society. For this reason, all cases between the Goods Owners (buyer and seller, creditor and debtor, contract, liability, etc.) have been elaborated. Thus, the Roman right can be taken as a basis in the organization of civil law.

2) In this right the contractual issues were elaborated and regulated various contractual relations (purchase, debt, etc.). Roman civil law, which is one of the main rights of the Roman state of slavery, was characterized by the creation of broad rights and opportunities for the economy-dominated classes (slave-traders), with its individual character, that is, not limited to the institute of private property law. One of its distinctive features is the extensive use of contract institute. The development of new forms of contracts, the provision of real and proper implementation of contractual provisions, in particular, recognition of the equality of the parties to the contract, is based on the imposition of the most severe property responsibility on the debtor, the debtor. It is necessary to recognize that the Roman law has developed various methods of protection of the interests of participants and their relations with the use and disposal of private property. It is for the first time that the Romans, based on the history of the world countries, in particular the Oriental countries, for the first time fully regulated private property as well as other property rights and interests.

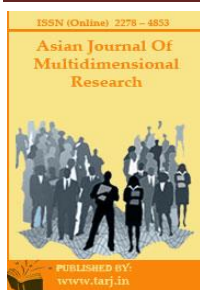
The Roman right, distinguished by its own nationality, was, in its essence, a very rich legal source, and in later stages of human development was a component of its greatest and sacred common wealth.

Mill First By the middle of the fourth century, the adoption of laws that were considered equal by the law to all citizens of Rome, regardless of their status, was an indication of the insignificance of rights in ancient history.

Today, the state pays special attention to human rights. Establishment of the Authorized Person for Human Rights (Ombudsman) in our country is a confirmation of the above statement. Today, many of our citizens are exposed to various foreign elements because of poor knowledge of their rights. Therefore, no power will be lost if we make good use of the present conditions, become mature, perfectly urbanized and raise our legal awareness.

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INFLUENCE OF DUST OF CEMENT PLANTS ON ECOLOGY

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ABSTRACT

The article provides information on the production of cement clinker as a waste dust of clinker kilns is formed, which is very toxic and poisons everything around. The use of dust from clinker kilns for environmental purposes should also be considered more promising. Also, the use of dust from clinker kilns in agriculture to protect plants from pests. The invention is intended to destroy pathogens in waste. In a quantitative chemical analysis of hair and nails in children of the main group, in comparison with the control, there is an imbalance of trace elements, an excess in the nails of aluminum, iron, calcium, cobalt, cadmium, lead, arsenic, strontium, chromium, barium, molybdenum, titanium and zinc. The use of dust from clinker kilns for environmental purposes should be considered more promising. The invention relates to ecology, and more particularly, to the treatment of soil contaminated with petroleum substances. The device includes a sludge mixing chamber and mixing means. Heating elements provide additional heat to the sludge. The predetermined Hof the sludge is controlled by pHmeters. The method provides a reduction in the content of pathogens in the waste, in accordance with existing standards, while increasing the efficiency of the process.

KEYWORDS: *Dust Clinker Kiln, Trace Element, Expanded Clay Plant.*

INTRODUCTION

In the production of cement clinker, dust from clinker kilns is generated as waste, which is very toxic and poisons everything around.

In the works by atomic emission spectrometry, a quantitative chemical analysis of all sources of water supply in areas with a developed cement industry and in two conditionally clean areas was carried out. In the city of Volsk, Saratov Region, in drinking water, in comparison with the MPC for SanPiN and WHO, contamination with chemical elements of the 1st and 2nd hazard classes - lead and chromium was revealed. Compared with the chemical composition of drinking water sources of water supply in relatively clean regions, in the selebit zones, in the cities of the cement industry, a significant excess of chemical elements of the 1st, 2nd, 3rd and 4th hazard classes was revealed. It is concluded that industrial enterprises for the production of cement are a source of water pollution.

This state of affairs, of course, has an effect on the health of the population. Thus, for example, insights analyze the microelement composition of hair and nails, as well as urine, in 37 children aged 1 to 18 years living in the region with the cement industry, and in 20 children from relatively clean regions. In a quantitative chemical analysis of hair and nails in children of the main group, in comparison with the control, there is an imbalance of trace elements, an excess in the nails of aluminum, iron, calcium, cobalt, cadmium, lead, arsenic, strontium, chromium, barium, molybdenum, titanium and zinc. In the hair there is an accumulation of cadmium, zinc, arsenic, antimony, chromium, cobalt, molybdenum, copper, vanadium, magnesium, barium, boron, bismuth. And this in turn leads to multiple diseases.

Clinker kiln dust is also a source of radioactive elements. The dispersed and chemical composition of dust from clinker kilns was studied. The distribution of heavy metals by fractions of dust particles is analyzed, the main sources of dust enrichment with heavy metals are established. The presence of radionuclides in the dust of clinker kilns has been shown.

In this regard, the use of dust from clinker kilns as fertilizer or soil reclamation is somewhat unreasonable.

Also, it is doubtful that the use of dust from clinker kilns in agriculture is used to protect plants from pests. And in the work it was shown that gas purification dust from cyclones of Zykovsky (ZKZ) and Achinsky (AKZ) expanded clay plants of the Krasnoyarsk Territory, as well as gas purification dust from electrostatic precipitators of the Krasnoyarsk cement plant (KCZ) are good adsorbents and can be used as preservative-dusting agents for preserving potatoes in winter, which is also protected by patents of the Russian Federation.

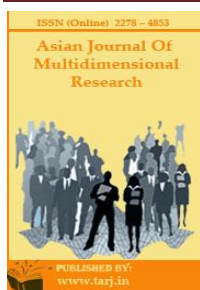
The use of dust from clinker kilns for environmental purposes should be considered more promising. The invention relates to ecology, and more particularly, to the treatment of soil contaminated with petroleum substances. The method includes applying to a dusted surface of clinker kilns, captured by electric filters from the exhaust gases of rotary kilns of cement plants, with a moisture content of not more than 2%, a layer of 1 to 5 cm and mixing with a soil layer of 5 to 10 cm

The invention is intended for the destruction of disease-causing micro organism sin the waste. Waste is mixed with dust-clinker kilns, settled, kept at pH 12 for at least 2 hours while raising the temperature of the mixture to a predetermined level, in a closed chamber, for a predetermined period of time. The device includes a sludge mixing chamber and mixing means. Heating

elements provide additional heat to the sludge. The predetermined Hof the sludge is controlled by pHmeters. This method provides a reduction in the content of pathogens in the waste, in accordance with existing standards, while increasing the efficiency of the process.

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RECYCLING OF ZINC OXIDE SCAVENGERS

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ABSTRACT

*Oxin-zinc absorbers are designed for fine purification of natural gas from sulfur compounds. Spent absorbers are replaced with fresh ones after sulfur saturation. For the simultaneous loading of desulfurization apparatus in the chemical industry, hundreds of tons of zinc oxide absorbers will be required. Absorbers unloaded from the apparatus are waste products. At the end of 2000, more than 1,000 tons of spent absorber had accumulated at domestic enterprises of the chemical industry. **Purpose:** To develop a technology for the extraction of zinc oxide from spent absorbers, to determine the conditions of dissolution, precipitation, heat treatment of the precipitate, consumption rates of nitric acid, carbon ammonium salt and product yield. Consider the use of zinc oxide from spent scavengers. **Methodology:** Nitric acid dissolution, purification of the solution from insoluble, precipitation of basic zinc carbonate, drying and calcination. PH control, analyzes of the composition of the raw material and the finished product, solutions by volume and titrometric methods and spectrophotometrically. **Scientific novelty:** The possibility of extracting zinc oxide from spent absorbers by the chemical-thermal method with the production of natural active zinc oxide for use in the manufacture of paints and fresh absorbers has been established. **Received data:** Engineering calculations were performed with the initial data for the design of a pilot plant. Pilot tests have confirmed the performance of the developed*

technology. The obtained zinc oxide in terms of quality, specific surface area and particle size meets the requirements for active zinc oxides for the production of effective absorbers.

KEYWORDS: Zinc Oxide, Nitric Acid, Ammonium Carbonate, Dissolution, Precipitation, Drying, Calcination.

Features:

- obtained zinc oxide with a developed specific surface;
 - Pilot tests of the developed technology were carried out;
 - An absorber based on zinc oxide obtained from waste absorbers meets the technical requirements.
-

INTRODUCTION:

Zinc oxide has a wide application in industry, medicine in everyday life.

It is used as a filler and dye for rubber, polymers, paper, a vulcanizing agent for some types of rubbers. A component of methanol synthesis catalysts, low-temperature conversion of carbon monoxide (II), reduction of nitrogen oxides in the composition of exhaust gases, adsorbents. Used in the manufacture of glass and paints, electrical cables, semiconductors, etc.

Zinc oxide is formed mainly due to the oxidation or sublimation of zinc metal. This is a white powder, it turns yellow under the influence of temperature. Upon reaching 18000C, sublimation occurs.

The main source of zinc is sulfide, copper-lead-zinc, copper-zinc and lead-zinc ores.

Of all zinc produced in the world, 27-29% is obtained by processing scrap, as well as waste generated during galvanizing [1].

World zinc production in 2019 (forecast) was 13.65 million tons.

In Uzbekistan, the main zinc producer is the zinc plant of Almalyk MMC. Processes zinc concentrate and industrial products containing zinc.

One of the wastes containing zinc oxide is an absorber of sulfur compounds.

In the process of producing synthesis gas by conversion of natural gas, catalysts containing nickel, iron, copper, zinc, chromium and promoters are used.

All of these catalysts are irreversibly poisoned if sulfur and its compounds are contained in natural gas. (RSH, SO_x, H₂S).

Therefore, in the production of synthesis gas, sulfur compounds are hydrogenated to hydrogen sulfide, and hydrogen sulfide is absorbed on zinc oxide absorbers.

Catalyst Industry Produces Zinc Oxide Absorbents ГИАП-10, ГИАП-10-2, ГИАП-34, G-7-2.

All of the listed absorbers contain zinc oxide, the service life of which is not more than 2 years or are replaced with an increase in weight by 14-18%.

Objective: To develop a technology for the production of zinc oxide from spent absorbers suitable for the preparation of new batches of zinc oxide absorbers.

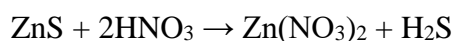
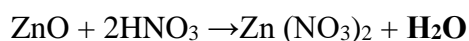
Methods and materials: Nitric acid dissolution, precipitation with a solution of carbonate salt, washing from traces of Na⁺ ion, drying and calcination by a stepwise increase in temperature were used in the work.

Results and discussion:

In laboratory conditions, zinc oxide was extracted from the spent GIAP-10 catalyst by dissolving it in nitric acid.

At stage I, the extraction was carried out on the installation, which consisted of a flask (1), a used refrigerator (2), an electric stove (3). In the course of experimental work, the following were worked out: the optimal concentration of nitric acid, the temperature of the course of dissolution, and the duration of dissolution.

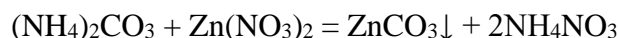
In the process of dissolving the spent GIAP-10 catalyst in nitric acid, the following are processed: zinc nitrate, an insoluble black precipitate, a small amount of H₂S and nitrogen oxides are released depending on the acid concentration.



Nitric acid for dissolution was used at a concentration of 56% and 30%. The spent GIAP-10 catalyst was dissolved in ground and non-ground form, and the dissolution time was determined. The resulting zinc nitrate solution was filtered off from an insoluble precipitate. The content of the basic substance of zinc nitrate was determined in the solution, and the composition of the insoluble precipitate was also determined.

At the second stage of the experimental work, the optimal conditions for the deposition of zinc nitrate by ammonium carbonate were determined.

The precipitation reaction is as follows:

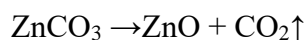


Precipitation was carried out with a saturated solution of ammonium carbonate with heating to 80 °C and without heating. During the deposition, a white precipitate of zinc carbonate formed.

In stage III, to obtain zinc oxide, the following operations were performed sequentially:

- a) Washing zinc carbonate from ammonium nitrate and zinc sulfate;
- b) Drying zinc carbonate at 100 °C;
- c) Calcination of zinc carbonate at 500 °C.

During calcination, zinc carbonate was thermally decomposed to ZnO.



The results of ZnO preparation are tabulated. No. 2. At the IV stage, several batches of oil paint from zinc white were prepared from the obtained zinc oxide. The composition of zinc white paint included: zinc white or ZnO, chalk, drying oil and a small amount of ultramarine. The quality of the paint was determined by hiding power, according to GOST 8784-75. The opacity results are summarized in table No. 3.

The analysis results (see table No. 3) showed that the most optimal concentration for dissolving the spent GIAP-10 catalyst is 30% nitric acid, although the dissolution is 2 times slower in time, but at the same time they are released in a small amount of nitrogen oxides than with 56% nitric acid.

The content of zinc ions in a solution of zinc nitrate for weighing from 21.88 to 22.7 grams. During dissolution, sulfide sulfur was isolated in the form of H₂S in an insignificant amount and passed into the solution in the form of zinc sulfate, the content of zinc sulfate ions in the studied solutions ranged from 0.91 to 10.17 grams. As a result of complete dissolution, a black zinc nitrate solution was obtained.

After filtering zinc nitrate from an insoluble precipitate, precipitation was carried out with a saturated solution of ammonium carbonate. The insoluble precipitate contained: graphite 52.8%, zinc sulfate 30.4% and zinc sulfide 6.8%, the weight of the precipitate was 3.2%.

Zinc nitrate was precipitated by ammonium carbonate in two ways.

- 1) with heating of zinc nitrate and a precipitator of ammonium carbonate to 80 ° C;
- 2) Without heating.

Precipitation was carried out as follows: zinc precipitated in small portions and zinc nitrate with continuous stirring. A white precipitate of zinc carbonate precipitated.

When heated, larger crystals form and precipitation is more complete.

It should be noted the disadvantage of the precipitator of ammonium carbonate itself. This is not a stable compound, which during long-term storage easily decomposes into ammonia and carbon dioxide. Precipitation must be carried out with freshly prepared solutions. The end of the deposition was determined by pH, its value was 8-10.

In the filtrates, after precipitation during heating, zinc carbonate was contained less than without heating and amounted to 150-170 mg / l when heated, and almost 2 times more than 320-380 mg / l without heating. The precipitate was washed by repeated decantation with hot water, thoroughly washed from traces of ammonium nitrate and zinc sulfate. 1 volume was spent on washing 8-10 volumes of hot water.

The white precipitate of zinc carbonate was dried at 100 ° C for 8 hours, the color changed during drying, then calcined in a muffle furnace for 6 hours. After calcination, the color of zinc oxide became pale yellow. The content of the basic substance ZnO was 95.0-97.0%.

In further work, the extraction of zinc oxide from the spent catalyst GIAP-10 with nitric acid, the dissolution was carried out with heating to 85-95 ° C. Zinc oxide was produced up to 5.0 kg. Because. that the spent catalyst was not sorted, when grinding in mills, due to the presence of iron oxide, which probably got when loading from the equipment, zinc oxide acquired a dirty yellow color, which negatively affected the preparation of zinc white oil paint in the future.

To obtain 1.0 kg of high-quality zinc oxide, 1.5 kg of pre-processed spent catalyst GIAP-10 from mechanical impurities and pieces of iron were taken. Conducted sequentially all of the above operations. Zinc oxide was obtained with a basic substance content of 97.0%. After calcination, zinc oxide turned a light yellow tint. Based on zinc oxide, 3 varieties of zinc white oil paint were obtained. The composition of the paints included: zinc white, chalk, drying oil and ultramarine

(see table. No. 3). Ultramarine is added to impart a pure white color to zinc whitewash following yellowness.

To obtain high-quality paint, an important indicator is the fine grinding of components added to drying oil, the quality of drying oil itself.

The quality of oil paints is determined by the opacity according to GOST 8784-75.

For zinc white oil paint, a spreading rate of up to 140 g / m² is allowed. All 3 options (see table. No. 3) are on this indicator. But the second turned out to be the most successful option, since the zinc whitewash turned ivory, the paint lays well on a 1-layer glass plate. Hiding power was 51.87; 57.92 g / m².

CONCLUSIONS

In laboratory conditions, work was carried out to obtain zinc oxide from the spent catalyst GIAP - 10. Based on the work carried out it was established:

1. Zinc oxide from the spent catalyst GIAP - 10 can be extracted by dissolving it in nitric acid;
2. The optimal dissolution conditions were selected:
 - a) The concentration of nitric acid is 30%;
 - b) Temperature - 85 - 95 ° C;
 - c) Extraction time - 5 hours.
3. The conditions for the deposition of zinc carbonate from a nitric acid solution of zinc with a saturated solution of ammonium carbonate are determined:
 - a) Deposition temperature of 80 ° C;
 - b) Complete precipitation is achieved at pH - 8.
4. The conditions for drying and calcination are determined:
 - a) Drying temperature - 100 ° C, pumping - 500 ° C;
 - b) Drying time - 8 hours, calcining - 16 hours.
5. The degree of extraction of zinc oxide from the spent HIAP catalyst is 10 at least 72%, which is associated with the formation of ZnSO₄ in solution and its transition to the filtrate.
6. Based on the obtained zinc oxide, oil paints of zinc white are prepared, the quality of the paint meets the requirements of GOST-8784-75.

THE RESULTS OF THE DISSOLUTION OF GIAP-10 (NEG.) IN HNO₃

№ pos	Name samples	Canopy of catalyst is torus, g	Concentration, HNO ₃ ,%	Temperature dissolution, ° C	The time of complete dissolution, h.	Solution content Zn(NO ₃) ₂		Structure insoluble draft	Note
						Zn ²⁺ , g/l	SO ₄ ²⁻ , g/l		

1	Chopped.	50	30	80-95	5	63,5	3,7	Графит-52,8%	H ₂ S stands out
2	Unfinished.	50	30	-//-	5,5	72,8	4,5	ZnSO ₄ -30,4	and is negligible.
3		50	56	80-95	2,5	70,3	2,9	ZnS-6,8%	qty NO ₂
4	Chopped.	50	56	-//-	3	99,8	44,1		H ₂ S stands out and a large number NO ₂
	Unfinished.								

Zinc Oxide Results**TABLE № 2**

№ pos	Precipitation *				Time h		ZnO content in the product, %	Note
	Volume of solution Zn(NO ₃) 2, MJl	Precipitant volume (NH ₄) ₂ CO ₃ ,MJl	The content in the filtrate, mg / l		drying ZnCO 3	calcination ZnCO ₃		
			When heate d to 800C	withou t heatin g				
1	260	650	150	340	8	16	97	The end of the deposit ion was determ ined by the pH of the mediu m. pH adjuste d to 8- 10
2	230	575	156	380	8	16	96,5	
3	230	580	165	320	8	16	95	
4	154	385	170	334	8	16	95,8	

* - опытным путем установлено полное осаждение наступает при соотношении V раствора к V осадителя 1:2,5.

Determination of the quality of oil paint zinc white

TABLE #2

№ pos	Options	Content ZnO, %	The degree of grinding mesh	Paint composition		Hiding power gram/m ²
				gram	%	
		n/m 99,5	n/m 0,063			n/6 140
1	I	95,5	0,063	ZnO-350 a piece of chalk - 100 Drying oil - 1000	24 7 69	46,08 45,95
2	II	97	0,063	ZnO-315 a piece of chalk - 105 Ultramarine - 0,5 Drying oil - 800	25,81 8,6 0,04 65,55	51,87 57,92
3	III	96,5	0,063	ZnO-240 a piece of chalk - 60 Ultramarine – 1 Drying oil - 700	230,8 5,99 0,09 79,93	53,24 49,95
4	IV	95,4	0,063	ZnO-50 a piece of chalk - 15 Drying oil - 130	25,64 7,69 66,66	47,31 55,40
5	V	95,5	0,063	ZnO-30 a piece of chalk - 10 Drying oil - 80	25 8,33 66,66	58,74 56,18

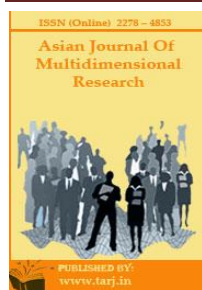
IV variant paint obtained immediately after calcination.

V variant paint obtained after calcination, dissolution of the deposition of drying and calcination, to obtain ZnO.

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STRUCTURE OF CHILDREN'S CHILDREN OF SOME FAMILIES OF THE GENUS ACANTHOPHYLLUM

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ABSTRACT

The article discusses the structure of the bract of some representatives of the genus Acanthophyllum. Some types of Oligosperma section, sec. Turbinaria, sec. Pleiosperma, sec. Maciostegia The formation of adaptive characters in leaf organs and their morphological and anatomical structure of this plant under the influence and control of environmental conditions was studied. It was shown that representatives of the genus Acanthophyllum noticeably differ among themselves in terms of the anatomical and morphological structure of this part of the flower; therefore, none of the signs of its structure can characterize the genus Acanthophyllum as a whole. However, species and sections within the genus differ in one way or another.

KEYWORDS: *Acanthophyllum, Genus, Section, Species, Subspecies, Bract, Simple and Glandular Hairs, Epidermal Cells, Epidermis, Stomatal Apparatus, Stomata.*

INTRODUCTION

The Central Asian region is considered the only one in the world where species of this family are found. Caryophyllaceae with very high saponin content, in connection with which, recently, a number of researchers have paid great attention to the study of morphological, biological features, as well as systematic characters of the main saponin-bearing representatives of this family.

There is enough information in the literature on the biology of flowering and development, on

the ways of introduction into the culture, on the distribution and germination of seeds in certain species of *Gypsophila*, *Acanthophyllum* and *Allochrysa* [1,2]. For the conditions of Almaty, information on the developmental biology of this species is given in the works of S.B.Bespaev [3], L.I. Tomilov [4], Hammer K. [5]. The genus *Acanthophyllum* was first described by S.A. Meueg in 1831 with a single species - *A.mucronatum* S.A. Meu. In 1867, when about 20 species of this genus were already described, E. Boissier developed the genus system, dividing it into 5 sections: *Macrodonata*, *Euacanthophylla*, *Macrostegia*, *Turbinaria* and *Pleiosperma*, based on the location of flowers on the plant in inflorescences (single, paired, axillary or apical, in capitate inflorescences, etc.), calyx structure, venation, form of bracts, number of ovules in ovary, etc.

As for the sections of the genus *Acanthophyllum*, it turned out that, on the basis of the studied species, they cannot be distinguished by the anatomical and morphological characteristics of the leaf, but they can be characterized by the characteristics of a flower: *Oligosperma* differs from the other two sections by the absence of glandular hairs on the calyx and relatively wide (1- 3 mm) corolla petals. But according to other indicators, this section was not homogeneous, and 2 groups of species more similar in terms of the studied characteristics were outlined in it: *A.pungens* - *A.albidum* - *A.leucanthum* and *A.elatius* - *A.borsczowii* - *A.glandulosum* (sec. *Pleiosperma*) stands out among representatives of other sections by a large number of simple and glandular hairs on the outer epidermis of the calyx. *A.korolkovii* and *A.serawschanicum* from cec.*Macrostegia* differ greatly in the majority of leaf and flower characters, and for a number of characters the first of them is more inclined to the *Oligosperma* section, in particular to its species *A.elatius*. Characteristics of two species of the genus *Allochrysa* and 11th genus *Acanthophyllum*, including eight of the anatomy and morphology of the leaf and flower, and six of the seed showed that these taxa are clearly distinguished by a number of characters.

T.A. Madumarov and A.S. Dariyev [6] studied the anatomical structure of the leaf and flower of the genus *Kughitangia* Ovcz. in connection with its systematic position. Anatomical structure of the seed (embryo and spermoderm), leaf, calyx, and bract 20 species of the genus *Acanthophyllum*, two of the genus *Allochrysa* and one of the genus *Drypis* were the subject of Ph.D. dissertation by T. A. Madumarov [7]. Based on the obtained sperm and leaf organ data, the author delimits the studied taxa. The species *A.albidum*, *A.brevibracteatum*, *A.aculeatum*, *A.pungens*, *A.krascheninnikovii*, *A.stenostegium*, he considers as independent. Given the extreme similarity between themselves, *A.coloratum* and *A.korolkovii*, he suggests including them in the subgenus *A.Platyphyllum* Zak. etMuss. p.*Acanthophyllum*.

According to the literature, the signs of the morphological and anatomical structure of the leaf organs allow us to distinguish between species, less often and genera. They come to the same conclusion.

Z.T. Artyushenko [8], studying the leaf organs of the representatives of the genus *Grinum*, E.V. Dorovskikh, P.G. Gorova [9] - when analyzing the signs of the epidermal leaf of the Far Eastern species of *Buplerum*.

Resume: The article discusses the structure of the bract of some representatives of the genus *Acanthophyllum*. Some types of *Oligosperma* section, sec. *Turbinaria*, sec. *Pleiosperma*, sec. *Macrostegia* The formation of adaptive characters in leaf organs and their morphological and anatomical structure of this plant under the influence and control of environmental conditions was studied. It was shown that representatives of the genus *Acanthophyllum* noticeably differ among themselves in terms of the anatomical and morphological structure of this part of the

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Length mm	Extremely long	More than 14
	Very long	12-14
	Long	11-12
	Moderately long	8-10
	Short	6-8
	Very short	4-6
	Extremely short	0,3-3
Thickness, microns	Extremely fat	339-390
	Very thick	295-338
	Fat	251-294
	Moderately thick	207-250
Fineness, microns	Thin	163-206
	Moderately thin	118-163
	Very thin	94-117
	Extremely thin	50-93
Pubescence, number of hairs per 1 mm ²	Exceptionally thick	More than 300
	Extremely thick	251-300
	Very thick	201-250
	Thick	151-200
	Moderately thick	101-150
	Rare	50-100
	Very rare	Up to 50
The number of epidermal cells per 1 mm ²	Extremely small cell	1347-1467
	Very small cell	1226-1346
	Small cell	1105-1225
	Moderately small cell	984-1104
	Moderately large cell	864-983
	Large cell	742-862
	Very large cell	621-741
	Extremely large cell	500-620
	Lots of	301-358
	A lot of	251-500
	Moderately a lot	200-250
	Few	151-200
	Very little	101-150
	Extremely small	50-100

In plant taxonomy, the structure and distribution of epidermal outgrowths have important diagnostic value [14]. If the density of pubescence can significantly vary depending on the phase of development and the environmental conditions of the places of growth, then the shape of the

hairs is genetically determined and less susceptible to environmental influences and therefore is a fairly reliable taxonomic trait [15].

Bracts of all representatives of the genus *Acanthophyllum* are relatively densely pubescent with simple single-beam, consisting of 1-3 cells, trichomes 97-112 microns in length. Of the 13 species studied sec. *Oligosperma* 11 is covered only with simple hairs, and only two species, *A. lilacinum* and *A. pulchrum*, are simple and glandular. Species of other sections are pubescent, like the last two species, by hairs of both types. In sec *Oligosperma* two species - *A. adenophorum* and *A. krascheninnikovii* - have the largest number of hairs - 130 per 1 mm². *A. albidum*, *A. brevibracteatum*, *A. aculeatum* have relatively rare hairs - 100 per mm². In the remaining species, their number per 1 mm² does not exceed 80. Among the representatives of this section, *A. albidum* and *A. krascheninnikovii* stand out as the longest (130 - 192 µm), and *A. adenophorum* are relatively long (152-163 µm). *A. aculeatum*, *A. pulchrum*, *A. brevibracteatum* and *A. lilacinum*. In other species, their length is in the range 112-114 microns. It should be noted here that *A. albidum*, *A. aculeatum*, and *A. brevibracteatum*, considered by a number of researchers [16] as synonyms of the *A. pungens* species, as well as *A. stenostegium*, the species *A. krascheninnikovii*, differ markedly from each other in the basic structure of the bracts. For example, in *A. aculeatum* it reaches 110 microns. *A. stenostegium* differs from *A. krascheninnikovii* in less than the last, in the number of epidermal cells per 1 mm² of area, a greater thickness of the cross section of the bracts, almost half as many simple hairs (80 against 130 mm² on the outer and 80 against 125 on internal structure of the bract). All this speaks in favor of the opinion of A.I. Vedensky [17] on the independence of these species.

Views from sec. *Turbinaria* are pubescent on both sides, simple in admixture with stalk-capitate and glandular hairs from medium density (60-80 per 1 mm²) to thick (100-140). Bracts sec. *Pleiosperma* of the inner side are pubescent with thick (152-180 per mm²) medium-sized simple (50-60) stalk-capitate glandular hairs in the mixture, with the same surface of moderate trichomes of moderate density (100-150 per 1 mm²) Species sec. *Macrostegia* on the inside is pubescent with moderately dense (100 150) simple and glandular, while on the outside, *macrostegia* is pubescent with thick (156-200) simple and moderately dense (100-140) glandular hairs. Bracts of *K. popovii* are pubescent on top with simple sparse (25-30 per 1 mm²) mixed with stalk-capitate (35-45 per 1 mm²) glandular hairs. *K. knorringiana* they are naked, although in the "Flora of the USSR" [18] there is a pubescence of glandular hairs.

In the genus *Allochrusa*, bracts in *A. paniculata* are pubescent with simple hairs, while in *A. gypsophiloides* they are completely hairless. Bracts of the genus *Drypis* are devoid of any trichomes.

All studied taxa are characterized by amphistomatism of the bracts, however, stomata are absent on the lower half of the inner surface in contact with the calyx. The stomatal apparatus is mainly anomocytic (the stomata are surrounded by four side cells), less commonly, diacytic and anisocytic. Stomata of medium size — 32–40 µm long and 20–30 µm wide — are located below the outer wall of the epidermal cells, which is typical of xerophytes.

Within the genus *Acanthophyllum*, the largest number of stomata is sec. *Turbinaria* sec. (Per 1 mm² of the outer epidermis 360 and internal - 280), the smallest (110-189 per mm² on the outer and 100-150 - on the inner epidermis) are species of sec. *Pleiosperma*. Views sec. *Macrostegia* on this indicator occupy an intermediate position between the two previous sections (205-220 per 1 mm² on the outer and 140-200 on the inner epidermis). In sec *Oligosperma* with the smallest

number (80 per 1 mm²) of stomata is characterized only by *A. pulchrum*, the average number (105-130) - *A. lilacinum*, *A. adenophorum*, *A. brevibracteatum*, *A. leiostegium*, *A. cyrtostegium*, the largest number (200) - *A. krascheninnikovii*, in other species of stomata section per 1 mm² does not exceed 160-180 on the outer and 140-180 on the inner epidermis. Large stomata (40 microns long, 25-30 microns wide) are inherent to *A. brevibracteatum* and *A. aculeatum* species, while others are of medium size (32-38 microns long, 22-30 microns wide). Sec *Turbinaria* is distinguished in the genus by the smallest (length 24 µm, width 18 µm) stomata, *Pleiosperma* - relatively large (length 37-45 µm, width 23-25 µm). Types of seconds. Macrosteigia on this basis are between seconds. *Oligosperma* and *Pleiosperma*, but still closer to the latter. The smallest stomata (40-70 per 1 mm²) are characteristic of the species *p. Kughitangia*

The subspecies and ecological forms of the monotypic genus *Drypis* differ slightly in the number of stomata, especially the big difference between the subspecies and the relatively small difference between the ecoforms. For example, in *D. spinosassp-spinosa* on the outer epidermis, the number of stomata is 150-165 per mm², in *D. spinosassp-jacquiniiana*, 120 is larger with the size of the first subspecies. On the inner epidermis, the number of stomata is the same in both subspecies; however, they differ markedly in size. All this testifies on the one hand to their differences between them. According to the size and number of epidermal cells, the mumps of the studied genera are generally very large and extremely large (600–980 per 1 mm² on the outer and 500–898 on the inner epidermis) with the exception of sec. *Turbinaria*, whose bracts are extremely small-celled (an average of 2370 per 1 mm² on the outer and 2100 on the inner epidermis), which puts it in a separate position in the genus *Acanthophyllum*.

It should be noted that the largest cell epidermis is characteristic of the lower part of the inner surface of the bracts (400-680 per 1 mm²). In representatives of *Acanthophyllum*, this zone forms a tube and therefore adjoins, i.e., is pressed to the calyx and has no stomata, while in the genera *Allochrusa* and *Drypis*, bracts immediately bend outward and do not form tubes.

Sec *Oligosperma* of the genus *Acanthophyllum* has a large-cell (740-890 per 1 mm²) outer epidermis, a very large-cell (660-695) and large-cell (716-798) - internal. In the relatively large-cell section (740-760 on the outer and 650-700 on the inner surface), *A. albidum*, *A. brevibracteatum*, *A. borsczowii*, *A. leucanthum* and *A. cyrtostegium* are distinguished by the epidermis. Other species have 850-890 per 1 mm² on the outer and 730-820 on the inner epidermis. Sec *Pleiosperma* is characterized by very large-cell (600-709) external and internal, *Macrosteigia* - moderately large-cell (915-980) external and large-cell and moderately large-cell (800-898) - internal epidermis. In the genus *Drypis*, in the subspecies *jaquiniana*, the bract epidermis is extremely large-celled (550 on the inner and 600 on the outer), while in *Ssp. spinosa*, the outer is large-celled (765-850), the inner is extremely large-celled and very large-celled (500-700).

According to the thickness of the plate of the bract, there are more differences within the genus than between the genera, which does not allow us to characterize the studied genera as a whole.

The bract plate of the species *Oligosperma* is thick to very thick (251-320). Among species of the same section, only in *A. krascheninnikovii* it is moderately thick (235 µm) in thickness; in *A. pungens*, *A. lilacinum*, *A. albidum*, *A. adenophorum*, *A. elatius* - very thick (300-320 µm) in others it is thick (260-295 microns).

Types of sections *Turbinaria* and *Pleiosperma* by plate thickness chickpeas are similar and according to this criterion belong to the group of “extremely thick” - their thickness reaches

respectively 350; 365-390 microns, which indicates similar environmental conditions of their habitat. Representatives of cec. *Macrostegia* are characterized by moderately thin plates - 134-150 microns. In thickness, all three studied species of this section, as well as *Pleiosperma* species, are close to each other. By thickness 250-300 μm , the bracts of *p. Kughitangia* are similar to *A. albidum* and *A. aculeatum*.

The genus *Allochrusa* differs from the other two genera in extremely thin (70-80 microns) bract laminae.

Subspecies and ecoforms of the *Drypis* genus, as well as species of the *Macrostegia* section of the *Acanthophyllum* genus, have moderately thin bracts (116-150 μm). Both subspecies vary well in their thickness. In *D. spinosa* Ssp. *jacquiniana*, it does not exceed 117 μm , in *D. spinosasp. spinosa* - from 130 to 150 μm , depending on the place of geographical distribution. The difference between ecoforms in the thickness of this organ, as well as in the number of cells, is greater than between some species of the genus *Acanthophyllum*, which indicates their sufficient remoteness from each other according to the characteristics of the bract.

The genus *Allochrusa* is characterized by a 2-3-layer isopalisade mesophyll. Otherwise, the structure of this tissue is the same as that of the previous genus.

The genus *Drypis* is characterized by bracts, the central vein of which is weaker than the genus *Acanthophyllum*, while in the genus *Allochrusa* it has almost no rib. The central vein is immersed in the thickness of the mesophyll; it differs sharply from the previous two genera by an undifferentiated (palisade and spongy parenchyma) 2-3-layer mesophyll. To a certain extent, this indicates a relatively lesser mobility of this part of the flower of the genus *Drypis* than the other two genera.

Based on the data we obtained, we came to the following conclusions: For the studied *Acanthophyllum*, *Allochrusa*, and *Drypis*, amphistomatism, anomocytic, considered primitive in the family *Cariophyllaceae*, less often the diacytic type of the stomatal apparatus, outer cell walls with a cuticular layer, and strongly protruding mid-vein sklesrenchymal margin from the abaxial plate are common.

The Mediterranean genus *Drypis* is characterized by wide-lanceolate (length 9-14 mm, width 4-7 mm), very thin (116-150 microns) bracts, with 3 on each side of the tooth-like lobes, undifferentiated 3-layer mesophyll with 3- a beam-conducting system and an extremely large-cell and very large-cell epidermis without trichomes. The *jacquiniana* subspecies differs from the spinose subspecies by the largest cell epidermis and large oysters. All signs of bracts of this genus speak in favor of a relatively lesser mobility of this organ than in the other two genera.

The genus *Allochrusa* is distinguished from others by reduced awl-shaped (length 0.5-1 mm, width 0.3-0.5 mm) and extremely thin (70-80 microns), pubescent only unicellular simple hairs, single-bundle and single-lacernal knot, bracts with three-layer isopalisade mesophyll, very large-cell (650-750 per 1 mm^2) epidermis.

Representatives of the genus *Acanthophyllum* noticeably differ in terms of the anatomical and morphological structure of this part of the flower and, therefore, none of the signs of its structure can characterize the genus *Acanthophyllum* as a whole. However, species and sections within the genus differ in one or another of the traits. For example, views sec. *Oligosperma* are combined by a bract lamina from moderately thick to very thick (236-320), with small-cell

(740-890 μm) epidermis, rare (70-100 per 1 mm^2), less often moderately thick drooping (110-130 per 1 mm^2), simple hairs and lack of glandular (with the exception of *A. lilacinum* and *A. pulchrum*, which have one). *A. albidum* differs from *A. pungens* in the number of epidermal cells of the outer epidermis (792 versus 880 per 1 mm^2), simple hairs on the inner epidermis (60 versus 120) and their length (153 μm versus 108) from two other species - *A. brevibracteatum* and *A. aculeatum*, considered as *A. albidum*, ego (*A. pungens*) si in private. It differs in the plate thickness (320 μm versus 260, 257, respectively), the number of epidermal cells on the axial side (700 versus 680, 800), and the number of stomata (146 versus 110, 110 per 1 mm^2). *A. pulchrum*, like *A. lilacinum*, occupies a separate position by the presence of glandular hairs on both sides of the bract.

A. krasheninnikovii, considered synonymous with *A. stenostegium*, differs markedly in the latter by the thickness of the plate (236 against 290 μm), the number of epidermal cells (900 against 700 μm), simple hairs (130 against 30-40 per 1 mm^2) and the absence of glandular hairs.

Other sections of the genus differ from *cec. Oligosperma* by the presence of bract on both sides and, along with simple, glandular hairs.

Sec. *Turbinaria* has an extremely thick (351 μm) plate and the smallest (2100-2370 per 1 mm^2) epidermis, small and numerous stomata (280-350), not only among representatives of all *Acanthophyllum* genera, but also of other genera.

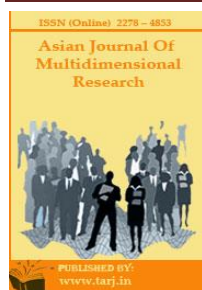
Sec. *Pleiosperma* has the thickest bracts (365-390 μm) among the studied taxa, a very and moderately large-cell epidermis (700-709 per 1 mm^2), the largest number (150-180 per 1 mm^2) of simple hairs.

Sec. *Macrostegia* occupies a separate position from other sections with the thinnest (134-149 microns) bracts, large and moderately large (800-980 per 1 mm^2) epidermis and numerous (205-220) stomata, the thickest (165-200) pubescence hairs on the inside.

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FOR PRODUCING CALCIUM NITRITE FROM LIMESTONE AND STUDYING ACIDITY IN THE $\text{Ca}(\text{NO}_3)_2$ - HNO_3 - H_2O SYSTEM

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ABSTRACT

The viscosity and density of nitric acid extracts obtained by treating Dzhamansay limestone with nitric acid have not been studied and the relevant data are not available in the literature. The study of the viscosity and density of the hoods is caused not only by the above considerations, but also by the fact that in the design of some production apparatus and plants there is often a need for knowledge of the viscosity and density of liquid flows. Thus, the decomposition process of Dzhamansay limestone with nitric acid was studied depending on the size of the limestone pieces, concentration, nitric acid rate and duration of the process. The optimal decomposition conditions are determined. The possibility of suppressing foam by preliminary decarbonization of high-carbonate waste by circulating pulp is shown. The rheological characteristics of solutions and pulps formed at various stages of the process are determined.

KEYWORDS: Nutsche Filter, Nitric Acid Extract, Figurative Points, Four-Water Calcium Nitrate, Isothermal Method, Filterability, Vacuum Filter, Viscosity, Stoichiometry.

INTRODUCTION

Processing Jamansai limestone with 58-65% nitric acid yields a nitric acid extract, which is a complex complex with many dissolved components. It can be assumed that the density and viscosity of liquids play an important role [1].

The viscosity and density of nitric acid extracts obtained by treating Dzhamansay limestone with nitric acid have not been studied and the relevant data are not available in the literature. The

study of the viscosity and density of the hoods is caused not only by the above considerations, but also by the fact that in the design of some production apparatus and plants there is often a need for knowledge of the viscosity and density of liquid flows [2-3].

For solutions, the dependence of density and viscosity on the amount of moisture was determined at temperatures of 20, 40, and 600C.

With increasing temperature and the amount of water in the solution, the viscosity and density decrease, which is consistent with the existing situation.

A change in the percentage of nitric acid in the solution does not change the temperature dependence of viscosity.

A graphical analysis of the data showed that the viscosity of the nitrate solution containing 10-20% free nitric acid and 58% nitric acid is on the same line. Therefore, it could be assumed that by increasing the content of free HNO₃ in solution, it is possible to obtain a mixture with a given amount of moisture, free nitric acid with the required viscosity and density [4].

Based on our work, we can conclude that in all the solutions we took, an increase in water content and an increase in temperature lead to a decrease in the values of viscosity and density.

These observations are consistent with the general position for most fluids.

An increase in the content of free nitric acid leads to a decrease in viscosity and a very slight increase in density.

A high viscosity is observed in solutions with a high content of calcium nitrate [5].

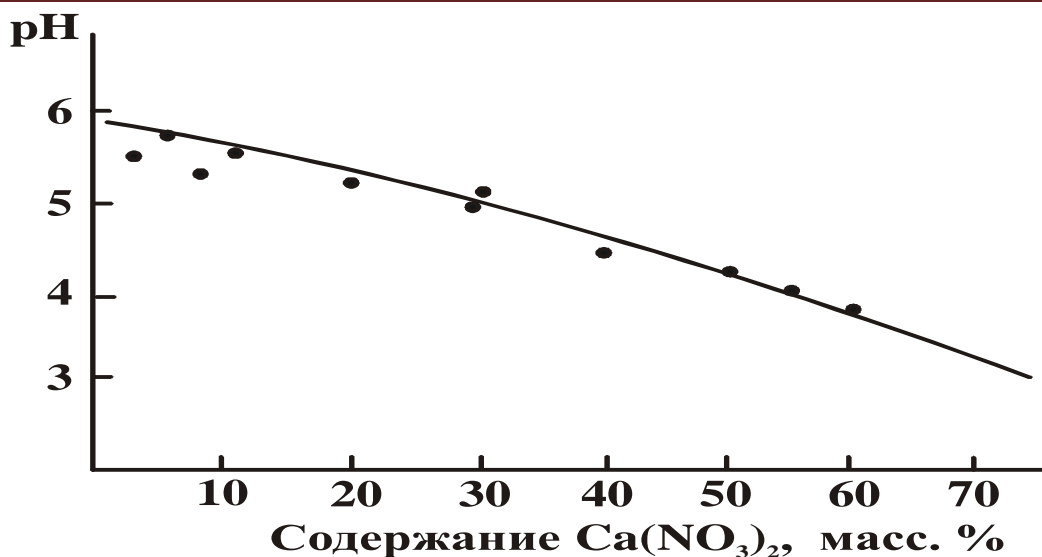
One of the main indicators for controlling the decomposition of limestone with nitric acid is the acidity of the reaction pulp.

However, the acidity of calcium nitrate solutions is interrelated with the content of calcium nitrate and free nitric acid.

Therefore, not knowing the functional dependence of the acidity of the system $\text{Ca}(\text{NO}_3)_2 - \text{HNO}_3 - \text{H}_2\text{O}$; $f(C_{\text{HNO}_3}, C_{\text{Ca}(\text{NO}_3)_2}) = \text{pH}$ from $\text{Ca}(\text{NO}_3)_2$ и HNO_3 , it is difficult to judge the properties of the reaction mass.

To obtain this dependence, solutions of calcium nitrates of various concentrations were prepared [6]. Concentrated nitric acid (52.5%) was gradually added in portions to these solutions. After each portion of nitric acid, the mixture was stirred with a magnetic stirrer for 3-5 minutes. The pH of the solutions was measured using an I-130 ionomer. The experimental results are shown in figures 1 and 2.

From figure 1. it is seen that changes in pH in the system $\text{Ca}(\text{NO}_3)_2 - \text{HNO}_3 - \text{H}_2\text{O}$ are very complex, therefore, the functional dependence of pH on the concentration of HNO₃ was obtained by interpolation of experimental data. The results of the experiments, in order to clearly show the change in dependence $\text{pH} = f(C_{\text{Ca}(\text{NO}_3)_2}, C_{\text{HNO}_3})$, shown in bulk (Fig. 2.). The greatest effect on the acidity of the system $\text{Ca}(\text{NO}_3)_2 - \text{HNO}_3 - \text{H}_2\text{O}$ has a concentration HNO₃ in the intervals 0-0.025 mol%. In these intervals, the concentration HNO₃, ΔpH depending on the content $\text{Ca}(\text{NO}_3)_2$ in solution ranges from 2 to 5.



Content $\text{Ca}(\text{NO}_3)_2$, mass. %

Fig. 1. The change in the acidity of the solution (pH) depending on the concentration of calcium nitrate. for instance, $C_{\text{Ca}(\text{NO}_3)_2}$ at 0 and 70 wt%, ΔpH is equal to 1.5 and 4.5, respectively. This nomogram allows you to accurately and quickly determine one of the unknown three parameters (pH, C_{HNO_3} , $C_{\text{Ca}(\text{NO}_3)_2}$).

If the content is known $\text{Ca}(\text{NO}_3)_2$ in solution, then after measuring its pH using fig. 2. content is determined HNO_3 .

For example, to determine the content HNO_3 using fig. 2. from a solution with a pH of 1.08 containing 35% $\text{Ca}(\text{NO}_3)_2$, a straight line is drawn from point "C" parallel to the line AB. From the formed points C and C3 we draw a perpendicular to the lines of the VD and AC to the intersection (curves V'D' and A'C').

From point C' and C3' a curve line is drawn C', C1', C2', C3' symmetrically to the curve a', a1', a2', a3'. To determine the desired point on the AVDS plane, which shows the concentration $C_{\text{Ca}(\text{NO}_3)_2}$ and C_{HNO_3} , find the height C_x Cx'.

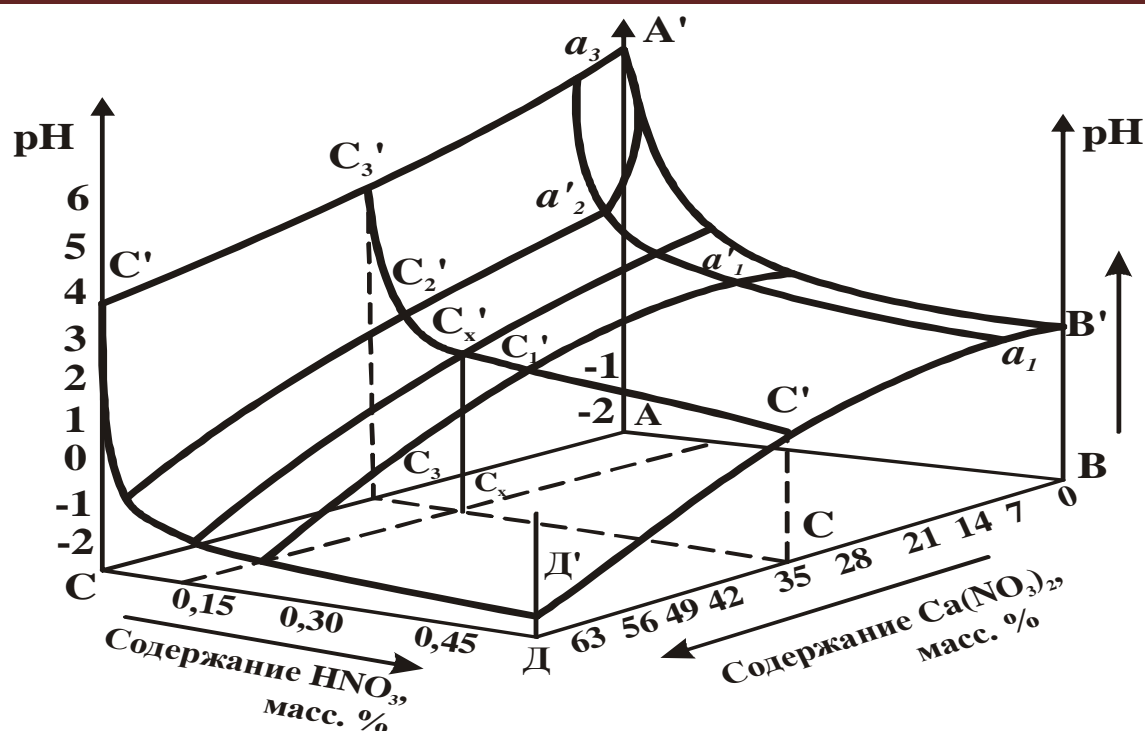


Fig. 2. The dependence of the pH of the solutions in the system $\text{Ca}(\text{NO}_3)_2\text{-HNO}_3\text{-H}_2\text{O}$ from content HNO_3 and $\text{Ca}(\text{NO}_3)_2$.

This line is equal to the pH value and is between the lines CC_3 and $\text{C}'\text{C}'_3$. According to our example $\text{pH}(\text{C}_x \text{ C}'_x) = 1,08$. By the found point C_x a parallel to the concentration axis is drawn on the AVDS plane $\text{Ca}(\text{NO}_3)_2$ before crossing with the axis of the concentration of nitric acid. The resulting point, equal to 0.112%, is the desired content in the solution.

Thus, using this nomogram, it is possible to determine the necessary technological parameters for the nitric acid decomposition of limestone.

The Basic Technological Scheme

The essence of the technology for the production of calcium nitrate is reduced to the interaction of limestone in a solution of nitric acid at an acid rate

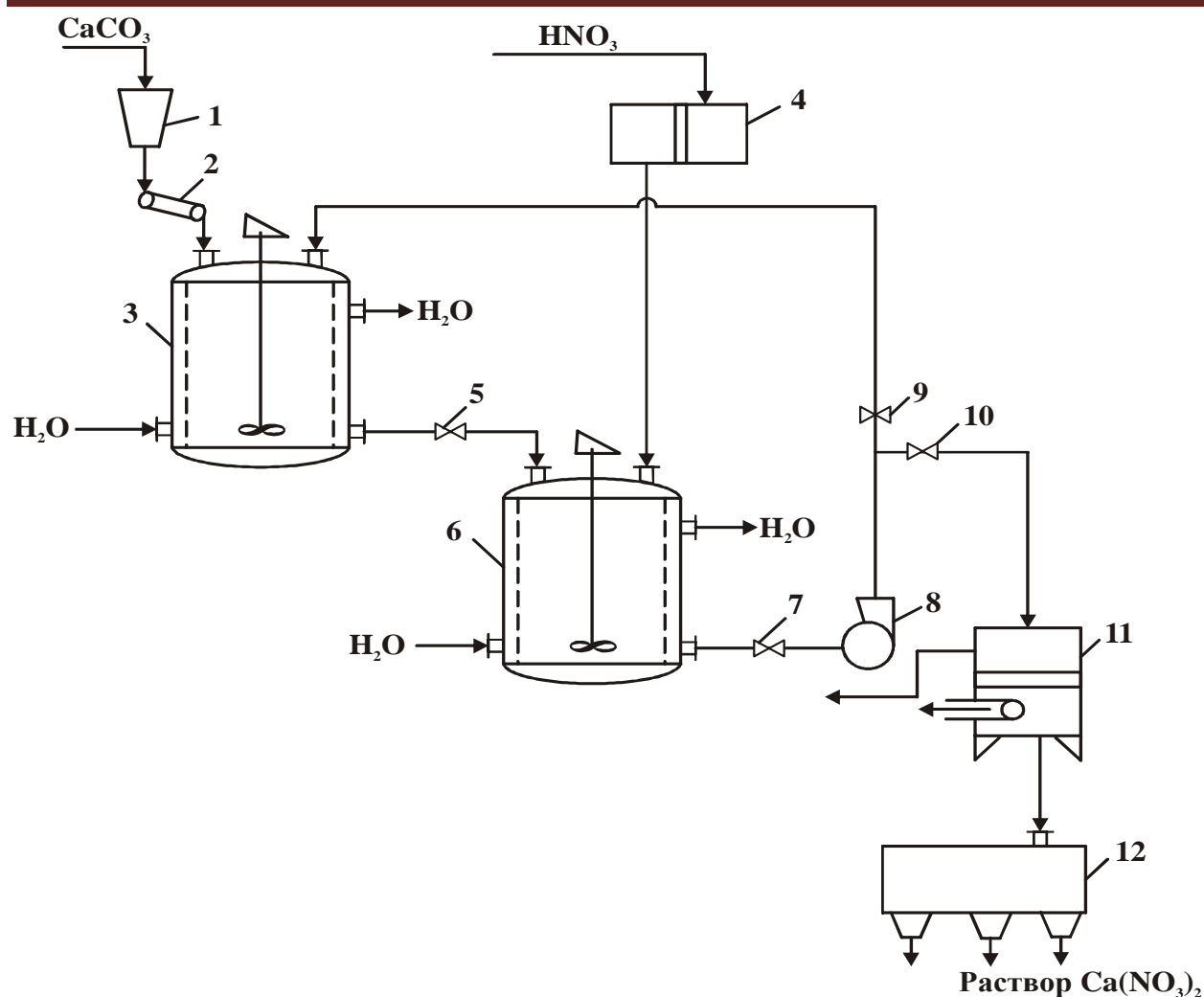


Fig. 3. The technological scheme for producing calcium nitrate from limestone.

1- hopper; 2-tape weight dispenser; 3.6 - reactors; 4 - flow meter; 5, 7.9, 10 - valves; 8 - centrifugal pump; 11 - nutsche filter; 12 - tare installation.

100-105%, followed by obtaining 40-45% - solutions of calcium nitrate by separation of the insoluble part by filtration.

Schematic diagram of the production of calcium nitrate is presented in Figure 3. It consists of the following stages:

- Acceptance of nitric acid and limestone into the warehouse;
- loading nitric acid into the reactor;
- loading limestone into the reactor and its decomposition with nitric acid;
- Filtration and separation of the insoluble part from the solution of calcium nitrate;
- Packaging of the resulting product.

The feedstock for the production of calcium nitrate is delivered by road or rail cars to the destination and is stored in warehouses or under a shed.

A circulating solution of calcium nitrate is dosed into the reactor (3). Limestone also comes here from the separation of raw materials through the hopper (1) and the weight batcher (2). The forming suspension from the reactor (3) by gravity enters the second reactor (6), where nitric acid is simultaneously fed. The decomposition of limestone with nitric acid is carried out by intensive mixing with a mechanical stirrer, which are equipped with reactors (3) and (6). The consumption rate of nitric acid for the decomposition of limestone is 100-105% of stoichiometry.

The reaction mass is cooled using a water jacket of reactors. The duration of the decomposition of limestone is 30 minutes. During this time, 98 - 99% of limestone practically decomposes with the formation of 40-45% calcium nitrate solutions. The resulting solution with sediment using a centrifugal pump (8) is pumped to the suction filter. The mother liquor, which is a 40-45% solution of calcium nitrate, enters the packaging unit (12) and after packaging is fed to the finished product warehouse.

Based on the studies, the following main technological parameters for the production of calcium nitrate from limestone of the Dzhamansaysky deposit and nitric acid were established:

Temperature in the reactor ⁰ C.....	35-40
Pulp ratio	3
The duration of the decomposition of limestone, min	30
Filtration temperature, ⁰ C.....	35-40
Pulp filtration rate, kg / m ² per hour	300
Stock solution concentration, %.....	40-45
Norm of nitric acid, %.....	100-105

For the first time, a three-dimensional diagram of the system $\text{Ca}(\text{NO}_3)_2\text{-HNO}_3\text{-H}_2\text{O}$ in the form of functional dependence $\text{pH}=\text{f}(\text{Ca}(\text{NO}_3)_2\text{-HNO}_3\text{-H}_2\text{O})$. This diagram and its graphical interpretation allows you to control the decomposition process.

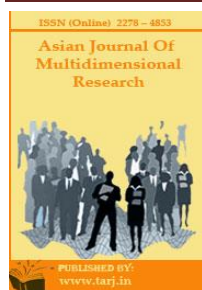
The results of physicochemical and applied research formed the basis for the development of technology for producing calcium nitrate from Jamansaysky limestone. Based on the results of laboratory research, a basic technological scheme is proposed.

Thus, the decomposition process of Dzhamansay limestone with nitric acid was studied depending on the size of the limestone pieces, concentration, nitric acid rate and duration of the process. The optimal decomposition conditions are determined. The possibility of suppressing foam by preliminary decarbonization of high-carbonate waste by circulating pulp is shown. The rheological characteristics of solutions and pulps formed at various stages of the process are determined.

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ON THE MEDICAL AND PHYSIOLOGICAL PRINCIPLES OF A PERSON'S PSYCHOLOGICAL HEALTH

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ABSTRACT

The processes of profound changes, consistent reform and liberalization of all aspects of political and socio-economic life, democratic renewal and modernization of our society are developing rapidly in our country. At the same time, the huge tasks set and consistently implemented on the way to building a strong civil society provide a solid foundation. In connection with the great milestone in our history, there is a need to assess the quality of life, how the image of our country is changing, what achievements and results we have achieved, how fast we are developing to build an open democratic state and civil society based on a socially oriented market economy. In short, it is natural that we objectively assess our long-term strategic goals, such as joining the ranks of modern developed democracies, ensuring sustainable economic growth, improving the quality of life and taking a worthy place in the world community. As a proof of our opinion, we can say that the task is to establish a healthy lifestyle among young people, to take comprehensive measures to protect them from alcoholism, drug addiction, various other deadly threats and religious and extremist influences, attacks on "popular culture". Human life and health are the greatest social wealth. This raises the issue of forming a healthy lifestyle in front of the family, school and places of human development. The health of the nation is, of course, addressed through a healthy lifestyle.

KEYWORDS: *Socio-Economic, Comprehensive, Liberalization*

INTRODUCTION

Human health is, first of all, the development of his mental and physiological qualities, maintaining an optimal level of work ability and social activity for the maximum life expectancy. According to many scientists, the functional capacity of the human body and its resistance to adverse environmental factors change throughout life, because health is an active process that

improves (relaxes or strengthens health) depending on age, gender, occupation, living environment. goes.

Human life and health are the greatest social wealth. This is in front of the family, the school and other places that deal with human upbringing, maturity raises the issue of shaping a healthy lifestyle. The health of the nation is also addressed naturally, through a healthy lifestyle.

Health is a balanced unit of biological, mental, physical state and labor activity of the human body. Health is happiness for everyone. His labor productivity, is a necessary condition for the development of the economic power of the country, the welfare of the people. A conscious and responsible approach to health as a public property should be the norm of life and morality of society and all its members.

In order to maintain and strengthen health, first of all, a person needs to know the laws of normal functioning, growth, development and reproduction of all tissues and organs of the body. It is also necessary to know and create the conditions necessary for the preservation and further improvement of these biological features inherent in man, as in all living things.

A wide range of targeted measures to create the necessary conditions and opportunities for the upbringing of a healthy and harmoniously developed generation in our country, the realization of the creative and intellectual potential of young people, the full development of young people in our country as students of the XXI century. A number of measures are being taken in the Republic of Uzbekistan to implement this plan. As a proof of our opinion, we can say that the task is to establish a healthy lifestyle among young people, to take comprehensive measures to protect them from alcoholism, drug addiction, various other deadly threats and religious and extremist influences, attacks on "popular culture".

Forming the concepts of the basics of a healthy lifestyle

The transition of the Republic of Uzbekistan to independent development, building an economic and democratic society, renewing the morale of society, promoting a healthy lifestyle in achieving high results in state and social construction is an important issue for the health of the younger generation and the nation.

Promoting a healthy lifestyle should be done in different directions. On the one hand, it aims to provide students and adults with certain medical and hygienic knowledge about healthy living, to awaken their understanding of how a healthy lifestyle affects the development of the organism, and on the other hand, to encourage them to adhere to hygienic rules in education.

Depends on the formation of skills to make health care a daily habit. In this regard, a healthy lifestyle should be widely promoted in the media, in lyceums, colleges, in conjunction with all educational institutions.

At the level of higher education, the Ministry of Higher and Secondary Special Education, the Ministry of Health, the Ministry of Social Welfare, the Republican Research and Practice Center "Family", as well as the Healthy Generation, Kamolot Youth Social Movement, Talent, Meh Nuri ", "Ulugbek ", "Nuroni ", "Aydin Hayot "should work closely with the mahalla.

A healthy lifestyle is a social phenomenon that ensures the organization of life activities and achieving a high level of health based on the acquisition of skills that ensure the safety of man and his health.

A healthy lifestyle is a way to actively master the conditions of human life, to follow the agenda, to strengthen the body on the basis of active movement, to do sports, to eat a full and quality diet, adherence to the hygienic rules of nutrition, communication and ecological culture, spiritual upbringing on the basis of universal and national values, the ability to refrain from harmful habits.

Goals and objectives of the subject of forming a healthy lifestyle:

- ☐ achieving the acquisition of theoretical knowledge and practical skills to eliminate the factors that adversely affect the life and health of the individual;
- ☐ strict adherence to the agenda;
- ☐ Regular exercise, organization of active physical activity and regular participation in sports;
- ☐ thoroughly master the information on the essence and importance of proper nutrition and use them in practice;
- ☐ Determination of responsibility for personal health;
- ☐ Protection of the environment, knowledge of the rules of ecological culture;
- ☐ Ability to prevent various injuries and accidents;
- ☐ Ensuring that negative habits (smoking, drug and alcohol abuse) are not encouraged;
- ☐ Proper upbringing as a sex, awareness of the rules of personal hygiene and adherence to them;
- ☐ Achieving high moral qualities, strong and strong will, as well as compliance with the requirements of psycho-hygiene;
- ☐ The general philosophy of life is to be able to cope with the problems of life, the organization of theoretical and practical activities on the way to the formation of immunity against beliefs that contradict the idea of national independence and ideological principles, and so on.

Theoretical, methodological and physiological bases of the formation of a healthy lifestyle. At the meeting of the Cabinet of Ministers of the Republic of Uzbekistan on December 23, 1998, the First President of the Republic I.Karimov said: Then he said, "Our children should be better, smarter, wiser and, of course, happier than us."

The modern educational concept of the new society is aimed at the formation of a human personality, that is, well-rounded, mature, free and able to achieve the set goal on their own. This includes, on the one hand, the comprehensive hormonal development of the individual, and, on the other hand, the maintenance of mentally, physically, spiritually healthy growth throughout his development.

Human life and health are the greatest social wealth. This raises the issue of forming a healthy lifestyle in front of the family, school and places of human development. The health of the nation is, of course, addressed through a healthy lifestyle.

As the First President of the Republic I.Karimov emphasized, "Strengthening the health of the people is one of the important tasks, caring for the health of the younger generation has risen to the level of state policy. This requires knowledge of the main factors affecting the health of the younger generation, the creation of methodological, psychological, pedagogical, medical and hygienic bases for the formation of a healthy lifestyle in students.

Every student has a concept of 'health'; health factors; protection of the organism in health care; must have knowledge of the science of valeology, its principles and methods.

Lifestyle itself is a life necessary for human existence means mastering the conditions. Depending on the method of acquisition, it can be divided into a healthy lifestyle and an unhealthy lifestyle, as well as the development of the formation of a healthy lifestyle, its relationship with other disciplines, the coordination of its goals and objectives.

The essence of the concepts of "lifestyle" and "healthy lifestyle". The Constitution of the Republic of Uzbekistan, the Universal Declaration of Human Rights, the Convention on the Rights of the Child, the views of the President of the Republic of Uzbekistan Sh.M.Mirziyoev on the formation of a healthy lifestyle, the Law of the Republic of Uzbekistan "On Education", "Personnel" National Law on Physical Culture and Sports, the Law "On Physical Culture and Sports", the views and opinions of scientists and thinkers of the East and Europe on the formation of a healthy lifestyle. Dasi. Every person's lifestyle is shaped by the events that take place every day and various changes. Changing relationships are affecting the psyche of students. As a result, it increases their responsibility to choose the mental, emotional, and volitional behaviors that are necessary for their own destiny, family, and community. It is necessary to prevent the resulting neurological diseases. This requires, first of all, the organization of a healthy lifestyle on a personal and social scale, and knowledge of the main directions and ways to implement a healthy lifestyle.

Exercise-related lifestyle, exercise, physical activity and sports are important factors in a healthy lifestyle. Active movement, ie exercise, plays a key role in a person's healthy lifestyle I.P. Pavlov explains the effect of physical activity on human health, that the organism is closely connected with the external environment describes as appearance. Such connections and the activity of biological organs are controlled by the central nervous system. Exercise has an effect on the whole organism, without affecting this or that muscle group. In particular, regular physical activity has a positive effect on a person's health. Metabolism is improved, body tissues absorb nutrients better, and decomposed substances are eliminated faster from the body. The heart hardens and becomes more resilient. Therefore, people who are physically active are alert, mentally light, full of energy, high in mood, and clear in heart. As a result of exercise, the body's defenses develop well. Exercise, which begins in childhood and adolescence, is especially helpful. It is necessary to cultivate in everyone the habit of following a strict regimen. Exercise, walking in the fresh air, participating in sports, longevity and health are among the factors. Each person should be accustomed to performing physical activities on a regular basis that are consistent with a certain level of physical ability. In addition, in our hot climate, it is advisable to exercise the body in non-traditional ways rather than traditional methods. That is, various methods of exercise, such as foot baths, walking on salt and rocky paths, as well as walking in the open air before and after sleep, strengthen the activity of the body's immune system.

The effect of active action on the body can be expressed as follows:

- ☐ activates cardiovascular function;
- ☐ Breathing improves;
- ☐ Bones become stronger, muscles become stronger, joint mobility increases;
- ☐ Good digestion of food is ensured;

- ☐ Improves the functioning of some organs;
- ☐ strengthens the nervous system, which plays an important role in maintaining the balance of excitatory events in the central nervous system;
- ☐ has a positive effect on human psychology;
- ☐ promotes the correct formation of the body, etc. Lifestyle health and in the process of teacher education role in strengthening; division of human life into periods; laws of growth and development of children, determination of physical condition; correcting anatomical and physiological defects encountered in childhood; hygienic basis of correct posture; types, causes and methods of correction of deformities in children and adolescents; hygienic bases of physical training; use of the natural forces of nature - sun, air and water to strengthen and harden the body; the importance of physical education in a person's healthy lifestyle, it is necessary to pay special attention to the issues and to form these concepts in students.
- ☐ Improves the functioning of some organs;
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Adherence to an agenda is the foundation of a healthy lifestyle. An agenda is a continuous process that takes place from the day a person is born. Of course, the agenda can not be the same for everyone, and it is tailored to the individual's age, health, ability to work and living conditions, and to its general requirements: the correct distribution of physical labor with practical labor in the development of the agenda; a certain diet every day, going to bed at a certain time and getting used to waking up early, walking in the open air, and so on. A person's healthy, unhealthy lifestyle is also right, wrong on the agenda depending on the organization.

Properly organized agenda includes all aspects of the body:

- ☐ Proper development;
- ☐ strengthening of the will;
- ☐ high labor productivity and good long-term maintenance of working capacity;
- ☐ plays an important role in preventing disease. School for the purpose of maintaining the health of school children

It is expedient to introduce the following physiological and hygienic recommendations to parents in their activities, its educational process:

- ☐ Adherence to the daily routine, ie the schedule, including the regulation of the workload at school and at home;
- ☐ Expansion of outdoor recreation;
- ☐ Adequate and timely nutrition;
- ☐ Hygienically complete, regular sleep;
- ☐ Timely replacement of mental load with physical load;
- ☐ change activities in accordance with hygienic requirements;
- ☐ Engage in independent activities.

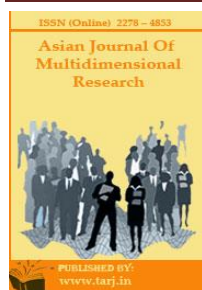
In determining the weekly workload in primary and secondary schools, academic lyceums and vocational colleges of the Republic, in agreement with the Ministry of Health of the Republic of Uzbekistan, the following control tasks should be assigned to the local department of public education:

- ☐ Hygienic organization and conduct of lessons;
- ☐ Adequacy of lessons and breaks;
- ☐ Acceptability of vacation periods and time during the academic year;
- ☐ Moderate number of lessons per day and week;
- ☐ Organization of equipping classrooms with the necessary equipment for measuring anthropometric indicators of children and adolescents;

Hygienic planning of mental and physical labor in the educational process - proper organization of rest, adherence to sleep hygiene, prevention of sleep disorders and insomnia, attention to children's movement and health, hygiene of educational work - prevention of fatigue and overwork issues such as obtaining.

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INVESTMENT -IS THE FUTURE OF OUR NATIONAL ECONOMY

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ABSTRACT

In ensuring the development of the economy in our country, foreign capital is a state of significant positive change in the share of foreign direct investment. Because attracting investors to the country's economy without state guarantees indicates the development of our national economy. In the implementation of this work we can see that all the conditions created for investors, the expansion of exports of their products and goods and the sustainability of future plans. That is why foreign investors choose a stable country. In Uzbekistan, this is a clear proof. In the context of globalization, the national of any country of the regions that make it up in the formation of the economy important The transition to market relations, further deepening and liberalization of economic reforms, achieving sustainable development are in many respects these regions, that is, the country's various domestic. Once the investor has met the preconditions, he or she must determine the purpose of the investment - the exact timing, size, form and risk of the investment in relation to the expected level of return. Before choosing a financial instrument, it is necessary to conduct an assessment in terms of investment. The result of the valuation process should be precise measurements of the profitability, risk and price of this financial instrument. Thus, making the socio-economic development of our country among the developed countries will create all the conditions for Uzbekistan to increase in the country on the basis of current investments and loans, increase the attractiveness of innovative national investment. The rational use of types of investments and their involvement in the national economy is a factor in the country's development. Countries that do not have the opportunity to attract investment resources to the economy, which is experiencing a shortage of funds, will inevitably lag behind the country's overall socio-economic growth. That is why foreign investors choose a stable country. In Uzbekistan, this is a clear proof.

KEYWORDS: *Implementation, Liberalization, Measurements*

INTRODUCTION

The potential and capabilities of the components depend on the activity. In the context of changes taking place in the world in recent years, the sustainable development of the regions of our country, the region The gradual increase in the competitiveness of the economy, in the regions further improvement of entrepreneurial activity is urgent. PF of the President of the Republic of Uzbekistan dated February 7, 2017 No. 4947 "On further development of the Republic of Uzbekistan

In accordance with the Decree "On the Strategy of Action" in 2017-2021, the task of modernization and accelerated development of agriculture has been identified as one of the five priority areas for implementation in our country, including the development and liberalization of the economy.

Gradual transition to market economy relations, sectors investment is of great economic importance in ensuring the rapid development of the economy and its efficiency. Today, the adaptation of investments to a market economy and the management of investment activities require a different approach. This is because the choice of a modern way of doing business requires a radical change in investment policy. Further development of sectors and industries of the national economy of Uzbekistan requires intensification of investment activities. An important role in this process is played by the attraction and effective use of foreign direct investment in the context of modernization of the economy. In this regard, it is important to assess the factors of investment activity and its activation. In general, the essence of the concept of "investment" is as follows. Investments are property and intellectual property invested by investors in the objects of entrepreneurship and other activities in order to earn income or achieve social benefits is the inclusion of funds representing all types of values. In practice, there are different approaches to investing. One is based on careful planning of actions aimed at achieving specific goals, while the other is based on risk-based decision-making, in contrast to the first. Cash should not be spent to meet current needs, the purpose of the investment is to use current cash to meet future needs.

Once the investor has met the preconditions, he or she must determine the purpose of the investment - the exact timing, size, form and risk of the investment in relation to the expected level of return. Before choosing a financial instrument, it is necessary to conduct an assessment in terms of investment. The result of the valuation process should be precise measurements of the profitability, risk and price of this financial instrument.

The choice of the investment option is very important, because at this time the next stages of the investor's activity are determined, and the achievement of the planned goals will depend in many ways. While it is not necessary to provide the highest level of profitability as the best option, indicators such as risk and tax conditions can also play a significant role. In our opinion, the country is currently working to create a favorable investment climate and increase investment activity

It should be noted that along with large-scale measures and measures, there are also some shortcomings. Including:

- remote commercial banks operating in our country term i.e. uneven in terms of regions of stable resource base distribution and incomplete implementation of measures and measures aimed at eliminating this problem;

- Poor infrastructure in some regions of the country, which serves to create a favorable investment climate, and as a result, a significant part of bank investments is directed to cities and regional centers;

- Slow production of competitive products due to the small number of existing enterprises processing products in the regions.

In general, in the future the industry will be individualized by attracting foreign direct investment in the economy development is desirable. Joint with foreign investors

The establishment of enterprises in our country creates the following opportunities provides:

- introduction of new, modern equipment and technologies into the economy of the republic attracting, introducing them into production, is of poor quality, the customer allows the manufacturer to get rid of old equipment faster, which does not meet the demand;
- creation of new jobs and employment of the unemployed, as well as the introduction of advanced foreign management practices, thereby increasing labor productivity;
- Acceleration of the inflow of foreign currency into the country through the production and export of quality products that can compete in the world market.

Today, the Oliy Majlis of the Republic of Uzbekistan is constantly improving the laws aimed at attracting foreign investment and further stimulating the investment climate in the country, creating more favorable conditions for foreign investors in Uzbekistan, which encourages foreign investors to operate freely in our country. In particular, the recently adopted Law of the Republic of Uzbekistan “On Amendments and Addenda to Certain Legislative Acts of the Republic of Uzbekistan” and the Law of the Republic of Uzbekistan “On Foreign Investment” and “On Competition” adopted by the Oliy Majlis. to attract more foreign investments, to improve the investment climate in our country, to facilitate the activities of foreign investors in the territory of Uzbekistan appropriate amendments and additions were made to create the conditions. It is natural that such changes in the legislation will be communicated to foreign investors through local incentives, preferences and conditions through promotional activities, which will contribute to more effective implementation of the legislation in the future. The development of measures to establish free economic zones and the legal framework for their activities is an important factor in modernizing the country and further increasing employment, production of products that meet world standards and are in demand in world markets, foreign investment, primarily direct. It is important to create favorable conditions for attracting investment. In short, the development of free economic zones and the legal framework in this regard play an important role in further developing the economy and increasing its efficiency, increasing integration into the world market, introducing a unique and unique mechanism to encourage direct investment. In order to ensure economic balance in our country and further intensify the role of not only foreign investment, but in all sectors of the economy, it is necessary to take the following measures:

- Improving the regulatory framework and legislation governing foreign investment;
- processes of production infrastructure development acceleration and expansion in all regions;
- The economic system and the private sector in it with investors in an effective way for the economy of the country, that is, a high surplus fully cooperate in value-creating industries make it possible;
- Study of foreign experience in further development of free economic zones;

- reasonable from the available labor and labor resources in the economy
- organization of use and improvement of their quality;
- Ensuring the acceleration of capital turnover through the reform of the banking and financial system and the development of financial markets;
- formation of a favorable business and investment climate in the country, ensuring freedom of entrepreneurship;
- liberalization of foreign economic activity and export incentives;
- It is necessary to develop long-term economic development programs by identifying ways to develop sectors based on the social, political, environmental and resource potential of the national economy.

In accordance with the Law of the Republic of Uzbekistan "On Amendments and Addenda to the Law of the Republic of Uzbekistan" On Investment Activity "No. ZRU-380 dated December 9, 2014 (adopted in the new edition) Factors promoting investment activities and the rights and guarantees of investors, as well as their protection is a regulatory document on measures. The types of investments defined by law: forms of capital, innovation and social investments, the activities of the investor and his rights and obligations are regulated. In terms of types of investment, capital investments are mainly types of investments that create funds and invest in the development of other forms of reproduction. Especially today, in a competitive market economy, the country is developing high-quality, affordable and marketable, export-oriented products. The provard goal of this is determined by the delivery of quality products to the population of our country, the availability of goods and products in foreign countries. The development of the economy is an important factor for the development of our country. Capital investment In the 15 years of the XXI century, during the period of economic development, the change in the volume of capital investment in the economy of our country has increased. If we take the volume of capital investment in 2017 compared to 2010, we can see that it has increased 4 times. That is 60,719.2 billion soums out of 15,338.7 billion soums. Foreign investors increased by 3 times from 2017 to 2010. According to statistics, in terms of sources of financing, 43.9% of enterprises and the population, 11.0% of bank loans and other borrowings, 26.9% of foreign investments and loans accounted for 5.5% of the state budget and extra-budgetary. funds account for 12.7%. This suggests that foreign investors have formed a timely regulatory framework.

In ensuring the development of the economy in our country, foreign capital is a state of significant positive change in the share of foreign direct investment. Because attracting investors to the country's economy without state guarantees is a sign of the development of our national economy. Also, the creation of all-round conditions for the population of our country through the attraction of social investments is aimed at their social support. Because all of the reforms are human factors. Through social investment, inosn serves to increase potential, skills and production experience, and thus to develop other forms of intangible benefits. At the current stage of development of the world community, no country can achieve socio-economic development without access to investment. The rational use of types of investments and their involvement in the national economy is a factor in the country's development. Countries that do not have the opportunity to attract investment resources to the economy, which is experiencing a shortage of funds, will inevitably lag behind the country's overall socio-economic growth. It goes

without saying that our national investment will be used to build new enterprises producing import-substituting products in demand in the domestic market, create new jobs, ensure the production and further development of existing enterprises, import and install innovative equipment and machinery. The result is the production of national products that can compete in the world market. Also, as a result of the opportunities and conditions provided to investors in the banking system, the opportunity to implement promising projects of national production will serve the development of our economy.

As an example, the President of the Republic of Uzbekistan Shavkat Mirziyoyev visited Navoi region on December 28, 2019 to get acquainted with the reforms in the socio-economic development of Navoi region, the ongoing creative work and the construction of new industrial complexes. Speaking at the opening ceremony of a complex for the production of polyvinyl chloride, caustic soda and methanol at the Navoi Nitrogen Joint-Stock Company, the head of state said that Navoi was one of the most promising regions in the world in recent years. Today, Navoi region accounts for 10% of domestic industrial production. The region ranks first in the country in terms of GDP per capita, investment, industrial and agricultural products. \$ 300 million was invested in the construction of the complex, equipping it with the latest technology and equipment. It produces 100,000 tons of caustic soda and 300,000 tons of methanol per year. These products are especially in demand in the automotive, textile, metallurgy, chemical, oil and gas industries, electrical engineering and construction materials. In January-November 2019, about 90,000 tons of polyvinyl chloride worth \$ 86.4 million were imported. It is also planned to export \$ 40 million worth of products annually. More than 900 jobs have been created in the new complex. It should be noted that in 2019, among the 360 regional investment projects of national importance worth about \$ 1.4 billion, 3 projects worth \$ 1.7 billion of Navoiazot JSC will stand out.

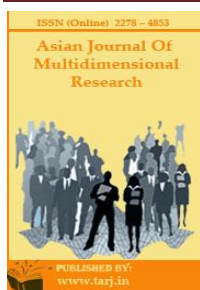
The head of state reviewed the construction of two of them - enterprises for the production of ammonia and urea and nitric acid. The total cost of the first project is about \$ 1 billion, which will produce 660,000 tons of ammonia and more than 580,000 tons of urea per year. About 500 jobs will be created, and the company plans to launch in 2020 and export products worth \$ 136 million a year.

The new plant, which is being built in collaboration with Japan's Mitsubishi Heavy Industries and Mitsubishi Corporation, will save 735 million kilowatt-hours of electricity and reduce emissions due to the use of modern technologies. In the implementation of this work, we can see that all the conditions created for investors, the expansion of exports of their products and goods, and the sustainability of future plans. That is why foreign investors choose a stable country. In Uzbekistan, this is a clear proof. The inflow of capital into the national economy by investors is largely due to the rating of the enterprise or the results of economic activity, the opportunities and conditions provided by the state, as well as domestic policy. This allows them to operate freely. We can say that the priority of the socio-economic strategy of Uzbekistan is to create an environment for attracting investment to the national economy. Thus, making the socio-economic development of our country among the developed countries will create all the conditions for Uzbekistan to increase in the country on the basis of current investments and loans, increase the attractiveness of innovative national investment.

In conclusion, we need to understand that investments in our national economy are a factor in the overall development of our country..

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**SITUATION OF NES BALANCE IN THE CITY PASSENGER
TRANSPORTATION MARKET WHEN MOVING PASSENGERS WITH
TRANSFERS**

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ABSTRACT

Population displacement is an important factor affecting the development of the urban environment. The main driving force of this process is the need of a person to move between certain points in the city. The greatest number of movements in Uzbekistan cities is carried out using public transport, so it is important to describe how a person chooses a public transport route for travel. Usually, only isolated routes are considered in GPT optimization problems [3, 6]. Although, as a rule, a passenger can choose one of several routes to travel to their destination [5]. Another factor complicating the process is moving with a transplant. The approach presented in this article is based on [4]. The difference is that in this work, passengers with a higher cost of time choose transportation with a transfer, and in [4] they prefer to travel by car. In these conditions, competition between urban passenger transport routes is

intensifying. Thus, it is necessary to consider the optimization of the work of transport operators in the language of game theory, which is not adequately described in the literature [1].

KEYWORDS: *Forecasting, Models, Simulations, Public Transport, Passengers, Subject, Route, Transfer, Operator.*

INTRODUCTION

1. Model the choice of passenger flow

When examining the work of urban passenger transport, you should start with the most complex subject in the transportation process - the passenger. The mode of functioning of the city's transport system depends on when a person has a need for transportation, between which stops, how important this trip is, what type of transport a person prefers.

In this section, we consider situations in which a passenger decides to board a vehicle, which may take him not to his destination, but in a passing direction. That is, depending on the cost of their time, passengers make different decisions.

In this case, it is necessary to compare the gain in passenger time and the additional fare. Assume that the passenger-hour is distributed exponentially for passenger flow.

We introduce the main parameters that determine the choice of the method of movement:

β – *Public transport fare;*

μ – *The intensity of public transport of the delivering passenger to the destination without change;*

η – *The intensity of public transport from the place of origin of the need for movement to the transfer point;*

ν – *The intensity of public transport from the transfer point to the destination.*

γ – *average cost of travel time;*

p – *the probability of movement with a change.*

It should be noted that the necessary condition

$$\mu < \nu \quad (1)$$

shows that the average waiting time at the transfer point will be less, i.e. if a vehicle is suitable on which you can reach your destination with a transfer, you can gain time by landing. This condition is reasonable, that is, in practice, a larger number of routes pass through the transfer point (including direct routes).

A person pre-determines the method of movement (with or without a transfer), knowing the traffic intensity. In the model, suppose that a person does not analyze the riskiness of a trip (there is no risk sensitivity) and makes a choice of a method of movement based on average characteristics. That is, for a given cost of travel time, an unambiguous choice of the travel method is made.

Note that if a vehicle approached that allows you to get to your destination without a transfer, then all passengers land in this vehicle. Probability of such an event $\mu/(\mu+\eta)$.

In the case of a vehicle approach that allows you to get to your destination with a transfer, we will get mixed solutions for passengers with different passenger-hour costs.

Under these conditions, a vehicle will remain waiting for a part of the population with lower incomes to reach their destination without transplantation (since transplantation reduces time spent while increasing financial expenses for the trip). The purpose of the population flow is to minimize the total cost of moving by changing the parameter p . Let γ' be the cost of time that divides the population in relation to movement with a transplant (if the cost of time is less than γ' , then there is always a transfer without a transplant). Then

The average cost of time when moving the flow in the forward direction:

$$\frac{\int_0^{\gamma'} \frac{x}{\gamma} \exp\left\{-\frac{x}{\gamma}\right\} dx}{\int_0^{\gamma'} \frac{1}{\gamma} \exp\left\{-\frac{x}{\gamma}\right\} dx} = \frac{1}{1-p} \int_0^{\gamma'} \frac{x}{\gamma} \exp\left\{-\frac{x}{\gamma}\right\} dx =$$

$$= \frac{\gamma + \gamma p \ln(p) - \gamma p}{1-p}$$

$$p = \exp\left\{-\frac{\gamma'}{\gamma}\right\} \text{ или } \gamma' = -\gamma \ln(p)$$

The average cost of a single forward movement consists of a loss in waiting time and fare:

$$\frac{\gamma + \gamma p \ln(p) - \gamma p}{1-p} \left[\frac{1}{\mu} \right] + \beta \quad (2)$$

The average cost of time when moving with a transfer:

$$\frac{\int_0^{\infty} \frac{x}{\gamma'} \exp\left\{-\frac{x}{\gamma'}\right\} dx}{\int_0^{\infty} \frac{1}{\gamma'} \exp\left\{-\frac{x}{\gamma'}\right\} dx} = \frac{1}{p - \gamma \ln(p)} \int_0^{\infty} \frac{x}{\gamma} \exp\left\{-\frac{x}{\gamma}\right\} dx$$

$$= \gamma - \gamma \ln(p)$$

The average cost of one transfer with a transfer requires double fare, as well as waiting at the transfer point:

$$(\gamma - \gamma \ln(p)) \left[\frac{1}{v} \right] + 2\beta \quad (3)$$

The total cost of the flow for one trip is the weighted sum of the costs of moving by car and public transport (2, 3):

$$\left[\gamma + \mu \ln(p) - \mu \left[\frac{1}{\mu} \right] + \beta(1-p) + \right. \quad (4)$$

$$\left. + (\mu - \mu \ln(p)) \left[\frac{1}{\nu} \right] + 2\beta p. \right.$$

$$\gamma \frac{1}{p} \left[\frac{1}{\mu} - \frac{1}{\nu} \right] \geq 0$$

$$\gamma \ln(p) \left[\frac{1}{\mu} - \frac{1}{\nu} \right] + \beta$$

The first derivative of total costs (3) per unit trip will be: Second derivative:

Thus, the cost function for a single trip is convex downward (5) with respect to the parameter p . Or, the passenger flow gain function is convex up the flow strategy p . Equating derivative (4) to zero, we obtain the optimal probability of using a transplant:

$$p = \exp \left\{ - \frac{\beta}{\gamma \left[\frac{1}{\mu} - \frac{1}{\nu} \right]} \right\} = \exp \left\{ - \frac{\mu \nu \beta}{\gamma (\nu - \mu)} \right\} \quad (6)$$

Share of non-stop trips:

$$1 - \exp \left\{ - \frac{\mu \nu \beta}{\gamma (\nu - \mu)} \right\} \quad (7)$$

These formulas are obtained for the case approaching the stopping point of the vehicle, allowing you to get to your destination with a transfer, and not as a whole for the passenger flow. 2. Generalization of the model in an urban environment

In urban settings, there are many places of origin for travel needs and destinations. Also, the standard of living in the districts of the city is heterogeneous. Therefore, using the terminology of paragraph 1.3, we introduce the following parameters:

N – the number of stopping points on which vehicles move and passengers move;

K – number of competing routes;

$\lambda_{i,j}$ – the intensity of the Poisson flow of passengers arriving at i - stop point with the desire to move on a shuttle vehicle to a stop j - th point per unit time of receipt

$$i, j = \overline{1, N}; \quad (\lambda_{i,j} \geq 0,$$

β – fare for city passenger transport;

$A_{i,j}^k$ – takes the value 1, if you can move along the k -th route from the i -th stop point to the j -th one, otherwise it takes a value

0

$$(i, j = \overline{1, N}, k = \overline{1, K});$$

$B_{i,j}^k$ – assumes the value 1 if it is possible to cross the k th route from the i -th stop point in the direction of point j to the transfer hub, otherwise

$$0(i, j = \overline{1, N}, k = \overline{1, K});$$

$D_{i,j}^k$ – takes value 1, if on the k -th route, moving from point i you can move from a transfer point to point j , otherwise it takes a value

$$0(i, j = \overline{1, N}, k = \overline{1, K});$$

μ_k - variable describing the intensity of the Poisson stream of vehicles moving along the k th route per unit time

– Average cost of travel time between points $(k = \overline{1, K});$

$\gamma_{i,j}$

$p_{i,j}$ – the proportion of passengers $i \rightarrow j (i, j = \overline{1, N})$ between points i and j who benefit from transfer services

$$(i, j = \overline{1, N}).$$

We write down the conditions of the model to prove its important properties

$$D_{i,j}^k \geq A_{i,j}^k, \quad i, j = \overline{1, N}$$

The first condition shows that if the route allows you to take a passenger to your destination without transfers, then this route also passes through the transfer point. Those. a passenger at a transfer point can meet all the routes that could deliver him to his destination without transfers.

$$B_{i,j}^k A_{i,j}^k = 0, \quad i, j = \overline{1, N}$$

$$B_{i,j}^k D_{i,j}^k = 0, \quad i, j = \overline{1, N}$$

The last two conditions show that the routes allow to deliver to the transfer point. cannot enter many routes that allow you to reach your destination (the condition is obvious from the description of the parameter).

The expenses of passengers arriving at their destination without a transfer only consist of loss of time when moving between points

$i \rightarrow j$ (2):

$$\frac{[\gamma_{i,j} + \gamma_{i,j} p_{i,j} \ln(p_{i,j}) - \gamma_{i,j} p_{i,j}]}{(1 - p_{i,j}) \sum_{k=1}^K A_{i,j}^k \mu_k} + \beta$$

More complex is the calculation of the time loss of passengers with a higher cost of passenger-hours. Note that the waiting time at the starting stop point is reduced

$$\frac{1}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k}$$

More complex is the calculation of the time loss of passengers with a higher cost of passenger-hours. Note that the waiting time at the starting stop point is reduced

$$\frac{|\gamma_{i,j} - \gamma_{i,j} \ln(p_{i,j})|}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} + \beta \quad (8)$$

These losses are mandatory. If a vehicle comes up that allows you to reach your destination without a transfer, the passenger does not incur additional costs. If transfer with transfer is chosen, then additional costs will amount to

$$(1 - p_{i,j}) \frac{|\gamma_{i,j} - \gamma_{i,j} \ln(p_{i,j})|}{\sum_{k=1}^K \sum_{l=1}^{L_k} D_{i,j}^k \mu_k} + \beta \quad (9)$$

Now we clarify the probability of occurrence of events, that is, the weights of each formulas (8) and (9), respectively

$$\frac{p_{i,j} \sum_{k=1}^K B_{i,j}^k \mu_k}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k}$$

Total Cost of Movement Flow

$$\lambda_{i,j} p_{i,j} \frac{B_{i,j}^m \mu_m}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \quad (12)$$

$$\begin{aligned}
& G_{i,j} \left(\{\mu_k\}_{k=1,K}, \{p_{i,j}\}_{i=1,N_k} \right) = \\
& \frac{[\gamma_{i,j} + \gamma_{i,j} p_{i,j} \ln(p_{i,j}) - \gamma_{i,j} p_{i,j}] + \beta(1 - p_{i,j}) +}{\sum_{k=1}^K A_{i,j}^k \mu_k} + \\
& \frac{[p_{i,j} \gamma_{i,j} - p_{i,j} \gamma_{i,j} \ln(p_{i,j})] + \beta p_{i,j}}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} + \\
& + \left(\frac{[\gamma_{i,j} - \gamma_{i,j} \ln(p_{i,j})] + \beta}{\sum_{k=1}^K D_{i,j}^k \mu_k} + \beta \right) \times \\
& \times \left(\frac{p_{i,j} \sum_{k=1}^K B_{i,j}^k \mu_k}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \right) \rightarrow \min
\end{aligned} \quad (10)$$

It is important to calculate the number of passengers that the passenger transport operator wins. First of all, we calculate the number of passengers transported between the stopping points i and j of route m , which delivers the passenger to the destination without a transfer:

$$\lambda_{i,j}(1 - p_{i,j}) \frac{A_{i,j}^m \mu_m}{\sum_{k=1}^K A_{i,j}^k \mu_k} + \lambda_{i,j} p_{i,j} \frac{A_{i,j}^m \mu_m}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \quad (11)$$

Number of passengers choosing route m to travel to the transfer point

The number of passengers who have chosen route m for traveling from a transfer point to a destination

$$\lambda_{i,j} p_{i,j} \frac{\sum_{k=1}^K B_{i,j}^k \mu_k D_{i,j}^m \mu_m}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \quad (13)$$

The number of passengers carried consists of three formulas. If the route delivers to the transfer point, then (11) and (13) are zero, and the convexity upward (12) in μ_m is obvious. It remains to consider the case when the route can win the passenger during transportation to the destination (with or without transfer), then the terms will be nonzero (11, 13)

$$\frac{\lambda_{i,j} A_{i,j}^m \mu_m}{\sum_{k=1}^K A_{i,j}^k \mu_k} (1 - p_{i,j}) + \lambda_{i,j} p_{i,j} \frac{\lambda_{i,j} A_{i,j}^m \mu_m}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} + \lambda_{i,j} p_{i,j} \frac{\sum_{k=1}^K B_{i,j}^k \mu_k D_{i,j}^m \mu_m}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \quad (14)$$

The first term in (14) is also convex upward; therefore, we prove the convexity of the sum of two terms, taking into account that $D_{i,j}^m = A_{i,j}^m = 1$ lowers the constant

$$\begin{aligned} & \frac{\lambda_{i,j} A_{i,j}^m \mu_m}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} + \frac{\sum_{k=1}^K B_{i,j}^k \mu_k D_{i,j}^m \mu_m}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \\ &= \frac{\mu_m \sum_{k=1}^K (D_{i,j}^k + B_{i,j}^k) \mu_k}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} = \\ &= \frac{\mu_m + \sum_{k=1}^K B_{i,j}^k \mu_k}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} + \frac{\mu_m - \sum_{k=1}^K D_{i,j}^k \mu_k}{\sum_{k=1}^K D_{i,j}^k \mu_k} \frac{\sum_{k=1}^K B_{i,j}^k \mu_k}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \quad (15) \end{aligned}$$

The first term (15) is convex upward, since the second derivative

$$-\frac{2 \sum_{k \neq m} B_{i,j}^k \mu_k}{\left(\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k \right)^3} \leq 0$$

The second term in (15) is also convex. Since the numerator is independent of the variable, with simple calculations, it turns out to prove that the second derivative will be less than zero.

$$\begin{aligned}
 &= - \sum_{k \neq m} D_{i,j}^k \mu_k \sum_{k=1}^K B_{i,j}^k \mu_k \times \\
 &\frac{2 \left(\sum_{k=1}^K A_{i,j}^k \mu_k \right)^2 + 2 \left(\sum_{k=1}^K B_{i,j}^k \mu_k \right) + 2 \left(\sum_{k=1}^K D_{i,j}^k \mu_k \right)^2}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k \right)^3} - \\
 &\quad - \sum_{k \neq m} D_{i,j}^k \mu_k \sum_{k=1}^K B_{i,j}^k \mu_k \times 2 \cdot \\
 &\quad \left(\sum_{k=1}^K B_{i,j}^k \mu_k \right) \left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) + \left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \times \\
 &\quad \times \left(\sum_{k=1}^K A_{i,j}^k \mu_k \right) + 2 \left(\sum_{k=1}^K A_{i,j}^k \mu_k \right) \left(\sum_{k=1}^K B_{i,j}^k \mu_k \right) \\
 &\quad \frac{}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k \right)^3} \leq 0
 \end{aligned}$$

The number of movements with the possibility of a transfer between points i and j (6):

$$p_{i,j} = \gamma_{i,j} \exp \left\{ - \frac{\beta \left[\sum_{k=1}^K A_{i,j}^k \mu_k \right] \left[\sum_{k=1}^K D_{i,j}^k \mu_k \right]}{\gamma_{i,j} \left(\sum_{k=1}^K D_{i,j}^k \mu_k - \sum_{k=1}^K A_{i,j}^k \mu_k \right)} \right\} \quad (16)$$

3. The situation of equilibrium in the market of urban passenger transport in case of movement with transfers

In urban settings, there are many places of origin for travel needs and destinations. Also, the standard of living in the districts of the city is heterogeneous. Obviously, the intensity of the flows of vehicles moving along each route is not negative:

$$\mu_k \geq 0, \quad k = \overline{1, K}. \quad (17)$$

The expenditures of the population (10) when moving between points i and j is a convex function over

$$G_{i,j} \left(\left\{ \mu_k \right\}_{k=\overline{1, K}}, \left\{ p_{i,j} \right\}_{\substack{i=\overline{1, N} \\ j=\overline{1, N}}} \right) \rightarrow \min$$

The gain or profit of the m-th route (income from paying passengers minus transportation costs) per unit of time:

$$H_m \left(\{\mu_k\}_{k=1, \overline{K}}, \{p_{i,j}\}_{i=1, \overline{N_k}}^{j=1, N} \right) =$$

$$\sum_{i=1}^N \sum_{j=1}^N \lambda_{i,j} \left[\frac{A_{i,j}^m \mu_m (1 - p_{i,j})}{\sum_{k=1}^K A_{i,j}^k \mu_k} + \frac{p_{i,j} (A_{i,j}^m + B_{i,j}^m) \mu_m}{\sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k} \right] +$$

$$\sum_{i=1}^N \sum_{j=1}^N \lambda_{i,j} p_{i,j} \frac{\sum_{k=1}^K B_{i,j}^k \mu_k D_{i,j}^m \mu_m}{\left(\sum_{k=1}^K D_{i,j}^k \mu_k \right) \sum_{k=1}^K [A_{i,j}^k + B_{i,j}^k] \mu_k}$$

$$- \alpha_m \mu_m \rightarrow \max \quad (18)$$

Obviously, (18) is convex with respect to the strategies of the mth route μ_m . Routes work independently of each other, and each seeks to maximize its own profit by changing the interval of vehicles on the route. To do this, build a game

$$\Gamma \left\langle \begin{matrix} K + N^2, \{\mu_k\}_{k=1, \overline{K}}, \{p_{i,j}\}_{i=1, \overline{N_k}}^{j=1, N}, \\ \{H_k\}_{k=1, \overline{K}}, \{-G_{i,j}\}_{i=1, \overline{N}}^{j=1, N} \end{matrix} \right\rangle$$

Of particular importance in this case is the situation of Nash equilibrium [2], in which each individual enterprise is not profitable to deviate, change the intervals of movement on their routes. Obviously, many population strategies are compact –

$$p_{i,j} \in [0, 1]. \quad (19)$$

The traffic intensity is limited by economic feasibility. For example, revenue from ticket sales on all routes

$$\beta \sum_{i=1}^N \sum_{j=1}^N \lambda_{i,j}$$

The costs of the enterprise cannot be more than income, therefore.

$$\alpha_k \mu_k \leq \beta \sum_{i=1}^N \sum_{j=1}^N \lambda_{i,j} \quad (20)$$

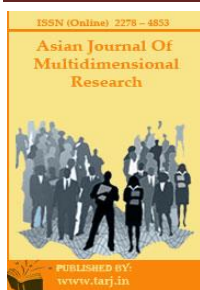
Since the payoff functions are convex down the strategies of each player and are continuous (10, 18), and the set of strategies is compact (19, 20), the game Γ has Nash equilibrium points in pure strategies [2].

5. CONCLUSION

The mathematical model of the urban passenger transportation market proposed in this article is a development [4, 5]. The model takes into account an important factor - the passenger's ability to reach the destination with a transfer. This generalization allows the use of models to solve the problems of optimization of the GST, including in cities. The game model of the urban passenger transportation market, in which the existence of the Nash equilibrium is proved, is of theoretical value.

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USING E-TEXTBOOKS FOR TEACHING COMPUTER GRAPHICS AND GLOBALIZING IT

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ABSTRACT

The article gives instructions and suggestions for teaching and popularization of the subject of computer graphics on the basis of modern electronic textbooks and their use. In our modern world, special emphasis is placed on the technology of teaching, achieving the effectiveness of education through information and communication technologies, and the introduction of quality management. Decree of the president of the Republic of Uzbekistan on measures to ensure more effective organization of the process of acquisition of rights over land parcels and other immovable property further expands the participation of economists and sectors in the quality of training of specialists with higher education program created within the framework of this research in the implementation of the tasks. At the same time, it is observed that the systematic approaches to the publication of the effectiveness of the training of future computer graphics science teachers, the mechanism for ensuring the positive results of the training of "computer graphics" curriculum are insufficient. The main thing is how much the created image resembles the real one. The Object appearance, the combination of colors in it, the size of the image all this indicates how important the computer graphics are.

KEYWORDS: Computer Graphics, Raster, Vector, Fractal Graphics, Learn Graph, Image, Object, Animation, 2D And 3D Graphics.

INTRODUCTION

In advanced education, the role and importance of natural and exact sciences, including computer graphics in the context of globalization, is seen as the tendency to use the features of block modular system-based design as an innovative form of training for teachers. Given role and importance of natural and Exact Sciences in educational institutions of ilgaroliy, including computer graphics Science in the global environment, trends are observed in the use of block-modular system-based design features as an innovative form of field surveying.

Research on the problems of educational technology, design and organization of educational processes is carried out by the world's leading scientific centers and positive results are achieved. These studies occupy an important place with the aim of improving the effectiveness of teaching computer graphics science, as well as the development of training design principles on the basis of the theory of technological development of educational process, modern technologies and principles.

The reforms carried out to ensure the integration of Science, Education and production in our country, the development of the higher education system, the strengthening of the material and technical base, the improvement of the forms and content of education are introducing advanced pedagogical technologies into the educational process. At the same time, it is observed that the systematic approaches to the publication of the effectiveness of the training of future computer graphics science teachers, the mechanism for ensuring the positive results of the training of "computer graphics" curriculum are insufficient. In the strategy of action on further development of the Republic of Uzbekistan, priority tasks such as "continuation of the policy of training highly qualified personnel in accordance with the modern needs of the labor market, improvement of the quality of education in higher educational institutions, deepening study of such important and high-demand subjects as computer graphics"[1] were defined. In this regard, the science of "computer graphics" in higher educational institutions plays an important role in determining the modern concept of training design, innovative modeling of the technology of Organization of teaching, improvement of methodological provision.

Decree of the president of the Republic of Uzbekistan on measures to ensure more effective organization of the process of acquisition of rights over land parcels and other immovable property further expands the participation of economists and sectors in the quality of training of specialists with higher education program created within the framework of this research in the implementation of the tasks.

Pedagogical education in higher educational institutions on the methodological aspects (content, purpose, methods and tools) of the disciplines being taught on the training of specialists in the field of education, teaching computer graphics Educational Sciences and on the study of problems aimed at the formation of educational training projects in our republic. Abdukodirov, T. Azlarov, B. Baltaev, M. Ziyakhadzhaev, N. Taylakov, A. Hayitav, U. Yuldashev, R. Baqiev, M. Mamarajabov, A. Siddikov, and if scientific research was carried out by others, Scientists from the CIS. Gursky, K. Grebennikov, L. Ivannikova, O. Kraynova, O. Odintsova, N. Petrova, E. Tretyakova, L. Turanovas were looking at their work.

Proceeding from the above, we can say, Today, the company graphics is one of the fastest growing information technologies in the world. They are VideoFilm, multimedia products, movers, videoconferencing. In this way, the products are integrated into the development of ratification and technology projects. This includes: navigation which is a major consideration in

the creation. Software of three- dimensional graphics (X,Y,Z)(3D)rendering system enables server creation.The three-dimensional graphics is the most important and late-to date complication of computer graphics.A user of three-dimensional graphics must possess knowledge such as deleting objects,using sound and demonstrations effects.Computer graphics development is currently under development. In the same way, the 3 objects of the application development and creating theory choosethevisualizationof the application of the products.There are a number of settings, such as settings, and also we can create different kind of visual projects on it.We can create graphic objects in programming languages or in ready-made special programs. The main thing is how much the created image resembles the real one. The Object appearance, the combination of colors in it, the size of the image all this indicates how important the computer graphics are. Computer graphic is taught in secondary institutions as a separate science under a special plan. This in turn requires the creation of software products to teach computer graphics. A few of similar software products can be seen today. But in such programs, little attention is paid to such aspects as communication between learners in offline mode, sharing ideas and increasing competition. Only one user from the program can learn independently, but if he uses more than one user in the program, that is, he is a group in schools or universities, having his own login and password – this will further increase the effectiveness of reading and learning the textbook. This program was developed on the basis of a science program based on the 2nd application of the order of the Ministry of higher and secondary special education of the Republic of Uzbekistan № 274 in March 27th, 2018.The program is created mainly for students of higher education institutions and independent users. The program consists of 17 chapters, theoretical and practical assignments, a form with users and a graphical view of the results. The program consists mainly of 5 Windows. It consists of a program Access window, a key input window, a login and password activation window, a registration window, and the main window of the program. (Picture 1)

Registration window



Registration

Login *Password*

Email

Surname *Name*

Date *Phone number*

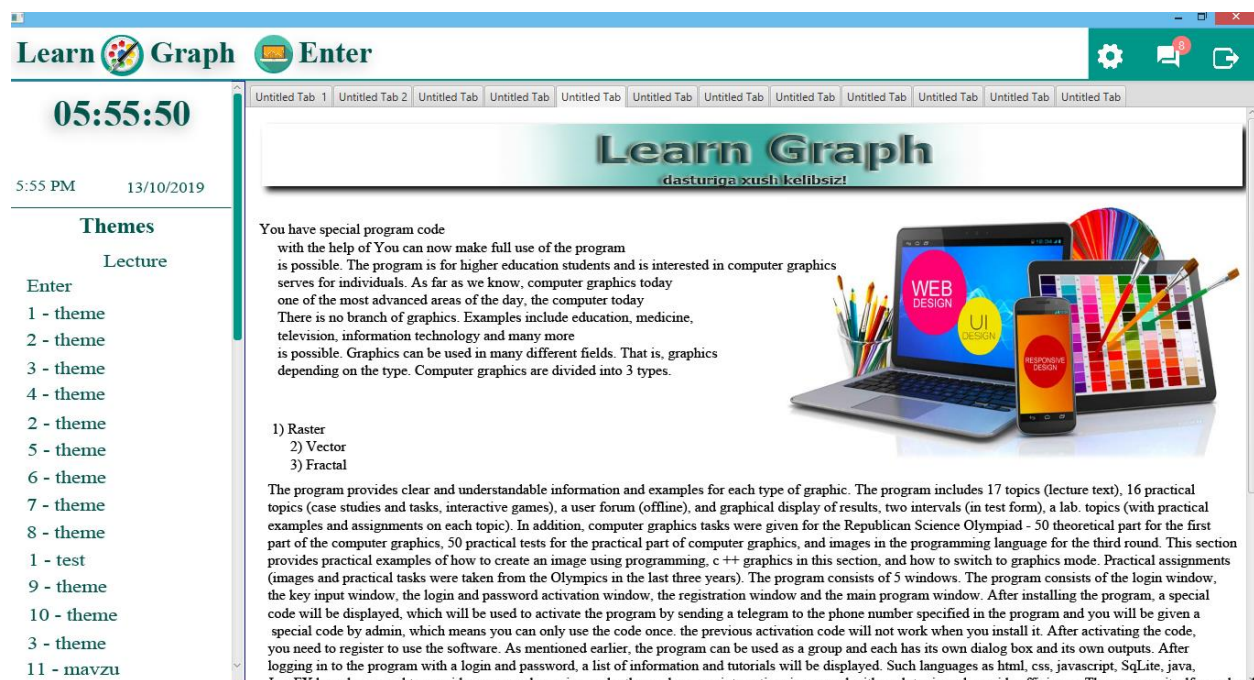
Save *Back*

Picture 1

After installing the program, a special code is issued, to activate the program, you need to take this code into the picture and send it by telegram to the phone number is indicated in the program, and by the admin you will be given a special code. You can use the code only once, that is, when you delete the program and install it again, the previous Activation Code will not work. After faxing the code, you need to register to use the application.

As already mentioned above, the program can be used as a group, and each of them will have its own dialog box and its own results. After entering the program with a login and password, a list of information and lessons that are relevant to you will come out. Languages such as html, css, javascript, mysql, java were used in order to provide application dynamics, to attract the learner more, to leave an impact on each topic and to ensure effectiveness. The program itself was developed in the JavaFX programming language. The program presents a generalized and in-depth study of computer graphics topics and types of computer graphics: raster, vector, more detailed information about fractal graphics, practical examples, assignments and more. In addition, the work on a working graphic editors for each type of graphics, the sequence of creation of 2 and 3-dimensional images is detailed.

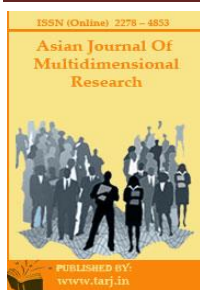
The program allows learners to have a full understanding of computer graphics and have the knowledge and skills to create raster, vector, fractal images in graphic editors. If we get acquainted with the program. Below is the main working window of the program. (Picture 2) Program main working window



In this part, you can get acquainted with such sections as getting acquainted with textbooks, seeing and communicating the results of other users, seeing a graph of your results, getting acquainted with the program. In conclusion, program is used in the educational process, the result will be an increase in the effectiveness of education, the improvement of new knowledge, skills and skills of students.

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**BIOLOGICAL FEATURES OF INDIVIDUAL PHASES OF THE
DEVELOPMENT OF UNPAIRED SILKWORMS IN UZBEKISTAN OF
THE WALNUT FRUIT ZONE OF THE BASSEN RIVER CHIRCHIK
(LYMANTRIA DISPAR L)**

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UZBEKISTAN

ABSTRACT

Truss traps based on disparlur allow you to accurately set the start dates for males, to track the entire period of their flight and end. The use of truss traps is necessary for monitoring the appearance of outbreaks of mass reproduction of unpaired silkworms in walnut stands. In the conditions of the Tashkent region, the Chirchik river bassin in walnut-fruit stands, the development of caterpillars from the moment of their birth to pupation took 55 - 61 days. A biometric analysis of pupae of males and females revealed that the weight categories can fluctuate significantly and an increase in the proportion of pupae with the smallest weight, both in females and males, shows that the studied population of unpaired silkworm has entered the attenuation phase. The timing of the development of the caterpillars depends on the species of fodder trees.

KEYWORDS: *Butterflies, males, females, caterpillars, pupae, counting, forecast, flight of butterflies, food specialization, fodder plants, feromon traps.*

INTRODUCTION

The unpaired silkworm got its name for the sharp morphological differences between the butterflies of females and males. Butterfly and have differences in the variability of size and color of the wings. Females in the wingspan from four and two to eight and eight cm, they are

white, often with a gray or brownish tint. On the front wings there are four transverse black zigzag stripes. Fringed wings with black spots. The abdomen has the appearance of a densified thickening, yellowish. At the end of the abdomen there is a pillow of dark or tan hairs. (fig. 1-4.).

Males are smaller than females, with a wingspan of three and two to five and one centimeter, grayish-brown in color with wide dark transverse stripes and fringe along the edges of the wings. Antennae crest necessary for the search for females. As a result of a zigzag flight, pheromones of females are captured.

The purpose and objectives of the study

The determination of phenology, biology, ecology, fodder rate of unpaired silkworms in walnut-tree stands, the development of a forecast for the dynamics of the spread of the pest in a short time, and the development of effective measures to combat them were revealed.

Examination of walnut fruit forests in the Chirchik river basin and identification of foci of distribution of unpaired silkworms.

Conducting phenological and biological observations of unpaired silkworms, determining the phases of its development.

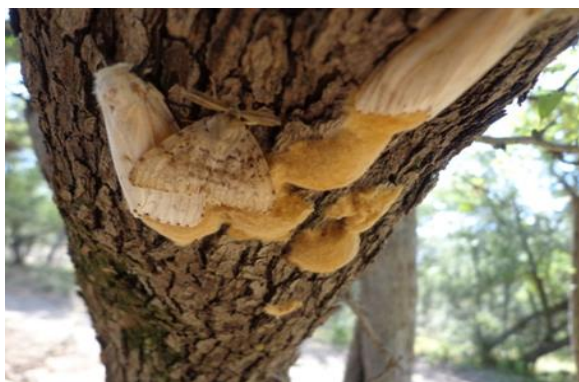
Determination of food specialization and the required number of different plants for the normal development of the pest in the caterpillar phase.

MATERIALS AND RESEARCH METHODS

Field and laboratory studies, as well as a detailed examination of foci of unpaired silkworms in their habitats and determination of distribution, were carried out according to the "Instructions for the expeditionary forest pathological examination of forests" and the methodology "On the development of survey methods for recording outbreaks of mass reproduction of the main leaf-eating pests in the walnut-fruit forests of Uzbekistan".

RESEARCH RESULTS AND DISCUSSION

Butterfly flying. In the conditions of the Tashkent region, the Bostanlyk district, the flight of butterflies usually begins in the first decade of June. The first to appear are males, later females. It should be noted that females of unpaired silkworm, weakened by eggs in the abdomen, fly poorly.



Picture 1. Mating silkworm mating and egg laying



Figure 2. Oviposition of caterpillars



Figure 3. Older caterpillar



Figure 4. Pupa in the crown of a fodder plant

Males are active flyers, in search of females they make zigzag movements in order to capture the phenomena emitted by active females. Before embarking on coverage of the population characteristics of unpaired silkworms, it is necessary to dwell on the truss monitoring of this species. K.S. Ashimov who carried out truss monitoring of unpaired silkworm in the conditions of Toscool of the Ata forestry before our studies, confirmed the observed K.E. Romanenko, an earlier flight of males in the lower (pistachio) belt in comparison with the walnut belt for 1-1.5 months, depending on weather conditions. They showed a direct relationship between trap catchment and pest population density. For example, trapping from 200 to 350 males indicates a danger of defoliation of stands, i.e. his data do not differ from the results obtained in the 80-90s of the twentieth century. in other regions.

Silkworm development pattern

TABLE 1

Stages of development for months and decades																						
Jan			Feb			March			April			May			June			July			August-december	
1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2
Я	Я	Я	Я	Я	Я	Я	Я	Я	Я	Я	Я	Г	Г	Г	Г	К	К	Б	Б	Б	Я	Я
																					Я	Я

Legend: I- egg laying, G- caterpillar, K-pupa, B-butterfly

Unfortunately, the author does not indicate with what traps it directly depends on their type (for example, glue traps are unsuitable for working in hot spots with high density, since their glue surface quickly clogs and the results are significantly distorted), and on the concentration of the phenomenon and its purity in particular, the racemate of the (+) disparur is less attractive to males as well as the mixture of (+) and (-) disparur.

In order to determine the summer dynamics of males of males, we used closed, “milk bag” type truss-insecticidal traps in which we placed dispensers containing 500 mg (+) disparur and

insecticidal plates impregnated with 2,2-dichlorovinyl methyl phosphate (manufactured in the USA)) Traps and components for them for testing in Uzbekistan were obtained by us from the USDA, Department of Forestry in the amount of 50 pieces. During the mass summer of silkworm males (June) in the walnut-fruit plantations of Karakulskaya, in the outbreak with a high degree of population (up to 6 egg-laying per tree), preliminary tests of truss traps were started. Three types of truss traps were tested: triangular (open), American (typical closed), and American advanced trap. After two weeks of observation, a large number of butterflies fell into these traps. Most of all butterflies fell into triangular open type traps with glue inserts. For 14 days of observation, 426, 484 and 495 individuals fell into these traps (see table-2). Close values were obtained by us in experiments using American traps that we improved.

TABLE 2. THE DYNAMICS OF CATCHING MALES OF UNPAIRED SILKWORMS TO VARIOUS TYPES OF FARM TRAPS BASED ON DISPARLURA IN THE OUTBREAK WITH A HIGH PEST POPULATION (WALNUT FRUIT PLANTATIONS OF THE KARAKUL FORESTRY)

Trap type	Rep eata bilit y expe rien ce	The number of caught individuals by days of recording, pcs															The averag e number of butterfl ies 1 trap, ex.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	total	
Americ an-style bathroo m	1 2 3	5 3 2	4 1 0 3	13 29 11	20 18 23	28 15 34	56 26 29	40 44 38	49 40 56	61 27 64	65 51 42	58 49 26	40 32 15	21 15 9	14 6 3	46 9 36 5 35 5	394,3
Triangu lar large, open	1 2 3	5 12 4	1 1 0 8	25 19 21	31 26 19	29 45 29	49 43 58	66 52 40	79 61 56	84 7 8 64	65 50 23	70 46 35	58 28 26	42 18 21	24 7 14	48 4 49 5 42 6	463,3
Americ an Standar d	1 2 3	2 0 0	5 3 9	15 6 5	18 14 10	15 18 11	24 12 20	30 15 26	31 23 21	37 28 34	41 31 28	32 29 16	20 15 18	13 6 10	10 3 11	29 3 20 3 21 9	238,3

Males fall into the trap by the smell of a disparlura through narrow slit windows located on all sides of the rectangular trap. During the mass flight of butterflies, males accumulate at these crevices, and not everyone can immediately fall into the trap. Males trapped in contact with a

plate saturated with an insecticide die. The standard type American traps hit 203; 219; 293 copies butterflies of males of an unpaired silkworm. Some difference in the number of male silkworms trapped in the trap is apparently explained by the placement of traps among the stands. Even a slight breeze contributes to the spread of the smell of the phenomenon at a greater distance from the trap, so more males fly to this smell.

Field trials of traps in 2005-2011 were carried out in the walnut-fruit stands of the Karakul and Aktash sections of the Burchmullinsky forestry with the participation of representatives of the forestry and Ugam-Chatkal National Natural Park. In the stands of the Karakul site in 2005, all three types of traps with aperture were tested. 45 such traps were involved in the experiments. Counts of males trapped by traps were carried out during the entire period of their flight (see Figs. 7-12). The flight of silkworm males in walnut stands began on June 20 and lasted for 30 days. At these times, they were trapped with disparur traps. Catching of individuals into triangular and American traps was carried out daily, and into advanced American ones with a collection bag (ordinary cellophane bag) after three days. Figures 13-15 show data on the dynamics of catching silkworm males, depending on the type of traps tested. From these data it can be seen that the truss traps posted in the walnut-fruit stands make it possible to precisely determine the dates of the beginning of the summer of males and to trace the entire period of their flight and their end. In this case, the flight of the males lasted about 30 days.



Figure 5. Hanging American Traps



Figure 6. Oviposition Weighing ovipositor gypsy moth

The center of unmatched silkworms in the walnut-fruit plantations of the Karakul site around the Tash Gas training camp, according to the Ural Scientific Research Institute of Forestry, began to decay under the influence of destructive measures carried out in the past by leshoz employees and the natural mortality of caterpillars and pupae of the pest from bacteriosis. Therefore, the number of male silkworms in the traps was somewhat lower.

Most of all, silkworm male butterflies fell into open type truss traps with an adhesive insert. Butterflies flown by the smell of the phenomenon were fixed on glue liners. When counting, such butterflies were removed with tweezers from the surface of the liner. After a decade, as the adhesive was added and the glue surface of the liner became dirty, they were replaced with new ones. Typical American traps of a closed type have no glue liner. Slit windows do not allow butterflies flying to the phenomenon to immediately fall into the trap.

Improved American traps with a collection bag made it possible to count flown butterflies not daily, but as individuals accumulate in the container, in our case after 3 days. Such advanced bag traps will find wide application in the practice of protective plants. So, for example, in the plantations of the Aktash site at the beginning of July for three days 563 moth males fell into such a trap with a collection bag.

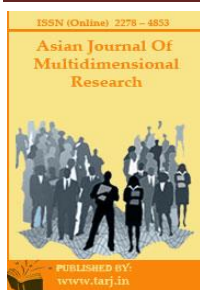
CONCLUSIONS

The life span of butterflies varies significantly and depends on the caterpillar's energy reserves and ambient temperature. Gypsy moth butterflies do not feed, their mouth apparatus is reduced

Females, according to some authors, live from 10 to 15 days, less often up to 25 days. Males are up to 6-10 days old, since they spend a lot of energy to search for females. To determine the amplitude of these fluctuations, the hatching butterflies in the cages were left for further observations and their vital activity was recorded daily: mating, egg laying and their number in each egg-laying. Butterflies were kept in laboratory conditions in cages at air temperature + 24°C, until their natural death. 40 butterflies participated in the experiment, of which 20 were females (♀) and 20 (♂) males. The average life span of females of butterflies was 13 days, males of 7 days. However, in natural conditions, butterflies can live longer.

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INCREASING EFFECTIVENESS OF ECONOMIC EDUCATION PROCESS IS BASIS FOR THE DEVELOPMENT OF QUALIFICATION OF ENTREPRENEURSHIP

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ABSTRACT

The article shows the role of entrepreneurship in the development of the national economy and the role of youngsters in it. There is information about the programs adopted for the development of youth entrepreneurs and loans allocated for it. The article defines the importance of economical knowledge and its efficiency, as well as the significance of this process for the development of entrepreneurial skills of young people. There are also recommendations are given for young people to develop entrepreneurship.

KEYWORDS: *Young Entrepreneurs, Education, Economic Education, Economical Education Efficiency, Development of Business Skills In Students.*

INTRODUCTION

New rapid growth of the economy requires modern, conceptual approaches in the science of world economy. In addition, in economy effective activity has been studied more extensively than industrial activities, socially oriented activities are aimed at ensuring quality and sustainable living standards in the society.

In the practice of developed countries, as one of the effective ways of developing economy is seen in the support and gradual development of entrepreneurship.

One of the main objectives of economic reforms in our country is improvement of business environment in the regions and creation of favorable conditions for doing business, as well as achieving economic efficiency through improving these activities in the regions.

At present, youth make up 60% of the population of our country. More than 105,000 young entrepreneurs are currently operating. Of course, this rate is very low. Therefore, it is important to increase the number of young entrepreneurs and develop their skill and experience in this field.

Analysis and results

Improving entrepreneurial literacy of the youngsters, teaching skills of setting up and running a business is a priority. Comprehensive support of youth entrepreneurship, active involvement of young people, create conditions for active involvement in business and create available jobs for youngsters. Also, according to the functions of 2017 – 2021 **action strategies**, that aimed to develop Uzbekistan in five sections, supporting initiatives, start-ups, ideas and fulfilling projects and teaching how to run business are being implemented. And by improving social-economic activeness of young people the implementation “Young people - our future”, that aimed to assure business of young, has begun.

Naturally, for developing entrepreneurial skills among young people financial resources are needed for initiatives, projects, and ideas. In this case, the conditions are being created by our government to support young people. For example, 7% rate loans are set through commercial banks for business initiatives, start-ups, ideas and projects. Here are some indications of the potential use of that investment in Namangan region.

1-TABLE INFORMATION ABOUT GIVEN CREDITS BY ALL BANKS ON THE BASIS OF “YOUNG PEOPLE - OUR FUTURE”

№	Banks name	Credit for September 2018-2019		Total plan for 2019		The number of jobs actually created
		number	Amount in million	number	Amount in million	
1	Nation's Bank	82	18 614	190	43 195	386
2	National Bank	77	23 570	213	59 221	324
3	Partner Bank	47	15 256	88	41 732	332
4	Silk Road Bank	50	12 082	83	20 170	191
	District in total	256	69 522	574	164 318	1233

Source: Made by the authors of the article on the basis of data from the Namangan Region Department of Statistics

From these figures, it is clear that the investment for development and support of entrepreneurial activity among young people is increasing year by year. Therefore, one of the most important

issues is increasing the number of young people who use it, start their own business and engage in it.

Entrepreneurship is achieved through the acquisition of economic knowledge and skills, and by applying the acquired knowledge and skills effectively. At the same time, any process consists of a set of legitimate and consistent actions aimed at achieving a certain result, and consequently it relates to education and upbringing. The main result of the upbringing process is the formation of a personality that is harmoniously developed and fully developed.

In the second half of the twentieth century, the question of economic education in pedagogical-psychology began to be studied as an independent direction. There have been many studies in the economic books about economic education, including economic education: as an element of labor education; as a generalization of labor, ethics, ideological and political upbringing; as an independent direction of the education system; considered. According to one of the leading scientists of our country I.Inomov: "Economic education has many forms depending on its aim: educational work is a complex and difficult process, which creates a stronger goal in the social context of education. We call it economically conditioned".

According to J.Khasanbaev, economic education is defined as the role of production in society, the means of production and tools, the teaching of interrelationships between tools and the acquisition of skills in this knowledge among people.

Results of economic education, according to G.X.Gebekov, are seen in how children deal with cost effectiveness of various resources (monetary, clothing and footwear, electricity and water, food and recreation, time and health).

Economic education is linked to the educational process, and many of its issues are addressed as an important process of educating. Upbringing of individuals is one of the most important issues of all time for mankind. For centuries, "Modern Youth" has been complaining. And it is not just about the inability of adults to apply the attractiveness of their youth to the state of their youth. The other issue is more important - education always puts on new tasks, puts its own challenges, and demands new, unconventional decisions.

Thus, in a higher education institution *economic education* is aimed to prepare a specialist that has high qualification and who is capable of controlling his destiny, capable of objectively evaluating his place in society, his role and behavior in terms of economic feasibility and efficiency, capable of planning and predicting his life activity.

Diagnosis of the basics of economics and methods of economic education in the teacher, full formation of economic ideas - enhances *the effectiveness of economic education* in pedagogical management. Also, *the effectiveness of developing economic education* also depends on the systematic organization of academic and extracurricular activities that give students the opportunity to acquire economic knowledge and develop their potential economic abilities.

The economy is the solution to these two problems - where the money (not necessarily money) comes from and how it should be spent (used). Young people participate in economic processes. They buy products from the stores, use the services, provide the services and, at the same time, make economic experiments for the first time or gain necessary skills. Therefore, the task of educators is not only to teach young people economic knowledge, but also to teach them how to use it in practice.

The *effectiveness of development* of economic education in young people requires these:

- A high level of economic competence of teachers and administrators of educational institutions and parents;
- Organization of lessons and excursions, as well as study of economic knowledge and production in the labor process, which is beneficial for the labor productivity of society;
- teaching students how to organize households, use time effectively and save material values;
- training how to save and economize in material and service production;
- looking at specific situations analyzing of problems in the production and service enterprises,
- Formation of the ability to make independent decisions in various situations and so on.

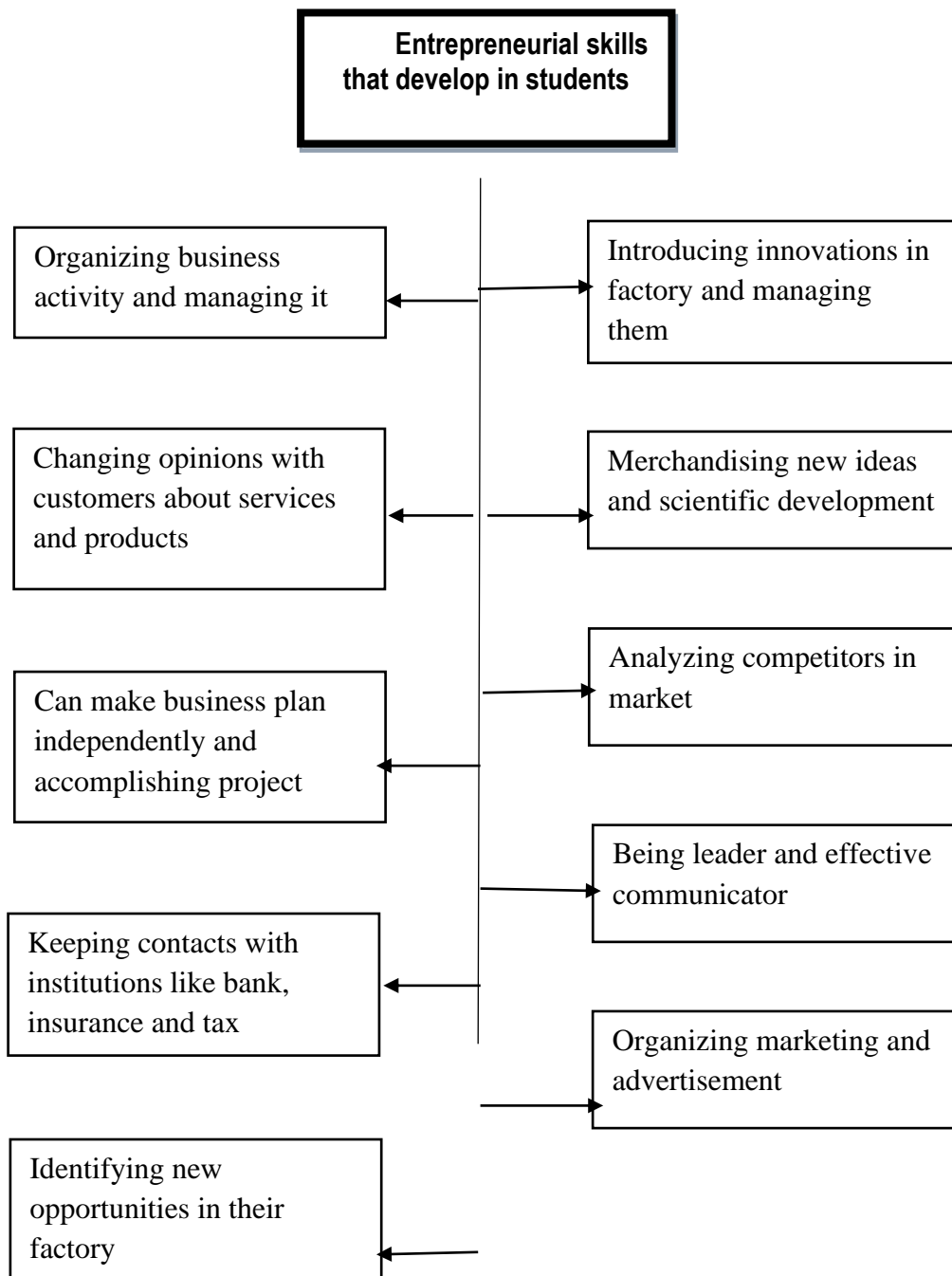
At a piecemeal transition to a market economy, we rely on the potential of today's highly qualified economics educators to educate personnel that are educated and skilled develop all sectors of society extensively, particularly in the service, entrepreneurship, education, food industries. In order to develop business activity increasing the number of personnel, that has a high level of knowledge and skills, is a requirement of the time.

It should be mentioned that the education of students on the basis of the economic activity of entrepreneurship and the acquisition of knowledge, skills, qualifications, economy, and financing activity of enterprises serve as an important priority in opening internal skills of and improving the performance of each student. It also requires the population to develop specific skills in their business and student learning through the creation of a wide range of effective modern technologies in the economy and their involvement in the activities of manufacturing companies. Therefore, it will be expedient to teach students theoretical basis of economy and provide students with practical knowledge and skills.

These tasks can be varied, all of which will create the entrepreneurial qualities among students, enhance economic consciousness, thinking and culture.

Developing entrepreneurial skills in higher education students will help them avoid problems encountered in their future employment, as business plans for student youth will play an important role in their future employment.

The development of students' economic knowledge, skills and qualifications in the nature of entrepreneurship is reflected in the following.



1-picture. Entrepreneurial skills that develop in students

In our view, the conditions created for young people need to be further expanded and improved. After all, the vast majority of young people do not have necessary skills and abilities needed to start and develop entrepreneurship.

CONCLUSION/RECOMMENDATIONS

When starting and developing their business, we think they should do these things:

- enrichment of skills and knowledge, that relate to entrepreneurship, in young people;

- supporting entrepreneurial initiatives;
- broader teaching of investments and types of investment used in entrepreneurship and expanding young's knowledge about them;
- finding, applying new approaches to learning and teaching entrepreneurship;
- development of business culture and qualities;
- to show the importance of entrepreneurial activity in the region's economy
- to expand understanding of the flexibility of entrepreneurial activity in changing conditions and so on.

In conclusion, we can say that a large part of the population of our country is youth, who occupy various directions. Entrepreneurial activity plays an important role in the development of the country's economy and can be organized in various fields. At the same time, it is necessary to develop entrepreneurial skills among youngsters, which can be achieved through the development of economic education. Positive results can be achieved through the use of pedagogical technology in the development of these skills and competencies.

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