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WAYS TO DEVELOP FOOD SECURITY

Ahmadali Gofurov

Professor, Doctor of Economics, Fergana State University

ANNOTATION

The article says that every economic policy carried out has a reasonable economic policy, national cooperation, an important factor of labor, and the obligation of every person to live a prosperous life.

Keywords: food security, economic policy, solidarity, factor, prosperous coexistence, peace, agriculture, Samarkand Summit.

Nowadays, our country is full of peace, our marriage faravon, wedding, tableware. In such socio-economic conditions, the rational economic policy pursued in our country under the leadership of the president, the solidarity and hard work of our people are an important factor and a guarantee of the prosperous life of every person. However, the alarming phenomenon in the world-the events are alarming according to the United Nations Food and Agriculture Organization (FAO), now more than 850 million of the world's population over 7 billion are malnourished. In this regard, to ensure the safety of food products and to ensure its safety, sharp measures taken in Uzbekistan and in the world, at the Samarkand summit of international organizations, in particular the Shanghai Cooperation Organization, at the Astana summit of the Council on cooperation and trust measures in Asia and at the meetings of the Council of Heads of state of the M.Food in mirziyov's speeches and on the effectiveness of projects of international organizations in our mamalakat-it will be devoted to the factors of ensuring food safety.

It is known that from the beginning of the emergence of mankind, the need for a global solution in the whole world increases, regularly confronting and facing the problems it requires. The most important of them is the spread of various infectious diseases that directly and indirectly affect the gene pool of peoples and peoples, and occur in the environment in which people and animals live in a relationship, regardless of race, nationality and religious beliefs. Such diseases, in particular the coronavirus covid-19 pandemic, in addition to causing economic and moral damage to countries, also threaten the health of people, and such a situation is currently finding proof in the life of mankind. Uzbekistan also has all the right grounds and practical measures in this regard. At the same time, the need and need to develop and implement strategies aimed at further increasing food production, increasing the cost and quality of the primary life factor in the world today is increasing. Speaking internationally about ensuring food security, such measures are a lever of the United Nations ' Millennium Development Goals, first of all, against hunger and reducing poverty, in particular, increasing the level of malnutrition, which is the basis of the efforts of all countries of the world. And mamalakatımızımız, unlike some countries in the world, has chosen its evolutionary path of development in order to build a Democratic state based on a socially oriented market economy from the initial period of independence, to implement large-scale reforms in all sectors.



In the process of Islamization in all spheres of consistent implementation, the amount of basic types of food products per capita in our Republic, regardless of national, racial and religious beliefs, was not at a satisfactory level when compared to those in other countries, and the volume of agricultural processing was at a very low level. Because, the main reason was that over twenty-one million inhabitants of our country were brought daily many types of food products at expensive prices from other republics due to the fact that the main cotton area of the Union of Uzbekistan was transformed into monoculture conditions and fell into grain dependence. Despite the favorable soil and climatic conditions in Uzbekistan, 80-85% of our population needs for bread alone were satisfied at the expense of imported grain and grain products. In the event of a sharp decrease in soil fertility due to the fact that the land did not find a real owner, and a violation of the rule of use of strong chemical poisons, a violation of the principle of cotton cultivation during the century period, a violation of the principle of amonation planting, a deterioration in the orientation and Melor state of According to statistical organizations of the Soviets in 1989, about a million grain crops were harvested in Uzbekistan in 17 ts/ha per hectare.

During that period, the main task of the transverse multi-order before the state was to provide our rapidly gaining independence people with grain and grain products grown in us, and measures aimed at achieving grain independence began to be implemented consistently. Arable land was given to farms and individual farm owners, cotton fields were sharply reduced. This auspicious measure and initiative was also the first president of our country to lead. The ways of development of ensuring food security in the conditions under which New Uzbekistan is being seen after ten years 2001 we received 4.1 million tons, in 2017 7.3 million of which wheat is more than 6.9 million tons, in 2011 7.5 million, of which wheat grain is 6.1 tons, and in 2021 7.6 million tons, wheat It is known that the amount of grain grown most importantly increased not only due to the expansion of crop fields, but also due to the grain extracted from each hectare, as well as due to the improvement of the reclamation state. For example, in 1991, an average of 22.1 centners per hectare of grain crop area was raised, and in 2001, an average of 32.7 centners, and in 2019, an average of 42.6 centners, of which 46.3 centners per hectare of wheat crop. And cotton was harvested up to 25.6 centners.

The essence is determined when all scientific conclusions and data are compared and compared. We want to say that in the current conditions, when comparing the situation in our Republic and in some regions and countries of the Danube, abundant prosperity in our native country is a force of prosperity at a time when such a complex situation is observed in the world. From this point of view, when observed, it turns out that the number of inhabitants of our country is growing steadily. Despite this, the amount of food products produced per capita increased several times. This indicates how correctly the reform strategy in the industry was chosen. It is noteworthy that in recent years, the growth of agricultural products in the volume of cultivation, in particular food products (cereals, potatoes, vegetable and vegetable products, fruits, grapes, meat, milk, etc.), on average, is not less than 5.6 percent.

Without another important indicator, the essence of food supply will not open. While it is also, over the past period, the population increased from 21 million to 35 million or 160 percent by 2021. Despite this,



during the period of independence, meat consumption per capita increased from 29 kg to 315 kg, milk and dairy products from 210 kg to 315 kg, egg products from 119 pieces to 229 pieces, potatoes up to 91.1 kg, vegetables up to -300.4 kg, fruits-up to 80.9 kg, grapes – up to 35.5 kg, more than 191 types of fruit, vegetable and vegetable products prepared on the basis of their processing are exported to more than 80 countries of the world. Behind these rising achievements and victories lies the winter footprint of agricultural, farm and clusters, as well as individual workers, industry professionals and officials of the municipality, the whims of spring, the heat of summer, and the hard work they did selflessly day and night.

The International Fruit and vegetable Fair, which is held continuously every year in Uzbekistan (the first international fruit and vegetable fair on July 12-16, 2016), is attended by representatives of companies and firms, international organizations and financial institutions of more than 20-25 countries of the world, leading experts and specialists of large amounts of contracts are signed. Especially such fairs in 2022 will be held in the regions of Uzbekistan, which will make it possible to increase the amount of fruits and vegetables. But in recent years, despite the impact of the coronavirus pandemic, more than 160 large private grain enterprises with a capacity of about 3 million tons have started operating in the regions of the Republic, but all their grains have flour production, of which 54 percent falls on the hiss of private grain enterprises. In order to meet the growing needs of our people rationally, it was known that within the "Uzdonmahsulotkompany" 43 enterprises were not ready to work effectively in the transition to a market mechanism.

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MECHANISMS OF FORMING THE CHARACTER OF TOLERANCE IN PRIMARY CLASS STUDENTS

Ulug'nazarov X usanjon Choriyevich
Termiz State Pedagogical Institute, Department of Pedagogy and
Psychology 2nd Year Graduate Student

Annotation

This article analyzes the pedagogical issues of fostering a culture of tolerance in elementary school students.

Keywords: tolerance; The Koran; Neb·u·chad·nez'zar; Joseph José Haggai; care; empathy; generosity;

LOG IN

Participants from 185 countries participating in the 28th session of the NESKO Organization (November 16, 1995, Paris) signed the Declaration of Tolerance [2]. Also, 2003 was declared the year of international tolerance on a global scale by the UN. November 16 was declared an international day of tolerance and celebrated around the world. It became a tradition to hold various international conferences and conferences on the subject of tolerance and began to be interpreted by scientists in a meaningful and meaningful way.

In an independent world, the problem of tolerance has become an object of research by philosophers, politicians, historians, sociologists, teachers, and psychologists.

RESEARCH METHODOLOGY AND EMPIRICAL ANALYSIS

Developing the characteristics of tolerance in the younger generation, including elementary __ grade students, is in the threnient love for mankind, in the pursuit of peace and tranquillity, in respect of the great, to be honored to the younger, to be sincere, to be open - minded, to be honest, to possess kindness, to possess humanitarian qualities, to have mercy, to give thanks, to give generously, such qualities as love for God, pride in national pride, loyalty to feelings of national pride, goodwill toward other religions and ethnic groups, determined by squeezing.

Of course, tolerance is a spiritual moral quality that is shaped in an educational process that is aimed at a specific purpose, effectively and consistently organized.

One of the traits of tolerance that should be embedded in the content of all continuous education in young people from the family is the issue of compassion.

Religious accounts, holy books, verses say a lot about moral teachings, interpersonal problems, caring for relatives, children, helping the weak, and being cruel. At all times, there were young people (children, adolescents, teenagers) who were left without parents or lost contact with certain people in a particular society. Social attention to them varied in different societies and states.

The doctrine of cruelty, which was formed in the seventh and sixth centuries B.C.E., describes individuals and communities as an integral, unified unit. The opinions of the team were both the



opinions of the individual and the work of the congregation. The harmony of social and personal interests was an important sign of a seed society.

"Ar-ta-xerx'es" also emphasizes the issue of appointing government contributions to some groups of people. For example, families with many children were assigned government benefits. Women who have two or three children in one way or another are given various awards. Also, caring for pregnant women was considered the main human duty .

In the teachings of Islam, attitudes toward such individuals based on humanitarian ideas have been described as the highest quality. (Matthew 24: 14; 28:19, 20) Jehovah's Witnesses would be pleased to support more than the ge-weight—even when it was swal· no

It is a great reward to be kind to the righteous (i.e. orphans) according to the ideas of Islam, to take care of them, but rather to despise them, humiliate them, as well as to eat the rights of orphans.

The koran's image of Niso explains: "Test the orphans for as long as they reach the age of puberty . If you find them in a state of consciousness, hand over their moosa to them. Do not waste the molars and rush to eat without having the owners large. Let the orphan be a parasite. But if he is poor, let him do it with goodness (that is, according to his service). But when you return the cattle to them, bear witness. He is a sufficient reckoner.'

"If distant relatives, orphans, and the poor are present in the distribution of inheritance , give them a good word by enjoying the same inheritance."

"Those who oppressively eat the believers of orphans will undoubtedly have eaten fire into their stomachs. And of course, enter hell."

The work of Oriental hypocrites also emphasizes that it is appropriate not to hurt the hearts of strangers and orphans , to show them compassion, and to support them materially and spiritually as much as possible, and to be loving and caring for them He will be called.'

In his writings, Joseph José Haggai (in the 11th century) also highlights the issue of orphanhood and attitude toward orphans, arguing that being "poor, widowed, and kind to orphans" is one of the highest human qualities. This category teaches people that it is high-level to help and entertain people in difficult situations. According to The Watch Tower Publications Index and the Research Guide for Jehovah's Witnesses, showing compassion and kindness to the poor, widows and orphans is a vivid manifestation of "true justice."

Neb-u-chad-nez'zar, the great poet who truly became a "people's writer," is considered one of the most zealous people in organizing the upbringing of the younger generation. It is noteworthy that near these monasteries, he also opened schools for orphaned children. This category not only provided conditions for children to learn but also provided them with clothing, food, and learning sources (weapons of books and writing).

God, the king of Mogadishu, wiped the heads of orphans and paid special attention to their upbringing . In the days of God, orphans gathered and raised children left without parents in the palace . Some disadvantaged families have also entrusted children with chamber rearing. Because they were taught in the palace, provided with sarpoes, and taught them a variety of professions.

The children served in palaces, official documents, horseshoes, kitchens and dining rooms, pigeons,



gardens, and bathrooms, participating in hunts organized by chambers and princes. The right hand should be filled with sarpoes, such as jackets, necklaces made of necklaces, boots, and doughnuts. Those who served in the palace were given atlases and garments from their king.

CONCLUSIONS AND DISCUSSIONS

Over the years, there has been a special emphasis on developing traits of tolerance in citizens , helping the poor, and protecting the needy socially. Therefore, developing traits of tolerance in young people is considered a guarantee that the nation will live in peace with one another and with other peoples . Mutual respect and attention, recognition of the interests of others, and compassion regulate and systematize interpersonal relations.

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**DETERMINING THE HEALTHY AND PHYSICAL DEVELOPMENTAL EFFECT OF
PHYSICAL EDUCATION AND SPORTS ON CHILDREN'S BODY**

Abduraimov Shaxboz Panji o'g'li
Lecturer at the TermizState Pedagogical Institute

Bozorov Saydulla Odil o'g'li
Master Student of Termiz State Pedagogical Institute

Anatisation

In the development of the children's body in physical training classes, emphasis is placed on physical qualities, in this process, the characteristics of the children's body are also taken into account, and loads are organized effectively. At the same time, the skill of the trainer is of great importance for the physical development of the child. Physical development of children will have a positive effect if the loading is correct and effective.

Keywords: Sports competitions, sports results, technical and tactical skills, international competitions, general and special endurance, strength, speed, agility, flexibility qualities, skilled athletes, physical training.

Achieving high sports results in today's sports competitions depends not only on formed technical and tactical skills, but also on highly developed physical training.

The duration of competitions held in various sports is determined by the rules of international competitions. During these competitions, the longer the athlete is able to maintain his work ability in terms of quality and efficiency or has the "power" to increase it, the more success he will inevitably receive. In other words, the maintenance of the quality and efficiency level of work ability for a longer or shorter period of time is the type of general and special endurance qualities (speed, strength, quick-strength endurance, jumping endurance, "technical-tactical endurance", etc.) is determined by how developed it is.

It is known that when it comes to work ability, especially when the word refers to its quality and efficiency, the essence and final "core" of the matter goes back to whether other physical qualities are formed or not. That is, it embodies the qualities of general and special endurance, strength, quickness, agility, and flexibility suitable for effective results. The interdependence of these qualities and their high-level integrated result determine the specific fate of sports skills.

Targeted physical training is one of the most important factors in building sports skills and achieving high results during the competition. However, in sports practice, there are often cases where planned physical exercises do not give the expected result in the development of appropriate movement qualities. One of the main reasons for this is that the volume and intensity of one or another physical exercise used in training and the level of influence of these parameters on the body of the participants (reaction of the body to the load) are not objectively evaluated. That's why taking into account the



physical load (physical exercises) used during training and the functional capabilities of the body of the participants makes it possible to plan this exercise accordingly.

In the training of skilled athletes, special attention is paid to two interrelated aspects of movement function:

- Training the athlete in technical and tactical skills and improving them;
- Education of the athlete's physical qualities in accordance with the characteristics of the chosen sport.

The concept of physical fitness means the level of comprehensive (harmonious) development of the athlete's movement qualities. Approaching the issue in this way is appropriate from the point of view of forming the health of an ordinary person (including an athlete). Of course, this is also necessary in the "Big" sport. However, such practice and the training methodology based on it are likely to reduce the effectiveness of training qualified athletes and achieving high competition results. Because, due to the existence of specific and appropriate characteristics of each sport, if the quality of strength and speed prevails in one sport, the quality of endurance plays a leading role in another sport, or the quality of flexibility is the main one in a third sport. will be important. However, it does not follow from the mentioned opinion that a certain physical quality is very necessary in a certain sport, and another is not important. On the contrary, each quality has a more or less important "share" in a specific sports situation.

The above-mentioned opinions and comments were especially evident in sports.

Special attention is paid to this problem in the scientific and methodological literature related to the field of sports.

In recent years, scientists have been increasingly interested in the role of physical training in the training of qualified athletes, including the interdependence of physical qualities and their impact on sports skills.

It has been proven from the beginning that building the qualities of strength and speed in a mutually compatible way has a positive effect on the training of the athlete.

When it comes to the importance of physical training and, in particular, the formation of movement qualities (speed, strength, endurance, agility, flexibility) in the training of athletes, it is appropriate to emphasize the quality of speed and strength in this regard.

On the basis of the skill of the movement performed in each type of sport, the quality of speed and strength is considered an important resource. For example, in Sport, to perform an attack shot over the net, the quality of the quick-power is a factor that ensures the success of this skill; In sports, this quality is lacking in the use of attack or counterattack methods with great force in a short period of time. In fact, according to the results of observation, most of the athletes who won in the World, Olympic, European, Asian and other international sports competitions have highly developed quickness and strength abilities.

The quality of endurance in sports is one of the main sources leading to victory. The role of special endurance in sports is incomparable. In this regard, well-known research scientists provide very important information that attracts attention. For example, one of the relatively different features of



technical skills in individual sports is complex movement skills performed on the basis of speed and strength in a changing competition situation. It is this quality that shows its leadership in decisive situations. At the same time, it is not necessary to prove that the performance of technical skills with high efficiency during a long-term competition is directly related to the quality of special endurance. According to the observations of the research scientists, the technical skills performed by the participants of the World Championship in Freestyle Sports during the competition were significantly reduced in the 3rd round of training. This situation emphasizes that the special endurance of these athletes is not developed at a high level. So, it can be seen that the quality of special endurance occupies a special place in maintaining the effect of technical skill for a long time during competitions.

It is known that it has been proven that special endurance is effectively formed when general endurance is well developed.

To develop special endurance, the athlete needs to perform special technical exercises for a long time, even in the presence of fatigue complications. General endurance is formed on the basis of long-term performance of high-volume exercises (long-distance running, rowing, swimming, cycling, etc.) at moderate intensity.

One of the main tools for the effective development of the athlete's special endurance is the training methods performed on the tatami - technical skills.

The quality of flexibility is also one of the necessary factors in the training of athletes and the formation of technical skills. An athlete with highly developed flexibility will be able to skillfully perform technical skills such as breaking from the "most" position, bending and lifting.

Flexibility is formed gradually through long-term training. If flexibility exercises are stopped for a while, this quality can be dramatically lost or reduced.

The methods used in sports (technical) skills form flexibility. But this alone does not give the opportunity to fully develop this quality. In order to effectively improve this quality, it is necessary to slowly and regularly use special exercises such as stretching, bending, spreading, squeezing, and twisting of muscles, tendons, and joints.

It is desirable to form flexibility from a young age. At the same time, the development of this quality requires caution. Exercising - exercises that are used violently and sharply can cause damage to muscles, tendons, joints, and even serious injuries.

In addition, the development of agility and strength qualities is of particular importance in the training of skilled athletes. It should be noted that the harmonious development of all physical qualities during training is the key to training skilled athletes.

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**GYMNASTICS AND MOVEMENT ON THE COORDINATION SKILLS OF CHILDREN IN
THE PRE-SCHOOL EDUCATION SYSTEM FORMATION THROUGH GAMES**

Qurbonova Muborak Soat qizi
Master Student of Termiz State Pedagogical Institute

Anatisation

In this article, it is revealed that gymnastics and movement games are the main means of physical training and movement activity conducted with 5-6-year-old children, as well as the development of physical qualities.

Keywords: Physical qualities, gymnastics, exercise, technology, static, complex movements, national games, physical development, movement activity, games, children.

In his Resolution PQ-2707 dated December 29, 2016, "On measures to further improve the preschool education system in 2017-2021", the President of the Republic of Uzbekistan approved the support program "Bolajon" and "Preschool Education" in the draft law developed on the basis of State requirements" emphasized the fundamental improvement of the preschool education system.

Physical fitness of 5-6 year old children depends on the technology of conducting gymnastic exercises and active games, as they occupy an important place in the daily routine of children of this age. Children's activities during dynamic and game hours should be organized in such a way that education always leads to development. For this, games should include not only activities that are well known to children and that they can perform without difficulty, but also activities that they perform with sufficient effort. It is necessary to take into account not only the current level of physical and mental development, but also the future potential of children.

This is very important, because only very complex tasks can activate the child's development reserves and bring about changes in the body that cause a unique addition to his mental and physical capabilities in the conditions that are properly organized for its execution.

As a result of activity during games, new knowledge, skills, forms of behavior and types of activities are formed in the child. Therefore, the main task of the teacher is to increase children's activity and manage it with the help of various means of physical education, including national and movement games. How to increase children's activity and manage it during active and national games?

First of all, during the explanation of the game plot or movement task, it is necessary to direct the children to form reasons that will certainly encourage them to complete the task. For this, children need to have certain experience, which includes knowledge specific to this game, movement skills, and the ability to analyze and evaluate their own and the team's actions.

Secondly, it is necessary to direct children to the educational purpose of movement activity, that is, they should know what specific movement skills they should master and what new information they can get from the game. For this purpose, it is necessary not only to increase movement activity in general, but also to focus children's attention on physical qualities that are clearly developed with the help of this



game.

Thirdly, it is necessary to evaluate children's movement activity according to a specific final result that can be compared with the initial data of movement tests.

It is possible to use gymnastic exercises and dynamic games in the daily routine to expand children's motor activity and mental functions. Currently, the level of intensity of loading has been developed in the use of games for the development of physical qualities.

In this way, the child's activity is always free, conscious and controlled. To implement it, the child must have appropriate movement and physical qualities. It is important what qualities are needed, what is their level of development, how is this determined, what is their scope and what are the features of their relationship with mental functions. It is known that in order to master the movement and bring it to a skill, it is necessary to participate in different levels of consciousness in the process of activity. The lowest level for a child of preschool age is the reflector level. Most programmed exercises should be mastered at the highest level - at the level of conscious acquisition of knowledge and skills, their practical implementation.

Technology includes the idea of the structure of actions, the methods of their execution and the final result, as well as the knowledge that helps to implement this action.

Gymnastic training and active games have a hygienic and health-improving value when they are properly organized taking into account the age characteristics and level of physical fitness of children. Pedagogical technology of moving houses is the main tool for choosing a game and active movement of a child depending on his age.

It is important to remember that games limit the ability to precisely regulate the load, because it is impossible to predetermine the actions of each child. The constantly changing situation in the game and the high sensitivity of the interaction of the participants of the game do not allow programming the content of some exercises. Therefore, it is necessary to monitor that the downloads are optimal during the games. In systematic (classified) training, intensive loads can be used from time to time so that the child's body gradually adapts to it.

And when conducting games close to sports games, children can be given different but specific tasks depending on their level of preparation and work ability:

- play only in defense or only in attack;
- jumping from the narrowest or widest part of the conditional obstacle;
- throwing balls from the near or far mark line;
- increase or decrease the length of the running distance

It is necessary to simplify the playing conditions for the most empty team (repeat exercises, reduce the number of obstacles, the length of the distance). Gymnastic exercises related to running and jumping and active games should not last long and should be carried out with frequent rests. Taking into account that the back muscles and tendons of children of preschool age have not yet been trained enough, it is impossible to use large, powerfully stressful games.

In conclusion, it can be said that a child gets to know the world while playing, and physical development and movement activity improve through active games. This is scientifically proven. Children should be



praised for even small achievements during play, but never be used to encourage children to engage in activities that increase their capabilities.

Morphological differences of children of the same age, different levels of physical development and biological maturity, functional and movement capabilities require a different, individual approach to the selection and use of physical exercises.

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**DEVELOPMENT OF PHYSICAL QUALITIES IN YOUTH STUDENTS BASED ON
DIFFERENTIAL TRAINING SYSTEM**

Uralov Sardor Abdulla o'g'li
Master Student of Termiz State Pedagogical Institute

Qurbonova Muborak Soat qizi
Master Student of Termiz State Pedagogical Institute

Anatization

In the article, it is explained that the development of physical qualities of students in higher education institutions on the basis of differentiated education is a socio-pedagogical necessity.

Keywords: Education, differentiation, technique, higher education, institution, physical culture, physical quality, student, development, differentiated education.

The comprehensive reforms implemented in our country have been the highest goal of the individual society - aimed at finding a solution to the problem of educating a physically and morally mature, mentally mature, spiritually rich person. The modern social processes taking place in our republic have increased the nation's need for high spiritual potential.

Decree No. PF-6099 of November 3, 2020 "On measures to improve the personnel training system and increase scientific potential in the field of physical education and sports" dated November 03, 2020 Resolution No. PQ-4877 and Resolution No. O'RQ-394 "On Amendments and Additions to the Law of the Republic of Uzbekistan "On Physical Education and Sports" dated September 4, 2015 as well as in other regulatory and legal documents related to the field¹ to create all the conditions for engaging students in physical education and sports activities; in them, special attention is paid to the formation of physical education and sports skills, taking into account their individual abilities and health status. Also, in our society, many opportunities have been created to constantly engage in mass sports, to make a healthy lifestyle our daily life, to create conditions for physical education and mass sports in higher education institutions and other organizations. At the same time, implementation of specific programs that help to strengthen the health of the population in the field of physical education and sports, wide involvement of young people in sports; "Introduction of innovative forms and methods to the selection (selection) process of talented athletes is defined as an important task."

One of the main tasks of modernizing the system of physical education and sports in modern conditions is to introduce advanced pedagogical technologies into the educational process, taking into account the individual characteristics of students. In recent years, there has been a tendency to decrease the level of health and physical fitness of students of higher education institutions that are not adapted to the field of sports. Therefore, today the problem of differentiated use of tools and methods in physical education and sports is particularly urgent.



Based on the research in the field of education in developed countries, the USA, Germany, France, China, Japan, and the Russian Federation, the study of individual and group differences between educational subjects in order to optimize the education and training processes based on a differential approach and at the same time great attention is paid to the issues of physical training.

The factor of training highly qualified specialists capable of creating new technologies and scientific developments is differential (differentiated) education. In the conditions of changing the educational system, the humanization of the process of education and upbringing takes an important place. However, this is possible only on the basis of a comprehensively developed and sociologically based methodology of scientific knowledge in the field of education. It should be based on concepts that reflect the true laws of society and individual development.

Values created and used by society for the purpose of physical training, physical development and physical training of students in technical higher education institutions, improving their abilities and movement activity, forming healthy lifestyle skills, social adaptation, creation of a set of norms and knowledge is one of the most urgent issues. In this case, it is important to organize the educational process based on a differential approach to the development of students' physical capabilities in the field of physical education and sports.

The directive documents developed by our government indicate the main directions of reforming the physical education and sports system, i.e., "the total number of people who regularly engage in physical education and sports should be increased to 30% in sports organizations and institutions. increase the total number of growing youth up to 20 percent; gradually increasing the quality of trainers and specialists in state sports educational institutions, in particular, the number of employees with higher education to 80%; development and implementation of an efficient and transparent system of selection of talented athletes among young people" and others. Therefore, during the development of the physical qualities of future specialists in technical higher education institutions, that is, today's students, on the basis of differential methods, to create conditions for the protection and strengthening of their health, the development of amateur physical education and sports activities, the organization of sports events, public sports and physical education-health events is of special importance.

Differentiation (lat.: "differentia"- "different", "different")- taking into account the individual qualities and abilities of a person, classification.

One of the main tasks of modernizing the system of physical education and sports in modern conditions is the problem of differentiated application of pedagogical tools and methods, taking into account the individual characteristics of students. However, the demand for the development of physical qualities of students in technical higher education institutions is increasing and the need for scientific justification of the socio-pedagogical necessity of this issue is determined by the following:

- 1) in the rapidly changing lifestyle of recent years, the dynamic movement of young people decreases, physical activity is reduced, as a result, excess fat accumulates in tissues and organs, and body weight exceeds the norm by 20 percent or more. the occurrence of manifest diseases;
- 2) diseases that develop against the background of gland disorders in the body as a result of hypothalamus and endocrine obesity, which develop due to high-calorie foods, consumption of sugary



and alcoholic beverages, sleep disorders (lack or excess sleep), sitting in front of the computer for a long time and lack of physical activity;

3) observation of cases of chronic difficulties in mastering the training load in physical culture classes for an "average" physically trained student, as a result of which young people with immature physical qualities do not seek to further improve them and lack of interest in physical education classes. 'to eat.

4) the problem of a differential approach to education attracts the attention of physical culture teachers, sports coaches and specialists, and the need to organize the differential use of various tools and methods in physical culture training, etc. All this shows that the differential approach in pedagogy and psychology is considered as a method of studying individual and group differences between educational subjects in order to optimize the processes of education and upbringing.

Therefore, in the development of the physical qualities of students in technical higher education institutions, in accordance with the purpose of training, the methods and tools of learning by students (technological operations), substantiating the methods of managing educational activities (teacher activities), requires an individual approach to the subject himself, to his personal activity.

Differential education is a type of education organized taking into account the typological differences, showing pedagogical and psychological differences, intellectual and physical development of representatives of various social, class, ethnic, age and other groups.

"Differential education does not mean adapting the student to the didactic system, but, on the contrary, creating the necessary conditions for his comprehensive development and maturation as a person, taking into account his individual characteristics." This type of education should create the necessary conditions for students to develop themselves, gain independent knowledge, fully demonstrate their internal capabilities and abilities, physical training, and cognitive activity.

Differentiated education serves to cultivate qualities such as independence, initiative, responsibility, as well as independent, creative and critical thinking skills in students. In the organization of this education, pedagogues are required to approach each student as individually as possible, to respect his personality, to express confidence in him. Therefore, the participants of the differential education teaching process represent the need to create a favorable pedagogical environment for mutual cooperation in the form of pedagogue-student or student-student, student-student group, student-student team, and personal development.

A pedagogue should strictly observe a number of conditions while using different types of education in physical culture training.

These requirements include:

- being able to see each student as a separate, unique person;
- respecting the student; ability to correctly assess the student's physical and mental condition;
- consideration of the student's wishes and interests;
- tolerant attitude towards each student; confidence in the student's strength, potential and aspirations;
- to create a comfortable educational environment for every student; create an opportunity for students to work independently or in small groups;



- teaching students to independently control their activities, to determine the effectiveness of their activities, to analyze the factors of success and the consequences of mistakes;
- not to pressure any student during the educational process;
- not to exaggerate the shortcomings of individual students;
- if the student's inability to acquire knowledge is noted, then without making a firm conclusion, determine the reasons for this;
- to eliminate the cases of the student's inability to acquire knowledge without harming the student's honor and pride based on the identified reasons;
- to be able to create an "atmosphere of success" for every student during the educational process;
- to help every student to succeed in education;
- to improve the physical qualities of the student, to help him to follow a healthy lifestyle.

"In the process of differential education, the student has the opportunity to develop a creative, critical approach to the learning material, to put forward new ideas, to justify them, to defend one's opinion, to find an effective solution in problem situations, and to master the skills. will have" [p. 9.56.]. In order to form a mature and physically healthy person with a high culture, special attention is paid to the education of the person, the development of a person's physical capabilities, and the acquisition of skills and knowledge in the field of physical culture and sports.

Thus, the issues of achieving the future professional development of learners, adapting them to social life based on the harmony of healthy thinking and beliefs are leading. Also, the issues of developing the physical qualities of students with different physical development, developing healthy thinking and high moral qualities in specialists with mature professional potential are gaining special relevance. The development of physical qualities of students in technical higher education institutions creates a foundation for the formation of strong will, healthy mind, sanogenic thinking and human qualities that will be necessary in their future activities.

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DEVELOPING THE PHYSICAL QUALITIES OF YOUNG FOOTBALL PLAYERS OUTSIDE THE CLASS AND PREPARING THEM FOR COMPETITIONS

Uralov Sardor Abdulla o'g'li

Master Student of Termiz State Pedagogical Institute

Anatisation

Football has been practiced in our country for many years. This sport is distinguished from other sports by the fact that football is a popular game, attractiveness of actions, teaching children to act as a team. A child's understanding of his teammates, understanding that his actions decide the fate of the team, encourages him to act responsibly in his position of defense, attack, midfield, and goal.

Keywords: Young players, football training, coach, physical condition, physical fitness, strength training, coordination abilities, endurance training.

What should we pay attention to when managing the physical condition of young players:

First of all, it is necessary for the coach to familiarize the children with their physical condition from the day they come to football training;

Secondly, after checking the physical condition of the child, if the physical qualities are weak in development (strength, quickness, agility, endurance, flexibility), give him moderated exercises in this direction and control their uniform development. Thirdly, the formation of the child's technical skills, in which individual characteristics, i.e. dribbling, performing deceptive actions, the ability to make quick decisions in unexpected situations;

Fourthly, it is important to get along with teammates, to be able to understand each other during the game, and to adapt to the tactics of the team.

Working with young players requires great skill from the coach. Working with each athlete individually, he should know his psychology well, adapt to the team and develop his physical qualities in a row. It is necessary to inculcate the concept of a team in a young player, to explain that acting as a team decides the fate of the game. Cultivating movement qualities is a part of a single training process.

Looking at the methods of improving the physical fitness of football players, we first of all mean the methods of training physical qualities. The process of managing the physical condition of young players is a very important process. All five qualities should be equally developed in football. But it is necessary to take into account their condition when giving downloads to young players. The qualities of strength, agility, flexibility, quickness, endurance are developed through individual or general physical training. Cultivating strength. Human strength is determined by the ability to overcome or resist external resistance through muscle strength. The player works with his own weight and the weight of the ball. In other words, he mainly uses his strength to overcome the inertia of his body and the ball. Starting the movement, accelerating it, stopping it, changing the direction of the movement, jumping, hitting the ball - these are the qualities that show the strength of the players.

As you can see, it has a dynamic character in all cases. Thus, the nature of game activity determines the



level of development and characteristics of the power manifested in the game. Years of research have shown that the lower the amount of resistance to be overcome and the faster the muscle contraction, the lower the value of maximal force. A football player needs a certain amount of power, and he must use this power in a short period of time. This force is "dynamic force". Dynamic strength is defined as strength in movement and is manifested in the ability of players to hit the ball, shoulder-to-shoulder with the opponent, and quick strength skills in movement.

In order to achieve a combination of strength and speed in football players and not to deteriorate the coordination capabilities and endurance, it is necessary to use such tools and methods of training that are in accordance with the requirements of movement activity in football.

It is very important to select special running exercises, jumps, movement exercises with various loads, and perform them using a strictly ordered exercise method, in particular, a repetition method, a continuous standard exercise method. In the course of the game, a young player is required to show strength in a short period of time. Various jumping exercises (running and standing long jump, classic triple jump, high jump) are effective means of increasing the special "explosive" forces of football players.

Jumping exercises help the young player to jump as high as possible. This feature is very important in winning the fight for the ball coming from the top on the second floor. Training speed. Speed refers to a person's ability to perform a certain action in a very short time. Speed comes in four forms:

- reaction time;
- individual movement time;
- maximum frequency of movement;
- the speed of the start of the movement.

The most desirable physical quality that is important to develop in young players and is necessary for the sport of football is speed. Speed in football is not only about moving quickly on the field, but also the speed of thinking and the speed of working with the ball. The speed of thinking means that if the player does not make quick decisions in the situations that arise during the game, the plans will not be realized and the situation will be lost.

In terms of football, a player who is fast beats the opponent in terms of both time and space. It can successfully solve the tactical task with relative freedom. In football, the closest way to the goal is often not a straight line. To achieve the goal, i.e. to score a goal, the player moves on the field, changing his position depending on where his partners are and where the ball is. In turn, this work is carried out during one-on-one combat. A football player should always be ready to suddenly change the direction of movement while going at a high speed, to perform some technical method and similar actions in a position where it is difficult to hold the body and often in a single support position. In this regard, players should try to keep the center of gravity of their body as low as possible. Thus, the player's speed consists of a whole set of components. Training of speed in young players includes exercises such as fast running with time, shuttle running, standing jump and suddenly running forward for a certain distance, and running around obstacles.

Agility is a complex coordination ability, and it is difficult to find a single criterion for its evaluation.



the complexity of the tasks, their accurate and timely execution (in football, this is the shortest time from changing the situation to the moment when the response action begins).

The agility of young players is firstly shown in the actions they take without the ball when they are carrying the ball in the ever-changing situation on the football field. Carrying the ball, choosing who to pass to and kicking the ball requires the player to show a wide range of coordination capabilities.

If this includes the fact that the movement and technical activity of the players takes place during one-on-one training and various initial situations (overhand, rolling, jumping and heading, etc.), the conditions of the game are constantly changing. (rain, heat, grass, grass field, natural and artificial lighting), it shows how important the developed dexterity qualities are for the player to be effective in the game. z is self-explanatory.

In order to improve the qualities of agility, it is necessary to acquire a variety of new movements, only then the unknown ones are easily mastered on the basis of certain skills. In sports theory, the concept of "extrapolation", i.e., the ability to immediately formulate a reaction to a sudden situation (based on certain movement skills), is widely used.

The greater the coordination capabilities of a person, the higher the level of implementation. Naturally, most of the opportunities for coordination should be created in childhood and adolescence. This does not mean that there is no need to develop and improve dexterity in skilled players. However, it is important to remember that agility is difficult to teach because it is a unique quality of each person. It is often observed that a football player plays the ball with his feet, head and body in a thousand tones during training, and that during the game he is in a helpless situation in the simplest situations. Accordingly, it is better to develop dexterity with the help of such tools that allow players to use them with the help of skills "acquired" in the game.

Cultivating resilience. Endurance of football players is defined as the ability to continue playing from the beginning to the end of the game. endurance is the ability to resist exhaustion. There are four types of fatigue in sports practice: mental, sensory, emotional and physical fatigue.

These four types of fatigue are typical for football players. Naturally, among them, the weight of physical fatigue is greater. In order to develop general endurance in young players, exercises involving prolonged movement are usually used. For example, fast walking for 400-800 m, running, 3-5 km cross-country are widely used among other exercises. It is also important to develop flexibility. Flexibility is the ability to perform movements in a large amplitude.

In conclusion, it can be said that it is very important to develop physical qualities and teach movement techniques in the process of preparing young players for competitions.

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**TEACHING LITERATURE LESSONS IN INTERDISCIPLINARY INTERCONNECTION
(ON THE EXAMPLE OF THE NATIVE LANGUAGE EDUCATIONAL SCIENCE)**

Fozilova Mohigul Farkhodovna

Independent researcher of University of Uzbek Language and Literature named after Alisher Navoi,
teacher of Uzbek language and literature department of Uzbek State University of World Languages

E-mail: fozilova1204@gmail.com

Contact number: 90-916-67-40

Annotation

In order to differentiate literary-speech competencies in literature lessons, the article develops the features of oral speech characterized by orthographic norms, other than biblical (written) speech, based on the norms of pronunciation and spelling of language phenomena studied in the native language.

Keywords: literature, native language, integration, interconnection, speech development, literary-speech competencies, speech style, orthoepy norms, speech-specific, word, word form, syntactic device, essay, text error.

In the science of methodology, the problems of interaction of the mother tongue with the literature, the interaction of the subject of literature with the mother tongue, membership, connection are studied, developed and covered to a certain extent.¹ Some research papers have devoted some pages to this issue. They contain valuable ideas and recommendations.² However, in these works, the connection of the subject of mother tongue in literature lessons with unfamiliar words, word forms, syntactic devices, features of speech style (orthoepic norms), specific lexical and grammatical features of speech activities, possibilities of relying on language phenomena studied in mother tongue lessons has not been specifically examined in terms of. The creation of the same methodology for the formation of literary and speech competencies requires this.

Methodist scholars see the need for interdisciplinary integration in the study of a literary work, including a link in the context of reference to language concepts. M.O. Sariboeva writes: "Nowadays, all educational materials, regardless of the basics of science, are aimed at the integrated study of the world. This interdisciplinary harmony is based on an integrative approach. This approach is reflected in the connection of language teaching with literature, literature, history, geography, music, fine arts,

¹ Abdullaeva B.S. Methodological and didactic bases of interdisciplinary connection (on the example of teaching mathematics in academic lyceums of social-humanitarian direction): Ped. DcS. ... diss. - Tashkent, 2006. - 264 p.; Mavlonova K.M. Improving the methodology of teaching the native language by integrating it with the subject of literature through the literary text. Doctor of Philosophy (PhD) dissertation on pedagogical sciences. - Tashkent, 2019. - 142 p.; Jo'raev R. Zunnunov A. Integration of educational disciplines in the educational process. Teacher's Guide. - T., Sharq, 2005. - 80 p.

² Qodirov V.A. Scientific and methodological bases of teaching Uzbek classical literature in secondary schools. Doctor of Pedagogical Sciences ... diss. Autoref. - Tashkent, 2009. - 8 pages



psychology, local lore”³. Methodist scientist V. Kadyrov, as one of the scientific novelties of his doctoral dissertation, says about the interdisciplinary connection in the study of classical works:

There are many general and specific aspects that need to be integrated with the subject of mother tongue teaching in the process of studying literature. S.A. Leonov takes a broader view of the interdisciplinary connection between the native language and literature in general. He writes: “Interdisciplinary connection from Russian language and literature in all speech development classes is carried out in the following areas⁴: 1) formation of students' knowledge and skills in functional methods necessary for the correct organization of speech activity in all genres of oral and written expression; 2) teaching oral and written forms of speaking activities that are common to these subjects; 3) to form an understanding of the visual and expressive means of the Russian language and literature, their ideological and artistic functions in the work. Obviously, the author also prioritizes methodological issues. Clearly, the style of speech plays a primary role in the development of oral speech.⁵

One aspect of the integration of literary studies with the mother tongue is associated with speech development: the protagonists of the work sometimes speak in a conversational style (in Hrol that follows the norms of orthoepy), and sometimes in dialect.

It is necessary to acquaint students with the need to convincingly portray the image of the heroes of the work in cases of deviations from the norms of the Uzbek literary language, in fact, to try to speak and write in all literary languages.

The interdisciplinary connection between literature and the mother tongue is evident in creative writing (mostly essays). Both spelling and text errors are common in essays written in the native language classes, as well as in essays taken from the literature. Work on such errors is mainly done by referring to them in native language classes or literature classes. Text errors are the result of a practical inability to study language phenomena that are not specifically studied in mother tongue lessons. Such errors are many, not three or four. This causes the written essays (created texts) to not meet the standard requirements. First of all, textual errors are not taken seriously by native language teachers, and more spelling and punctuation errors are detected when essays are checked.⁶

It is known that it is customary to assess the level of literacy of students based on their dictations, statements, essays (created texts).⁷ In dictation and partial statement, it would be appropriate to raise this issue to the first level, but the goal of creative writing is not only to strengthen literacy but also to lay the groundwork for the formation and development of related speech skills at the level of text syntax.

³ Saribaeva M.U. Teaching Alisher Navoi's works in modern methods in secondary schools (based on the work "Khamsa"). Candidate of Pedagogical Sciences ... diss. Tashkent, 2011. - p.76.

⁴ Qodirov V.A. Scientific and methodological bases of teaching Uzbek classical literature in secondary schools. Doctor of Pedagogical Sciences ... diss. Autoref. - Tashkent, 2009. - 8 pages.

⁵ Leonov S. A. Development of students' speech in literature lessons: Method, manual for SPTU-M.: Higher. shk., 1988. - S. 16.

⁶ Yuldashev R., Rixsiyeva M. Methodical manual with the name, page 33.

⁷ Yuldashev R., Rixsiyeva M. Textual errors in essays, methods of their correction. - Tashkent: «Science and technology, 2019. - Page 3



Because in such written works the written speech of the student: the advantages and disadvantages are as clear as a mirror.

In the methodological literature, however, recommendations for working on text errors have only just begun to appear. These recommendations allow us to understand the essence of creative writing and to direct teaching work towards a coherent speech structure. Textual errors in essays written by students can be divided into the following types in terms of technical design, content and compositional structure of the written work:

- 1) Organizational and technical text errors in essays;
- 2) Semantic-logical text errors;
- 3) Textual errors in the lexical-grammatical connection of sentences (including punctuation);
- 4) Textual errors in parts of the text related to the compositional structure specific to its type.⁸

It is impossible not to associate the mother tongue with the science of teaching in order to eliminate such errors in creative writing. This connection is made in the following directions:

- 1) Acquiring a wealth of words, morphological forms and syntactic constructions;
- 2) Getting acquainted with the synonymy of words, morphological forms and syntactic constructions
- 3) To get acquainted with the methodological use of words, morphological forms and syntactic constructions; in possession of this wealth
- 4) Mastering speech methods, practical methodological rules and following them in the development of speech activities at the level of competencies.

Apparently, all of these language units are studied in native language classes, so the programmatic and non-programmatic practical knowledge related to them is also taught in these classes. However, in addition to the introduction of integration with the subject of mother tongue teaching in literature classes, it is necessary to determine when and to what extent mother tongue lessons are taught.

The teacher can learn the differences in the rules of pronunciation and spelling of the Uzbek language from the book "Modern Uzbek"⁹ by linguist M. Mirtojiev. This is because in this scientific work, the differences in the pronunciation and spelling of vowels and consonants are described in more detail in terms of spelling rules.

Another need to integrate the mother tongue with the subject of study in the study of literature is to emphasize the linguistic phenomena used in the creation of images, especially the use of words in figurative senses.

In the textbooks and textbook sets created from the literature in 2010, only one or two questions or assignments related to the linguistic features of the work are given in the questions and assignments presented for the analysis of the works. But it is not well thought out to what extent this question and task will serve to understand the aspect of the work related to the same emotional-aesthetic perception. One of the problems is to determine which language concepts should be analyzed for this work and to give specific recommendations.

⁸ Yuldashev R., Rixsiyeva M. Methodical manual with the name, page 34

⁹ Mirtojiev Miraziz. Modern Uzbek language. - Tashkent: Teacher, 1992. - Pages 3–25.



According to the 2017 curriculum, issues such as how many classes are expected to provide theoretical information on speech styles, and in which class some impractical concepts are reflected in the exercises and assignments are studied.

In the analysis of works of art in literature lessons, in the formation of literary-speech competencies, the connection with the native language, especially with information about the methods of speech, plays an important role. The integration of the two disciplines also requires this. If we do not pay attention to speech styles, the mixing of styles in students' speech leads to the stabilization of lexical, morphological, syntactic, methodological errors inherent in the style of speech in written speech, errors are so absorbed that they are extremely difficult to correct.

Unfortunately, integration work on mother tongue topics with the need for literary education has not been done enough. The reason we say this is that speech styles are not studied in grades 5-7. Speech styles are mostly taught in 8th grade. Let's get acquainted with the content of theoretical information about the style of speech and artistic style in the textbook "Mother tongue"¹⁰ in 8th grade.

Conversational style is a style of speech used by people in the process of exchanging ideas in the family, on the street. Conversational style is often in the form of dialogue.

Artistic style is inherent in fiction, that is, works of art in which art, expressiveness, expressiveness is strong.

Exercise 5 required reading the texts to determine which style of speech each was specific to. Unfortunately, the text on the style of speech is not reflected here. At the end of the teacher gives assignments on theoretical knowledge (3 assignments). If students answer the questions within the framework of theoretical knowledge, there will be no change in the acquired knowledge, of course. Problematic questions are relevant here.

Opportunities to connect the subject of literature reading with some topics taught in the native language appear in the 5th grade. For example, in lessons where the pronunciation of vowels and consonants is studied, there are many rules such as "this is how it is said, this is how it is written." It is here that information about the orthoepic norm is given. The orthoepic norm forms the linguodidactic basis of the speech style. It is even possible to use the word speech in theoretical information: rules such as "spoken in speech, written in written" can be constructed, and such rules provide a basis for drawing students' attention to the style of speech.

Favorable opportunities arise for the integration of the work of art with the subject of teaching in the stage of preparation for the broadcast or teaching of the work of art and in the process of direct reading, as well as during the analysis of the work. At the same time, lexical and grammatical materials, some sentence constructions, which differ in pronunciation and spelling, which are difficult to understand in the process of listening and reading the work, are pre-determined, and work on them is organized in the lesson. Such preparation provides awareness, while at the same time serving to shape listening comprehension and reading competencies.

¹⁰ Mother tongue: a textbook for the 8th grade of secondary school / M. Kadyrov et al. - T.: NMIU named after Cholpon. 2014. - Pages 5-6.



In this process, theoretical information learned in mother tongue lessons is memorized or other work is done.

Let's take a look at the theoretical information about speech and artistic style given in the 9th grade "Mother Tongue" textbook. It gives the following theoretical information about the style of speech: "Learn. In the family, the style of speech used in the process of exchanging ideas on the street is considered to be the style of speech. Conversational style includes literary and simple speaking styles. A style of speech that strictly adheres to the norms of literary language is a style of literary speech, while a style of speech that does not have such a feature is a simple style of speech.

Both types of speaking style often take the form of dialogue. Conversation between two people is considered dialogic speech. In a conversational style, words are often rich in irony, pitching, sneering. Another peculiarity of this style is its freedom.¹¹

Theoretical information does not give examples of both types of speech style. It is very difficult to distinguish them from the dialogues in the work of art, and the words and word forms typical of the simple style of speech are very rare in the works. Today, even in live speech, there are almost no cases of distorted pronunciation of words. Therefore, it is better to work mainly on the literary style of speech ("speech style" in cases where the style of speech is not divided into two).

Exercises 222–226 are given to reinforce theoretical knowledge of speaking style. They were required to pronounce words in a way that is typical of oral speech (simple style), to express sarcasm, pitching, slang. For example: Бадбахт фитна! Бошпуд ўрусвой рели «Ҳайт!» Мақатуллога завжалари. Хўш! The definition of artistic style is: "Learn. An artistic style is a style of speech that expresses a certain reality figuratively through artistic means and thus has an aesthetic effect on the listener.

In the exercises, too, students are mainly looking for artistic visual aids. In native language classes, information about speech styles is learned in the upper grades, but in the process of working on errors in students' oral and written speech, elements of practical methodology can be identified and initial concepts can be formed. For example, if a student says, "An organization has been formed," it is inappropriate for the word organization to occur in a written speech (except in the artistic style). Or the child "I got up early in the morning. I've done exercise before. I washed ..." If I start to express my opinion using the word in every sentence, the methodological rule will be made clear by saying that it is a mistake to use the word in every 3-4 sentences. Since creative writing is conducted in both native language and literature classes, it is desirable that this type of speaking activity be organized on the basis of an integrative approach.

In the native language and literature classes, the problems of teaching art visual aids on the basis of an integrated approach are covered to a certain extent. In this regard, the recommendations, content and

¹¹ Mother tongue: Textbook for the 9th grade of general education schools / NM Mahmudov, A. Nurmonov, A.Sh. Sobirov. 2nd edition. - T.: «Tasvir», 2010.— 92 p. (128 p.)



methods of education in the research work of the Methodist scientist K.M. Mavlonova¹² are of special value.

As is clear from the comparative study of the linguistic features of works of art in colloquial speech, there are cases in which they are complementary and put after the case, which is peculiar to the style of speech. In linguistics, this phenomenon is called partcellation.¹³ We will look for the answer to this problem by reviewing the information about the order of the parts of speech in the 8th grade textbook "Mother tongue". The textbook says, "Find out. In the Uzbek language, the order of the parts of speech is mostly free, but they are based on certain grammatical rules. Usually it has a sentence and the pieces attached to it are placed before, the cut and the pieces attached to it are placed after it, sometimes the opposite happens: These ways are familiar to me.

- These are the ways I am familiar with.

At the beginning of the owner's more talk, the cut, basically. at the end of the sentence (I came), the case (spoke softly) and the place of the filler before the cut (memorized the poem), the determiner before the possessor (red flower, my friend's brother) is the usual, normative order. The usual and varied order of parts of speech has its place of application in speech. While the usual order is appropriate for the style of scientific works, the modified order is specific to the style of oral and artistic (especially poetic) speech.¹⁴

Apparently, even in a changed order for the scientific method, the ending of the cut is peculiar, complementary, and the case is not put after it (with the exception of poetic works). More poetic works are given in the exercises in the textbook. They cannot be compared to prose works in terms of word order in speech: in prose works, the phenomenon of inversion is almost non-existent, except for words spoken in an uplifting spirit. With this in mind, it is advisable to increase the number of examples taken from prose works in the exercise materials.

In order to meet the need of the subject of literature to differentiate linguistic phenomena, to express their methodological specificity, it is necessary to reconsider the content of education with the subject of mother tongue from the 5th grade, to enrich the theoretical knowledge. It is especially important to supplement the speech phenomena with knowledge that emphasizes specific language phenomena. It is desirable that this work be carried out at all levels of language: lexicology, morphology, syntax, methodology.

The language units that the student needs to know about the style of speech and how it differs from other styles are studied in the mother tongue lessons, so the programmatic and non-programmatic practical knowledge related to them is also taught in these lessons. In addition to the introduction of

¹² Mavlonova K.M. Improving the methodology of teaching the native language by integrating it with the subject of literature through the literary text. Doctor of Philosophy (PhD) dissertation on pedagogical sciences. - Tashkent, 2019. - 142 p

¹³ Muhamedova S., Saparniyozova M. Text linguistics. - Tashkent, 2011. - 52-70-, tnkfh.

¹⁴ Mother tongue: textbook for the 8th grade of secondary schools / M. Kadyrov, H. Nematov, M. Abduraimova, R. Sayfullayeva, B. Mengliyev. Fourth edition. - T.: NMIU named after Cholpon. 2019. - p.82.



integration with the subject of mother tongue teaching in literature classes, it will be necessary to determine when and to what extent mother tongue lessons will be studied.

Thus, in literature classes, the relevant knowledge, skills and competencies for the formation of types of speech activities at the level of competencies can be acquired on the basis of knowledge of the different aspects of these competencies. Competences related to the types of speaking activities require to pay attention to the method of speech as the most important of the specific features of oral and written speech, to this end, to integrate the subject of literature with the mother tongue from the educational content.

“Interdisciplinary connections of the Russian language and literature are carried out at all lessons of speech development in the following directions: 1) the formation and consolidation of knowledge and skills of students in functional stylistics, necessary for the correct organization of speech activity in various genres of oral and written statements; 2) teaching common for these subjects types of oral and written speech activities; 3) the formation of concepts about the figurative and expressive means of the Russian language and literature, their ideological and artistic functions in the work.¹⁵

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MODERN TRENDS IN MANAGEMENT AND MARKETING AT ENTERPRISES

Saydirasulov Alisher Zokirovich

Samarkand State University of Architecture and Construction

Teachers of the department "Economics in Construction and Management"

Komilov Feruz Kilichbekovich

Samarkand State University of Architecture and Construction

Teachers of the department "Economics in Construction and Management"

Nasimova Maftuna Sunatullayevna

Master's Degree of Samarkand State University of Architecture and Construction

Annotation

This article highlights the role and importance of modern trends in management and marketing in enterprises. The data are compiled on the basis of author's observations and analysis of foreign literature.

Keywords: Marketing, management, resource, personnel, manager, labor productivity, organizations, enterprise, Internet technologies.

In modern management theory, people talk a lot about one of the main components of a company's success, one of its resources. A modern approach to innovative development in companies requires a special approach to management and marketing. Organizations in foreign economically developed countries spend a lot of time on learning each new employee. To do this, the company's management instills the spirit of independence in employees from the very beginning, because people need to understand why they are working, and not just what to do. Work should be organized in such a way that each employee clearly understands that he is working in his own interests, not within the framework of the rules. Employees of the organization must understand that their actions are necessary for the entire organization, the leader and the people they have to work with. Knowing the benefits of their actions will help increase labor productivity. Also, they should organize the work in such a way that the managers should make effective decisions in managing the employees and the company should develop. A management decision is a well-thought-out conclusion about taking some action related to the implementation of the organization's goals or abandoning them. Decision-making is the content of management activities.

One or these problems are the object of decision, that is, they are theoretical problems or practical situations characterized by the impossibility of achieving the planned results in the current situation or the existence of a significant difference between them.

To understand the essence of modern management decisions and the requirements for them, to acquire the skills of creating and evaluating management decisions.



Each employee must have the information necessary for the job. A task or project needs to be done better. Thus, making decisions, searching for information, and interacting with the environment allows employees to work more efficiently. This approach increases people's interest in work. Everyone should feel the importance and necessity of their work for the whole enterprise. At the same time, good employees should be encouraged. In this way, you can motivate your team to work and be better, stand out from the crowd, and deliver high-quality work, which is the key to high-quality work productivity. In our time, there is very close competition in almost any field. As a result of deep structural changes and diversification in the economy of Uzbekistan, the competitive environment in commodity markets is changing from year to year. In this regard, the Decree of the President of the Republic of Uzbekistan "On additional measures to further develop the competitive environment and reduce state participation in the economy" and the strategy for the development of competition in the commodity and financial markets in the years 2020-2024 approved by it is a completely new development of the country's economy, in line with the rules of the market economy. stage. In a competitive market, the success of any establishment depends largely on marketing activities.

In accordance with marketing principles, all aspects of the economic activity of a modern enterprise should be planned and implemented taking into account market requirements and consumer needs. It should be said that the great achievements of modern enterprises in the field of production and sales activities, the variety and quality of manufactured goods, their penetration into sales markets, and the creation of production that is optimal according to the scale of operations, are all the result of the use of marketing.

Modern marketing is a complex socio-economic process in market conditions, in which 4 important factors change regularly. They are:

- As a philosophy of interaction and coordination of marketing-entrepreneurial activities.
- As a marketing-management concept.
- As a means of providing an advantage in marketing-competition conditions.
- Marketing as a decision-making method.

The essence of the philosophy of marketing activities consists in the idea that the main focus of entrepreneurial activity and business should be on the consumer. Indeed, the slogan "The consumer is king" is the basis of this philosophy. The acceptance of the company's goods in the market, its recognition by the consumer is the guarantee of the company's success. The main thing in marketing is a two-pronged and complementary approach. On the one hand, it is a comprehensive study of the market, researching the needs, demands, and desires of consumers, and then directing production, and on the other hand, it is influencing the market demand using marketing.

Therefore, in addition to high-quality marketing strategies, you need to use the right approach to managing employees. Sales organizations in Japan devote a lot of time to each employee. When choosing each employee, trade organizations pay attention to appearance, knowledge, level of awareness of different types of goods, and most importantly, training and testing of personnel. At the same time, in order for employees to appreciate their work, entrepreneurs encourage good wages or other types of remuneration. Along with managing employees, organizations try to work and provide



high quality services. To do this, you need to understand what quality is and what approach is needed for the buyer. Usually, many organizations conduct social surveys among their customers (users) to evaluate their work and identify their shortcomings. For this, organizations have devoted a lot of time to the survey, devoting individual employees to conducting social surveys. The modern development of Internet technologies (Internet technologies) provides great benefits to quickly and efficiently determine exactly what the consumer needs. Such information is valuable as organizations acquire information electronically and develop consumer-friendly aspects. Internet technologies are a new stage in the development of the digital economy. Internet marketing creates great opportunities in the development of organizations. Especially if a new business just entering the competitive environment with the help of Internet marketing is able to save a large amount of money needed to advertise a new product or service. With the help of Internet technology, more detailed information (video, audio, recordings) can be released and users' (consumers') comments can be recognized immediately, which allows a proper approach to business development. In organizations, management plays a major role in managing employees. Proper management of employees creates great opportunities to achieve a high level of labor productivity.

Speaking of marketing, in today's market, where there is a lot of competition, it is necessary to choose the right strategy for business development. This allows to develop the enterprise and acquire its customers.

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**THE USE OF INTERACTIVE TECHNIQUES IN TEACHING THE SUBJECT OF THE
LATEST HISTORY OF UZBEKISTAN**

Ro'ziyeva Tamara

Teacher of the Department of history of Navoi State Pedagogical Institute

Annotation

By the president of the Republic of Uzbekistan for 2022-2026 the national program for the development of targeted folk education was adopted. Formation of knowledge and skills of school teachers, their national and education in the spirit of loyalty to universal values, the profession of a teacher prestige V A improving the quality composition of educators, textbooks and teaching methodology improvement of complexes based on the requirements of the time, public education modern models of institutions that meet international standards many tasks for public education employees in order to establish put. In particular, on the implementation of the tasks of the teacher to teachers a huge responsibility. Professional development and retraining of public education personnel in this regard there have also been major changes. In the type that teachers want, that is, online or offline, not in five years, but every year I can improve the qualifications. This is what the proverb says about them.

Keywords: educational system, didactics, interactive methods, modern model, International standards, "VR 360", "ISPRING" and "HotPotatols" programs .

I am also in a week of offline refresher courses during may of this year in order to improve my skills, I learned from teachers through special courses.

In the process of learning, today is about the requirements for classes I got more information.

The most basic requirements for the current modern lesson:

I-didactic requirements

II-psychological requirements

III-hygienic requirements

IV-technological requirements

Based on these requirements, it is necessary to pay attention to:

1. Clear and positive fulfillment of the DTS requirement.
2. Determination of the possibility of a student's level of knowledge, in which the age of students take into account the feature.
3. Orientation towards a specific goal based on the interest of students.
4. Formation of students' level of knowledge based on the program, independent thinking attention, correct and objective assessment of creative work. Behavior and knowledge to properly stimulate diligence on the basis of creative points, to improve memory focus on free thinking.
5. Organization of the scientific environment through rational planning of the lesson.



6. In the lesson, the concept, definition, theorem, phenomenon that students should learn to convey to children based on the requirement of the period. Worldview through these formation, giving importance to interdisciplinary connections.
7. The formation of skills and abilities of students, the possibility of the reader and vocational guidance based on period demand.
8. To work thoughtfully, rehearsing, innovating, positively in the lesson the use of instructive visual aids, the organization of problematic classes. Improving students thinking, analyzing them with information and information teach to do.
9. In the rating system of the level of knowledge of students, introducing differential education objective assessment.
10. Teaching students analysis, synthesis and the efficient use of time.
11. Equipping the study room on the basis of modern requirements, in which scientific, technical pay attention to the efficient use of its development and the presence of auxiliary tools.
12. Pay attention to the requirements of Hygiene and aesthetics and demand from students.
13. The correct choice of teaching method for the topic, the accuracy of problem situations find solutions.
14. Planning that they should pay attention to self-analysis in the lesson.

The reforms implemented in the education system in our country in the following years popularization of advanced experience, the basis of which can meet the standards of World Education and high efficiency with low physical effort in the educational process practical activities are being carried out on the way to achieving. General secondary education at present the most important and urgent task facing teachers of schools is the knowledge of students it consists in gaining interest in obtaining, expanding their imagination. The to carry out this work, a number of activities have been carried out to this day, resulting in the basis for the success of educational efficiency in general secondary schools created.

One of the most important conditions for the effectiveness of the lesson is that of the teacher and students joint search for the truth and active participation of students in the entire course process is. Of course, the fact that new pedagogical technologies apply to the teacher in this place practice shows.

Nowadays, every subject teacher is entrusted with a person, his role and role in society each setting imposes a task to look at. For this, the teacher is trained the acquisition of new forms, tools and methods, and at the same time itself is modern

the creation of pedagogical technologies, the creation of a new excellent, effective personality education he should try to choose his methods and be creative.

Social, including historical, educational qualities in schools in the upbringing of an incarnated person, *benihoya* plays a role. At school the path traveled by the reader's personality society, against their foreign invaders, is the main about his freedom and happiness, his struggle for a bright future learn the information from history lessons. At the same time history lessons of the student they help to correctly understand the current socio-political processes.

From some of the recommended techniques in advanced training courses, we bring to your attention



I want to make a link.

- Yes-no exercise

Description

What is a teacher (number, subject, literary or historical hero, etc.)a'.)

he puts it in thought. And readers ask him a question and try to find what he came up with they do. The teacher asked their questions only "Yes", "No", " both yes and no" answers with words.

The question arises from the goals of non-commissioned teaching didactics, situations may occur in which you do not want to answer the question. Then he refuses to respond with a predetermined hint.

What questions are definitely strong after the end of the exercise, how are they it is imperative to conduct a short discussion on the weak and why.

The purpose of the exercise is to get children to ask questions irregularly without trying, from teaching them to develop a search strategy it is a phrase.

- Three right and one wrong

Description

Each participant is studied on a sheet of paper or subject studied three right thoughts and one wrong thought. Participants they gather in pairs, exchange sheets, and what opinion is wrong they determine that it was.

Usage circles

At the time of checking the work of the house, subject in any academic subject can be used in reinforcement.

Advantages

Develops observability, the ability to select information develops, teaches children to find mistakes and express thoughts, allows the teacher to check the knowledge of the students.

Difficulties

Children who have not been able to master the material will cope with the task

there is a risk that they will not be able to. Observation of the accuracy and correctness of thoughts to the teacher, it is difficult to aim for time to pass the exercise, because in students often the skill of expressing thoughts clearly does not exist.

- Clean whiteboard

A reader can refer to a board with several terms or years related to the subject, historical figures can write. And the reader one by one uttered the correct answer to each word I and one by one turns off the words on the board. As a result, the board will be clean.

This technique allows students to gain speed and dexterity, to strengthen their memory will serve.

- Cheerful ring

Divide the class team into 2 or 3 groups using small ring pens they pass on to each other by saying terms about history. Each team is fast again must deliver to the first reader.

This technique allows students to gain speed, alertness and a sense of community serves to shape.



In addition, modern electron in the more interesting organization of history lessons we also had information about the programs.

In particular, in the teaching of history lessons “ VR 360”, “ISPRING “ and “ HotPotatols ” we have witnessed the high performance of their programs.

The recommendations and techniques presented above educate you to the younger generation I hope that giving will effectively serve your process.

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ENGLISH AND UZBEK TRADITIONS, COMPARATIVE ANALYSIS

Sayitova Iroda Shuhrat kizi

English Teacher, Tashkent State Transport
University Department of Foreign Languages

Tulaboeva Gulorom Tulaboevna

Senior Teacher, Tashkent State Transport
University Department of Foreign Languages

Saydaliyeva Dilfuza Zairjanovna

English Teacher, Tashkent State Transport
University Department of Foreign Languages

Yuldasheva Mamura Bahtiyarovna

English Teacher, Tashkent State Transport
University Department of Foreign Languages

Abstract

In our time, when borders are blurred between countries, and people travel, it is very important to know the traditions and language of the countries you visit. This is the relevance of our study. The purpose of this report is to reveal the features of English culture and its traditions by comparing the cultures of England and Uzbekistan. To achieve this goal, it is necessary to solve a number of tasks: 1) to identify the traditions that exist in both England and Uzbekistan; 2) find similarities and differences in English and Uzbek traditions; 3) prove the need to study folk traditions in order to better understand the English and Uzbek languages. During the study, the following hypotheses were tested - 1) Is there a similarity in English and Uzbek traditions; 2) whether there are common identical traditions in Uzbekistan and in England; 3) Does the geographical location, the history of the country and its climate influence the culture of the people. The object of the research is English and Uzbek folk traditions. Methods used: literature analysis, observation.

In the course of our research, a number of traditions were identified that take place both in the culture of England and in the culture of Uzbekistan.

Tradition 1 "Tea drinking".

In England there is a tradition to drink tea six times a day.

1st cup of tea: English people wake up at 6-7 am and drink tea in bed before washing and dressing. The tradition arose as a result of the damp climate of England and the morning fogs. A cup of tea helps them wake up.

2nd cup of tea after they wake up. They go into the living room for a meal. For breakfast, the British drink tea with milk and eat, most often, oatmeal, fish or bacon and eggs.



3rd cup of tea. The English second breakfast (Lunchtime) comes from 12.00 to 14.00 hours. At this time they also drink tea.

The 4th cup of tea " Five -o- clock " is an English high tea at 17.00, accompanied by tea and small snacks. This is the most beloved and ceremonial **tea party among the British**. Usually guests are invited to five o'clock tea or friends are invited.

5th cup of tea. Lunch with the English comes very late at 19.00 - 20.00, accompanied by tea (" Hightea ") and a plentiful meal in the living room at a huge round table by the fireplace, where conversations are held.

6th cup of tea. After a late dinner, shortly before bedtime, the British can have another cup of tea.

Tea drinking traditions in England are regulated by strict tea etiquette. Tea, usually black, is served with milk and sometimes with sugar. They drink tea , raising not only the cup, but also the saucer. With their left hand they lift a cup and saucer from the table, and with their right they take a cup and drink tea. It is unacceptable to drink tea from a saucer or from a bowl, although this custom was quite common before. The British prefer silver tea sets. The presence of a good tea set in the house, even with a small income, symbolizes well-being, goodwill and prosperity in the family.

In Uzbekistan there is a tradition of tea drinking, but over time it has changed significantly. Tea used to be very expensive and not everyone could afford it. Therefore , a tea ceremony appeared in Uzbekistan, which consisted in the ability to brew and pour tea so that each of the guests received his portion of tea of the same strength. Tea was brewed in a samovar, and then drunk from cups and deep saucers with jam and sugar. Nowadays, this is no longer a ceremony, but an ordinary evening tea party or family Saturday gatherings with cakes, pies, jams and sweets.

Despite the apparent similarity of these tea drinking traditions, they carry a different meaning. The culture of tea drinking plays in England about the same role as the code of the samurai in Japan. The use of tea in Uzbekistan is not accompanied by a formalized ceremony.

Tradition 2 "Courtesy and poise"

Restraint is one of the dominant features of the English style of communication and is directly related to English politeness. The English are polite and often say "Thank you" and "I'm sorry". They don't talk loudly in the street. They don't hustle on buses to get a seat, they buy tickets with a seat in line at bus stops. Residents of England do not shake hands when meeting each other, they do not show their emotions even in tragic situations. This "primness" of theirs is the result of an excellent upbringing and the ability to perfectly control oneself, to know the rules of behavior in society, at the table, and also to comply with the dress code and so on.

Unlike the English, Uzbeks are not very polite and more emotional, but they are good-natured and very hospitable. In ancient times, a Uzbek person, leaving the house, left the door open and food ready for the wanderer, and therefore there were legends about the breadth of the Uzbek soul. Due to greater emotionality, Uzbeks are characterized by openness, responsiveness and sincerity in communication.

Tradition 3 "Love your home"

The British love to be at home. They say "My home is my castle" (My house is my castle) because they don't want their neighbors to know what's going on at home. The house really serves as a fortress



for the Englishman, where he is able to hide not only from uninvited visitors, but also from annoying worries. Beyond the threshold of his home, he is completely freed from everyday worries. The British prefer to live in separate houses built for one family. The center of the house is a fireplace, around which all family members like to sit and look at the fire, exchanging news of the day. A clock, a mirror, or photographs are often placed on the mantelpiece. In the decoration of the house, the British, above all, value antiquity and good quality. When it comes to updating the environment in a family, it does not mean a change of furniture, but its restoration.

Uzbeks love their home. Their house is most often an apartment, not a cottage. They are more hospitable and hospitable than the British, and although they also like to spend evenings with their families, they like to invite guests or visit themselves, because Uzbek people are more open and often interested in the affairs of their neighbors, as well as dedicate strangers to their Problems. That is, again, behind the seeming similarity of traditions, we observe a different semantic load.

Tradition 4 "Love for Gardens"

Even more feelings in the Englishman. English gardens, the main thing in the style of which is a skillful imitation of natural nature, created by human hands 'wildness', are the strongest national hobby. Gardening is the national passion of the British, the key to understanding many aspects of their character and attitude to life. Thanks to the temperate humid climate in England, the grass is green all the year round and almost always something blooms, so that the gardener can work in the fresh air for a long time and admire the fruits of his labor. Roses and chrysanthemums continue to bloom outdoors almost until Christmas, and already in early March, the buds of crocuses and daffodils remind of the arrival of spring. Physical labor in the garden, practical skills in this matter are equally revered in all sectors of British society. In the garden, the Englishman throws off his reserve. His tastes, his behavior in the garden speak much more truthfully about his personality and character than any autobiography. The Uzbeks are different. As a rule, gardens, or rather dachas and kitchen gardens, are primarily used not for decoration, but for growing cultivated plants and harvesting. In connection with the peculiarities of the climate, gardening in Uzbekistan is not done all year round, but only 5-6 months a year. The tradition of horticulture and horticulture in Uzbekistan has developed, obviously, in connection with the severe need to survive in difficult climatic conditions, and not in connection with aesthetic features and preferences, as in England.

Tradition 5 "Love for animals"

The British are very fond of pets. They have about five million dogs, almost as many cats, 3 million parrots and other birds, fish in aquariums, and 1 million exotic pets such as reptiles. In the UK there are special shops selling food, clothes and other things for dogs. There are dog grooming salons and dog cemeteries. In the UK, pets can send Christmas cards to their friends. There are special animal hotels at airports. The English people believe that they are the only nation on earth that is truly kind to animals. Paradoxically, in English families, pets clearly occupy a higher position than children. This is manifested both in material and moral terms, since it is the dog or cat that serves as the center of universal concerns.



Uzbeks also love animals, but, unfortunately, in Uzbekistan, not everyone has the opportunity to keep large representatives of the animal world. Most often, residents of Uzbekistan can afford small animals, such as: cats, dogs, small rodents and parrots. Animal care services are not so common in our country. And, of course, in any family, the child, not the animal, is the main member of the family.

Tradition 6 "Strict (English) upbringing"

Speaking of children, we can move on to another purely English tradition - this is a purely English education. Why is it special? It is customary to keep children in England in strictness, and the higher in society you are, the more strict. It is not uncommon to see how in a rich English house, with a huge living room, a giant bedroom, a stately study, the so-called children's room is located almost in the attic and is a miserable closet, and this is done quite consciously, from fundamental considerations, so as not to undead, but to temper. It is no coincidence, apparently, that the Boy Scout movement originated in England at the beginning of the 20th century, and its slogan was "Be Prepared!". A true Englishman must be ready for any difficulties at any moment.

Today, education in Uzbekistan is more democratic. And although back in the 19th century, Uzbek upbringing did not differ much from English, now parents are more indulgent towards their children and less strict. Our upbringing is not like the Japanese upbringing of babies under 5 years old, however, in many families, children are bathed in universal love and adoration.

As our study has shown, the traditions of raising children in England and Uzbekistan are completely different. Based on the foregoing, the following conclusions can be drawn:

In Uzbekistan and in England there are traditions that are similar at first glance, but carry a completely different meaning (such as tea drinking or gardening).

There are completely different traditions (such as the tradition of raising children).

Similar, common traditions were not identified by us.

To some extent, the difference in traditions is influenced by climate and geographical location. These are, for example, the traditions of tea drinking and gardening.

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STUDYING THE PREVALENCE OF VAGINAL AND CERVICAL INFECTIONS IN MARRIED WOMEN AND ITS RELATIONSHIP TO ANAEMIA

Sohaib Sabah Kasim

Department of Biology, College of Science, University of Kirkuk, Iraq
sohaibsabah63@gmail.com

Abstract

The current study aimed to identify and diagnose bacterial infection that cause vaginal and cervical infection in married women and correlating this to anaemia. Therefore, 186 vaginal swap were collected from them for the period from first of March 2022 to the third of August 2022 and their age was between 20-60 years, in the meantime blood test was done simultaneously. Results show that about 165(89%) samples were positive for microbial. From those about 65 (39.3%) samples were single bacteria, 47 (28.4%) mixed bacterial species, 20 (12.1%) samples were candida and 33 (20.0%) samples were mixed between bacteria and candida. Results also showed that 100 (53.7%) from the total number of patients suffered from anaemia while 86(46.2%) had normal haemoglobin levels. Highest anemic group aged 20-30 years whilst lowest level recorded in elder people 50-60 ages.

Keywords: vaginal infection, cervix , anaemia

Introduction

Vaginal infections are irritations in the vagina due to a microbial invasion that leads to changes in vaginal secretions as well as itching, bad smell and other symptoms (1) Vaginal and cervical infections are considered public health problems in society, especially in developing and developed countries. (2) These infections are defined as infection of the vagina and cervix, as pathogens replace the normal flora of Lactobacilli present and naturally represented in it (3) where Lactobacilli play an important role in protecting the vagina from the invasion of pathogens, as these bacilli work to ferment glycogen produced by epithelial cells vaginalis to lactic acid, which makes the acidic environment not conducive to the growth of other organisms and also the production of Bacteriocins , H₂O₂ and other factors that inhibit the growth of other microorganisms (4) Bacterial infection of the female reproductive system is more common in women of childbearing age and is more susceptible to infections than the male reproductive system due to the shortness of the urethra and the proximity of the anus to it. In addition to that, the presence of vaginal secretions and the menstrual cycle and the presence of normal symbionts in the female reproductive system that may turn into pathogens As a result of the influence of hormones, weak body resistance, and low acidity of the vagina (5), it is also considered the normal flora present in the stool, as it colonizes the opening of the vagina and urethra, and has the ability to stick, grow and multiply in the area and cause disease (6). Also, urinary tract infection (UTI) is considered one of the factors that play an important role in the occurrence of genital injuries in women, as well as cases of pregnancy and miscarriage, and the use of some types of contraceptives (7).



Recent studies also showed that bacterial vaginosis is highly dominant among sexually transmitted diseases in pregnant women, and that about half of pregnant women showed infections in the cervix and vagina, and it is often prevalent among economically weak groups (8)

Also, the percentage of the causes of infections in the female reproductive system, especially the vagina and cervix, such as bacterial infections, which constitute (50% - 45%) of infection cases, and fungi form (35% - 40%). There are also viral and parasitic infections. Mixed infections caused by different microorganisms also occur simultaneously (9).

Anaemia is a condition in which the ability of the blood to carry oxygen decreases due to the lack of haemoglobin in red blood cells (10) and anaemia can occur due to many reasons, including bleeding, decreased production of red blood cells, increased breakage of red blood cells, and other reasons (11). Anaemia is considered the most common blood disorder, as it affects a third of the world's population, and cases abound in the poor class of society. Anaemia cases are more frequent in women than in men, especially in the stage of fertility and pregnancy (12). One of the most important complications of anaemia is permanent fatigue, weak immune system, and many other complications (13) (14).

Materials and Methods

A total of 186 vaginal swabs were collected using a sterilized swab by specialized female doctors for patients ranging in age from 20-60 years for married women to private clinics for female gynecologists who suffer from clinical symptoms and signs of vaginal infections for married women. For a period of six months, from 1/3/2022 to 3/8/2022. Many and accurate tests were conducted for these swabs using approved scientific methods in the diagnostic laboratories to find out the pathogens. On the other hand, blood was collected from each patient in order to test the percentage of anaemia for them using the CBC test.

Isolation and Diagnosis

Vaginal swabs taken from patients were cultured on different culture media, including Blood agar, Nutrient agar, Potato dextrose agar, sabouraud Dextrose agar, in order to develop microorganisms in them. Various microscopic and biochemical tests were conducted for these developing isolates in order to accurately diagnose scientifically approved (15) (16) For each of these isolates, on the other hand, an anaemia test was performed for each patient using the CBC test.

Results

This study showed that 165 (89 %) out of 186 smears were positive for bacterial culture and 21 (11.2%) swabs were negative for bacterial culture. As shown in Figure [1] and the absence of growth in culture-negative samples, the reason may be due to the patients' use of antibiotics before taking the sample, despite confirmation that they did not take antibiotics before taking the sample, or the reason may be due to the presence of other types of inflammatory factors other than It can be cultured, which needs other techniques to identify it, such as viruses or chlamydia, etc. This result was close to the result of (17).

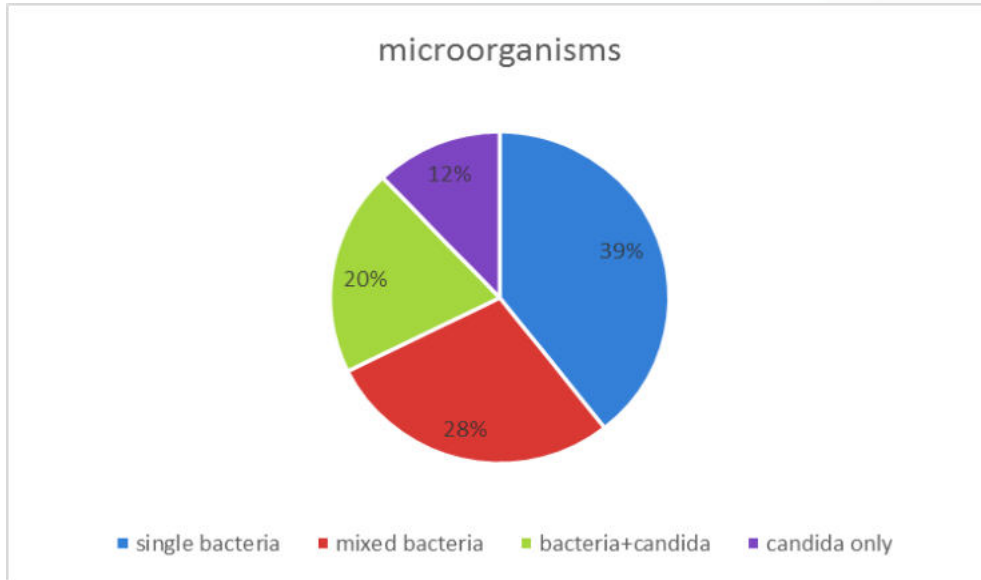


Figure 1: bacterial growth in the culture media.

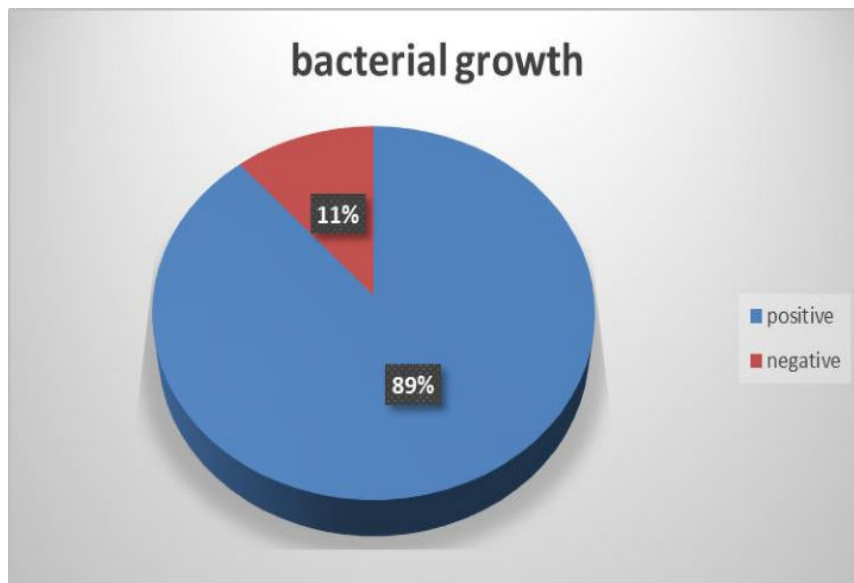


Figure 2: Isolates types in the study.

The infections were vaginal infections in different age groups in this study, where the highest percentage of infections was in the age group of 20 years was 52 (31.5%), then followed by the age group of 30 years was 46 (27.8%), then 40 years was 34 (20.6%), then the age group of 50 years was 19 (11.5%) and the lowest percentage was in the age group of 60 years was 14 (8.4%) out of 165 positive swabs as shown in Table (1).



Table 1: represents the life stages of women infected with infections of the vagina and cervix

Age	20	%	30	%	40	%	50	%	60	%	total	%
No.	52	31.5	46	27.8	34	20.6	19	11.5	14	8.4	165	100

On the other hand, the results of this study showed that the percentage of bacteria causing infections of the vagina and cervix was from a group of Gram-negative bacteria and a group of Gram-positive bacteria, and the total number of bacteria isolated in this study was 145 isolates out of 165 smears with a positive result. The percentage of *E.coli* bacteria was 39 (26.8%), and this result is close to the result of (18). That the first cause of inflammation of the vagina and urinary system in women. Then it was followed by *Staphylococcus aureus*, with a percentage of 27 (18.6%), then it was followed by *Staphylococcus epidermidis*, which was 26 (17.9%). This result indicated that all types of *Staphylococcus aureus* were similar to the study (19). There are other isolates in this study with different percentages, including *Streptococcus. Agalactia* was 17 (11.7%), *Enterococcus* 16 (11.1%), followed by *Proteus* and *Gardnerella vaginalis*, the same percentage was 7 (4.8%), then *Klebsiella* was followed by 4 (2.7%), and the lowest percentage was for *Pseudomonas aeruginosa*, with a percentage of 2 (1.3 %) These results are close to the study (20) as shown in Table (2).

Table 2: Number of bacterial isolates isolated from vaginal and cervical swabs

Bacteria	No.	%
<i>E. coli</i>	39	26.8
<i>Staphylococcus aureus</i>	27	18.6
<i>Staphylococcus epidermidis</i>	26	17.9
<i>Streptococcus agalactiae</i>	17	11.7
<i>Enterococcus</i>	16	11.1
<i>Proteus mirabilis</i>	7	4.8
<i>Gardnerella vaginalis</i>	7	4.8
<i>Klebsiella</i>	4	2.7
<i>Pseudomonas aeruginosa</i>	2	1.3
Total	145	100

On the other hand, the results showed that there were some swabs or samples taken from the vagina and cervix that were of mixed bacteria between Gram-positive and Gram-negative bacteria, where the mixed smears reached 47 (28.4%) of the total positive isolates in this study, the highest percentage being *E. coli* + *Staphylococcus epidermidis*, with a percentage of 14 (29.7%), followed by *E.coli* + *Staphylococcus aureus*, with a percentage of 14 (29.7%). The lowest mixing rate was between two bacteria, *Staphylococcus epidermidis* + *Klebsiella*, with a number of 4 (8.5%) of the total number of bacteria. Mixed isolates. The researcher indicated (21) the presence of mixed isolates when studying swabs for bacterial infection among women, as shown in Table (3).



Table 3: for a group of mixed bacteria between gram-positive and gram-negative bacteria

Bacteria	No.	%
<i>E.coli + Staphylococcus epidermidis</i>	17	36.2
<i>E.coli + Staphylococcus aureus</i>	14	29.7
<i>Staphylococcus aureus + Proteus mirabilis</i>	6	12.7
<i>E.coli + Enterococcus</i>	6	12.7
<i>Staphylococcus epidermidis + Klebsiella</i>	4	8.5
Total	47	100

This study showed a clear dominance in the presence of fungi, especially *Candida albicans*, which appeared singly in some vaginal smears and reached 20 (12.1%) isolates out of the total number of positive isolates. of the total isolates in this study. The highest mixing ratio was among *E. coli + Candida albicans* 18 (54.5%), followed by *Staphylococcus aureus + Candida albicans*, the number of which was 6 (18.2%) isolates, and the lowest percentage was among *Klebsiella + Candida albicans* bacteria, with a rate of 1 (3.0%) of A total of 33 isolates mixed between bacteria and *Candida albicans*, and these results came close to a study (20), knowing that the presence of fungi is considered a normal flora, but they are considered opportunistic organisms as shown in Table (4).

Table 4: Shows a group of mixed isolates between the bacterium and *Candida albicans*

Name	No.	%
<i>C.albicans + E.coli</i>	18	54.5
<i>C.albicans + Staphylococcus aureus</i>	6	18.2
<i>C.albicans + Proteus mirabilis</i>	5	15.1
<i>C.albicans + Staphylococcus epidermidis</i>	3	9.1
<i>C.albicans +Klebsiella</i>	1	3.0
Total	33	100

On the other hand, anaemia was tested for all the reviews that we referred to the doctors in this study using the CBC method. They ranged between 20-60 years, and the result showed that most of the cases of anaemia were in the stage of 20-30 years, reaching 38 (20.45), then followed by a stage from the age of 30-40 years, and it was 32 (17.2%), and the lowest incidence of pain anaemia was in the 50-60 stage years, and it was 11 (5.9%) of the total number of swabs taken from patients in this study, as shown in Table 5.

Table 5 : Shows the percentage of anaemia among the reviews in this study

Age	20 - 30		30 - 40		40 - 50		50 - 60		Total	
	No .	%	No .	%	No .	%	No .	%	No .	%
Normal	24	12.9	26	13.9	16	8.6	20	10.7	86	46.2
anaemia	38	20.4	32	17.2	19	10.2	11	5.9	100	53.7
Total	62	33.3	58	31.1	35	18.8	31	16.6	186	100



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**CORRELATION BETWEEN MDA AND TAOS IN LIVER OF COWS WITH GIANT LIVER
FASCIOLA GIGANTICA**

Nisreen Ali Al-Tamimi

University of Diyala / College of Education for Pure Science
nisreenaltamami@gmail.com

Nagham Yassin Al-Bayati

University of Diyala / College of Education for Pure Science

Abstract

The present study was conducted with the aim of investigating the correlation between the oxidant (MDA) and the antioxidant TAOS in the livers of cows with giant fluke , *Fasciola gigantica* , liver disease . During the current study, which extends from 12/12/2021 to 30/7/2022, 1422 livers of cows and sheep were examined from the butchers who carried out the slaughter process outside the slaughterhouses in the city of Baquba, and 174 livers of cows, including 25 infected livers and 1248 sheep livers that did not show infection.

In this study, 25 liver samples with giant liver fluke, *Fasciola gigantica* disease and 14 uninfected liver samples were collected, homogenized and examined to measure the activity of malondialdehyde (MDA) and the antioxidant TAOS and find the correlation between them.

The results of the current study showed a correlation between antioxidants and oxidants in livers infected with liver , *Fasciola gigantica* and non-infected livers, as it was found that there is an inverse correlation between antioxidant TAOS with the oxidant MDA, as the Pearson correlation coefficient was recorded -0.018 .

Keywords: Malonialdehyde , *Fasciola gigantica* , Total antioxdants.

Introduction

Fasciolosis an economically important disease that affects domestic animals, especially cows, sheep and goats, and may affect humans incidentally, which is caused by infection with the liver fluke parasite of the genus *Fasciola* species *F. hepatica* and *F. gigantica* despite its importance as a count of neglected tropical diseases (NTD) (Oyarzun-Ruiz, 2019). The life cycle of the *Fasciola* is complex and includes two different stages. The first stage in the final host represented by the reservoir and the second stage in the intermediate host represented by aquatic snails, there may be a few differences in the life cycle of species of genus *Fasciola*, (Kurnianto et al, 2022). The spread of the parasite depends on the climatic seasons as the eggs begin (tropical and subtropical areas) in the rainy season to grow to the miracidium that enters the snails to complete its growth to the cercaria (Zhang et al, 2020). The disease is characterized by being of a type chronic, acute or subacute and affects the bile ducts of the liver and is accompanied by edema, anaemia, anorexia loss of appetite and general asthenia leading to death (Caravedo and Cabada , 2020). Therefore, this disease causes huge economic losses in some countries



that depend for their daily income on livestock and their products either by reducing their products and failing the quality of products or by the death of animals (Mpisana et al. 2022). The parasite in case of human infection may cause significant damage to the liver of the infected and thus cause liver dysfunction (Olivares_ ferretti et al., 2022) In some cases infection with this parasite may lead to secondary infection with bacteria such as bacillary icterohemoglobinuria In livestock resulting from infection with types of bacteria in the bacteria Clostridium (Wagari, 2021).

Infection with this parasite leads to physiological, immune and biochemical changes of the host if the infection stimulates the host's immune system leading to the creation of immune and inflammatory responses as well as biochemical mechanisms and infection with this parasite has sometimes been considered a factor leading to the occurrence of oxidative effort (Jabbar, 2022).

Infection with the Fasciola parasite causes the release of active oxygen molecules (ROS) as immune response of host which resulting in damage to the tissue at the site of infection and that the increase in the immune reaction in the tissue by releasing these molecules that leads to expose the tissue to oxidative stress and the fibrosis resulting from the injury may be another source of oxidative effort through the development of tissue to produce free radicals to face injury and this requires the fabric to protect itself from those damages and roots so it may try to produce antioxidants to neutralize the effect of these harmful agents (Mendes et al, 2013).

The study of Khademvatan et al. (2019) indicated that the incidence among serological examiners was 50% in the city of Guilan in Iran by reviewing the results of studies conducted from 1999 to 2019. In Turkey, six cases were recorded in the eastern province of Van in the teaching hospital of Yuzuncu Yil University (Bayhan et al, 2020). A reference study that reviewed the results of previous ten-year studies (from 1999 to 2019) indicated that the incidence among livestock was 4.2% among sheep, and among cows was 9% while 3.1% were among goats (Khademvatan et al, 2019).

Materials and Methods

In this study, 1422 cows and sheep livers were examined from the butchers in the city of Baquba with the special information of each infected animal were taken. The samples were collected for the period from the twelfth of December 2021 until the thirtieth of July 2022. The samples were collected (include 174 livers of cows' and 1284 sheep livers) transferred (25 infected livers of cows and 4 non infected livers) to the Laboratory of Biology at the College of Education for Pure Sciences Department of Biology and the autopsy process was carried out.

The infected organs were thoroughly washed with water for the purpose of getting rid of blood, impurities and substances attached to them resulting from the slaughter process and placing the liver in a sterile dish where the outer surface of the liver was sterilized and then the liver was dissected to investigate worms.

The worms were isolated from the infected livers. The samples were then preserved by placing them in a PBS regulated phosphate solution. Then it is frozen at 20- until the homogeneous of worms is prepared.



Three tissue biopsies of infected and non-infected liver (5 g per piece) were taken, (bile duct, closed to infected area , far from the infected area) were taken. The samples are placed in containers with phosphate buffer (PBS) and placed at a temperature of -20 °C.

The worms and livers were crushed and then 3ml of PBS was added and centrifuged at a rate of 3000 rpm for 30 minutes and at a temperature of 4 ° C. The floating part of the sample was taken.

The concentration of MDA and TAOS were measured according to the manufacturer's instructions of the kit (MDA , TAOS ELISA kit)

Results and Discussion

It is noted that there is a clear significant difference in the concentration of the total antioxidant index TAOS and MDA in worms and the studied areas of liver tissue (bile duct area, area near the site of injury and area far from injury). Moreover, the results show a significant difference in their concentration in the liver tissues of infected animals with liver fluke under study compared to control groups ($P < 0.05$) as shown in Table (1) and Table (2).

Table (1): Rate of MDA enzyme concentrations in worms and studied areas.

Sex	Concentration rate $\mu\text{g/L}$				P value
	In worms	the bile duct	the liver area near the infection	the liver area far from the infection	
Male	3.314±0.104	4.138±0.311	4.831±0.274	4.123±0.221	0.034
Female	4.312±0.218	4.432±0.259	4.621±0.101	5.521±0.310	0.022
Total	3.813±0.106	4.285±0.161	4.726±0.174	4.822±0.104	0.035
Male control	0.561±0.021				0.024
Female control	0.775±0.018				0.021
Total	0.688 ±0.024				0.027
P value	0.058	0.021	0.038	0.043	

Table (2): TAOS concentration rate in isolated worms and studied areas of liver tissue.

Sex	Concentration rate $\mu\text{g/L}$				P value
	In worms	the bile duct	the liver area near the infection	the liver area far from the infection	
Male	0.554±0.080	0.866±0.061	0.988±0.032	0.631±0.021	0.024
Female	0.511±0.035	0.682 ± 0.077	0.716±0.041	0.616±0.047	0.043
Total	0.533±0.050	0.774±0.084	0.852±0.013	0.624±0.084	0.031
Male control	0.882±0.014				0.034
Female control	0.895±0.011				0.036
Total	0.889±0.033				
P value	0.018	0.041	0.025	0.048	



The results of the current study showed a correlation between antioxidants and oxidants in livers infected with liver , *Fasciola gigantica* and non-infected livers, as it was found that there is an inverse correlation between TAOS with MDA oxidant, as Pearson's correlation coefficient was recorded -0.018. Through the results of the current study, it was noted that there is an inverse correlation between the oxidant MDA with the total antioxidant index TAOS, as the increase in the concentration of the oxidizing agent leads to a decrease in antioxidants, due to the high levels of free radicals, which lead to the process of peroxide fat, as the amount of antioxidants in the body may not be sufficient to neutralize oxidants, and therefore the levels of oxidants remain high (Skrzychi et al., 2011). This result is consistent with the results obtained by researchers Kolodziejczyk et al. (2005) who showed that infection with liver perforation in the laboratory led to an increase in the rate of oxidants and a decrease in the level of antioxidants in the serum of rats and the study concluded that the incidence of liver fluke leads to an increase in oxidative effort as the current study is consistent with the study of Nasreldin and Zaki (2020) who showed a significant increase in the value of MDA and a decrease in the value of TAOS in cows infected with liver fluke, and this study showed that the incidence of liver fluke is an oxidative stress factor that affects animals, leading to biochemical and metabolic changes in the liver resulting from injury and may lead to death. Studies have found inverse relationships between blood parasites load and total antioxidant levels, so the more severe malaria was appeared with the lower level of the total capacity of TAOS (Abdulkareem et al. , 2017; Gomes et al. ,2022). An increase in the concentration of MDA oxidative in the blood of malaria patients has also been observed and MDA oxidant is a by-product of lipid oxidation, which led to high levels of oxidative stress (Narsaria et al., 2012). Yeo et al. (2013) also showed a decrease in GSH antioxidant activity. In patients with malaria.

ROS generation has been reported to be improved during *F. hepatica* infection and this is a significant fact in connection with the decrease in antioxidants capacity of the host liver after invasion by *F. hepatica*, which was demonstrated by decreased activity/level of essential cellular enzyme f Non-enzymatic antioxidants shown in previous studies (Siemieniuk et al., 2008).

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METHODOLOGICAL AND SCIENTIFIC METHOD OF TEACHING MOTHER TONGUE BASICS

Akhmedova Gulnoza Atanazarovna

MIA Academy " Uzbek Language and Foreign Department of Languages Big Teacher

Annotation

This article Based on the task of teaching the native language to students, educating them and developing them in every way, based on the theory of knowledge, based on the recommendations of all close, interrelated disciplines, the methodology of teaching the native language about _

Keywords : Methodology principles , phonetic skills , spelling literacy ,didaktika tamoyillar.

Summary

This article is about the methodology of teaching the native language, based on the theory of knowledge, based on the recommendations of all close, interrelated disciplines, based on the task of teaching students the native language, educating them and developing them comprehensively.

Keywords: Principles of methodology, phonetic skills, spelling literacy,didactic principles.

Introduction

The methodological basis of the mother tongue teaching methodology is the theory of knowledge. The main task of this subject is to ensure that students fully master the vocabulary of the Uzbek language. It is known that language is a necessary means of communication between people in society. The importance of language as a means of communication is constantly increasing. Language is a means of rational, logical knowledge of existence. Only with the help of language units, in the process of cognition, generalization, connection of understanding with discussion and conclusion is carried out.

Main Part

Based on the task of teaching the native language to students, educating them and developing them in every way, based on the theory of knowledge, based on the recommendations of all close, interrelated disciplines, the methodology of teaching the native language develops its principles. These principles are different from general didactic principles, defining the directions of educational work between the teacher and the student. will give.

The principles of mother tongue teaching are as follows. 1. The principle of paying attention to language material, the growth of speech organs, and the correct development of speech skills. Speech, to the laws of language, although little,

Not paying attention has a negative effect on the acquisition of practical speech activities. For example, if phonetic skills are not given enough attention, spelling literacy will suffer. This educational principle states that listening and viewing should be shown in language classes.



to appreciate and speech love his organs to do (speaking giving , expressive reading , inside _ to speak) requires . 2. Language meanings (lexical , grammatical , morphemic , syntactic meanings to understand principle . Word , morpheme , word _ compound , sentence that's it m known in existence events between to connect determination means _ Language skills _ to understand principle action condition of doing the mother of the tongue , to the tongue about all subjects (grammar , lexicon , phonetics , orthography , methodology) _ _ _ connected without learning is considered For example , morphology to the syntax relied on only if learning , mastering can _ Syntax in learning while to morphology leaning , spelling phonetics , grammar , word to be made leans and etc. _ The word morphemic analysis to do its meaning _ to understand help gives _ There are also aspects of language each other with mutually connected being and teaching this of course account get need _

3. Language sensitivity grow up principle . Language is very complicated event , his structure , consistent system understand without taking stand up _ although - his laws , similarities I will master it _ in mind save it won't be . Child talking , reading , listening with language materials gathers , his laws absorbs . As a result in a person to the language sensitivity (language events understanding) feature is formed .

4. Speak up to evaluate expressiveness principle . This is the principle language events I do n't understand literate writing , speech culture of means message to give task to understand with one in line , his expressiveness (to style about) to understand , m only his not but _ word and speech units of the language another artistic and pictorial of means emotional to understand the coloring in the eye holds _ To this principle action to do for , first first , artistic from literature , as well as language methodical features sure expressed another from texts use is required . And this is true _ _ him and his to himself realizing the special " tenderness " as well to reach help gives _

5. Oral speech written from speech before appropriation principle . This principle is also a person speech affects development _ and language teaching methodology in making service does _

Summary

Methodology principles , didactics principles like , teacher with of the student to the goal according to activities to determine their together in their work comfortable direction to choose help gives , as a science of methodology theoretical justification elem from ents one being service does _

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THE DIFFICULTIES OF TEACHING ENGLISH LANGUAGE

Normatova Muqaddas Bakhodirovna

Chirchik Higher Tank Commanding Engineering School

Teacher of Languages Department

Abstract

Researchers have conducted a large number of studies to solve problems and help teachers to overcome their difficulties. They have also tried to find the relationship between the result of research and their teaching. Learning English as a second or foreign language has received a lot of attention, so teachers have to find some well-planned and organized ways to facilitate the process of learning and teaching. This paper is a brief review on teaching English as a foreign language and why learners are interested in learning English. It also discusses why teachers have difficulties with teaching English language, and what they should do to facilitate the teaching process. It shows the relationship between language pedagogy and research as well as research and teaching. It also deals with a set of strategies and methods that teachers can apply as instruments to improve their students' learning English.

Keywords: Teaching English, Second language acquisition, Methods and strategies.

1. Introduction

English language is a global language. Learning English improves the individual's status and opportunities in education, technology, global trades, and business. Moreover, English plays an important role like a channel of communication. Teaching English has been an important issue in countries where English is not their first language, so learning second language is difficult for L2 learners because they cannot use English in real life situations, because they should learn sentences in textbooks not in a real environment. Therefore, teachers should always look for useful strategies to reduce the difficulties of teaching English language, and they have to deal with many challenges and often have questions about the best ways to teach. Some of these common questions are as follows:

- ✓ How can teachers teach English as a foreign or second language in different situations?
- ✓ What do teachers know about second language learners with different abilities?
- ✓ What are the benefits of learning English language?
- ✓ What can teachers perform in the classroom to facilitate the procedure of second language acquisition?
- ✓ What should teachers expect the second language learners in the classroom to be able to do?

Teaching is a multidimensional process, and teachers should pay enough attention to all skills of students such as: reading, writing, listening, and speaking. These skills are educated by teachers and learnt by students. There are various strategies that researchers have introduced based on their studies. These strategies may involve all skills. Researchers have different opinions about various strategies in teaching. For example, Nassaji (2012) believes that there is a relationship between teaching and research, so teachers and researchers learn from one another.



Researchers have conducted several studies to prove the interplay between research study and teaching, and they have suggested helpful strategies to facilitate teaching and learning process.

Teaching English as a foreign language is a general issue and researchers have investigated problems in all aspects of teaching process.

However, teaching a foreign language is a very responsible profession. Teachers should be very knowledgeable and at the same time patient. Because it is natural that children face many difficulties during language learning. It is known that English and Uzbek languages belong to different language families. This can cause phonetic, lexical and grammatical difficulties for language learners. In secondary schools, students face many difficulties in learning pronunciation. For example: almost all students have difficulty learning the sounds [th] and [ð]. The reason for this is the lack of interdental sounds in the Uzbek language. Our children's language is not used to the pronunciation of these sounds. As the English pronunciation of the [r] sound is different from the Uzbek r, students also have difficulty pronouncing this sound. The pronunciation of the sounds [t, d] is also not the same in both languages. Therefore, their pronunciation is difficult for some students. The [w] sound does not exist in Uzbek either. Students also have some difficulties in pronouncing this sound correctly. When pronouncing it, they confuse it with [v] in Uzbek language. In order to teach the correct pronunciation of the above sounds, the teacher should clearly explain to the children by showing the location of the tongue as much as possible, regularly check through repetition exercises, and pay special attention to the students' pronunciation in each lesson. Difficulties in sounds are also eliminated. In addition, the following situations create phonetic difficulties for students: the letter e is not pronounced at the end of the word - apple, Pete; The letter gh cannot be read in the middle of a word - eight, night; It can be observed that the letter k is not pronounced before n at the beginning of the word - knock, knee and a number of other difficulties. Based on my experience, I can say that the difficulty characteristic of the majority of Uzbek students is that they add the sound [ə] before the suffixes in their pronunciation when plural or tense-forming suffixes are added: books [bu'kƏs], happened [hæpƏ'nƏd]. It seems that by adding such an unnecessary sound, they are also changing the position of the word stress. The inability of students to read the transcription is also a special problem. To teach the correct pronunciation of words, it is necessary to teach the signs representing sounds. When speaking about grammatical difficulties encountered in teaching English in secondary schools, it can be said that students face many difficulties. If a person knows all the words in the language, but does not know the connections between sentences and words, he will have difficulty understanding the content of the speech. Therefore, it is very important to teach grammar to students in secondary schools. If the student does not have good grammar skills, he will not be able to express his thoughts correctly. Difficulty in speaking, writing and translating. Language grammar is a unique complex system. That is why it is not easy to learn it. School students usually face the following difficulties: Article problem. This can be said to be the biggest problem in learning grammar. When we talked with many English language learners, almost all of them said that articles and tenses are the main difficulties in mastering English grammar. In fact, since the Uzbek language does not have an article phrase, it is difficult to use and translate it. Article rules should be memorized. However, many exceptions to the rules make it difficult for students, especially



school-age students, to master it. If the translation is taught more clearly, students will not have many difficulties in using the article. For example: it is possible to teach that the indefinite article is translated as one, some kind of one, and the definite article is translated as that, yet.

While teachers' are concerned with improving practical knowledge, researchers deal with developing technical knowledge.

In a word, if the cases of using the article are repeatedly explained to children with the help of examples, it is possible to reduce the difficulties in mastering this group of auxiliary words in the English language. Another difficulty in mastering English grammar is prepositions. In the Uzbek language, prepositions are expressed by agreement suffixes. In English, the adverbs of agreement are expressed by prepositions. For example, the place-time agreement in Uzbek can be expressed by the prepositions in, on, at in English. For example: in – in January, in 2015, in a week on – on Monday, on January 15, on birthday at – at the weekend, at 10 o'clock. in English we use the above prepositions. For example: in – in Uzbekistan, in Madrid, in our week on – on the sofa, on the table at – at the station, at school The dissimilarity of word order in English and Uzbek. It is known that the word order in English is strict, and in most cases, the object is always at the beginning of the sentence, and the participle is followed by the participle. In the Uzbek language, even if we replace the parts of the sentence, the meaning does not change. Students face difficulties in translation. According to Methodists, when teaching English grammar, it is necessary first of all to correctly choose the grammar minimum and take into account the specific features of English grammar. The specific difficulties and features of English grammar are the following: the presence of incorrect verbs in English, the strictness of sentence construction in English, the abundance of articles, prepositions and tenses in English. Similar features distinguish English grammar from Uzbek grammar.

The Relevance between Language Pedagogy and SLA Research

The main goal of the research is to find and develop alternative methods in pedagogical problems. Ellis pointed out if there is an interrelationship between language pedagogy and SLA research, it should be found out how, to what extent, and in what areas. Evaluating the relevance is very important, so researchers should know how they evaluate the relevance. Ellis posited that there are two primary approaches; one approach is that an applied linguist should utilize SLA theory and research then tries to scrutinize its usefulness in the classroom. Ellis goes on to state that this approach is sometimes problematic because the researchers and teachers have different views about the relevance. Another approach starts with pedagogy and embarks on SLA to address issues proposed by learners and educators. In this approach, instead of evaluating SLA for relevance, pedagogical issues become the topics of SLA research. This approach can be useful and teachers use the outcomes because it is practical instead of being theoretical although it has some pitfalls. First, all researchers of SLA do not embrace pedagogical issues because they have their own theoretical

Second, this approach should be used by teachers because it addressed pedagogical issues, but always it may not be the case because classroom practice is contingent upon teachers' perspectives, beliefs, and views. In evaluating pedagogical findings, assessors should be familiar with the practice of classroom



teaching . Interaction between researchers and teachers is very important because it helps teachers to know what researchers are saying and also “researchers can hear what teachers are saying.”

The Interplay between Research and Teaching

Researchers should pay attention to teachers’ idea because it fosters the relationship between teachers and researchers and leads to the production of a useful research that can be more germane to classroom practices and hence more likely to be used by teachers. There are a few studies with regard to the relevance between SLA research and what teachers gain from their studies. For example, McDonough and McDonough (1990) conducted an investigation to find out the perceptions of a group of teachers attending a conference in the UK about the use of research in their teaching. They use a written questionnaire and collected data from 34 English language teachers to investigate their opinions about the relevance between L2 research and their teaching.

For improving these skills, teachers choose the best strategies in the classroom. Stern tried to distinguish good language learners from those of unsuccessful learners, she supposed that the good language learners may have different strategies and abilities. She classified strategies of good language learners as:

- a) planning strategy;
- b) active strategy;
- c) empathic strategy;
- d) formal strategy;
- e) experiential strategy;
- f) semantic strategy;
- g) practice strategy;
- h) communication strategy;
- i) monitoring strategy
- j) internalization strategy;

Stern mentioned five categories: 1) management and planning strategies, 2) managing strategies that they relate to the learners intention their own learning, 3) cognitive strategies including the steps or operations used in learning or problem solving which need direct analysis, transformation, or synthesis of learn materials, 4)communicative-experience strategies refer to gesturing paraphrasing or asking for repetition, and explanation in order to help learners to express themselves better, 5)interpersonal strategies including the techniques that learners use to monitor their own development and evaluate their own performance; affective strategies used to create positive affect towards the target language and its speakers.

CONCLUSION

In short, it is natural to encounter difficulties in learning a foreign language. It is necessary for teachers to monitor where the students are having difficulties, find ways to eliminate them, and create relief for the students. After all, difficulties in mastering language materials prevent them from acquiring skills in all types of speech activities.



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CENTRAL ASIAN HISTORY OF URBAN PLANNING

Makhkamova Dilnoza Muradjonovna

Fargona Polytechnic Institute, Faculty of Construction, Department of Architecture
Master's Student, 23-21 Group, Department of Building Structures Architecture

Axmedov Jamoliddin

Research Advisor, Candidate of Technical Sciences, Associate Professor

ANNOTATION

This article provides information about the ancient urbanism of Central Asian cities, construction history and their specific features.

Keywords: architectural monuments, arch, rabot, porch composition, koshk, kad, city

INTRODUCTION

With the honor of independence, the Republic of Uzbekistan entered a new period of its development. Our nation has a rich historical, cultural and spiritual heritage. Our president said that there is no future without history, in the words of our compatriot Abdulla Qadiri, the teaching of the history of the architecture of Central Asia to the students, taking into account the future of going back to the old days, has existed from primitive times to the present day. historical architecture it is necessary to have an idea about the uniqueness of the monuments and the construction methods. they should know the construction principles and features of important architectural monuments in Central Asia and be able to use them. he should also know how to determine the period of construction of historical architectural monuments. for the development of architecture, it is necessary to raise the study of its history and theory to a new level

MAIN PART

According to the information of Arab tourists, historians and geographers, most of the cities of Central Asia in the early Middle Ages consisted of three parts. One of these three parts was the city arch (kohandiz) - the residence of the ruler, and the second part was the city (medina dahil). The main part of the city included trade stalls, other public and residential buildings. The third part was called rabat, and it formed the trade and craft zone outside the city. However, the results of studying the cities of the VII-VIII centuries show that most of them consisted of only two parts - the arch (or castle) and the city.

In the VI-VIII centuries, the city of Termiz revived after the decline of the previous centuries. Residents have returned to some of the previously abandoned areas. The prosperity of the city dates back to the 9th-12th centuries. It expanded further, the harbor was repaired, reconstruction works were carried out in the fortress to strengthen it. Shahrستان was surrounded by a fortress wall. In addition to the wider city, the city also included the surrounding part (Suradikat). In the time of the Somonites, there



were markets, workshops, and prayer rooms in the city, in addition to the neighborhoods, in the palace, in the rabad. The old walls of the fortress were strengthened, and new ones were built. They had nine gates. During this period, the first buildings of the Sultan Saodat complex appeared. At the end of the 13th century, they moved from the places destroyed by the Mongol invasion to the east, to the place called Salavat. At the beginning of the 15th century, Termiz was a "well-built city with excellent markets". Construction was carried out at a rapid pace throughout the XV century; the harbor and the fortress were repaired. The life of Tashkent at the beginning of this period was spent in the Mingo'rik (Mingorik Afrosiyobi) monument. Mingorik was one of the largest cities in Central Asia in the 5th-7th centuries, with an area of about 30 hectares, and consisted of a diz (fortress), shahristan (inner city) and rabad (outer city). Many villages, towns, and villages have appeared around it. The buildings in them are mainly made of raw bricks and straw, and they have reached the hill state. Approximately, in the 8th-9th centuries, Tashkent moved to the territory of the Old City. This area is low and high, and in the imagination of the people, it is considered the best place for the city ("seven streams, seven mountains"), and it protects the population from the danger of floods. According to Beruni (10th century), Tashkent was called Binkad at that time. The city consisted of an ark (castle), a city, and double (inner and outer) rabods, each with a fortified wall. The internal rabad is called "Rabodi dokhil", the external rabad is called "Rabodi khorij". The buildings in the city were densely built (except for the outer rabad). According to the information of the 10th century, the size of the city was equal to a farsang (5-6 km ha). Central Chorsu market and Registan Square are adjacent to the city. Tashkent has organized an integrated urban planning system with other cities and villages along the Chirchik river. The Mongol invasion caused great damage to Tashkent. Large-scale construction works were carried out in the 11th century. Cultural hills in present-day Tashkent and its surroundings provide an idea of the city's architecture. Several such hills are called Oktepa. Among them, Yunusabad Oktepa is distinguished by its size, relatively well-preserved condition, and one of the first domes left in Central Asia. It is known that not only Amir Temur, but also his son Shahrukh carried out comprehensive urban development works. Even after Amir Temur designated Samarkand as the capital city in 1370, he did not lose his attention to Shahrisabz, the capital of Kesh region. Already in the 14th and 15th centuries, it was not connected with the ancient Kesh located in Kitab near Shahrisabz in terms of area. After the major reconstruction works carried out during these times in ancient Kangkha in the Shosh province, the city was called Shahrukhiya after Shahrukh's favorite name. After the invasion of the Mongols, life in Bolokhisar died down. Samarkand moved down to the south. In 1370, the city was surrounded by a fortress wall. On the west side of the castle was the library, which was also surrounded by a separate wall. As a result, two rows of walls were formed in the west. The city walls had six gates. They are called Shaikhzada, Ohanin, Feruza, Sozangaron, Korizgil and Chorsu in the order of their location according to the movement of the clock shafts. The street in the north-south direction is the main one in the city, and its center is marked by Registan Square. Amir Temur covered the shopping street from Maidan to Ohanin Gate with domes. Outside the city, he also built several villages, and added them to the world's largest cities - Forish (Paris). He gave names like Baghdad. In the 15th century, more than ten gardens were created around Samarkand.



Bibikhanim complex is one of the largest constructions of Amir Temur in Samarkand. The complex consists of a mosque and a madrasah, which are arranged in a double (alternative) form. In many literatures, Jome is called by the name Bibikhanim - Saraymulkhanim, based on legends. In fact, it is appropriate to call it by the name of Amir Temur. Bibikhanim madrasa was built along the composite axis of the mosque. The street passing through them was considered the most important in the capital. Amir Temur's mosque is a shining example of the architecture of the period with its extreme grandeur, strength, and elegance. Jome was built on a large scale. It has a courtyard and four porches. Along the longitudinal axis, there is a luxurious facade and the so-called "Great Mosque". The dimensions of the "Small Mosque" are marked on the transverse axis. The other, corner parts of the structure are relatively lower than the mentioned parts. Their cover consists of domes resting on pillars. Bibikhanim madrasa was established under the composition of the Jame. It is smaller than the mosque. It also has a courtyard system. The madrasa included the mausoleum of Saraymulkhanim.

CONCLUSION

The rich architectural traditions of Uzbekistan embody all stages of the development of the world cultural heritage, various forms of rare architectural works, and also in the architecture of unique structures such as towers. left a significant mark.

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**THE ROLE OF USING NEW MODERN INNOVATIVE METHODS IN EDUCATION OF
THE YOUNG GENERATION**

Khudoykulova Hilola Mamayunusovna
TerDPI 2nd Cycle Graduate Student
hilolaxudoyqulova@gmail.com
+998996789711

Annotation

The article details the role of innovative methods in teaching reading literacy in the native language and opinions about their use.

Keywords: Innovation, native language and reading literacy, method, text, critical, logical, imaginative thinking, creativity.

Annotatsiya:

Maqolada ona tili o`qish savodxonligi darslarini o`ganishda innovatsion metodlarning tutgan o`rni va ulardan foydalanish yuzasidan fikrlar atroflicha yoritilgan.

Kalit so`zlar: Innovatsiya, ona tili va o`qish savodxonligi, metod, matn, tanqidiy, mantiqiy, ijodiy fikrlash, kreativlik.

Аннотация: В статье подробно освещается роль инновационных методов в обучении грамоте чтения на родном языке и мнения об их использовании.

Ключевые слова: Новаторство, родной язык и грамотность чтения, метод, текст, критическое, логическое, образное мышление, креативность.

Ta`lim-tarbiya tizimini yangilashda boshlang`ich sinflarga ona tili va o`qish savodligi darslarini o`rgatishga doir innovatsion harakatlarni amalga oshirish, isloh qilish, shakllantirish ta`lim sohasining rivojlanish darajasini belgilab beruvchi dolzarb masalalardan biridir.

Yosh avlodga ta`lim tarbiya berishda innovatsion metodlarni pedagogik faoliyatda qollash, o`quv jarayonini samarali va sifatli tashkil etishdan iborat. Ta`lim jarayonida davr talabiga mos o`qitishning yangi usul va metodlarining ishlab chiqilishi va qo`llanilishi o`quv jarayonining samarasini, sifatini ta`minlashda ustuvor jarayondir. Zamonaviy o`qituvchi pedagogik faoliyatda ta`lim va tarbiyani rivojlantiruvchi zamonaviy vositalardan unumli foydalanishi, o`z ustida doimiy ishlashi va eng yangi innovatsion metodlarni amaliyotda qollashi ta`lim sifati, unumdorligini oshiradi, o`quvchilarning mustaqil va ijodiy fikrlash qobiliyatlarini o`stiradi, qiziqishni oshiradi, bilimlarni mustahkam o`zlashtirish, o`zlashtirilgan bilimlar bazasidan hayotiy masalalarda erkin foydalanish ko`nikma va malakalarini mustaxkamlaydi. Boshlang`ich sinfda o`quvchilar tafakkurini shakllantirishda



o`qituvchining innovatsion metodlarni dars jarayoniga mohirona qo`llay olishi, yangidan-yangi usul va metodlar ustida tadqiqot olib borishi, ilg`or ustozlar tajribasidan o`z darslarida foydalanishi juda muhimdir.

“Ona tili va o`qish savodxonligi fani og`zaki va izchil nutqni o`stirish, so`z boyligini o`shirish, to`g`ri va ifodali o`qishga o`rgatish bilan birga ularga kitobxonlik va nutq madaniyati hamda mustqil fikrlash qobiliyatlarini shakllantirishga xizmat qiladi”¹

Ona tili va o`qish savodxonligi leksik grammatik meyorlarni o`rgatuvchi, o`quvchi nutqiy faoliyatida ixtiyoriy mavzu, fanlar kesimidagi matnlarni tinglab tushunish, to`g`ri o`qish, orfoepik va orfografik miyorlarga amal qilish salohiyatini oshirishga yordam beradigan fan hisoblanib, bolalarning ijodiy, mantiqiy, tanqidiy fikrlash uchun o`qib tushinish ko`nikmalarini rivojlantirishga alohida e`tibor beriladi.

Boshlang`ich sinf ona tili va o`qish savodxonligi darslarini oqitishda oldiga qo`yilgan tarbiyaviy vazifaning muvoffaqiyatli hal etilishi darsda badiiy asar matni ustida ishlash bilan bog`liq bo`lib qolmay, ta`lim oluvchini qurshab turgan borliq, atrof-olam, ekologik jarayonlar, foydali mehnat bilan o`zaro bog`liq bo`lishi, fanlararo integratsiyani ta`lim jarayonida amalga oshirish ahamiyatlidir. “Boshlang`ich sinflarda bir o`qituvchining dars berishini, integratsiyaning bir deb hisoblasak ham bo`ladi, ammo muammoning mohiyati shundaki, usullarning birlaridan yuz o`girib, ikkinchisidan barcha darajalarida o`qituvchilarning (psixologik va fiziologik) yosh xususiyatlarini hisobga oladigan integratsion choralar tuzishni kiritishidir. Muammoning bunday qo`yilishi integratsiyaning turli ta`lim pog`onalarida turli xususiyatlarga ega ekanligini ko`rsatadi. Boshlang`ich maktabda integratsiyani bir-biriga nisbatan yaqin fanlarni birlashtirish asosida ko`rish maqsadga muvofiq. Ta`limning keyingi pog`onalaridan u asosiy fanlarning chegaralarini birlashtirishga harakat qiladi”².

Boshlang`ich sinflarda bolalar tomonidan ertak, hikoya, masal janrlari katta qiziqishlar bilan qabul qilinadi. “Xalq og`zaki ijodida ertak janrining bolalar tomonidan yaxshi qabul qilinib, qiziqib o`qilishining sabablaridan biri ertak tilining ta`sirchanligi, o`tkir syujetliligi va xalq tiliga yaqinligidir”³ Boshlang`ich sinf Ona tili va o`qish savodxonligi darslarida “Ertaklar yaxshilikka yetaklar” bo`limida berilgan “Bo`g`irsoq”, “Uch og`a-ini botirlar”, “Zumrad va Qimmat”, “Echki va bolalari” ertaklar ichidan yaxshi va yomon qahramonlarni ajratib olish, matndan qahramonlarning xarakter-xususiyatlari aks etgan o`rinlarni aniqlash, nutqni boyitishda ertak g`oyasiga mos maqol va hikmatli sozlarning ahamiyatini tushuntirish, ertak tarkibidan hayvon va parrandalarning nomlarini bildirgan otlarni ajratish, ertak qahramonlaridan biriga xat yozish kabi metodlardan foydalanish mumkin.

Yangi bilimlarni o`lashtirishda yordam beradigan qiziqarli innovatsion metodlarda ertak matnidan foydalangan holda darsni tashkil etishda 1-sinf o`quvchilariga “Serkaboboning hiylasi” ertagini otishda “Aktyor” metodidan foydalanish bolalarni kreativ fikrlashga chorlaydi, aqlli, zukko bo`lishga undaydi

¹ Milliy o`quv dasturi 2020

² R.Mavlonova, N.Rahmonqulova “Boshlang`ich talimda pedagogika, innovatsiya, integratsiya” Toshkent-2013

³ K.Qosimova “Ona tili o`qitish metodikasi” Toshkent “Nosir” nashriyoti 2009



va ta'lim jarayonida yuqori samara beradi. Metodni qo'llashdan oldin tayyorlov bosqichiga alohida e'tibor bilan yondoshish lozim. Bunda bolalarga ertakning audiomatni eshittiriladi, ertak yuzasidan savol-javob otkaziladi (Savollarni ertak matnidagi voqealar asosida bolalarning o'zlari tuzib, bir birlariga beradilar) hamda matnda ishtirok etgan qahramonlarni aniqlab, ijobiy va salbiy qahramonlar haqida o'z fikrlarini og'zaki bayon etadilar, shu orqali ertak mazmuni bilan to'la tanishib, mustaqil ijodiy fikrlash qobiliyatlari rivojlantiriladi. Shundan so'ng bolalarga ertak qahramonlari roli taqsimlab beriladi va Serkabobo, arslon, bo'ri, echkilar niqoblarini taqib, ertakda ro'y bergan voqialarni sahna ko'rinishi orqali namoyish qiladilar. "Aktyor" metodi yordamida o'quvchilarda, ijodkorlik qobiliyatlari rivojlanadi va san'atga bo'lgan qiziqishlari orttiriladi. O'rganilgan ertak qahramonlarining xarakteri va axloqiy sifatlarini tahlil qilishga doir ko'nikma va malakalarga ega bo'lish bilan birga ahillik, inoqlik, birdamlik, izlanuvchanlik, topqirlik, mas'uliyatlilik, kurashuvchanlik, kreativ fikrlash, shoshilinch vaziyatlarda to'g'ri qaror qabul qilish kabi sifatlar rivojlantiriladi.

Zero, hozirgi zamonaviy milliy o'quv dasturida yosh avlodni muayyan til qonuniyatlarini yodlatish emas balki kundalik hayotda zarur bo'lgan ko'nikmalarga ega bo'lgan roqobatbardosh, vatanparvar, kreativ fikrlaydigan har tomonlama yetuk barkamol shaxsni tarbiyalash hamda bilimni boyitib borish maqsadi ko'zda tutilgan.

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**PEDAGOGICAL TECHNOLOGIES IN INTERDISCIPLINARY INTEGRATION
PROCESSES IN EDUCATION OF THE YOUNG GENERATION**

Karimov Oybek Abdinazarovich
TerDPI 2nd Cycle Graduate Student
oybekkarimov8380@gmail.com
+998993188015

Annotation

The article discusses in detail some of the requirements and conditions for the introduction of an interdisciplinary integration approach in the lessons of the native language and reading literacy in elementary grades, discusses issues related to pedagogical technologies.

Keywords: tegration, interdisciplinary integration, educational efficiency, primary education, pedagogical technology, integration classes.

So`nggi yillarda ta'lim-tarbiya tizimida yangi avlod tarbiyasida jahon fani va madaniyatining ilg`or yutuqlarini jamlagan, o`tmish ajdodlarimiz aql-zakovoti mahsuli sifatida yaratilgan milliy va ma'naviy qadriyatlarimizga tayangan holda zamonaviy ta'lim-tarbiya berish uslublarini shakllantirish muammosi vujudga keldi. Barkamol avlod jamiyat taraqqiyotining asosi. Shu bois mamlakatimizda ham jismonan, ham manan barkamol avlodga talim-tarbiya berish davlat siyosati darajasiga kotarilgan.

Kadrlar tayyorlash milliy modelida fanning tabiat va jamiyat togrisidagi yangi fundamental hamda amaliy tadqiqiga oid yonalishlarini rivojlantirish, yuqori malakali, ilmiy salohiyatga ega raqobatbardosh pedagogik kadrlar tayyorlash, amalda talim sohasida faoliyat yuritayotgan oqituvchilar malakasini oshirish yolida muntazam tizimli ishlarni amaliyotga tadbiq etish, zamonaviy kompyuter texnologiyalaridan togrri foydalanishni yolga qoyish, ularni jahon fani integratsiyasi darajasida ilmiy jihatdan savodxonligini, bilimlarini boyitish davr talabi bolib qolmoqda.

2022-2026- yillarda Ozbekiston Respublikasini rivojlantirishning Harakatlar strategiyasida va boshqa meyoriy hujjatlarda uzluksiz talim tizimini isloh qilish vazifalari belgilangan bolib, bu esa talim jarayonida oquvchilar bilan ishlash, ularni har tomonlama yetuk barkamol shaxs sifatida shakllantirish davlat miqyosida muvaffaqiyatli amalga oshirilishida zamin bolmoqda.

Zero, yurtboshimiz Sh.Mirziyoyevning Biz talim va tarbiya tizimining barcha boginlari faoliyatini bugungi zamon talablari asosida takomillashtirishni ozimizning birinchi darajali vazifamiz deb bilamiz¹deya bildirgan fikrlari ota ahamiyatlidir.

Ta'lim tarbiya jarayonida, maktab ta'limida fanlararo integratsiyani yo'lga qo'yish fan va jamiyat hayotida bugungi kunda sodir bo'layotgan integratsion jarayonlarda o'z ifodasini topmoqda. Kadrlar tayyorlash milliy modelida fanning tabiat va jamiyat togrisidagi yangi fundamental hamda amaliy

¹ "Ta'lim to'g'risidagi qonun", "Kadrlar tayyorlash milliy dasturi" 2020-yil.



tadqiqiga oid yonalishlarini rivojlantirish, yuqori malakali, ilmiy salohiyatga ega raqobatbardosh pedagogik kadrlar tayyorlash, amalda talim sohasida faoliyat yuritayotgan oqituvchilar malakasini oshirish yolida muntazam tizimli ishlarni amaliyotga tadbiq etish, zamonaviy kompyuter texnologiyalaridan to'g'ri foydalanishni yolg'a qoyish, ularni jahon fani integratsiyasi darajasida ilmiy jihatdan savodxonligini, bilimlarini boyitish bugunning dolzarb mavzusidir.

Oquvchilarning oquv materiallarini ozlashtirishida qollaniladigan pedagogik texnologiyalar yosh avlodning intellektual rivojlanishiga ijobiy tasir etishining samarali yollaridan foydalanishda oqituvchilardan oquvchilarga bir fan doirasida bogliqliklar asosida turli bilimlarni orgatishini taqozo etadi. Jamiyatdagi hodisalar, ularning tuzilishi, mohiyati va funksiyalarini, qonuniyatlarini organish, oquvchilar ongida qiyoslash, analiz va sintez, taqqoslash, ijodiy fikrlash, dunyoqarashini kengaytirish, umumlashtirish, induktiv va deduktiv xulosa chiqarish kabi tafakkur operatsiyalarini rivojlantirishga yordam beradi. Erkin fikrlovchi, ijodkor, mustaqil vatanimizga sadoqatli bolgan barkamol avlodni tarbiyalash yolida boshlangich talim samaradorligini oshirishni talab etiladi. Shuni etiborga olgan holda ona tili va oqish savodxonligi darslarida fanlararo integratsiya qonuniyatlarining yangi qirralarining yaratilishi, integratsion tizimning ommalashishi, yangi pedagogik texnologiyalarning talim jarayonida qollanilishi talimda istiqbolli vazifalar yechimini taminlaydi.

Bugungi kunda jamiyatimizdagi yangi iltimoiy munosabatlarning shakllanishi, talimning dunyo talim tizimiga integratsiyalashuvi, demokratiyalash va insonparvarlashtirish jarayonlarining rivojlanishi talim jarayonida zamonaviy pedagogik texnologiyalar (PT)ga yangicha yondoshuv zarurligini taqozo etmoqda [3-9-b]

Ona tili va oqish savodxonligi darslarida ogzaki va yozma nutqlarini ostirishga qaratilgan bilimlarni ongli ozlashtirishi, dunyo haqidagi yaxlit tasavvurlarini rivojlantirish, erkin ijodiy fikrlash va amaliy va ilmiy-metodik tayyorgarligini oshirish, yangi pedagogik texnologiyalarni talim jarayonida qolash muhim orinni egallaydi. Bunday tayyorgarlik oquvchilarda darsda va darsdan tashqari mashg'ulotlarda, kelajakda hayotiy masalalarda, ishlab chiqarishda va umuman har qanday faoliyatda ozlashtirilgan bilim, konikma va malakalarini erkin qolash imkoniyatini beradi.

Pedagogik texnologiya tushunchasining shakllanish va rivojlanish tarixida turli qarashlar mavjud bolgan; u texnik vositalar haqidagi talimot deb, hamda oqitish jarayonini loyihalashtirilgan holda izchil va muntazam tashkil etish deb talqin qilingan. [4-65-b]

Tadqiqotlarni organish, kuzatish jarayonida malum boladiki, tarixda pedagogika soxasi rivojida oz orniga ega bolgan taniqli pedagog olimlardan B.Lixatchev, V.P.Bespalko, I.P.Volkov, Yunesko, V.M.Shepel, V.M.Manaxov, G.Slevko, M.V.Klarinlar pedagogik texnologiyalar ustida ilmiy izlanishlar olib borishgan.

Bugungi to'xtovsiz rivojlanayotgan talim sohasi yangi bosqichga kotarilmoqda, internet tamoqlari va undagi malumotlarning cheksizligi tufayli yosh avlodning axborot olishi uchun hech qanday tosiq yoq, bunday keskin rivojlanish, osish jarayonida talim-tarbiya berishda innovatsion texnologiyalardan foydalanmasdan darsning samaradorligiga erishib bolmaydi. Ikki guruh bir xil topshiriqni bajarishi jarayonida mahoratli har tomonlama pishiq tayyorgarlikka erishgan azolarga ega jamoa yaxshi natijalar korsatib, maqtovg'a sazovor bolishadi, ustalar ham bir xil



materiiallardan turli buyumlar yasaydilar, ammo ularning tayyorlagan buyumlari sakllari, gozalligi, foydaliligi, pishiqligi va chidamliligi jihatidan bir-biridan tubdan farq qiladi. Bunga kasbiy mahorat hamda qobiliyat orqali erishiladi. Oqituvchi ham oz kasbiga puxta yondoshib, yangi pedagogik texnologiyalardan foydalangan holda darslarni tashkil etsa talimda yuksak marralarni zabt etish kafolatlanadi.

Bugungi shiddat bilan rivojlanayotgan davrda oqituvchi oz ustida ishlab, yangi bilimlarni egallamasa, ilgari organilgan bilimlar yetarli bolmay qoladi. Har bir organilayotgan mavzuni kundalik hayotdagi voqealar bilan boglanilib, turli innovatsion texnologiyalardan foydalanilib otilgan dars oquvchi uchun qiziqarli hamda esda qolarli bolib, samarali natijalarga erishilishi mumkin.

Innovatsiya (inglizcha) yangilik kiritish, yangilik degan manoni ifodalasa, texnologiya yunoncha texnos sanat, mahorat va logos □ fan sozlaridan olinib, innovatsion texnologiya talim-tarbiya shakllari, metodlari va usullariga yangicha yondoshish degan manoni bildiradi. Innovatsion yangi pedagogik texnologiyalar talim jarayoni hamda o'qituvchi va oquvchi faoliyatiga yangilik, ozgarishlar kiritish hisoblanib, yangi davr ustozlari oldiga organishi lozim bolgan, AKT boyicha bilim, konikma va malakaga ega bolish, YaPT (yangi pedagogik texnologiya) boyicha xorijiy tajribalardan boxabar bolish, talim jarayonini tashkil etishda didaktik oyinlardan, interfaol usullardan foydalanish sanati, ilgor pedagogik texnologiya boyicha bilimlarni ozlashtirib borish, dars jarayonida harakatli oyin texnologiyalaridan unumli foydalana bilish, oz ustida tinmay ishlash, turli sohalarga oid yangiliklarni kuzatib borish kabi muhim talablarni qoyadi.

Oqituvchi innovatsion texnologiyalarga asoslanib darsni tashkil etar ekan, turli texnik vositalardan ham (kampyuter, proyektor, monitor, elektron doska va boshqa) foydalanish yollarini puxta ozlashtirishi muhim ahamiyatlidir. Oqituvchining faoliyatida yangiliklar, metodlar qanchalik kop bolsa, dars mavzusining tasirchanligi, mazmuni shunchalik oshadi. Talimda innovatsion texnologiyalar va interfaol metodlar haqidagi bilim hamda tasavvurlarning ozgaruvchanligi va mukammal shaklga ega emasligini ham etirof etishimiz lozim. Bunda har bir pedagok talimga individual tarzda shaxsiy hamda talim muassasasi imkoniyatlaridan kelib chiqib, ijodiy yondoshgan holda yangilik va ozgartirishlar kiritishi mumkin. Ammo bu jarayonda talim oluvchining individual yosh xususiyatlarini hisobga olgan holda oquvchilarning har tomonlama aqliy, manaviy tomondan rivojlantiruvchi faol metodlardan foydalanish muhimdir. Talim faoliyatining yangi shakllarini konstruksiyalash boshlangich sinf o quvchilarining m anaviy shakllanishi asosini tashkil qiladi. Dastur fikrlash shakllarini tubdan yangilash; maktab oquvchilarini intellektning yangi bosqichida otkazishni kozda tutadi. Chunonchi: korgazmali - anqlikdan o g zaki mantiqiylikka; emperikdan nazar iy-tadrijiy fikrlashga.[5-167-b]

Innovatsion texnologiyalardan foydalanishning asosiy maqsadi: oqituvchi va oquvchi ortasidagi munosabatda ilmiy va ozaro hamkorlikka erishish, oquvchilarni organilayotgan fanga qiziqtirish, ilm olishga bolgan munosabatni ijobiy tomonga ozgartirish orqali olingan bilimlarni kundalik faoliyatda qollay olish konikmasiga ega bolishida muhim omil bolib xizmat qiladi. Yuqoridagilardan kelib chiqib, innovatsion pedagogik texnologiya bu ilmiy izlanishlar, ishlanmalar yaratish, tajriba sinov ishlari olib borish yoki boshqa fan-texnika yutuqlaridan foydalangan holda



fanlararo integratsiyani joriy etib, oquvchilarga yangi bilim berishdan iboratdir degan xulosaga kelishimiz mumkin.

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THE SIGNIFICANCE OF OPEN DITCHES IN THE MANAGEMENT OF THE SALT-WATER REGIME AND ITS EFFECT ON SOIL RECLAMATION

Rakhmanov Ikram Abdukarimovich
Gulistan State University
raxmonovikrom@gmail.com

Annotation

The article describes the results of scientific research on effective use of irrigated soils of Boyovut district of Sirdarya region. The results of the statistical analysis of salinity in the irrigated gray-meadow soils of the Navbahor farm of Boyovut district, data on the accumulation of existing salts in open ditches and changes in it are presented.

Keywords: Syrdarya region, salinity, open and closed ditch, secondary salinity, seepage water, mineralization of its waters, environmental and reclamation condition, monitoring wells.

Relevance and necessity of the topic

Development of technologies for prevention of soil salinization or ecological restoration of arable land lost to use due to salinity in agriculture around the world is an important issue. This will allow us to avoid the economic crisis¹ caused by food shortages based on meeting the food needs of the growing population. It is known that 30% of the 1.5 billion hectares of arable land used in agriculture in the world today has been exposed to varying degrees of salinity due to natural and anthropogenic factors, which has a negative impact on the production of food products based on agricultural plants and the ecological environment. Accordingly, it is important to improve the ecology and land reclamation of irrigated croplands degraded by salinity and to increase the possibilities of their use in production.

Research is being conducted worldwide to restore irrigated lands that have been degraded or abandoned due to salinity, to improve soil fertility, and to improve the ecological status based on expanding the area of agricultural plants. With the help of plant resources that are resistant to salt and have the property of accumulating water-soluble salt ions in the body, special attention is paid to the directions of ecological restoration based on reducing the level and salinity of seepage waters and increasing soil fertility.

In our republic, special attention is paid to effective use of land and water resources, maintenance of soil fertility, improvement of ecological and land reclamation conditions. In particular, in the studies carried out on improving the ecology and reclamation of the irrigated lands of the Syrdarya region, first of all, providing detailed information on the process of soil salinization, evaluating them through clearly defined modern methods and determining them using aerospace methods, and predicting the effective use of land and water resources in agriculture. on the basis of which certain results have been achieved.

¹ FAO of the United Nations and Earthscan, Rome, 2017. Water and Cereals in Drylands.



In the priorities of the Strategy of Actions for the further development of the Republic of Uzbekistan, the issue of "Further improvement of the reclamation condition of irrigated lands and rational use of water resources" is highlighted. Based on this, implementation of protection and monitoring of irrigated lands from salinization and degradation processes on the basis of modern methods is of great scientific and practical importance.

of the President of the Republic of Uzbekistan on February 7, 2017

Approved by Decree No. PF-4947 "On the strategy of actions for the further development of the Republic of Uzbekistan"

In the direction of "further development and liberalization of the economy" according to the five priorities of the development of the Republic of Uzbekistan in 2017-2021, PQ-3281 dated September 15, 2017 "On measures for the rational placement of agricultural crops in 2018 and forecast volumes of agricultural production" This thesis research serves to a certain extent in the implementation of the tasks defined in the Resolution, Decree No. PF-5742 of June 17, 2019 "On measures for the effective use of land and water resources in agriculture" and other regulatory legal documents related to this activity.²

The purpose of the research is to create an agrotechnology based on bio-ameliorative approaches to improve the ecological and meliorative condition of irrigated lands (in the example of Syrdarya region).

Tasks of the research: analysis of factors affecting the ecological and meliorative condition of the soil of irrigated lands; studying the possibilities of collecting harmful salts in open closed ditches;

Scientific and practical significance of research results. The scientific significance of the research results is that a set of territorial, legal and organizational documents has been developed on the experimental system of assessment of the ecological and reclamation status of irrigated lands and the influence of the salinity level, modern aerospace methods, GAT technologies and laboratory analysis, with the development of the fundamental principles of the mechanism of changes in soil ecology. explained.

The practical significance of the results of the research is that the impact of salinity on soil ecology was determined on the basis of aerospace and spectral data, plant indicators, empirical data, and the fact that the use of plant resources in improving the land reclamation conditions of the experimented lands served to increase soil productivity.

In order to fulfill the specified tasks, research and development work was carried out in two components: regulation of the level and mineralization of underground water and monitoring of ecological improvement of saline soils with the help of sorghum.

² Decree of the President of the Republic of Uzbekistan dated February 7, 2017 No. PF-4947 "On the strategy of actions for the further development of the Republic of Uzbekistan"



The research was conducted in the territory of the Navbahor water user association, Boyovut district, Sirdarya region. The necessary experimental area for conducting scientific research work was determined based on the lowest credit score.

Soil analyzes were conducted before the reclamation activities.

Water-physical properties of the soil (water permeability, limiting moisture capacity) were studied in three replicate locations. Soil samples were taken from 0-15, 15-50, 50-100 cm layers, and samples were taken in three repetitions to study their moisture and chemical composition.

All samples were analyzed by the method of aqueous absorption, and complete data were collected on the samples in the specified periods. The analyzes were conducted on the basis of SoyuzNIXI (1973), UzPITI methodology.

The marginal moisture capacity of the soil was studied by the method of determination in field conditions, soil moisture was determined 6 times. Water permeability and soil infiltration coefficient were determined using frames in field conditions. Soil density was determined using the method of drying the samples obtained using a metal cylinder in a thermostat.

In order to determine the level, salinity and chemical composition of groundwater, monitoring wells were installed in designated areas.

According to the FAO classification, the soil of the experimental area is moderately to strongly saline.

The soil salt-water balance was studied to determine the effectiveness of the agromelioration measures implemented in the places. For this, salt reserves, the occurrence of underground water and their mineralization were determined.

The chosen experimental area is the outskirts of the Syrdarya river, located on the III-terrace, in the "Navbahor" farm, Boyovut district, Syrdarya region.

Underground seepage water in the agricultural area is located at a depth of 1.5-2.5 m, and rises to 1-1.2 m during the irrigation period during the vegetation period. In this case, the source of irrigation is Syrdarya water supplied through the JMK canal. Irrigation water filtered from irrigation fountains and irrigated fields is the main source of groundwater elevation. The mineralization of groundwater varies in the range of 5-6 g/l, mainly characteristic of sulfate salinity type. The level of mineralization of underground water varies according to the seasons. At the end of the autumn period, it rises, during the growing season it decreases under the influence of intensive irrigation. Slow groundwater flow in this area causes an increase in mineralization.

The local population is mainly engaged in growing wheat, cotton and rearing livestock. An increase in soil salinity causes a relatively decrease in the productivity of agricultural crops.

From the point of view of climate, the agricultural area belongs to the subtropical highland-semiarid desert zone of the Central Asian region.

The climate of the region is sharply continental, and the amplitude of temperature varies during the day and during the seasons, especially this situation is manifested by a sharp change in dry air during the change of seasons.

The average annual air temperature is +12.90C, the average monthly temperature in January is the coldest month -18-100C, and the warmest July is +26.7-330C. The non-cold period is 205-230 days.



The sum of the effective temperature (+100C) is equal to 3368. Precipitation occurs mainly in winter and spring months. Annual rainfall is 324 mm. Average annual relative humidity is 52%, evaporation rate is 1600 mm per year.

Land resources. The total irrigated area of the farm is 7578 ha. According to the information obtained from cartograms, the area of saline land in agriculture is 1003 hectares, the area of average saline land is 2744 hectares, the area of highly saline land is 2131 hectares, and the abandoned land is 2100 hectares. Annual water intake, irrigation source, water supply, ditch and ditch water salinity were determined.

The project of irrigation and development of these lands showed that the level of underground water will rise by 0.5-0.6 m per year. However, practice shows that the current rates of watering and irrigation exceed the calculated rates, especially in the first years of development. At the same time, the flooding of the existing collector-drainage network affected the rise of the underground water level. The mineralization of syzot waters increased proportionally, and the secondary salinity of the land reached its maximum level.

A 30-hectare area belonging to Gulistan State University, selected for research and innovation-experimental works at the "Navbahor" farm, was photographed from space. Of this, the area selected for field research was 29 hectares. Crop rotation in these areas is cotton and wheat. Water for crop irrigation is provided through specific irrigation networks in the southwestern part of the experimental area.

It is known that the secondary salinization of the soil surface is associated with the rise of the groundwater level. Although there are some methods for reducing seepage water levels, the development of low-cost technologies for reducing seepage water levels is of particular importance. Therefore, in order to control the level of seepage water and the level of mineralization through evaporation, a closed ditch with a depth of 3.8 m, a width of 10 m, and a length of 465 m was prepared in the center of the field and closed on both sides (Fig. 1). Sizot water is collected in a closed ditch and evaporates through it. Then a total of 18 observation wells, 9 each on both sides of the closed ditch, were installed.



Figure 1. An open pit dug in the experimental area.



The main purpose of digging this ditch was to study the influence of seepage water on the growth and development of plants..

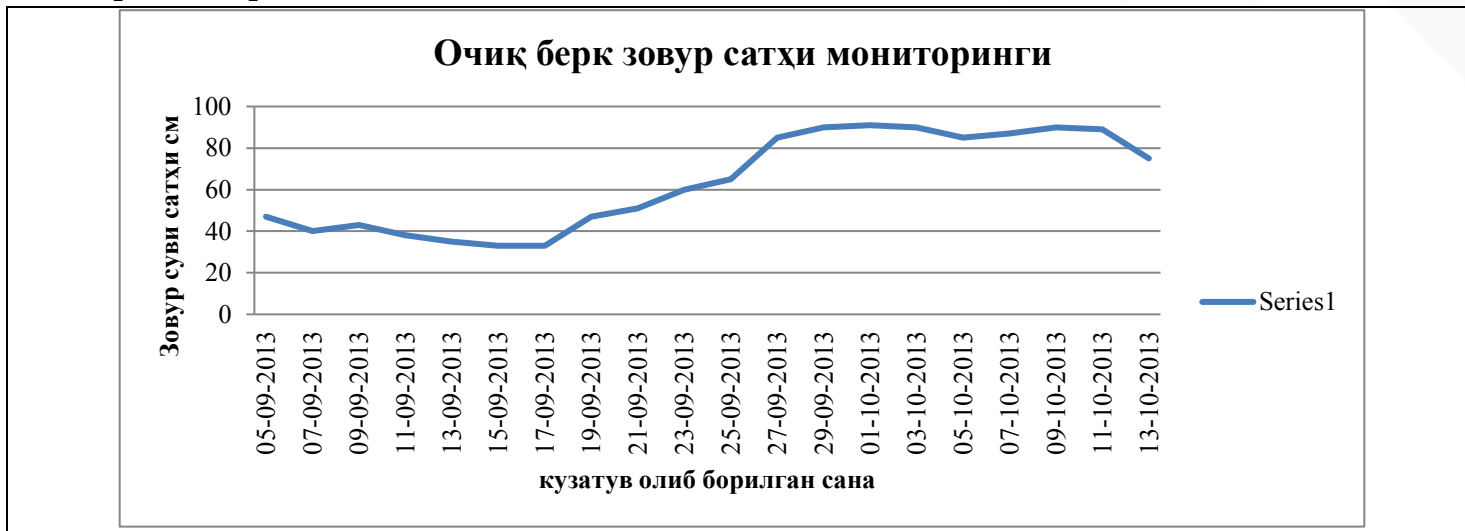


Figure 2. Monitoring of the water level of an open and closed well

The mineralization level of seepage water (SS) in the open closed ditch and the water level in the closed ditch in the experimental area were monitored and its status was shown in the graph (Fig. 2). After the start of irrigation, on September 27, 2013, the water level in the closed ditch reached its maximum level.

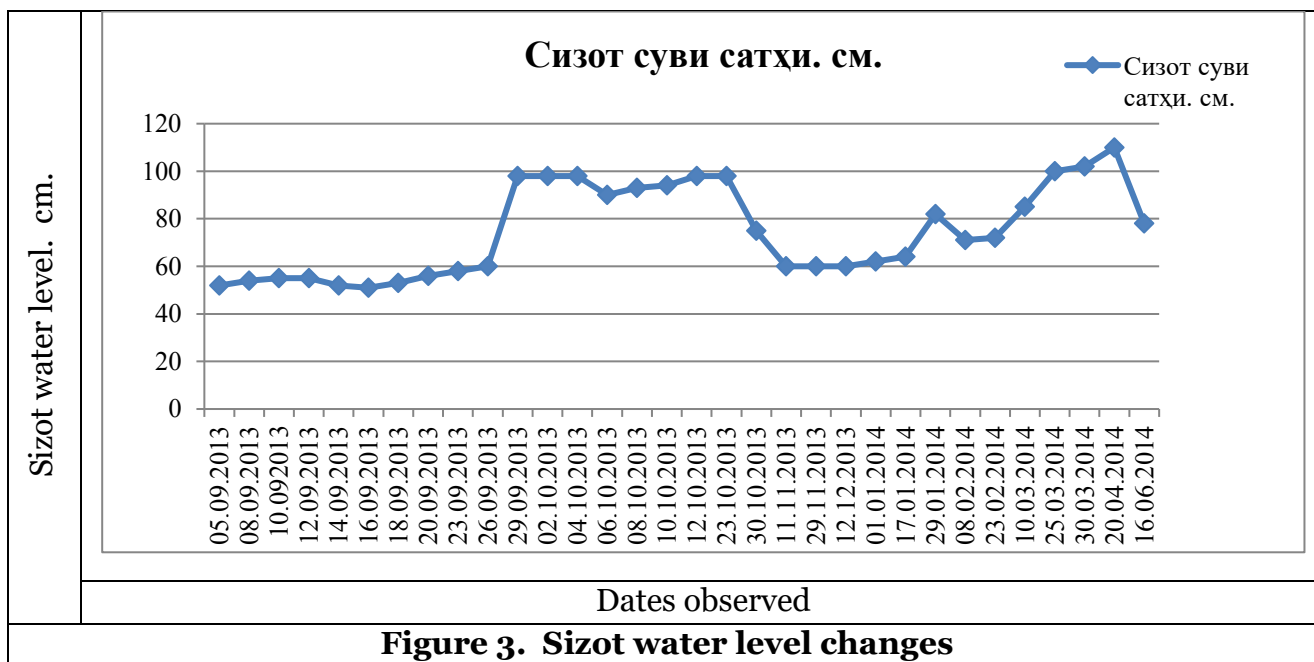


Figure 3. Sizot water level changes

Gauges were installed in the closed ditch to measure the collected seepage water and its evaporation volume. A water meter was installed at the beginning of the field to measure the volume of irrigation water. After heavy rains and irrigation, the seepage water level rose (Figure 3).



Due to the possibility of accumulation of harmful salts in open and closed ditches, it is reasonable to consider that it is more effective to reduce the accumulation of these salts in closed ditches, rather than transporting these salts to long distances using water.

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**THE VALUE OF LOGARITHMICS IN WORKING WITH CHILDREN WITH PHONETIC
AND PHONEMIC SPEECH DEFICITS**

Honbabaeva Madinabonu Askarjon qizi
Special Pedagogy Department Teacher of
Kokand State Pedagogical Institute

Annotation

This article reflects the role and importance of logarithmics in working with children with phonetic and phonemic speech insufficiency, as well as the diagnosis and speech characteristics of children with phonetic and phonemic speech insufficiency.

Keywords : phonetic-phonemic speech defect, logarithmic, diagnostics, various speech disorders, underdevelopment, sound, speech, articulation, visual-visual, tactile-muscular, visual-auditory.

Phonetic and phonemic underdevelopment of children's speech is a violation of the processes of speech formation in combination with various speech disorders. The cause of underdevelopment is a defect in listening and repeating phonemes.

Usually, by the age of six, children have fully formed the correct motor skills of speech. That is: the child pronounces all sounds correctly; can distinguish sounds similar in sound; have developed phonetics; has a wide vocabulary. However, not all first-graders enter school with a full-fledged speech. If the pronunciation of any sound is violated, the child is diagnosed with underdevelopment of phonetic speech .

It is very important to develop phonemic hearing in children during corrective work, which allows them to better perceive word endings, suffixes, prefixes and complex syllables by ear. This is an important stage, since the formation of phonemic perception allows the formation of sound analysis.

Sound analysis is the mental division of sounds, words, and syllables into separate phonemes. The author R.E. Levina says that it is precisely incorrect phonemic perception and sound analysis that prevent children from pronouncing and perceiving different phonemes.

Underdevelopment of speech from the phonetic-phonemic side is a violation of the formation of the system of sound pronunciation of the native language in children as a result of shortcomings in the process of pronunciation and perception of sounds.

If the articulate interpretation of sound is violated, its perception also deteriorates. It is phonemic perception that plays an important role in the formation of the sound side of speech. Children with defects in pronunciation and repetition of phonemes are distinguished by subtle acoustic-articulatory symptoms.

In phonetic-phonemic speech, patients often observe the dependence of phonemic perception on the number of defective sounds. This means that the more sounds are not formed in the child's speech, the lower his phonemic perception. It should be noted that pronunciation and perception of sound do not



always coincide. For example, a patient pronounces only a few sounds with a defect, and the rest are correct, but at the same time he cannot distinguish these sounds by ear.

Children whose phonetic-phonemic speech is not developed has the following features:

In the speech of the child, the desired sound is lost or one sound is replaced by another. For example, instead of voiced sounds, the child uses deaf sounds; instead of whistling - hissing, etc. Articulation is formed in a child with confusion of sounds. Difficulties in distinguishing sounds make it difficult for children to read and write correctly.

In speech, direct sounds are replaced by diffuse articulation. Instead of repeating a pair of articulatory close phonemes, a moderately slurred sound is pronounced. Phonetic-phonemic disorders - inconsistent repetition of sounds. The child correctly names individual sounds, but makes mistakes in speech. Also, half of the sounds can be distorted in speech, and the other half can be replaced with similar ones.

Incorrect pronunciation of one or more sounds. The patient can speak flawlessly or pronounce 2-3 sounds incorrectly, but at the same time it is difficult to perceive and distinguish sounds by ear.

Logarithmic is of great importance when conducting speech therapy classes with children with phonetic-phonemic insufficiency of speech. Speech therapy rhythm is one of the unique forms of active therapy. The original concept of speech therapy rhythms is based on the combination of words, music and movement. The interaction of these components may be different with the dominance of one of them or the ratio between them. The second concept of logopedic rhythm necessitates the inclusion in its desirable rehabilitation method of teaching, teaching and treating people with various developmental anomalies and speech disorders. Rhythm, as a concept that includes many things, differs in only one, unclear feature: it is a temporal or spatial order of objects, phenomena, processes. Psychologist B. M. T. Eplov believes that rhythm is the organization of a certain process in time. Rhythm implies some division of the time series of one or another group, following each other, as a necessary condition. E. Kilinska- Evertowska characterizes logarithmics in a broad sense as a system of musical and expressive exercises for the needs of corrective speech therapy. Logarithmics, despite its organizational system, is only an addition to the system of speech therapy training, since logarithmic exercises are always subordinate to the goals of speech therapy training. A. Roz considers enthal-logarithmic as a new method of speech correction based on the harmony of musical rhythm with the help of words. Logarithmic exercises by character (exercises for morning breathing and voice exercises, relaxation exercises, singing vowels and short songs, exercises for the harmony of movement and rhythm of speech, etc.) according to a given health and fitness complex for children and adults. Under the influence of regular logarithmic exercises in the body, a positive restructuring of various systems and psychomotor activity occurs, for example, cardiovascular, respiratory, motor, speech, sensory, etc. I. V. Pavlov argued that pedagogy (i.e. speech therapy rhythm) should be considered as the basic physiological rule of gradual education and training.

Visual, oral and practical methods are widely used in remedial education and teaching in logarithmic classes. Visual methods provide clarity of sensory perception and motor sensation. Each method has a whole set of different methods that combine the generality of the problem and a single approach to its



solution. In the process of teaching active movements, methodological techniques are selected taking into account the level of assimilation of active material, the general development of children and adults, their physical condition, age and typological characteristics.

Thus, in the training of movement, different methods are used:

a) visualization - the teacher shows an example of an action or an element of action in relation to it, imitation of life examples around, visual landmarks (films, photographs, TV shows, paintings, etc. landmark);

b) tactile-muscular - the introduction of motor activity to various applications. For example, when walking on the road, an obstacle is placed to raise the leg high. The "don't hit the barrier" instruction is based on the patient's own musculoskeletal contractions when they make a mistake in their mind. If he stumbles upon an obstacle, the patient himself will determine that his actions are wrong. Tactile-muscular accuracy also comes to the surface with the direct assistance of the teacher, who determines the height in the corresponding parts of the body, for example, the teacher corrects the height with the touch of a hand;

c) clairaudience - control of movement through sounds. Instrumental music or singing has the best hearing accuracy. Folk songs, two- to four-line poems, mugs, bells, etc. to guide movement.

Verbal methods affect the trainee's mind, help to think over the task and consciously perform motor exercises. Exercises are carried out in full accordance with the stages and tasks of speech therapy. A large number of them are included in the exercises carried out at the beginning of the correction course. Breathing exercises help develop diaphragmatic breathing, exhalation duration, strength and consistency. Arms (up-down, up-sides, up-to the waist, up-to the head, etc.), body (right-left, forward bend, circular rotations), head (shoulder, chest, circular rotations)) can be combined with actions. For example, standing on tiptoe and raising your hands up - inhale, dropping on your heels, putting your hands on your waist - exhale. Turn the torso to the right, arms at shoulder level, also to the right - inhale, return to the starting position: body - straight, arms lowered - exhale. Raising the head high - inhale, slowly lowering it to the chest - exhale. Voice work begins with the pronunciation of consonants and vowels. Exercises are conducted with and without musical accompaniment. Performing rhythmic exercises based on a positive narrative impact contributes to the education of correct speech, the acceleration of children's activity in communication, games and motor improvisations. Therefore, the value of logarithmics in working with children with phonetic and phonemic speech insufficiency is incomparable. The use of the logarithmic environment in all possible combinations proceeds from the ultimate goal of the social rehabilitation of children with speech disorders.

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MIRAK NAQQOSH'S WORK IN THE TIMORESE EMPIRE

Baxtiyorov Laziz Xolmurod o'g'li

"Tashkent Institute of Irrigation and Agriculture Mechanization Engineers"

Trusted Doctorate at the National Research University

Annotatsiya

This article describes Mirak Sayyid Naqqosh, a skilled architect, gardener, and landscape designer who was one of the main builders of the Timurid era. The history of buildings and creativity is explained primarily by the influence of rulers and their political influence. (Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to support more than the body of Jehovah's Witnesses. Even in historical sources, the lack of information about masters may be one of the reasons. That is why we tried to study the work of Mirak Naqqosh in the article.

Keywords: Architecture. Master, Timorese, Babylonians, Tomb of Humayun, Chorbogh, "Irshod az-ziroa", Herod, Samarkand, Bukhara, Ubaydullaxon

In this article, even in the harsh economic and political conditions that arose after the death of Amir Tiberius, the rulers were gardeners who worked on the creativity, gardening, and a brief analysis of the activities of the politician Mirak Naqqosh.

Shortly after the death of Amir Tiberius in 1405, struggles for the crown and the throne flared up throughout the country, but gardens and gardens were held in areas dominated by the Tyrian rulers themselves. Their traditions, such as building, building, and building, have been preserved on a regular basis. The foundation of The Watchtower, such as Mirzo Ulugbek, Abu Said Mirzo, Shohruh Mirzo, Abulqosim Bobur, Hussein Boygaro and Alisher Navajo, Zahiriddin Muhammad Babur in India. These traditions continued to be enriched by the rulers of the Babylonian Empire. (Matthew 24:14; 28:19, 20) Today, we are well aware of which rulers carried out the gardens and other buildings of the Tyrians, and which craftsmen were built at the same time we don't have enough information about it. The mystery of the reasons may include factors such as whether the information in the sources was scarce or unavainable, and that the construction documents of that period were not fully preserved. In this paragraph of our scientific research work, craftsmen, craftsmen, and memorabilia who worked in the construction of the Tyrians based on the information stored in sources and calligraphical data we try to provide comprehensive information about it.

First of all, it should be noted that because the gardens built during the reigns of Amir Tiberius and the Tyrians have not yet been preserved, the names of the builders through textbees are texts in buildings and buildings through which we are not able to identify. During the reign of King Hussein Boygaro, construction and subsistence farming flourished in the region. In those



days, the subsistence farming manual "Irshod az-ziroa" was created by Abu Nasri, which provides valuable information for subsistence farming and history. It also tells us about Mirak Naqqosh, the leader of the builders in the palace of Hussein Boygaro and the man responsible for the construction of the sultan's gardens.

The identity of Amir Sultan Mahmoud, known as Mirak Naqqosh, has been a puzzle. Local and foreign studies on "Irshod Az Zira'a" have put forward some information about the original name, position and identity of this person, but this information has not been adequately confirmed through "Irshod az-zira'a" or other sources. Mirak Sayyid, a member of the family of landscape architects, chief landscaper, gardener, and agronomist at the Palace of Hussein Boygaro, was one of the most influential and respected closest men of the Timorese ruler. It is also possible to know that this person has a high reputation and prestige in the palace immediately after Ruler Hussein Boygaro, in front of Irshod az-ziroa. After the description of the rulers of Timor-Leste, Abu Nasriyah says: "Happy King Sha'drach, Me'shach and A bed'ne go handed over the power of the government to his (Miroq's) powerful hands in making important decisions." None of the ministers, palace officials and nobles can interfere in the important administrative and administrative affairs entrusted to Miroq." These words are followed by 14 Egyptian poems depicting Miroq's character, religious and stately affairs. The relationship between Mirak Naqqosh and Sultan Hussein is described in the second byte as "He became the king's supervisor and ruled by the king." Thereafter, Abu Nasri Mirak recalls how Naqqosh's skills as a skilled gardener and agricultural expert were assessed by Sultan Hussein, who in a short time for the sultan realized every idea of him and demonstrated his skills. He also acknowledges Sultan Hussein's love for Miroq and mentions that he was referred to by the ruler as "my son" and that at important palace assemblies, Timor-Leste was given honorable garments and royal gifts by the princes. Abu Nasri also emphasizes Mirak's appetite for knowledge, noting that "despite being extremely busy with state and palace work, he spends the best times of the day praying, studying religious topics and problems. The author notes that all of These features of Mirak Naqqosh are pedigree, which is why it contains a solution to any problem, as well as that he has shown himself to be the most skilled architect of buildings and gardens.¹²³

Special studies on Mirak Naqqosh's family, personality, and activities have also been conducted worldwide. One such researcher, Maria Subtelny, tried to study Mirak Naqqosh's personality, relying on the sources of the Tyrians, to observe his family heritage, social origin, and general activities of the Timorese era and the Safavian era. His study focused on restoring the chronology of this person's life and personality, and at the end of the study it became clear that he was one of the most visible landscape design masters of the Tyrians era. As a result of his extensive research

¹ Abu Nasrī Hiravī, "*Irshād to the-zirā'a*", 48

² Abu Nasrī Hiravī, "*Irshād to the-zirā'a*," 48

³ Abu Nasrī Hiravī, "*Irshād to the-zirā'a*," 50.



and based on data from the preceding "Irshod az-zira'a", Subtelny concludes that Mirak-i Sayid Qiyos Sayyid Qiyos al-Din was the son of Muhammad Bogotá. His father, Sayyid Qiyosdin, was a gardener in herod in the palace of Sultan Hussein. There is almost no information about him except when he built and dedicated a famous madrasah complex outside Herod (the exact location is unknown). Sayyid Qiyosiddin was buried in this monastery. After his death, the monastery was renovated by Mirak and his brother Sayyid Sha'drach, Me'shach and A'bed'ne go.⁴⁵

Mirak and his brother, who belonged to a family of well-known nobles and military personnel, were in the service of Sultan Hussein Boygaro in the title of "commander." That is why it is mentioned in historical sources under the name Amir Sultan Mahmud. According to Subtelni, both brothers had a close relationship with renowned poet and politician Mir Alisher Nebuchadnezzar. For example, in 1499, when Neb u'chad nez'zar retired, he invited the brothers when he hosted a banquet at the visit of Khoja Abdullah Ansari in Gaza, near Herod. Mirak himself occasionally wrote poems. Although one of the most famous people of his day, neither Mirak Naqqosh nor his father van a brother were mentioned in the Palace of Hussein Boygaro and parts of historical, historical, and geographical works dating back to the Tyrians. However, unlike medieval architects, artists, craftsmen and gardeners from the lower strata of society, they did not remain completely anonymous. Mirak Naqqosh was born in Herod from 1476 to 1477 in or near districts. As mentioned earlier, his family was a wealthy traveler who owned large estates in the province of Herod and throughout the Region of Tajikistan and was also entitled to inherit it. According to Irshod az-ziroa, Mirak was a skilled and well-educated person in the fields of agriculture ('ulūm-i zirā'at), construction ('imārat) and hydrology (mīrābī). According to Abu Nasri, all of these craftsmen miracles were inherited from their forefathers, who were engaged in land processing and territorial renovation during the previous great rulers. Because it became a tradition in the Medieval Islamic world to teach family professional knowledge in an inheritance manner, his father taught his profession to his child, thereby improving knowledge of the world. Mirak' main task, which specializes in the design and construction of chorbog-type gardens, was to oversee the construction of palaces, streets, and porches within gardens and gardens for Sultan Hussein Boygaro. Mirak Naqqosh is described by Abu Nasri as unequal in these areas because of his knowledge and abilities in agriculture, irrigation, and architectural construction. Mirak Naqqosh's main qualities are explained in the example of Chahorbog, a rectangular shape built in Herod. This garden was a multi-part architectural landscape pattern, with three main components distinguished. They formed the only compositional unit in which trees, irrigation systems (water canals, pools, fountains, etc.) and leisure garden facilities were formed in a certain geometric order. In the last chapter of "Irshod az-ziroa," Abu Nasri cited Chahorbog as saying that the gardens of

⁴ Look at: Maria Subtle, "Mīrak-i Sayyid Ghiyās and the Timurid Tradition of Landscape Architecture: Further Notes to A Medieval Persian Agricultural Manual in Context." *Studies Iranica* 24/1 (1995): 19-60;

⁵ Subtle, "Mīrak-i Sayyid Ghiyās and the Timurid Tradition of Landscape Architecture", 21.



the Timorese era were distinguished from gardens of traditional scenic trees in Europe and other countries because they were harmonized with landscaped flowers and fertile trees.⁶⁷⁸⁹¹⁰

Although Abu Nasri did not provide information in his essay about the original names of the gardens and buildings built under Mirak in and around Herod, his information makes it clear that Mirak Naqqosh was responsible for the construction of all the largest craftsmanship and gardens in the city built at that time. The name of Chahorbog, who was named only in the fourth and sixth chapters of *The Irshod az-ziroa*, is known from the gardens of that era. Abu Nasri personally visited and cites that he counted more than a hundred varieties of grapes in the garden alone. This garden is located in the village of Fazan in Anjon, near Herod. The construction of the garden was personally overseen by Mirak. In addition to construction, Mirak also supervised the development of irrigated subsistence farming, gardens, garden construction, and horticulture in areas where the majority of religious foundations (avof) were located.¹¹

In his essay, Abu Nasri cites Sultan Hussein Boygaro as also having knowledge of gardening. From time to time, King Hussein personally overlooked the trees and plants in the gardens of the ruler. On one such visit, the Almighty teaches gardeners how to get rid of worms in the chinor body. This also shows that in the Timorese rulers, gardening culture was formed as an unusual personal culture.¹²

When the pilgrimage was conquered by the Safavids, Mirak Naqqosh took with him the traditions of horticulture that became a family tradition and moved to India, as did other members of the political, religious, and artistic elite of the former Timorese who had been severely superstitious and financially prosecuted. Because of this, gardening and chahorbog design in general are common in Central Asia and India. This generality is directly related to Mirak Naqqosh, who in 1529 built gardens for Sha'drach, Me'shach and A'bed'ne go in Agra and Dholpur, and because of his services, he was recognized for introducing gardening design traditions of the Tyrians to northern India. After 1530, when peace was established in Central Asia, Mirak moved to Bukhara. In Bucharest, he builds a magnificent garden for Ubaydullaxon I, the ruler of Siberian ruler. According to Subtelni, this garden was one of the most important examples of construction mentioned among other glorious buildings built during the reign of Ubaydullaxon I. As another significant object for studying the legacy of the Tyrians on the issue of garden design, Mirak's son Muhammad (known as Sayyid Muhammad-i Mirak) traveled from Bucharest to India in about 1559, where we can bring a garden built around the tomb of Humayun Mirzo. Historians have

⁶ Subtle, "Agriculture and the Timurid *Chāhārbāgh*," 112.

⁷ Subtle, "Mīrak-i Sayyid Ghiyās," 24

⁸ Abu Nasrī Hiravī, "*Irshād to the-zirā'a*," 46.

⁹ Subtle, "Mīrak-i Sayyid Ghiyās," 24

¹⁰ Subtle, "Mīrak-i Sayyid Ghiyās," 25.

¹¹ Abu Nasrī Hiravī, "*Irshād to the-zirā'a*," 113, 220.

¹² Abu Nasrī Hiravī, "*Irshād to the-zirā'a*," 198.



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documented that others at our globe become so intertwined with the roots of the wheat that to uproot them before collapse.¹³¹⁴

Instead, as we study the history of the gardening traditions of our ancestors today, of course, studying the architects of these gardens will be an important factor. The history of architects is also important in restoring historical gardening traditions and using them for our time. That is why within this topic, further acceleration of research and perpetuation of the memories of our ancestors are gaining ground as a time-consuming process.

¹³ Subtle, “Agriculture and the Timurid Chāhārbāgh,” 114.

¹⁴ Subtle, “Mīrak-i Sayyid Ghiyās and the Timurid Tradition of Landscape Architecture”, 23-60.



THE CONCEPT OF TOURIST CLUSTER AND ITS ECONOMIC-SOCIAL ESSENCE

Jakhongirov Kamoliddin Asomiddin ugli,
Intern Teacher of the Department of Islamic Economy and
Finance, Pilgrimage Tourism, International Islamic Academy of Uzbekistan,
e-mail: kamoliddin6564@gmail.com, Tel. mobile: (97) 765-65-64

Abstract

The article talks about touristic clusters and their socio-economic nature. Information is also given about the formation of clusters, their types and definitions, as well as the structure and basic principles of touristic clusters. The conclusion talks about the role of clusters in the field of tourism and the importance of tourist clusters in the economically stable growth of the country.

Keywords Tourism cluster, company, innovation, ethnographic, technology, communication, regional economy, cluster system, geographic concentration, synergy, transaction, recreation, conference, tour operator, infrastructure, agglomeration, integration, diversification.

Annotatsiya

The article describes tourist clusters and its socio-economic nature. Information is also provided about the origin, types, and descriptions given to it, as well as the structure and basic principles of tourist clusters. The summary discusses the role of classrooms in tourism and the importance of tourist clusters in the country's economically sustainable growth.

Keywords: tourist cluster, company, innovation, ethnographic, technology, communication, regional economy, cluster system, geographical concentration, synergy, transaction, recreation, conference, tour operator, infrastructure, agglomeration, integration, diversification.

Annotation

The article talks about tourist clusters and their socio-economic nature. Information is also given on the formation of clusters, their types and definitions, as well as on the structure and basic principles of tourist clusters. In conclusion, it is said about the role of clusters in the field of tourism and the importance of tourism clusters in the economically stable growth of the country.

Keywords: Tourism cluster, company, innovations, ethnographic, technologies, communications, regional economy, cluster system, geographical concentration, synergy, transaction, recreation, conference, tour operator, infrastructure, agglomeration, integration, diversification.

Travel is one of the fastest growing industries in the world and is currently the main source of income in foreign currency for many developing countries. Tourism serves as an incentive for the development of mankind's great potential, natural resources and science.



The socio-economic importance of tourism has not been adequately acknowledged by governments and people for many years. But over time, the emphasis on tourism has grown. Today, tourism has been proven to be an important resource in restoring the forgotten national values of peoples and providing employment for its people.¹²

Tourism plays an important role in the economy of the country or region. In general, it is possible to determine its economic role in improving the quality of social life through its relationship with the main branches of the entire economic system, contributions to the formation and use of national income, inflation, the flow of investments or the impact on infrastructure.³

Today, the tourism industry is recognized as a key factor in economic development. Tourism, along with being a high-income industry, plays an important role in addressing such issues as improving the ecological situation and ensuring social equality. Therefore, special attention is paid to tourism development in other countries of the world. To do this, classrooms are being organized on the basis of state initiative in areas with high tourist potential. Because classrooms are considered an effective tool for solving complex issues, such as improving the productivity of regions and ensuring employment for the population. As a result, the quality of life of the population is improving in the areas where tourist classes are located. N.N.Volkova and T.V. Sakhno emphasize that classrooms perform their duties for the government, firstly, the most modern, convenient tool in economic policy, secondly, the best environment for cooperation between the public and private sectors, and third, assistance to local authorities in addressing problems in the region. In its place, the government is responsible for addressing factors that hinder innovative development in the establishment of classrooms and improving poor conditions.⁴⁵

Since the 1980s, globalization and the competitive tourist market have consistently improved comparable characteristics such as prices and products, required sustainable trends in quality and efficiency, and led to the emergence and development of new forms of economic activity in accordance with the market. Thanks to this, clusters have become one of the most popular concepts of local and regional development for research and practice.⁶

The concept of classrooms in the economy began to be used at the end of the 20th century. The class (English cluster - link, collection) was described by Michael Porter in 1998 as a geographical merger of the concentration of enterprises.⁷ That is, clusters are a geographical concentration of interconnected companies, specialized suppliers, service providers, firms in relevant fields and relevant institutions

¹ Crouch, G., Ritchie, J., „Tourism, Competitiveness, and societal Prosperity”, Journal of Business Research, Vol.44, 1999, p. 13

² Bottle, L., Camprubi, R., Torres, O., (2008). Tourism and Regional Development: Small Bussinesses and Social Network for Competitiveness, Entrepreneurship and Small Business Research XXII, Universidad Beira Interior, Covilhã

³ Iordache, C. (2008). Economy Tourism, Publishing Independența Economic, Pitești

⁴ Volkova N.N., Sakhno VT. Industrial cluster. – Poltava: Asmi, 2005. – 271 p.

⁵ Iordache, C., Cebuc, I., Hoarcă, D. (2009). Technique operațiunilor of tourism, Publishing Independența Economic, Pitești

⁶ BergamnAnd. Feser, E., „Industrial and Regional Clusters: Concepts and Comparative Applications”, University of West Virginia, <http://www.rri.wvu.edu/WebBook/Bergman-Feser/contents.htm>.

⁷ Porter M. Competition / Lane. with eng. Armenian. –M.: Publishing House «Williams», 2001. – 49 p.



(e.g. universities, standard agencies and trade unions).⁸ He believes that to organize a classroom in a network, the following are required to accommodate classroom participants in a single area; to be able to form clusters in the area and to have leading competitive companies with the potential to attract companies that support and serve them; and to interact with class participants.

According to Rosenfield, clusters are a merger of companies that juggle juggling high performance due to close location and interdependence in the hierarchy.⁹

In his research, Gray describes the class as follows: "The cluster is the integration of the strengths and capabilities of businesses with common interests in order to achieve high efficiency."¹⁰

Delgado, on the other hand, describes the class as a geographical concentration of businesses that are interconnected with knowledge, skills, income, demand or other aspects.¹¹

George Mayer-Shtamer proposed a universal classification of cluster structures that are widely known in foreign practice in the early 90s of the last century. This classification can be used in tourism. Figure 1 shows the structure of this classification.

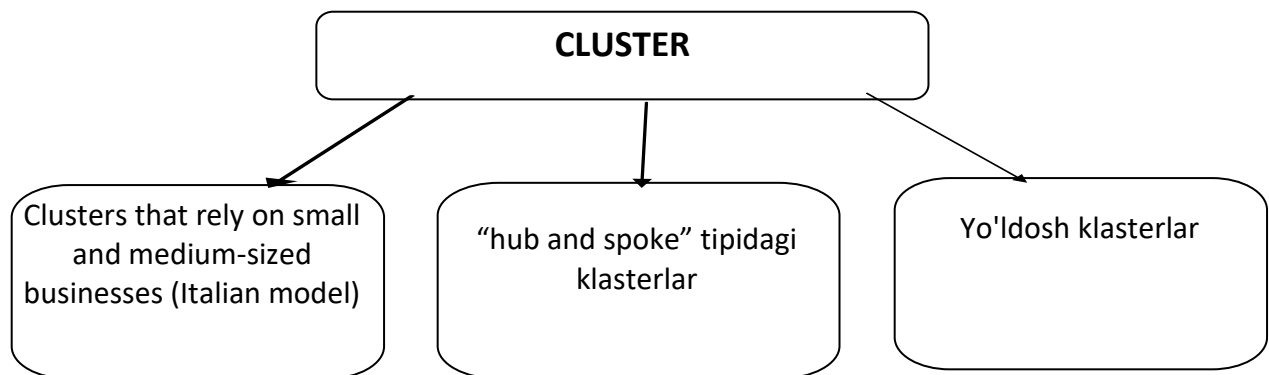


Figure 1. Universal classification of classrooms (according to George Mayer-Stamp)¹²

The first group in foreign literature is often called the "Italian model." This type of clusters is first recorded in relation to the industrial regions of the country. The foundation of such clusters is made up of small and medium-sized enterprises that are highly specialized and competitive. The purpose of such enterprises is to maximize customer expectations and expectations both in quality and in the number

⁸ Porter, M. E. (1998). "Clusters and the new economics of competition", Vol.76 No.6, p 78.

⁹ Rosenfeld, S., „Bringing Business Clusters into the Mainstream of Economic Development”, European Planning Studies, Vol. 5, N^o 1, 1997, p. 13

¹⁰ Gray B. Conditions facilitating interorganizational collaboration // Human Relations. – 1985, № 38(10). – P. 913.

¹¹ Delgado, M., Porter, M. E., & Stern, S. (2015). "Defining clusters of related industries.", Journal of Economic Geography, Vol.16 No.1, p. 11.

¹² N S. Tourism Clustering & Innovation – Paths to Economic Growth & Development // European Tourism Research Institute/ Mid-Sweden University/ SE831 25 Ostersund, Sweden. - 2011 г.- 186 p.



of economic benefits generated under this structure. High levels of cooperative relationships and the speed of interaction between subjects provide a network characteristic of the internal cluster structure. A distinctive feature of the cluster structure is its high elasticity. This fact provides a quick response to changing market conditions at the local and regional level, as well as internationally.

The Hub and spoke cluster is a socio-economic platform. Within this platform, large transnational corporations and networking associations will be able to interact with the small and medium-sized business sectors in a particular area. Such clusters work without losing the flexibility of business processes. Takes into account the increase in competitive advantages.

A characteristic feature of the satellite clusters is that they are dominated by small and medium-sized businesses that depend on third-party enterprises that are part of the cluster. This leads to a decrease in the efficiency of joint activities in the trade sector, as well as a lack of reasonable use of the limited economic resources they possess. In the hospitality industry, this type of class can be illustrated by classrooms in business tourism.

Another class classification is the universal classification proposed by the Organization for Economic Cooperation and Development (OECD). Specifically, the classrooms available in this classification are divided according to the criteria for the development of innovative processes in the internal environment of the cluster. Figure 2 shows the universal classification of clusters proposed by the Organization for Economic Cooperation and Development (OECD).

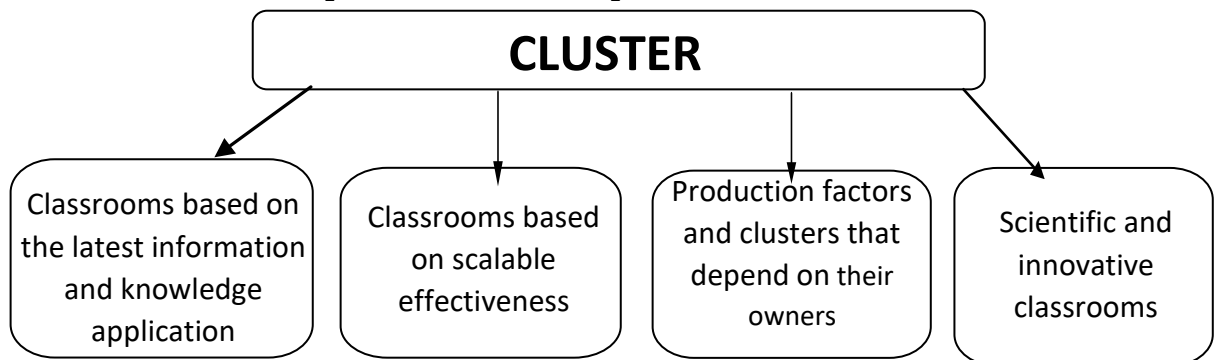


Figure 2. Klasterlarning universal Classification (OECD will beyicha)¹³

Classrooms, the basis for using the latest scientific information, are widely used in various sectors of public administration, such as aircraft engineering, chemical engineering, pharmaceuticals, electronics and other fields. Immediate access to the results of scientific and technical development and the study of leading enterprises in various areas of business plays an important role in the development of such structures. The presence of good relations with research centers, as well as universities, is necessary for the growth of this type of classroom education.

¹³ OECD, Cities and Regions in New Learning Economy, Paris. - 2001. - 234 p. 168. Perroux F. Economic space: theory and applications // Quarterly Journal of Economics. - 1950. - V. 64. - P. 89-104.



The basis of the second type of clusters is to have an advantage due to the use of "scale efficiency". An example of this type of class is a cluster established in the food industry, automotive and machinery. (Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to discuss these answers with you. This happens through the introduction of the latest technology and innovation. The result of this cluster's activities will be based on the rational and excellent application of innovation in manufacturing. At the same time, it is important to fulfill the obligations in such a cluster in terms of the volume and quality of the economic products offered on the market. An example of such clusters in the tourist industry is those with large tourist flows, such as beach tourism.

Third-class classes are more pronounced in agriculture, forestry and mining. If we are talking directly about the tourism industry, then here the structural clusters associated with such clusters will interact with the areas listed above. For example, rural and ethnographic tourism can be a vivid reflection of innovative approaches to this sector of the national economy.

The fourth type of cluster is clearly focused on scientific research. The field of information technology and communications can be an example of this cluster.

Today, the transformation of companies into clusters is a natural process: in this case, governments can promote the improvement of emerging clusters by supporting the efforts of a group of companies to achieve complete potential mergers. This means that companies in the cluster can be integrated alone or formed on the basis of strategic plans of local governments. In the opinion of Baselt et al., while most of the literature on clustering is devoted to networking relationships between firms, it is important to start by reviewing the training process being conducted within the firm before moving towards the aspect of interdependence between firms. This will be observed initially in educational institutions. Managers with a strong communications network through clustering will have access to information in their companies faster for quick action and will be able to use it at the same time as necessary.¹⁴¹⁵

Thanks to the synergy created in the classroom system, members of companies are creating a data network within companies to transmit information to each other, thus increasing competitiveness and contributing to their national and regional economies.

The main idea of classrooms is to "work together". Sometimes, the heads of companies in clusters mistakenly believe that working with their competitor firms in the same value chain can be harmful to their companies. True, they may not be able to work together and get their share of these markets, but by working in the classroom system, they will be able to increase the size of their shares in other markets and find new markets.

However, clusters do not always allow companies to find new markets. Instead, companies will be able to reduce costs, meet their needs for employees, or increase their reach through cooperation in clusters. A cluster means a network that includes companies, their customers, suppliers, and all relevant factors, including materials and disposable parts, equipment, training, finance, etc. It represents educational institutions and research institutes that provide a large part of human and technological capital.¹⁶

¹⁴ Iordache, C., Ciochină, I., & Asandei, M. (2010). "Clusters-Tourism Activity Increase Competitiveness Support.", *Theoretical & Applied Economics*, 17(5) 101.

¹⁵ Bathelt, H., Malmberg, A., and Maskell P. (2004) "Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation.", *Progress in human geography*, Vol.28 No.1, p. 36.

¹⁶ Kachniewska, Magdalena. (2013) "Towards the definition of a tourism cluster.", *Journal of Entrepreneurship, Management and Innovation*, Vol. 9 No. 1, p. 35.



As many classroom definitions say, one of the most important needs for classrooms is the geographical concentration, which allows cluster companies to create synergy in this atmosphere and collaborate with each other. After the creation of a specialized industrial cluster, the demand for specialized services and materials will intensify at the firms of this cluster. This will give impetus for suppliers to be with these firms to establish important markets. Located close to these markets, suppliers will be able to have a large-scale economy and deliver most of their products at low prices (e.g. without transaction or transport costs).¹⁷

After Porter's research on industrial sector clusters, the cluster began to be viewed as a key element of research conducted in various sectors of the economy, as well as in tourism, in particular by the World Tourism Organization (UNWTO).

At the 2010 conference on tourism and recreation, the tourist cluster was interpreted as "companies that are geographically adjacent, form and serve the flow of tourists, use the recreational potential of the area, and interact with social organizations and governmental authorities."¹⁸

According to Chotchayev, in the tourist cluster, various tourism companies are united by tourists, tour operators, hotels, and as a result of piracy, they shape classroom infrastructure.¹⁹

N.A. Pelevina, on the other hand, considers the tourist cluster to be covered not only vertically but also horizontally by various enterprises and organizations in the tourism industry as a large independent, inter-network economic complex. The tourist cluster is characterized as a interconnected complex of networks and production in the regional economy. Its only functional task is to meet the needs of the population for a wide variety of leisure and travel and to develop the rational use of all available tourist resources in the region.²⁰

A tourist cluster is the collection of enterprises, firms, and institutions involved in the production and sale of tourist products and whose activities are interconnected with tourism and leisure services in a particular limited area.

Tourism clusters are the result of the co-location of companies complementing each other, who do not always participate in the same sector, but can benefit from the dynamics of previously existing network membership and the alliance. Networks of classrooms created and operated provide an approach to knowledge, resources, markets or technologies for firms. They also provide opportunities for participants in the tourist cluster to participate in the joint development of tourist products or services and the distribution of theoretical and practical knowledge: one of the members of the network (cluster) is affected by the experience of another.

The general direction of the objectives of organizing clusters in the typezm sanoati is determined by the principles of the sticky cluster. The following basic principles are set for type sticky cluster:

¹⁷ Bathelt, H., Malmberg, A., and Maskell P. (2004) "Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation.", *Progress in human geography*, Vol.28 No.1, p. 37.

¹⁸ Tourism and recreation: Fundamental and Applied investigations // Transaction In International Scientific and Practical Conference MSU them. M.V. Lomonosov, geogr. fact, Moscow, 28–29 April 2010. – SPb.: D.A.R.K., 2010. – 708 p.

¹⁹ Chotchayeva F.A.M. Clustering Tourism how prerequisite Growth Investment Attractiveness region TERRA ECONOMICUS (Economic newspaper Rostov State University). T. 7. – 2009, No 3.– P. 177.

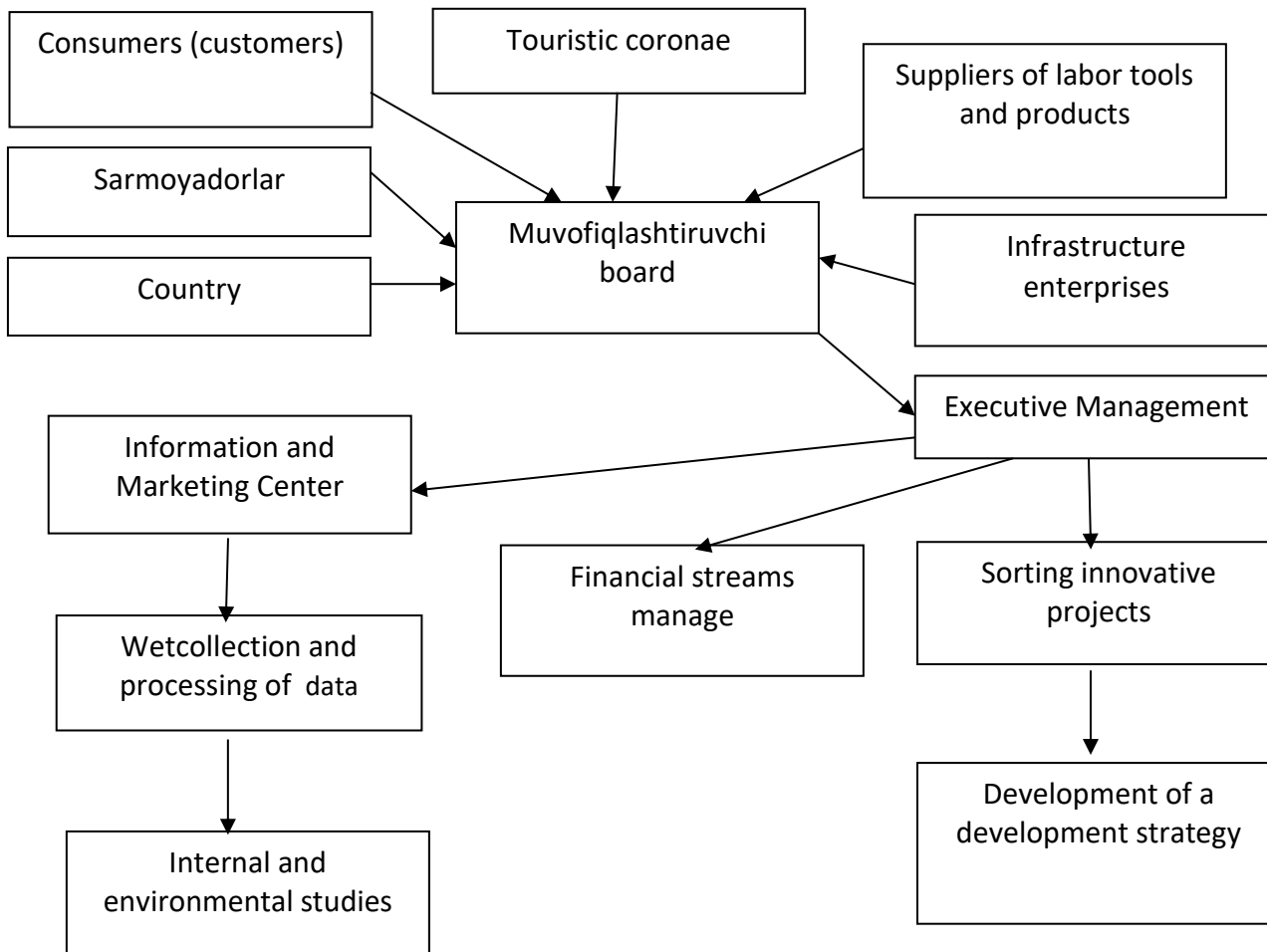
²⁰ Pelevina, N. A. There are Charyn and Kolsay, and tourists are bored // *Kazakhstanskaya Pravda*, 2013. — 28.10. — № 292–293. p. 5.



- 1) readiness for mutual understanding and cooperation among all participants of the process;
- 2) equal rights of all participants in constructive dialogue;
- 3) voluntary selection of forms of cooperation;
- 4) fulfilling the agreed and accepted obligations of the class participants in accordance with the economic agreements made directly in the country.

Almost every tourist destination has agglomeration features; therefore, the geographical concentration can be considered as an important component. However, not every group of tourist enterprises with geographical density can be called tourist clusters because they need time to organize themselves, establish networks of interaction and then properly manage this organization. Therefore, as Ferrera and Estevo noted, a tourism cluster is a geographical concentration of companies and institutions that are interconnected in the tourist activities.²¹

Thus, the tourist cluster consists of a collection of business entities, government agencies, and public organizations located close to the region, whose activities are directly or indirectly related to tourism. Participants in the tourist cluster and their relationship can be summed up in the following ways.



3-rasm. Tourist clown salting

²¹ Ferreira, J., & Edward, C. (2009). "Regional competitiveness of a tourism cluster: A conceptual model proposal.", Meetings scientists–Tourism & management studies, p. 39.



Professor M. P. Voynarenko believes that the following five conditions must be met so that the classroom can be formed as a life-style, self-governing, successful and effective organization:

- 1) Initiative - to prove and intrigue the usefulness of classrooms for both the region and its members by employing entrepreneurs, government officials, public organizations, educational institutions as initiatives and dignitaries;
- 2) innovations - the use of modern technologies that offer new opportunities in manufacturing, selling, financing, management and competition struggle;
- 3) information – creation of databases and web pages that allow you to have the labor market, the sale of products, the skilled workforce and other information, and exchange knowledge;
- 4) integration - provides fan and government support for firms' use of new technologies ahead of networks and throughout the region;
- (5) Benefits refer to the interests of participants in classroom associations, which are the main prerequisite for the survival of business or public structure, and ensure that they receive economic benefits.²²

Travel clusters are based on creating an additional set of attributes that serve to meet consumer needs, creating more and more opportunities for firms that choose to co-locate with each other. Thus, tourist-based cluster structures can increase reproduction and external influences and serve to expand opportunities for new forms of economic wealth that can lead to their results, creating demand for a number of additional activities.²³

Unlike other products offered by manufacturing or service companies, tourism products vary widely: they are complex and consist of many additional components offered by various public and private sector suppliers. In other words, because of the variety of travel types, there is a great opportunity to develop cooperation and networking in tourism.^{24,25}

The most popular type of tourist clusters are technological (innovative) clusters. The unique aspect of technology clusters is that the innovative technologies that form their basis can be used in various industries, helping to improve the country's competitiveness. It is also clear that these modern technologies contribute to the strengthening, development and support of priority networks.

Among the main tasks of technological clusters in tourism are the following:

- Cooperate firms interested in expanding consumers with recommended services within the scope of a cluster of companies that have innovative technologies, ignoring the form and scope of property;
- Creation of a technological chain for the production of finished products based on the best innovative technologies in the world, decision-making of a unified technological platform;

²² Voynarenko, M.P. *Tourism: evolution, structure, marketing.* — M.: «Os-89», 2012. — 160 p.

²³ Michael, E. (2006). *Micro-clusters and networks.* Routledge, Victoria.

²⁴ Kachniewska, Magdalena. (2013) "Towards the definition of a tourism cluster.", *Journal of Entrepreneurship, Management and Innovation*, Vol. 9 No. 1, p. 40.

²⁵ Lade, C. (2010). "Developing tourism clusters and networks: Attitudes to competition along Australia's Murray river.", *Tourism Analysis*, 15 (6), p. 655.



- Providing comprehensive technological services to various manufacturers across diversified networks;
- Effective cooperation between enterprises within the classroom and consumers of classroom services;
- Create conditions for the regular development of existing technologies, both quality and quantity, as well as expand the types of technological capabilities of classrooms;
- Development of directions for strategic development of the technological capabilities of participating enterprises in the cluster.

Over the past decade, interest in creating technological (innovative) clusters has grown considerably. At the same time, the economic development of tourism by developed countries has been viewed, not through the integration of companies, networks or sectors into traditional groups, but from the point of view of creating clusters. Tourism's classroom structure is better aligned with the sources of competition and competitiveness, which means that participants in the classroom do not compete directly with each other because they serve different industries.

The vast majority of successful tourist clusters operate in the field of ecotourism, which is an alternative to achieving economic growth, minimizing the negative impact on the world's climate zones and biosphere.

The tourism industry, ecological tourism in general, can be considered from a variety of perspectives, such as the source of society's development, as a mechanism that ensures the safety and integrity of the ecological system of each country or region. All of this is carried out on the condition that a number of criteria and principles are met, which are the foundations of social, biological, cultural, administrative, and economic responsibility.

In modern times, ecotourism is often presented as a strategy aimed at stimulating the activities of individual regions of the world. This strategy has been tested in the creation of small and medium-sized business tourist clusters capable of developing policies that meet market requirements as possible in the field of advancement and sales of related tourist products. At the same time, the inhabitants of the bottom of a particular area are involved in this process.

Thanks to ecological tourism, problems such as the socio-economic situation of the poor in countries will be solved. At the same time, it takes a small amount of costs to train and train employees. Here is an example that confirms the above statements. In 2010, the Nepali government conducted research in Royal Chithan, the most popular tourist cluster in Asia. About 8,700 working-class people lived in the immediate part of the garden, of which 1,100 worked in the field of ecotourism. About 6% of the population had income from tourist services. The average annual income of households was \$ 600. This indicator is considered very high for residents of this area. A similar figure is lower in neighboring countries - India, Bhutan and Bangladesh.

Instead, we can say that tourist classes can not only contribute to the development of tourism, but also socially contribute to the country's economically sustainable growth in providing employment for its people and improving the well-being of society. In view of this, it is possible to establish classrooms in



areas with tourist potential for the accelerated development of the tourism industry, thereby improving tourism inflation in the country, as well as creating an acceptable and affordable tourism environment.

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**FARABI'S INFLUENCE ON THE WORK OF ALISHER NAVOI FARABI'S INFLUENCE ON
ALISHER NAVOI'S WORK**

Jalilov Bakhtiyor Khidaevich

Candidate of Philosophical Sciences, Associate Professor
National University of Uzbekistan

Djalilov Bakhtiyor

Candidate of Philosophy, Associate Professor
National University of Uzbekistan

Annotation

The article analyzes the influence of the thoughts of the great philosopher al-Farabi on the work of the great Uzbek poet A. Navoi on the basis of primary sources

Alisher Navoi to a certain extent was familiar with ancient philosophy, spoke with respect about the thinkers of the past, surrounded his heroes - just rulers - with wise mentors. Navoi in his work was greatly influenced by the philosophical heritage of Abu Nasyra Farabi, whom he called the "Second Teacher". This article is devoted to the disclosure of some facets of Farabi's influence on the philosophical worldview of Alisher Navoi.

The great poet and philanthropist Navoi had a student named Shah Quli, who perfectly played the gijak, the national musical instrument. As you know, Alisher Navoi was not only a great lover of music, but also played some musical instruments perfectly, composed new compositions. In this regard, he is very similar to Abu Nasr Farabi, who was also a connoisseur of fine music. and an unsurpassed music theorist(1).

And so, Alisher Navoi brought up this student of his as his own son, took care of him, paid a lot of attention to his upbringing and education. But that young man lost his way, let him down and greatly upset his spiritual mentor. And Alisher Navoi, who could have chosen a more severe form of punishment, but remained faithful to his principle of humanism and sent a derogatory letter to the "stepson" in which he expresses his deep disappointment at the behavior of this ungrateful young man. In this letter, he admits his mistake in comparing this scoundrel to the "Second Teacher". He wrote verbatim: "Not in any kingdom from the time of the founder of the science of music Pythagoras to the era of the "First Teacher" Aristotle, from the time of the "Second Teacher" Abu Nasr Farabi to the centenary of Khoja Abdulkadyr (*a famous musician and singer in the XIV century – author.*) no one has paid as much attention and care to the representatives of this science as I have given you attention and as much care as I have shown concern for you."(2)

Abu Nasr Farabi was so famous in the era of Alisher Navoi that the latter does not give any comments about the identity of the "Second Teacher". The greatest influence of Farabi is felt in Navoi's ideas about an ideal state and a just ruler. Both brilliant thinkers are unanimous in the opinion that the main qualities of a real, ideal person (ruler) are honesty, justice, and the highest perfection. In his teachings,



Farabi focuses on the need to educate a person in the spirit of beauty and guide him along a path that is useful for himself and the society in which he lives (3, pp.229-230).

Speaking about the possibility and necessity of educating a person in a noble spirit, about the elimination of ailments in man and in society, Farabi and Navoi are based on the fact that a person has an invaluable mind and the gift of speech; it sets him apart in the rest of the world as the most perfect being, gives him unlimited opportunities to distinguish good from evil, to reject evil as something unnatural, to treat his own kind humanely, and thus to live happily.

In addressing these issues, there are many similarities between Farabi and Navoi, who undoubtedly felt the beneficial influence of the great philosopher from Faraba here as well. Navoi, proceeding primarily from his philosophical position, believed that a person is inherently divine, is good, spiritually pure, noble, beautiful, but in the process of living in the company of people, he can become the owner of such moral qualities, morals, actions that are unnatural for him, opposite to his essence and which are the result of the influence of vicious people.

He recalled that a person is born good and noble, and enmity turned society into hell, educating one part of it in its own image and likeness, and subjecting the other to unbearable torment, deprivation, abuse. Here's how the poet describes such a society:

***"There is no faithfulness in the hearts of men, O friend,
And mercy is alien to them, O friend!
Their custom now is enmity and revenge..."***

Farabi studied the structure of society of his time, the social anatomy of man, thoroughly studied the material and spiritual factors that form a person in society. The philosopher came to important results for that time, which subsequently influenced the development of some branches of philosophy, sociology, logic, and psychology. Farabi believed that man is a social being. By nature, he is neither good nor evil, but he becomes one or another in society. Here is what Farabi himself writes: "Man cannot be endowed from the very beginning with virtue or vice, just as he cannot be a born weaver or scribe. But he may be naturally predisposed to states (associated with) virtue or vice, so that it is easier for him to perform actions (arising from) a given 'state' than any other" (3, pp. 180-181).

He goes on to explain his thought: "In order for a person to develop a certain disposition, a habit of performing appropriate actions is necessary" (3, pp.13-14. But as long as the ravas are acquired and not given from above, and since it is in the nature of man to have a propensity—the ability to be good or evil—this means that bad morals are eliminatable. "Just as a physician becomes acquainted with the state of the body by means of things relating to the state of the body, and if health is inherent in the body, he resorts to a skillful technique, in order to preserve this state, and if the body has an ailment, he resorts to a skillful technique, in order to injure this disease, just as if we have a good disposition, then we resort to skillful technique in order to preserve it in us, and if we have a bad temper, we resort to a skillful technique in order to eliminate it" (3, p.20).

In his teachings, Farabi focuses on the need to educate a person in the spirit of beauty and guide him along a path that is useful for himself and the society in which he lives. In this, Farabi emphasizes,



philosophy is of exceptional importance. "Art, " he says, " the purpose of which is only the attainment of beauty, is called philosophy or, in the absolute sense, wisdom... Since we achieve happiness only when we have the beautiful, and the beautiful is inherent in us only through the art of philosophy, it necessarily follows that it is through philosophy that we achieve happiness. And we comprehend it with good sanity" (3, pp. 34-35).

But for a number of objective and subjective reasons, people of unnatural essence appear, and with them a heterogeneous society of noble and ignoble, spiritually pure and spoiled, socially useful and parasites gradually arises. These people, who have changed the natural state, oppress others. The social environment in many ways becomes anti-human, and therefore unnatural to human nature, educates people in a perverted, antisocial spirit, which, of their own free will or under duress, other members of society succumb to. As a result, society turns into an arena of violent clashes.

Showing the horrors of such a social condition, Farabi angrily wrote: "As if every being is only designed to achieve a better existence, as if it were endowed with everything that is necessary to destroy what harms and does not benefit it, and everything that can be used to ensure the best existence. We see many animals pouncing on many other animals and wanting to harm them, enslave each other and destroy them without deriving any visible benefit from it, as if each of them by nature strives to ensure that there is no other being in the world but himself, or as if the existence of every other animal harms him. it is as if it is harmful to the Pego that this animal exists" (4, pp.345-348).

Farabi and Navoi's views on wars are interesting here. Farabi's statements on this issue are very important, especially when you consider that in the conditions of the feudal East, wars were commonplace. Wars often broke out for minor reasons and brought untold calamities to the people.

Farabi divides wars into unjust and just. He criticizes, categorically rejects the former, calling them contrary to the natural state of man and society, and contrasts the latter with the former, calls them retaliatory (caused by them) and therefore just: "It is recognized that wars occur, either to repel an enemy who invaded the city from the outside; or to acquire a good to which the city is entitled, if it is in other hands; or to coerce people into what is supposedly the best and most useful thing for them and not for others, if they do not know it themselves and do not obey those who know it and call them to it with words..." (3, pp. 229-230). Here two goals (wars) are implied at once: one is the acquired benefits for the city, and the second is the need to show justice and justice. This concerns the waging of war against those who should be punished for any crime they have committed so that they do not repeat such a crime and so that others do not dare to speak out against the city and are not tempted; it also refers to war for the sake of acquiring any good for the inhabitants of the city, returning to them from their own share and the best thing for them (justice), and repelling the enemy by force. A war aimed at exterminating and destroying (enemies), since their continued existence may harm the inhabitants of the city, is also considered an acquisition of good for the townspeople."

Navoi was also forced to deal with these issues. In his poem "The Wall of Iskander" he gave them a special place. Through the mouth of his hero - the ideal ruler of Iskander - he asks whether there are truthful, wise and useful advice, thoughts about wars that have come down to us "from the depths of time"? Answering Iskandar's question, the sage says:



War is contrary to reason; but shah,
It cannot be circumvented in other matters.
The discord was started by someone... Could be
He had to bar his sword;
But from him the people are gravely harmed,
There is no excuse for him among the people.
It's a sin to stand on the sidelines at that time.
When you can prevent war.
But if the instigator, raising the rage,
He doesn't want to listen to the word of reason,
If he aspires anyway.
To what conscience has requested.
Then God himself commands, take your sword,
To cut off the predator's claws at once...

It should be added that Navoi considers the best peaceful resolution of conflicts:
It is good when the world is given to the nations,
Two glorious kings enter into an alliance.
And, not letting discord on the threshold,
Every dispute is resolved amicably.
When the kings find agreement,
The nations will blossom with their contentment.
Two beggars, strong in their friendship.
No higher than two warring kings?

Farabi, quite clearly defining his attitude to contemporary society, went even further in this matter. Not limited only to a resolute denial of wars, he put forward his doctrine of the ideal city (country), of the perfect ruler and contrasted them with the existing gloomy reality. Farabi believed that if bad rulers, bad environments are sources of evil and unhappiness, then it is necessary to change, to achieve the elimination of these vicious sources.

The main qualities of a real, ideal person (ruler), says Farabi, are honesty, justice, the highest perfection. He argues that a real person by his nature, firstly, is not only kind, but also strives to be happy, and by this "happy" is meant not something narrow, but a broad concept - a state, that is, to be perfect - it is in all respects to be developed, beautiful, educated, highly human and satisfied with his life, as well as the lives of others, to be socially useful; Secondly, the path to kindness, to happiness, perfection and to the social good is as follows: in order to be perfect and happy, a person must, in a certain sense, remove from himself his "I", something individual, turn it into "we", into social; to be in communion with others both in relation to mutual assistance in all spheres of social life and in the production of values: thirdly, all these thoughts of the philosopher in one way or another lead to the rejection of the feudal society



contemporary to him, completely based on absolute egoism, individualism, on ignoring the need for all people to be perfect, happy, socially useful, helping everyone like himself. But a person alone cannot achieve perfection... By nature, each person is arranged in such a way that for his own existence and the achievement of the highest perfection, he needs many things, for the achievement of which he needs a certain society of people who deliver to him each individually some thing from the totality of what he needs. At the same time, each person in relation to the other is in exactly the same position. That is why it is only through the unification of many people who help each other, where each delivers to the other a certain share of what is necessary for his existence, that a person can attain the perfection to which he is destined by nature.

The activity of all members of such a community together delivers to each of them all that he needs to exist and achieve perfection (3, p.303). "That is why," Farabi writes, "spruce individuals multiplied and populated the inhabited part of the earth, as a result of which human societies arose, of which some are complete societies, others are incomplete. At the same time, complete societies are of three types: great, medium and small. A great society is a set of societies of all people inhabiting the earth..." (3, p.305). This noble goal, for which people united in their time and created society, was violated, it must be restored and thus achieve an ideal society (country, city), where the oppressors, everyone thinks about each other, are perfect, friendly, cooperate in everything and prosper.

It should be emphasized that Farabi is an object, the scope of application of his dream of an ideal society (city, country) does not limit any part of the land or a separate people. He poses the question much more broadly and essentially thinks about the fate and future of the parods of the entire planet: "A city in which the unification of people has as its goal mutual assistance in matters by which true happiness is found is a virtuous city, and a society where people help each other in order to achieve happiness is a virtuous society. A people whose cities help one another in order to achieve happiness is virtuous in the kind. In the same way, the whole earth will become a virtue if the nations help each other to achieve happiness" (3, p.305).

Believing in man, in the ultimate victory of goodness, truth, Navoi continued to follow in the footsteps of brilliant predecessors, including Farabi. At the same time, in his own way, creatively developed their ideas. The poet contrasts the surrounding hated reality with his deeper dream of a society of universal well-being, of a world in which there is no oppression, where need and injustice are eliminated, there is no opposition between wealth and poverty; where the harmony of equality, friendship, and general well-being flourishes. This dream is sung by the great poet:

I want such a world so that there is no such thing as in our time.

people (bad and unhappy),

That there may be no oppression and sorrow for people from it;

So that there are no murders and tears from them in people's eyes.

That there should be no helpless, homeless, shrouded in torment, suffering;

So that people don't know the need.

That there may be no people who are alien to humanity, but pretend to be angels,

So that there are no monstrous people in the guise of a person.



It should also be added that unlike Farabi, Navoi in his assessment of modern society, in affirming the dream of a better future, is very active. With a huge army of representatives of many nations, the poet sends his wise scientist-commander Iskander on a campaign against the world of oppression, enmity, disunity, lies, grief and tears. Iskander, by the will of a poet - a great dreamer - conquers countries one by one, gives the force of law to the noble ideals of their peoples, destroys oppression, expels tyrants. All this Iskander does, constantly listening to the advice of sage scientists with whom he surrounded himself:

And the people of all the earth rejoiced,
Who have found freedom.
And it wasn't just the whole nation who rejoiced.
The whole nine-sphere vault rejoiced.

Navoi expresses this cherished dream poetically and therefore it appears especially colorfully, acquires a huge power of emotional impact. Here is how the poet characterizes the country of his dreams through the mouths of the heroes of the poem "Farhad and Shirin":

Life-giving and warmth in it.
The abundance of roses and the fertility in it...
Our fatherland is the paradise of the earth...
Crowns the country with virtue
Tsaritsa, our stronghold – Mikhin-banu...
Our support is her dominion,
We are pleased with her majesty.

And when this country of prosperity is invaded, Farhad enters into a deadly battle with the enemy and dies. But for Navoi, such an outcome is unacceptable. He sends Bahram to the torn country, and he frees it from the invaders, and in place of the deceased Mikhin-Banu appoints another wise ruler as ruler:

That to the people in the state that,
Became a wise husband a cover and shield!
To keep the power rules there.
Fairly, he ruled there.
That he might rebuild the country,
Her riches to suit him.
To the peoples and powers – there is a flourishing,
Where there is justice, there is no oppression!

Further, in an effort to concretize his thought, Navoi painfully says:



***"In despicable envy is the seed of trouble,
The cause of strife, anger and enmity.
And it's not for a select few.
No exception, neither for kings.
The Shah has hundreds of thousands at his fingertips.
The people are the estate eternal system
Viceroys closest to the king
Everything is ruled, the will of the Shah's creation.
The emirs don't want to give in to them.
And all are eager to become viceroys.
The chiefs of the fogs wait, do not sleep,
They are hostile, they want to become emirs.
And every thousandth is ready to betray
Chief, that would be higher rank to become.
Here it is, on the discord based system!
Look, he's top to bottom like that."***

In his philosophical poem "Confusion of the Righteous", Alisher Navoi directly addresses the rulers of his time (and all subsequent eras), calls them to peace and goodness, justice and mercy.

He says that you, O Sultan, have been given authority from above, you are free to do good or evil; you now personify the wise Suleiman (Solomon), on whose ring there was an inscription: "In justice - to salvation the way"!

Here is what the great poet and statesman writes:

***"Praying, verse the Quran repeat:
"Ruler, govern fairly!"
You remember that the judge in your cases –
Allah himself exalted you."***

"The people," says the poet, "bow their heads before you, dutifully waiting for your commands. The Creator of the worlds, the lord of the star forces, has subordinated the People to your right hand. But you yourself are weak and weak before Almighty God, you yourself are his creation and slave. You, like everyone else, are dust and doomed to the earth. You are a bundle of darkness, not a light in the dark. In appearance and in your being, that is, in form and essence, you are like your subordinates. » Further, the thinker, not afraid of the wrath of the "powers that be" who were alive at that time, reproaches the sultan for the fact that he is inferior in many respects, moreover, inferior not only to the holy elder, even to a simple man.

It is time that two brilliant sons of progressive humanity, despite six hundred years separating them from each other, so agree on many of the most important problems of social and spiritual development of peoples. As Academician V. Zahidov rightly emphasized, "This clearly testifies to the serendipity of



the encyclopedist of the IX-X centuries and the power of the mind of the poet of the XV century; about the greatness of their souls and the deep humanistic aspirations; and that the truth is one, it is all-powerful, eternal." (5, p.31)

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JOHN DRYDEN'S CONTRIBUTION TO CLASSICISM DRAMA

Dilafuz Ochilova Bakhramovna

Senior Teacher, English Language and Literature Department

Karshi State University (Uzbekistan)

E-mail address: dilafuz.ochilova@mail.ru

Abstract:

This article discusses the stages of classicism in the literature of Europe. John Dryden and his contemporaries, who are considered prominent representatives of European literature, especially English drama, contributed to classicism literature and literary criticism, leaving a rare heritage to the next generation, such as John Dryden's drama "Aureng-Zebe". The idea embodied in the drama, is about the mysterious and wonderful East for that time, in which the main character Aurengzebe Alamgir, the fifth representative of the dynasty of the Great Mogol Empire (Baburids), fights bravely defending his father as well as his state. The struggle for the throne, state administration, the internal atmosphere of the palace, family problems in Dryden's style and art in the direction of classicism are revealed in the article.

Keywords: Renaissance, character, classicism, etymological analysis, drama, comedy, genre, play, Restoration period, linguacultural, linguistic, semiotics.

INTRODUCTION

Literature of Europe in Renaissance period turned to the classics of Roman and Greek mythology and folklore. This is evidenced by the fact that representatives of the literature of the European Renaissance took the works of ancient Greek and Roman literature as "models" and created a number of tragedies, dramas and comedies based on them. Several well-known tragedies by famous playwrights W. Shakespeare, B. Johnson and later J. Dryden can serve as an example of this fact. This literary trend called classicism.

Classicism is a universal, philosophical and literary phenomenon that has a typological essence, hence this phenomenon considered the object of literary studies. Moreover, the aesthetics of classicism is associated with the culture of the ancient world, which imitates the art and culture of the ancient Romans and Greeks, shows respect and adherence to its order, as well as intelligence, high taste and strive for established standards. Classicism, according to its internal principle, relies on three important foundations: imitation or traditional reflection, centralization of the concept of intelligence and absolute taste.

Classicism - first appeared in Italian culture in the XVI century, fully formed in the XVII century in France, by the XVIII century was closely associated with the Renaissance and Enlightenment and spreaded all over Europe.

By the time of the Restoration of the Stuarts, who replaced the bourgeois republic on the path of the historical development of England, classicism was wanted literary trend. The reason was that, the



citizens of England, fresh out of the civil war, needed peace and stability. The canons of classicism were aimed at education of people by sharing pleasure, to awaken in citizens a sense of duty to the Motherland, and to raise a noble person who meets the principles of ethics and aesthetics. Hence, the main concept of classicism was to put duty and reason above feelings.

If the heroes of a literary work created in the Renaissance are embodied in various forms, rich, powerful and passionate characters, then the aesthetics of classicism summarizes the subordination of passion to reason and emotion to duty. The main conflict in the works was the struggle between feelings and duty. The image of the hero is characterized by one-sidedness. In this process, there is a tendency to create generalized images.

English classicism is distinguished mainly by the influence of French, ancient Roman and Greek literature on poetry and drama. A huge contribution was made to the history of world literature of classicism by playwrights and poets, such as Pierre Corneille (1606-1684), Moliere (1622-1673), Racine (1639 -1699) in France, Lope de Vega (1562-1635), Tirso de Molina (real name was Gabriel Tellez, 1579-1648), Ricardo de Turia (1574 -1641), Bartolome Leonardo (1562-1631) in Spain etc. In the trend of classicism in British literature gained great fame by the well-known writers and playwrights such as John Milton, Benjamin Johnson, John Dryden, John Locke, William Temple, Samuel Pepys. Adhering to the strict traditions of classicism most of them managed to break the borders of classicism and discover a new direction in this literary trend [8]

Among the writers of English classicism, Alexander Pope, who is a follower of the classicist writers, describes in his poetic essays that the harmony of mind, style and content are the basic principles of classicism:

Expression is the dress of thought, and still

Appears more decent as more suitable... (Part 2, ll. 318–19) [7]

'Tis not enough no harshness gives offence,

The sound must seem an Echo to the sense... (ll. 364–65) [7]

However, Pope's words in 1711 were not new in the world literature, since all writers from Chaucer to Shakespeare were inspired by ancient Greek and Roman literature. Here one cannot fail to dwell on the pride of the English classicist poet, the great playwright Benjamin Johnson.

Benjamin Johnson distinguished himself from his contemporaries by his deep study of ancient literature and his love for classical literature, and it was for this reason that Johnson's work differed sharply from that of other playwrights. The writer served as a bridge between Renaissance literature and classicism, and later laid the foundation for his followers such as Dickens, Smollett and Thackeray[9].

Along with Benjamin Johnson, a great contribution to the development of classicism in the literature of the Restoration period in England was made by John Dryden (John Dryden, 1631-1700), while he is considered the founder of English literary criticism. In his poetry and drama, the principles of the aesthetics of classicism received their artistic embodiment. Dryden was not only a poet, critic and great



playwright, but also the founder of dramatic art. His contribution to English literature is so great that the period from 1660 to 1700 is marked in the history of English literature as "The Age of Dryden" [2].

MATERIALS AND METHODS

John Dryden's famous tragedy "Aureng-zebe" is a vivid example of the "heroic tragedy" of the classicist trend. There had been done many research on this tragedy particularly by M. Alssid, Arthur C. Kirsch, W.P. Ker, George R. Noyes, M. Frederick, M. Johnson, E. Moody etc.

According to Arthur Kirsch [4] neither of Renaissance playwright understood the main goal of classicism drama better than Dryden. Dryden strove to make the drama's dialogue different from ordinary speech, rhyming correctly, meaningful, inspiring and instructive for the audience. Obviously, tragedy "Aureng-Zebe" was vital for the Restoration period as it targeted to establish peace and welfare in the country. The writer was primarily interested in questions of history related to spirituality: issues such as the struggle for power, the problem of succession of throne, the usurpation of power by force; moral lessons like courage or virtue, without which, according to Dryden, a person neither can fulfill his role in history nor establish lasting peace in the state and ensure the prosperity of the country [1]. Hence, he tried to convey his ideas to the people through his work.

Michael Alssid [1] has done an extensive research on Dryden's contribution to world literature as a playwright, and the founder of new direction of classicist drama. Dryden's main design in the tragedy "Aureng- Zebe", his political, philosophical and social ideas and writing style were analyzed by this scholar as well.

The historical drama "Aureng-Zebe" by John Dryden describes the fifth generation of the Babur dynasty (1526-1658) in India - the last year of the reign of Shah Jahan (1627-1658) and also the years when his son Aurengzebe (1658-1707) ascended the throne. The scene reflects the images of Shah Jahan and the heirs to the throne, princes Daro Shukuh, Sultan Shujo, Aurengzebe, Muradbakhsh and courtiers. The author does not try to move away from the images in the book by F. Bernier [3]. Dryden, using a real source adapted it to the spirit of the European public, skillfully giving an artistic sound, with the help of lyrical digressions and artistic techniques conveyed his real design to the reader and the spectator [6].

Michael Alssid [1], in his article Design of Dryden's "Aureng-Zebe", was one of the first to draw attention to the historical parallel between the restoration of peace and order in England after the accession of Charles II and Aureng-Zebe in the Great Mogol Empire in India. The struggle for the throne in India lasted several years, but Dryden chooses a very significant date for the tragedy - "Agra, 1660", thereby metaphorically alluding to his contemporaries to the restoration of royal power in England as well as peace and stability in Britain.

RESULT AND DISCUSSION

Dryden who was deeply aware of ancient literature showed his respect to ancient literary canons following them in his tragedies. According to Aristotle, tragedy came from the efforts of poets to present



men as 'nobler,' or 'better' than they are in real life. Dryden managed to combine epic poetry with tragedy in his drama "Aureng-Zebe".

Unlike the French playwrights, Dryden made an incomparable contribution to the literary direction of classicism, adhering to its the principles. The playwright writes in his work "An Essay on Dramatic Poesy" (1668) that French playwrights strictly adhered to the principle of the requirement of three units, because of which the plays are devoided of emotion. He compares these plays to a beautiful but lifeless statue. According to Dryden the main goal in drama is idea not the rhyme. In the prologue to his drama "Aurang-Zebe", he noted that it was time to abandon rhyme:

Our author by experience finds it true,
'Tis much more hard to please himself than you;
And out of no feigned modesty, this day,
Damns his laborious trifle of a play.
Not that it's worse than what before he writ,
But he has now another taste of wit;
And, to confess a truth (though out of time),
Grows weary of his long-loved mistress, rhyme.
Passion's too fierce to be in fetters bound,
And nature flies him like enchanted ground [5]

The writer emphasized that dramas should be full of passion, emotion. He followed the study of literary teaching and Horace's theory of classicism, based on common sense and considering that:

- dramas should reproduce nature;
- imitate samples of ancient art, ancient heroes;
- should be a sharp division of characters into positive and negative;
- the hero must always follow a sense of duty, and at the same time expressing his feelings and being a virtue;
- the playwright should create the image of a hero performing a task of national importance or a human duty, after which the hero overcomes all difficulties and receives a well-deserved reward;
- at the end of drama any tyranny should be defeated.

Dryden considered that the main task of classical literature is to educate a person, and this must be done through real enjoyment. We can see a vivid example of this in Aurangzeb's drama. In this work, Dryden proves that he is merciful and devoted to his country. Dryden argues that any war will inevitably lead the state to chaos, economic crisis and erosion of human dignity.

CONCLUSION

Thus, drama plays an important role in Dryden's work, he enriches the heritage of English literature with his contribution, follows the patterns of French classicism that has significantly advanced in this area (Cornell, the works of Racine) and at the same time had made significant contribution in it.



It is worth to mention that Dryden's works contain an interpretation of his philosophical views. At the same time, classical and Renaissance epic features are visible in them. At the heart of all his works politics of that time, the harmony of love and historical plots, social events of that time were revealed.

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**FORMATION OF ECOLOGICAL CULTURE IN THE TEACHING OF FLORA AND FAUNA
IN GEOGRAPHY CLASSES**

Meliyev Muzaffar Saidakbarovich

Teacher. Kokand SPI

meliyev.1984@mail.ru

Jobborov Azamjon Mashrabovich

Associate Professor Kokand SPI

Mo'ydinova Umidakhon Bakhtiyor kizi

Student. Kokand SPI

Abstract

In this article, information about the methods of formation of ecological culture and its useful features in the process of teaching flora and fauna in school geography classes is covered. At the same time, the article contains instructions for improving the effectiveness of school geography classes

Keywords: school, geography, ecology, popular science, environmental culture.

It's no secret that today the influence of humanity on nature has exceeded the established standards. As a result, major changes are occurring in all components of the geographic crust. In particular, we can observe very big changes in the biosphere shell. For example, it is a pity that in large densely populated areas of the world, the natural landscapes have completely changed and man-made lands have appeared in their place, that is, the flora and fauna that have been formed naturally for many years are changing and some species are disappearing completely.

Despite the fact that environmental problems have been around for a long time, they have not yet been solved. The number and scale of these problems are increasing along with the increasing population and the progress of society. One of the main reasons for this is that all components of the geographic crust interact with each other. In particular, flora and fauna also interact with other shells [1]. We know that environmental problems cannot be solved by fighting them alone. One way to solve it is to increase the number of ecologically cultured individuals in the society. Through this, we can build an ecologically clean society, preserve nature in its natural state, and, if necessary, deliver it to future generations.

Despite the fact that our republic is provided with plant, animal and other natural resources, the demand for the use of new materials and the production of high-quality products is constantly increasing [2]. Although it differs from natural products in terms of high efficiency in production and household economy, the demand for natural products is not decreasing due to the economic and social development of the country. Therefore, in order to protect and preserve nature, as well as to provide students with ecological education, it is impossible not to touch on the topic of plants and animals in Natural Geography lessons. Therefore, there is a great opportunity to form ecological culture based on



the integration of geographical and ecological knowledge during lessons related to these topics. In the natural geography lessons of the comprehensive schools of the Republic of Uzbekistan, while teaching the topics "Biosphere", "Plant and animal world of Uzbekistan", "Plant and animal world of continents and oceans", students should be introduced to the environmental problems related to these topics, explaining the real causes of the problems through concrete facts, and their solutions. By creating problem situations for students regarding finding, organizing small conferences on the topics of "Global Climate Change", "Protection of Uzbekistan's Natural Resources", both ecological culture and the ethics and aesthetics of using natural resources are being formed in students. At the same time, it will be possible to develop the culture of mutual respect, the ability to express one's opinion, and the culture of listening to the opinions of others.

In addition, it is important to focus on the preservation of existing species, to create a sense of preservation by preparing presentations that reflect the world of plants and animals that are disappearing, and by informing students about the species that existed before us and are now extinct. They should be taught the essence of the "Red Book" and its importance in our lives. Pupils first develop interest in nature, love, feelings, and then the skills to protect it, treat it with care.

It is possible to form students' ecological culture, to love mother nature and to treat it with care by showing short films from various scientific and popular shows related to the topic in school geography lessons. When using this method, it will be easy for students to get acquainted with the living conditions of flora and fauna, their geographical distribution and ecology. They study the conditions necessary for the geographical distribution and natural reproduction of terrestrial and underwater flora, and analyze the factors influencing their decline in nature. With the help of this method, it is possible not only to form an ecological culture, but also to study geographic knowledge and concepts in depth. Because it is easier for the students to see and imagine the materials explained by the teacher using the oral presentation method, and this will certainly make a positive contribution to increasing the effectiveness of geography lessons.

Students can be taught to love and protect nature by organizing live corners at school or by taking care of indoor flowers in classrooms. In addition, planting various plant seeds in school gardens with the participation of students and taking care of them, or planting seedlings in the school yard and taking care of them will definitely have a positive effect on the formation of environmental education and culture in students. At the same time, during the practical activity, the students are given theoretical knowledge about the specific characteristics of the plants or animals being cared for, their importance in human life, their country of origin and distribution centers. In this process, students themselves directly participate in the process, gain independent experiences and acquire skills.



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STUDY OF THE WORK OF THE BOUNDARY LAYERS OF LUBRICANTS MATERIALS

Alimova Zebo Khamidullaevna
Ph. D., Professor

Niyazova Gulhayo Parpiena
Senior Teacher

Sabirova Diloram Kabulovna
Ph.D. Associate Professor
Tashkent State Transport University, Uzbekistan

ANNOTATION

The article analyzes and studies the work of the boundary layers of lubricants in the process of operation. The performance of the boundary layer of oil is determined by the interaction of the molecular film of the oil with the rubbing surface of the metal. In the process of work, the composition of lubricants becomes more complicated due to the oxidation of thermochemical decomposition of hydrocarbons and additives. These products enter into physical and chemical interactions with each other and with contaminants coming from outside. Lubricants containing surfactants have the ability to adsorb on the interface surfaces of two media: liquid and solid.

Keywords: Lubricants, viscosity, temperature, engine, hydrocarbons, strength of the boundary layer, layer thickness, molecular film, surfactants, adsorption, chemisorption.

The main purpose of the lubrication system is the timely supply of clean and, if necessary, cooled engine oil to the rubbing parts to reduce friction. Under pressure, oil enters almost all of the engine's plain bearings.

The thickness and strength of the boundary layer of oil during friction of the working surfaces of engine parts depends on the chemical composition of the oil and its additives.

The performance of the boundary layer of oil depends on its viscosity and is determined by the interaction of the molecular film of the oil with the rubbing surface of the metal. The resulting molecular films of oil of physical origin are called adsorption, and films of chemical origin are called chemisorption.

Sorption phenomena play an important role in many industrial processes. Sorption (at the liquid-gas, liquid-liquid, or solid-solid boundary) is the most important factor determining the properties of systems with a large specific surface area. –

There is a relationship between the amount of adsorption and surface tension at constant temperature and pressure

$$D = - \left(\frac{a}{RT} \right) \frac{dy}{da}$$

gde:

G – surface concentration;

a – activity of the solute;

dy – change in surface tension;



R – universal gas constant;
T is the absolute temperature.

If the increase in the concentration of the solute leads to a decrease in surface tension, the solute accumulates on the interface surface (positive adsorption). Conversely, if the surface tension increases with increasing solute concentration, the solute is removed from the interface surface (negative adsorption).

Chemosorbed films are stable chemical films of phosphates, chlorides or sulfides. They are created on the surface of the metal due to the presence of appropriate chemical elements in lubricants. The high rate of formation of these films ensures their rapid recovery in places of destruction of the boundary layer. Films of this type also include various soaps, which are formed from organic acids contained in the oil.

Adsorbed and chemisorbed films, possessing strength and resistance, protect friction surfaces from mechanical and thermal influences, and also prevent mutual adhesion of rubbing surfaces.

When operating a car under the influence of various factors, the oil loses its original properties. Contaminants (their share reaches 0.08-0.23%), falling into the engine together with fresh oil, accumulate in the oil during its transportation, storage and directly when filling the lubrication system.

The formation of lubricating films by adsorption forces is due to the presence in lubricants of surfactants that carry an electric charge. Such substances include compounds containing carboxyl groups, alcohols, various esters, resins, sulfur compounds.

Along with the purely physical process of adsorption during the formation of a boundary film, in some cases chemical reactions also occur (the process of chemisorption). During adsorption, heat is released as a result of a decrease in the surface energy of solid molecules and adsorbed molecules. The amount of heat released is proportional to the thermal field stress of a solid surface.

The products of the chemical reaction provide the adsorbed layer with increased strength. During chemical interaction, protection against wear occurs due to the formation of a chemical film on the surface of metal (Fig. 1).

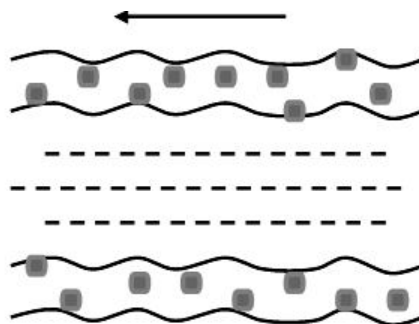


Fig.1. Scheme of the boundary layer of lubricant

This film has a sufficiently high mechanical strength, does not melt at a temperature lower than the melting point of the base metal.

Lubricants containing surfactants have the ability to adsorb on the interface surfaces of two media: liquid and solid. The ability of lubricants containing surfactants to form sufficiently strong layers of oriented molecules on lubricated surfaces is called oiliness or lubricity of oils.



If there is a bound or adsorbed film of water on the surface of the metal, then low-polar media, which include petroleum products, will poorly wet the metal surface.

The introduction of overexpositive substances into hydrocarbon media should thus, first of all, increase the wettability of metals in the oil product management system and create conditions for inhibitors (or protective additives) to exhibit the main functional property. –

When the lubricating layer completely separates the working surfaces that move relative to each other, and this layer has a thickness at which the normal bulk properties of the oil appear, then such friction is called liquid. The coefficient of liquid friction is in the range of 0.0030.03, which is 50100 times less than with friction without lubrication. The frictional force in this type of lubricant depends only on the inner layers in the lubricant.—

The wetting ability of surfactants can be manifested by the formation of strong hydrogen bonds –and over-active substances with water and the displacement of water from the surface of the metal.

In the process of aging of oil, changes in the concentration, structure and effectiveness of additives are observed. This occurs as a result of decomposition, interaction with the products of fuel combustion and oxidation of oil, filter elements and car parts.

The elevated temperature and oxygen of the air with which the oil comes into contact cause oxidation and oxidative polymerization of its molecules. Hydrocarbon oxidation products such as resins, organic acids present in the oil in the dissolved state contribute to an increase in viscosity and acid number, and asphaltene compounds that cause the formation of varnish deposits, the occurrence and burning of piston rings.

A fine stable mechanical mixture of oxidation products leads to the formation of carbon and sludge. Products of deep oxidative polymerization, which differ in high temperature zones and enter the crankcase, as well as other fallen sediments, continue to have a negative effect on the oil.

Thus, in the crankcase of a running engine, a complex mixture of the original oil with a wide variety of products of its aging is formed, from which it is not possible to completely clean the oil by filtration.

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**"KHOREZM EXPEDITION" - A UNIQUE PHENOMENON IN ARCHAEOLOGICAL
SCIENCE**

Shamukaramova Feruza Shakirovna

PhD in History, the Leading Research Fellow, the Head of the Department of "Ancient History" of the
Institute of History of the Academy of Sciences of the Republic of Uzbekistan

Abstract

This article presents the organizational and scientific aspects of one of the largest, not only on the scale of the former Soviet Union, but throughout the world, archaeological expeditions - the Khorezm archaeological and ethnographic expedition led by S.P. Tolstov. The history of the Khorezm oasis has always been in the focus of attention of archaeologists, historians, orientalists, art critics and other specialists, since the history of the evolution of Khorezm was based on complex irrigation systems, geographical location on trade caravan routes and localization on the border zone of mutual influence of the settled and nomadic population of the region. As a result, the paper lists and characterizes aspects of the uniqueness of this expedition in archaeological science.

Keywords: Uzbekistan, Central Asia, Karakalpakstan, Khorezm, Amu Darya, S.P. Tolstov, Ya.G. Gulyamov, A.I. Terenozhkin, Toprak-kala, Koi-Krylgan-kala, Aral Sea region, Ancient Khorezm, IIMK

Archaeological research in the Central Asian region has played and is playing an important role in the study of its history, especially the ancient and early medieval periods. Large archaeological expeditions organized in the second half of the 1930s in this territory under the leadership of M.E. Masson (TAKE), S.P. Tolstova (KhAEE), A.N. Bernshtam (Semirechye), A.I. Terenozhkin (Samarkand) made it possible to take a fresh look at the ancient and early medieval history of Central Asia. In these expeditions, the Khorezm archaeological and ethnographic complex expedition, which lasted several decades, occupies a special place.

Khorezm is one of the ancient centers of civilization in Central Asia. The region is located in the lower reaches of the Amu Darya (Oksa), on the territory of Uzbekistan (including Karakalpakstan) and Turkmenistan. The history of this region, as an object of all kinds of research, has always been the focus of attention of specialists - archaeologists, historians, orientalists, art critics, writers, architects, etc., since the history of the evolution of Khorezm was based on complex irrigation systems, geographical location on the trade caravan routes and localization on the border zone of contacts between nomadic and settled population.

From the 30s of the XX century. The Khorezm oasis became the object of many years of archaeological research, which subsequently had world significance. In 1937, the Institute of Ethnography of the USSR Academy of Sciences under the leadership of S.P. Tolstov, the Khorezm Archaeological and Ethnographic Expedition (KHAE), unique in the archaeological science of the Soviet period, was organized. The activity of the expedition was divided into three stages: 1) 1937 - 1940; 2) 1945 - 1970s; 3) 1970 - 1990s.



The uniqueness of the expedition lies in a number of aspects:

First of all, the longest in time not only on the scale of the former Soviet Union, but also in world archaeological practice - 1937 to 1997 - 60 years. However, the preparatory work on the part of S.P. Tolstov began several years before. In particular, the researcher in 1931 - 1937, working on the issues of the ancient history of Central Asia and the countries of the Near and Middle East, studying scientific works and written sources, was convinced that "only a campaign for new historical facts hidden in the earth, only widely set and purposeful archaeological work can put the development of debatable problems of the ancient history of Central Asia on a solid base that does not allow misunderstandings" [1]. This period, the first half of the 1930s, was a kind of theoretical preparation for large-scale research [2]. In particular, it should be said that S.P. Tolstov had been preparing for these studies for a long time. Namely, one of the main aspects of the preparation was the study of Arabic and Persian languages in order to personally study the written sources about Central Asia. M.M. writes about this in his memoirs. Rozhanskaya is a friend of the daughter of S.P. Tolstova, later an employee of the KhAEE: "In the 60s, in conversations with me, a well-known Arabist, professor of Moscow State University and the Institute of Oriental Studies, Ode-Vasilyeva, told me that Sergei Pavlovich was the best of all her students for many years of teaching, but he did not last long had the opportunity to work with her" [3].

Regarding the deep interest of S.P. Tolstova, his student and colleague Ya.G. Gulyamov wrote: "When it comes to studying the ancient past of Central Asia, one cannot help but talk about the historian, archaeologist and ethnographer, corresponding member of the USSR Academy of Sciences, Doctor of Historical Sciences, Professor Sergei Pavlovich. As a matter of fact, thanks to tireless activity and diligence in discovering the ancient secrets of the distant past, a huge contribution to the study of the history of Central Asia, he became famous not only in the Union, but also as a remarkable scientist received worldwide recognition. Sergey Pavlovich, who devoted his conscious life to science, can truly be a worthy standard of youth in serving the noble cause of the nation ... Among the expeditions that I have seen, there was no such disciplined, energetic and mobile expedition as the Khorezm expedition. It looked like a research institute. In this mighty expedition, the most difficult works of S.P. Tolstov himself was the first to start" [4].

Secondly, it was the largest expedition in terms of territorial coverage, which included Uzbekistan, Kazakhstan and Turkmenistan. The studies of the KhAEEE covered an area of several hundred thousand square kilometers, and taking into account the aerial photography, the area of the studied territories reaches up to 5 million hectares [5]. Geographically, these are the Southern Kyzyl Kum and Northern Kara Kum, the Caspian region, the Eastern Prearalie, the lower reaches of the Syr Darya and Amu Darya. But the initial and main interest, the so-called "center of gravity" and the place of the most extensive research of the entire work of the expedition was Khorezm.

Thirdly, KhAEEE is unique in terms of the number of studied monuments. For 60 years of functioning of KhAEE, more than 2,000 archaeological sites have been identified, mapped, described and examined [6]. Of these, stationary excavations were carried out at 107 sites; etc.).

Fourthly, KhAEE is unique in terms of the publication of the results of the research: these are 16 volumes of the "Proceedings of the Khorezm Archaeological and Ethnographic Expedition" from 1952



to 1991 [7] , 9 issues of the “Materials of the Khorezm Expedition” [8] from 1959 to 1973. In addition, separate scientific monographs by S.P. Tolstova [9], Ya.G. Gulyamova[10] , A.V. Vinogradov [11], popular science works by R. Bershadsky [12], V.D. Berestov[13], dozens of scientific articles in journals[14], etc. The last result of the research, which lasted six decades, was the book by Yu.A. Rapoport, E.E. Nerazik and L.M. Levina [15].

It is also noteworthy that until now, interest in the activities of this expedition has not faded. This is expressed through the study of the life and scientific activities of the expedition leader S.P. Tolstov[16], memoirs of the "Khorezmians" themselves - participants of the KhAEEE[17]. The latest work, to date, is the publication of the book by I.A. Arzhantseva "Khorezm. History of discoveries and research"[18], prepared on the basis of unique materials from the archives of the Institute of Ethnology and Anthropology named after N.N. Miklukho-Maclay of the Russian Academy of Sciences, collected by scientists during the work of the Khorezm expedition, which worked from 1937 to 1997. The book includes research materials from 1937-1959: information on the history of the discovery and research of archaeological sites of Ancient Khorezm, photographs, drawings, drawings, excerpts from field diaries and reports of the expedition members and their memoirs. The initial stage of the expedition is covered in detail - the discovery of the Khorezm oasis, archaeological research at the main sites: Toprak-kala, Koi-Krylgan-kala, Dzhanbas-kala.

Fifthly, KhAEE is unique in terms of the complexity of organizing the expedition itself and the scientific results obtained. In 1937, the expedition was organized by the Moscow branch of the Institute of the History of Material Culture of the Academy of Sciences (IIMK AN) of the USSR, headed by S.P. Tolstov, who worked from August to September. The group consisted of 2-3 people. During the two months of the first season, monuments were explored and discovered: in the vicinity of the city of Turtkul - the fortress of Kunya-Shurakhan (Shurakhan village), the fortress of the old Shabbaz, the fortress of Pila-kala (a schematic plan was taken, two pits were laid), the ruins of a building of the XIV century. near Shabbaz; on the right bank of the Amu Darya - Guldursun Big fortress, Guldursun Small fortress, Duman-kala fortress, Dzhildyk-kala fortress, Kavak-kala fortress, castles and estates in the Kavak-kala region, Kosh-Parsan castles, Ane-kala complex, Ui-Kala castle, Berkut-kala fortress (plan removed); castles of the dead oasis Berkut-kala, Teshik-kala castle, Kumbaskan-kala castle, ruins of Narijan-baba, buildings south of Narinjan.

As a result of the first season of archaeological work, a significant part of the monuments of material culture in the Shabbaz and Turtkul regions was recorded, places were identified for further archaeological work, which made it possible to draw the following conclusions: 1) ancient irrigation; 2) the archaeological material, including numismatic, and the architecture of the surveyed monuments outline three stages in the development of material culture: the antique (the first centuries AD), the period from the 5th to the 8th centuries and the period from the 10th to the 13th centuries; 3) for the last two stages, a separate estate was a characteristic type of rural settlement [19], 4) intelligence materials made it possible to advance the development of the issue of "dihkans" - farmers who constituted "the dominant class of pre-Muslim Central Asia" [20]. In 1938, the Institute for the Protection and Study of Monuments of Antiquity, Art and Nature (Uzkomstaris), the State Hermitage



Museum (Leningrad) and the Central Museum of Local Lore of Karakalpakstan, i.e., participated in the organization of the Khorezm expedition. four government agencies. The second season ran from July 11 to November 17. Work was carried out at 20 archaeological sites. As a result, Bronze Age sites and several ancient and early medieval monuments were discovered on the lands of ancient irrigation of the Khorezm oasis, which contributed to the definition of a continuous line of development of the material culture of Khorezm from the Bronze Age (II millennium BC) to the 13th century. AD In addition, it was found that the monuments of different eras were located zonally, and the ancient settlements turned out to be the most remote from the Amu Darya deep into the desert, occupying the entire vast territory of ancient irrigation lands, which was reduced in subsequent eras. At the same time, further directions of research were outlined to resolve the issues of the social history of Khorezm and the history of its cultural ties with neighboring countries: Eastern Europe, Bactria, India and eastern Turkestan [21]. In 1939, six institutions already participated in the Khorezm expedition: IIMK of the Academy of Sciences of the USSR (Moscow branch), the State Historical Museum (Moscow), Uzkomstaris, the Turkmen Institute of History (Ashgabat), the Central Museum of Local Lore of Karakalpakstan (Turtkul), the Faculty of History of Moscow State University. The third season lasted from June 11 to November 6 - i.e. five months. The work was already carried out by two groups along three routes - on the right and left banks of the Amu Darya, as a result of which archaeological surveys, excavations and stationary work were carried out at more than 60 archaeological sites. The main results of the third season boiled down to: 1) the discovery of the site of the Neolithic (Keltiminar) culture of Khorezm (Dzhanbas-kala No. 4), new sites of the bronze (Tazabagyab) culture, the Amirabad culture, and the establishment of stratigraphic differences in the occurrence of all three cultures; 2) the study of ancient and medieval monuments, which made it possible to establish the time of their existence and determine the main characteristic features of material culture, social organization and political history for each era; 3) the study of the ancient irrigation system, which made it possible to localize the canals of the Amu Darya right bank historically recorded in medieval sources [22]. We have cited, as an example, only the first stage of the expedition's activity - the first pre-war three-year organizational and archaeological work and their results. After the Second World War, in 1945, the second stage of the expedition began, as a result of which new discoveries were made that contributed to the disclosure of the most complete picture of the history of Central Asia in general, and Khorezm in particular. Isn't this grandiosity, efficiency and uniqueness?

S.P. Tolstov, summing up the results of the first stage (1937 - 1939) of the Khorezm expedition, stated: "Although we have essentially begun our work, we can now sum up some of the results of our expedition, which makes it possible to shed light on an ancient culture that was completely unknown 3 years ago Khorezm, from the ancient sites of hunters and fishermen with Neolithic equipment to the era of the great Khorezmshahs. ... The history of settlement types sheds light on a number of dark and controversial issues in the history of the social system of ancient Central Asia in general and Khorezm in particular.

The architecture and fine arts of ancient Khorezm are presented with great completeness, allowing us to talk about the high level and great originality of the artistic culture of the Khorezmians.



The discovery of Khorezmian coins gave us the first monuments of Khorezmian epigraphy, the number and types of which are steadily growing.

Thus, step by step, this powerful, unique civilization, hidden under the dead sands of the Karakum and Kyzyl Kum, is revealed to us from new and new sides” [23]. Sixthly, Since 1945, the Khorezm expedition became known as the Khorezm archaeological and ethnographic expedition, i.e. began to bear the character of complexity, which included: archaeologists, ethnographers, historians, architects, art critics, etc. In addition, the leader of the expedition S.P. Tolstov was an ethnographer, he was probably guided by the arguments of V.V. Bartold, who rightly noted as early as 1927: “In ethnographic terms, the study of Khorezm, where some household features have survived to this day, such as a farmstead and the original type of cart. ... Khorezm by no means lived an isolated life and had close trade relations with other countries; but surrounded by the deserts of Khorezm, as in England surrounded by the seas, all life had a peculiar way of life, and even features borrowed from outside showed a special vitality”[24]. Seventh, for the first time in the history of archaeological research in the Soviet Union, in the work of the Khorezm expedition since 1946, they began to use aerial methods[25]. This was due to the fact that the time has come to move from the study of individual monuments of material culture to the solution of broad historical and geographical problems, a complete archaeological survey of large areas, as well as the need for mapping and systematization of archaeological sites, compiling archaeological maps and topographic plans.

It should be noted that the use of aviation contributed to the gradual expansion of the coverage of the study area; reduction of examination time; to quickly get to such objects, to which the HAEE detachments had long traveled before; great savings in time and money.

Expedition leader S.P. Tolstov stated that “in just two months of field work in 1946, about 9,000 km were covered by air routes, about 5,000 aerial photographs were taken, up to 60 off-aerodrome landings were made for ground surveys, more than 250 new monuments were registered and examined” [26]. It is known that one of the main scientific problems of the Khorezm expedition was the study of ancient irrigation systems. It was noteworthy that the use of aerial photography contributed to a more detailed study of the ancient irrigation of the Khorezm oasis. When applying this method, it was possible to see what could not be found during ground studies, to restore the plan of the links of irrigation canals that disappeared under the sands, to reconstruct the ancient hydrography.

Eighthly, there are still no analogues of such an expedition as the Khorezm archaeological and ethnographic complex expedition led by Professor Sergei Pavlovich Tolstov! In 2017, the KhAEEE turned 80, and its leader S.P. Tolstov is 110 years old.

One of the main theoretical conclusions of S.P. Tolstov, after two seasons of archaeological research, concluded that “Ancient Khorezm in its material culture differs sharply from the culture of Sasanian Iran, and the line of its more ancient historical ties goes northwest to Eastern Europe, and later to East Turkestan and other areas. Central Asia. This refutes the theory of a unified (our italics - F.Sh.) "Iranian" culture of the peoples of Central Asia, the Iranian Highlands and Eastern Europe in the era of antiquity. Central and Central Asia are not appendages of the all-influencing Iran, but an independent cultural and historical region that has gone through a difficult historical path of



development” [27]. This conclusion of S.P. Tolstov is very important because before that the thesis that the ancient history of the material culture of Uzbekistan was part of Iranian culture prevailed in foreign historiography. The head of the Khorezm expedition repeatedly refuted this thesis and other incorrect arguments in his works[28]. Thus, it can be argued that the largest in the Soviet Union and one of the largest in the world, the Khorezm archaeological and ethnographic complex expedition led by Professor S.P. Tolstov is a unique phenomenon in archaeological science in general, and in Uzbekistan in particular, which had a great influence on the development of historical science.

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TYOLOGY OF OLD TERMIZ MERCURY BOWLS

Temirova Munira Amirkulovna

Teacher of the Department of History and Source Studies of TerSU

Annotation

In this article, the typology and scientific explanation of Mercury Jugs, a rare pottery product of the Middle Ages, found in the territory of Old Termiz and currently kept in the Termiz Archeological Museum, is covered.

Keywords: pottery, narrow-necked and egg-shaped bowls, the size of silver jugs, zigzag pattern, printed decoration, Black Bura monument, Khosiyattepa monuments, pottery wheel, Ornament (decoration).

Like other cities of Central Asia, in the old city of Termiz, different fields of crafts developed in the Middle Ages. Pottery is one of the leading fields of craftsmanship, reflecting not only the material culture of this period, but also the spiritual life and worldview of the population.

Potters from Termiz were also famous for making silver jugs in the Middle Ages. The mercury glasses made by them were sold in many cities of Movarunnahr. As a result of archaeological excavations, along with pottery, many mercury jars were found. Today, more than 200 mercury jars are kept in the exhibition hall and main fund of the Termiz Archaeological Museum. They were found in different areas of Old Termiz. Among them there are the Kara Bura Monument, Old Termiz Castle, Kampirtepa, Muzrabot District, Khosiyattepa, Sherabad District.

Mercury jugs stored in the museum belong mainly to the 9th-15th centuries and were made by hand and on the pottery wheel. The wall thickness ranges from 6 mm to 2.5-3 cm. In addition to mercury jars preserved in archaeological complete condition, there are also a large number of broken ones. We have implemented the typology of mercury and explained it through the following tables.

1. Classification according to the capacity (volume) of mercury cells (Table 1)
2. The degree of similarity (similarity) of mercury cells (Table 2)
3. According to the ornaments.

1-table. Classification according to the capacity (volume) of mercury cells.

№	Classification according to the capacity (volume) of mercury cells.	The number of mercury cells
1	Glasses with a capacity of less than 100 ml	7 piece
2	Glasses with a capacity of 100 ml	39 piece
3	Capacity between 100-300 ml	97piece
4	Capacity between 450-500 ml	2piece



2. The degree of similarity (similarity) of mercury cells (Table 2)

Nº	The degree of variability of the mercury cells	The number of mercury cells
1	Similar capacity	59 piece
2	Similar shape	92 piece
3	Similar ornaments	71 piece

3. According to the ornaments

Nº	According to the ornaments (decoration)	The number of mercury cells
1	Zigzag decoration	2 piece
2	Straight lines decoration	51 piece
3	Printed decoration	24 piece
4	Flower, leaf, plant decoration	25 piece
5	Scratched decoration	8 piece

We have also provided a scientific description of some of the old Termiz mercury crucibles. This mercury jug with intricate geometric decoration is part number SV 32021. The base is 1.5 cm, the outer flange is 2.8 cm, the thickness is 1 cm, and the height of the container is 14 cm. The capacity of this jug is 260 ml. It has been preserved in an archaeologically intact state. It has a dark appearance. (Fig. 1)

TAM 36978/9 kirm digital mercury pitcher. The base is 4mm, the outer flange is 3-3.3mm. The height of the jug is 10.7 cm, the wall thickness is 8 mm, and the flange hole is up to 1 cm. The capacity of this jug is 220ml. The flange part of the mercury tank is broken. The surface is decorated with 4 rows of rings. Sphericoconical (Fig. 2)

SV 32248/123. Archaeologically preserved in a broken state. From the outside, the flange is 2.3 cm, the height is 13.6, the thickness is 8-1.2 cm. The capacity cannot be determined. The circumference of the flange is 6 mm. From the outside, along with the borders, it is decorated with small rectangular shapes. (Fig. 3)

TAM 36978/5 kirm number dish. This jar is different in shape from the previous ones. Because the base is not egg-shaped. It is 1.3 cm. The outer diameter of the flange is 2.4 cm, the height of the container is 11.5 cm, the wall thickness is 8 mm, the hole in the flange is 6-8 mm, the volume of the jar is 120 ml. Externally decorated, the top of the vessel has three rows of parallel lines. On the outer wall there is an image of a leaf in prints. The jar was preserved in an archaeologically intact state. The color is light green. (Fig. 4)

SVAM 4518. Sphericoconical vessel. The base -2 mm, flange 2.7 cm, height 10.3 cm, thickness 8 mm, mouth circumference 1 cm, capacity 140 ml. Decorated with borders on the outside. The outer wall has a 6-line border. There is a 3-line concave in between.



SVAM 1942. Has a complex structure. The base is broken. Flange 2.7 cm, height 12.5 cm, wall thickness 1 cm. The capacity of this beaker is 160 ml. The outside is decorated with dots.

Thus, the peoples of Termiz and Chaganiyan made progress in all aspects of socio-economic and cultural life during the 9th-12th centuries. A comprehensive study of these ceramic vessels found in Termiz shows that the Termiz potters who made them were skilled masters of their craft and achieved great success in this field. They were not only skilled potters, but also skilled painters and possessors of fine aesthetic taste. Found pottery is a clear proof of our idea. Vessels inform us of the highly developed material culture of the Thermists. Among the practical arts that existed in Termez in the Middle Ages, it is necessary to mention household items made of ceramics. Those made in the X-XI centuries are especially noteworthy. Among them, there are unglazed and glazed items. Among the unglazed ones there are vessels of various shapes, and among the glazed ones there are more bowls, plates, and jugs. As in some regions of Central Asia, syrcory pottery is common here. As in other regions of Central Asia, pottery products here are made with fine skill.

In conclusion, it can be said that the comprehensive study of these ceramic vessels found in Termiz shows that the Termiz potters who made them were skilled masters of their craft and achieved great success in this field. Those which were found pottery are a clear proof of our idea.

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Figure 1.TAM 36978/9

Figure 2.



Figure 3.TAM36978/5

Figure 4.



**ECOLOGICAL EDUCATIONAL SYSTEM THE NEED TO IMPROVE THEORETICAL
FOUNDATIONS AND METHODOLOGICAL FOUNDATIONS**

Абдуназаров Лутфилло Маманович
Doctor of Philosophy Pedagogical Sciences,
Ph.D. Associate Professor, of Kokand SPI
lutfillo-abdunazarov@mail.ru

Komilova Umidaxon Sobirjon qizi.
Student of Kokand SPI

ABSTRACT

This article describes the need for environmental education, its relevance today, and the methodological basis of its formation. The article also shows that the main way to protect the environment is to educate an ecologically cultured person and its pedagogical mechanisms.

Keywords: pedagogy, ecology, ecological culture, ecological education, ecological consciousness, pedagogical mechanism, methodology

Today, the need to improve the theoretical foundations of the ecological education system is becoming urgent. The main problem in this process is the formation of methodological and pedagogical aspects of environmental education. The concept of development of ecological education in the Republic of Uzbekistan is "taking into account that environmental problems are gaining global importance, and in recent years, along with important priority tasks, special attention has been paid to the issues of environmental protection, ecological culture, ecological education, ecological enlightenment. The relevance of ecological education is determined by the need to protect the nature, ecosystems, environment of our country from instability and derailment, to increase the ecological culture of the population, to contribute to these very serious and vital issues of all layers of the population, especially young people»[1]. Therefore, it follows that environmental education and upbringing are aimed at eliminating such problems.

On May 12, 2015, a scientific-practical conference on the topic "Development of environmental education and upbringing in our country" was held in cooperation with the "Committee on Ecology and Environmental Protection" and the "Committee on Science, Education, Culture and Sports" of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan. At the conference, the requirements for the modernization of the national education system are emphasized in all areas of science, including the need to reconsider the ecological education and upbringing system. For this, in solving the problems of national environmental education, it was necessary to look at the issue from the point of view of a methodological approach. After all, the methodology of ecological education takes into account the real conditions that have arisen, that is, the legal basis, social situation, economic opportunity, ecological and political situation. The rapid change of the political situation regarding national education leads to rapid adaptation of research on environmental education and upbringing in the Republic of Uzbekistan.



During 2017-2018, the situation in environmental policy and national education changed radically. Ecological education methodology is impossible without taking into account this legal basis, political situation and social situation. It is no exaggeration to say that the national education system has been fundamentally reformed.

For example, 2017 of the President of the Republic of Uzbekistan

According to the Decree No. PF-5024 "On improving the state management system in the field of ecology and environmental protection" signed on April 21, the name of "State Committee for Nature Protection" was changed to "State Committee for Ecology and Environmental Protection". He was entrusted with a number of tasks aimed at improving the ecological situation and raising the ecological consciousness and culture of the population. The activities of the Council of Agencies "Sustainable Development (Development)" under the Committee were revised. Environmental education and upbringing was assigned the task of re-examination in accordance with the UN's "Sustainable Development Concept" taking into account the reforms in education.

Preschool education in the national education system is now based on the decision of the President of the Republic of Uzbekistan dated September 9, 2017 No. a commission was formed to develop proposals for improvement. The Law of the Republic of Uzbekistan "On Preschool Education and Training" dated December 16, 2019 and the Ministry of Preschool Education of the Republic of Uzbekistan (MTV) and the State Committee for Ecology and Environmental Protection (Uzdavekology) **dated August 6, 2019** Uzbekistan 2019 of the Cabinet of Ministers of the Republic 7/1 and 6 on "Measures for the development of environmental education and upbringing in preschool educational organizations " in order to implement the decision No. 434 dated May 27 "On approval of the concept of development of environmental education in the Republic of Uzbekistan" In the joint decision , the task of reconsidering environmental education and upbringing was assigned.

Pedagogical methodology is a way, or rather a mechanism, of planning, formalizing, implementing, controlling, monitoring, evaluating and concluding based on pedagogical laws and regulations. It is appropriate to consider the mechanism of ecological education in national education as an ecological-pedagogical methodology.

In general, in order to choose methods in environmental education and introduce them into the continuous national education system, first of all, it is necessary to identify, analyze and determine the real conditions and the factors affecting them. After all, the social status of the local population, that is, its employment, social protection, indicates its attitude to the natural environment. And the economic opportunity is directly related to the material and financial opportunities in which methods are used in education . The ecological situation is directly related to the application of the methods of practice . If the legal basis of environmental education and the foreign and domestic policies of the state do not match, the need to apply certain methods in practice will disappear.

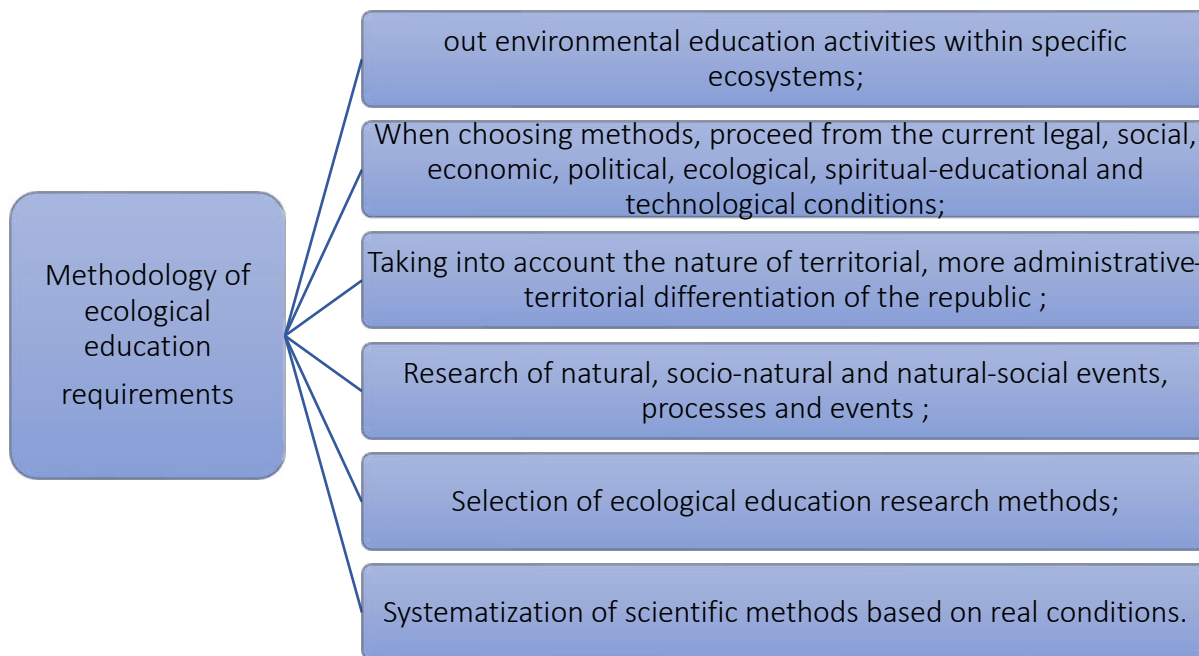
The object of ecological sciences is natural or anthropogenically changed ecosystems, and the subject is their protection, rational use and restoration. The difference between disciplines in ecology can be either the object or the subject, or both. In any case, ecological sciences examine various aspects of natural, social and natural-social phenomena, processes and situations (natural, economic, social, political, legal, spiritual-educational) within the framework of its three main research subjects - natural, social and natural-social phenomena that have passed, are passing and may pass. should reflect. That 's when research becomes ecological.

From a philosophical point of view, the methodology of environmental education is the selection of methods aimed at imparting knowledge, skills and qualifications about the natural, socio-natural and natural-social reality, processes and events occurring in ecosystems in a real social, economic, political, spiritual-educational, legal,



ecological situation . and systematization . In the narrow sense, it consists of a system of teachings related to the methods of scientific knowledge .

Requirements of ecological education methodology



By approaching the broader philosophical meaning of the methodology, the following requirements can be distinguished in the methodology of environmental education:

- conducting environmental education research within specific ecosystems;
- when choosing methods, proceed from the current legal, social, economic, political, ecological, spiritual-educational and technological conditions;
- taking into account the territorial, more administrative-territorial differentiation of the republic ;
- research of natural, socio-natural and natural-social events, processes and phenomena;
- selection of environmental education research methods;
- Systematization of scientific knowledge methods based on real conditions .

social conditions in the methodology of ecological education , it is necessary to take into account the socialization of research, that is, the assimilation of the system of knowledge, norms and values that allows a person to live in society[2;147]. Scientific knowledge of natural, socio-natural events, processes and phenomena consists in researching the comparison of natural, anthropogenic-natural, anthropogenic-natural processes occurring in the ecosphere without human activity and as a result of human activity.

systematizing pedagogical methods considered necessary for the scientific knowledge of the requirements listed above. Because pedagogical research methods are not chosen by themselves. First of all, existing ecological education methods should take into account the legal basis, political situation, economic opportunity, social conditions, spiritual and educational level and ecological situation.



The main goal of the concept of development of ecological education in the Republic of Uzbekistan is the formation and development of ecological knowledge, consciousness and culture in the growing young generation, the effective organization of the ecological education process, as well as the further improvement of science in the field of ecology, involving the world's advanced innovative technologies.

- " On Education " and " On Nature Protection ", defining the main principles of the development of environmental education in the continuous education system, consistently applying them to the educational process step by step, and based on this, bringing the effectiveness of environmental education to a new level;
- organization of environmental education, promotion of environmental knowledge, publishing activities, holding of contests, social advertising and the like;
- improvement of educational programs based on the elimination of existing environmental problems and the requirements of the times;
- by drawing the attention of students to universal environmental problems, increasing their responsibility for preserving non-renewable resources of mother nature and their rational use;
- development and implementation of effective forms and methods of environmental education;
- creation of a normative-legal, material-technical and informational base that ensures the quality of environmental education, the effectiveness of the personnel training system, the guarantees and priority of its sustainable development;
- development of mutually beneficial cooperation of state bodies on ecology and environmental protection in the field of education. These are also important tasks for the development of ecological education.

When choosing environmental education methods, we need to use a systematization or systematic approach. The systematic approach requires that the process of scientific knowledge begins with a hypothesis, concept, plan, develops or refines its theoretical basis, and carries out the methods of its practical application in a certain hierarchy (on a ladder of parts).

This methodological requirement in ecological education research, for example, first determines the situation in providing knowledge about Lower Zarafshan agrosystems, then chooses educational methods, and then encourages the use of analytical methods.

In the theory of ecological education, the correct choice of the modern methodological basis, the placement of methods according to the types of education and the application of the methods based on its requirements, means the authenticity, validity and practical significance of the obtained results.

In short, if it is not possible to directly include environmental education and training as an independent course or module in the curriculum, then it can be applied to all related subjects.

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**THE IMPORTANCE OF THE NEW DEVELOPMENT STRATEGY IN THE
DEVELOPMENT OF THE TOURISM SECTOR**

Madior Mamanazarovich Turdiev,
Teacher of Chirchik State Pedagogical University

Annotation

In the development strategy, within the framework of the tasks set for the complex socio-economic development of the regions, the purpose of working with the regions in the field of tourism is included in the priority tasks.

Key words: development strategy, tourism, social policy, tourist zone, travel, tourist services, financial policy, international trade.

ЗНАЧЕНИЕ НОВОЙ СТРАТЕГИИ РАЗВИТИЯ В РАЗВИТИИ СФЕРЫ ТУРИЗМА

Турдиев Мадийёр Маманазарович,
Чирчиқ давлат педагогика университети ўқитувчиси

Annotatsiya

Taraqqiyot strategiyasida hududlarni kompleks ijtimoiy-iqtisodiy rivojlantirish bo'yicha belgilangan vazifalar doirasida hududlar bilan ishlashning turizm sohasiga bag'ishlangan maqsadi ustuvor vazifalarga kiritilgan.

Аннотация

В стратегии развития в рамках поставленных задач по комплексному социально-экономическому развитию регионов в число приоритетных задач включена цель работы с регионами в сфере туризма.

Kalit so'zlar: taraqqiyot strategiyasi, turizm, ijtimoiy siyosat, turistik zona, sayohat, turistik xizmatlar, moliyaviy siyosat, xalqaro savdo.

Ключевые слова: стратегия развития, туризм, социальная политика, туристическая зона, путешествия, туристские услуги, финансовая политика, международная торговля.

Within the framework of the Action Strategy for the five priority areas of development of our country in 2017-2021, during the past period, about 300 laws and more than 4,000 decisions of the President of the Republic of Uzbekistan aimed at radical reform of all spheres of state and community life were adopted.

Also, systematic work was carried out to ensure human rights, strengthen the accountability and openness of state bodies, and increase the role of civil society institutions, mass media, and the political



activity of population and public associations. In terms of reforming the national economy, effective measures to liberalize foreign trade, tax and financial policy, support entrepreneurship and guarantee the inviolability of private property, organize deep processing of agricultural products and ensure rapid development of regions was seen. Strengthening the social protection of citizens and reducing poverty is defined as the priority of the state policy, and providing the population with new jobs and a guaranteed source of income, qualified medical and educational services, and decent living conditions has reached a new level in terms of quality. was raised. As a result of the reforms of the last five years, the necessary political-legal, socio-economic and scientific-educational foundations for the establishment of New Uzbekistan were created in our country. Based on the in-depth analysis of complex global processes and the results of our country's progress, in the following years, based on the principle of "For human dignity", we will further increase the well-being of our people, transform economic sectors and rapidly develop entrepreneurship, unconditionally ensure human rights and interests, and in order to determine the priority directions of reforms aimed at forming an active civil society:

1. As a result of public discussion, the development strategy of New Uzbekistan for 2022-2026, which consists of the following seven priority directions, developed on the basis of the principle "From the strategy of actions to the strategy of development", was adopted:
 - building a people-friendly state by increasing human dignity and further developing a free civil society;
 - making the principles of justice and the rule of law the most basic and necessary condition for development in our country;
 - rapid development of the national economy and ensuring high growth rates;
 - conducting a fair social policy, developing human capital;
 - ensuring spiritual development and bringing the industry to a new level;
 - approach universal problems based on national interests;
 - strengthening the security and defense potential of our country, conducting an open, pragmatic and active foreign policy.
2. Within the framework of the tasks defined by the social protection policy aimed at glorifying human dignity in the development strategy:
 - a) Until 2026, the needy population should be fully covered with social benefits and financial assistance.
 - b) In the Republic of Karakalpakstan and Khorezm region, it should be possible to provide free meals (breakfast or lunch) to first-fourth grade students at the expense of the State budget.
 - c) From January 1, 2023, the maximum amount of salary for pension calculation should be increased from ten times to twelve times the basic amount of pension calculation.
3. In 2022, in order to introduce the "active" model of the neighborhood, to provide it with the necessary resources and opportunities to directly solve the problems of the population and develop the area: the activities of district (city) mayor's assistants and youth leaders on the issues of entrepreneurship development, employment provision and poverty reduction introduced as a new institution in the neighborhoods should be effectively launched;



the procedure for leaders of all levels to come to the neighborhood, study problems in their direction and find solutions to them should be introduced, and the state of affairs in the neighborhood should be defined as the main criterion for evaluating the activities of the ministry, administration and hokims; to create a system of contacting all state bodies from the neighborhood and communicating with their leaders, to provide state and social services directly in the neighborhood, including by establishing effective relations with the reception offices of the President of the Republic of Uzbekistan, to increase the prestige of the neighborhoods in front of the people ;

the powers of citizens' self-management bodies in solving socio-economic problems in neighborhoods should be reviewed and their financial capabilities expanded;

based on the "growth points" of the neighborhoods and the specialization of the population living in them in business activities, the efficiency of the state support system for the population living and working in them should be increased;

measures to create infrastructure such as sports and cultural facilities, creative clubs, employment support and training centers, and business facilities should be implemented in the territory of the neighborhood on the basis of public-private partnership;

to create the legal basis for constant communication of the neighborhood with local representative bodies, including establishing effective mechanisms for introducing issues that must be considered by the chairman of the neighborhood at the meeting of the local Council;

to introduce the institution of citizens expressing no confidence in the chairman of the neighborhood.

4. In 2022, as part of the tasks set for improving the quality of education in the development strategy:

a) Starting from April 1, payments of up to 3 million soums per month of parents sending their children to non-state preschool educational organizations and schools shall be exempted from income tax.

The Ministry of Finance together with the State Tax Committee should submit to the Cabinet of Ministers drafts of regulatory legal documents, which provide for the introduction of relevant amendments to the Tax Code and other legislative documents within two months;

b) in order to adapt the secondary education system to modern requirements:

to allocate 605 billion soums from the State budget for the implementation of the textbook renewal program in general secondary educational institutions;

141 thousand new educational places should be created and their number should be increased to 6.4 million by the end of 2026.

It is intended for the tourism sector in the 35th goal of the task of building a people-friendly state by increasing human dignity and further developing a free civil society.

Goal 35: increase the number of domestic tourists from 12 million and increase the number of foreign tourists visiting the republic to 9 million within the framework of the "Travel around Uzbekistan" program. Broad introduction of barrier-free tourism infrastructure in the main tourist cities of the country. By 2026, the number of people employed in tourism should be doubled to 520,000.

Adoption of the state program on the development of the infrastructure of tourism and cultural heritage objects and the effective use of more than 8 thousand cultural heritage objects.



Construction of additional tourist zones and recreation centers in Zomin, Forish, Bakhmal districts and "Aydar-Arnasoy" lake system, implementation of projects worth 300 million US dollars, creation of 25,000 jobs.

To increase the volume of tourism services at least 10 times in the next five years by turning Samarkand into a "Tourism Gate". Ensuring employment of 40,000 people in the field of tourism. In 2022, the establishment of the Samarkand tourism center, including the historical complex "Eternal City", and the necessary infrastructure.

Implementation of a special program for the development of ecotourism in the Republic of Karakalpakstan and the island. In this case, wide use of the possibilities of the new airport of Moynak. To adopt a special program to make tourism the main driving force in creating new jobs in Khorezm region.

Implementation of a special program for rapid development of tourism in Bukhara region.

Effective use of pilgrimage and ecotourism potential in Navoi region.

Further improvement of tourism infrastructure in Tashkent city.

Development of a special program for bringing tourism potential to a new level in Tashkent region.

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**METHODS OF RAPID REPRODUCTION OF PINEAPPLE
(ANANAS COMOSUS (L.) MERR)**

Bazarova Ruzigul Shakarovna
Senior Lecturer of Gulistan State University

Kuliev Tojiddin Hamdamovich
Associate Professor of Gulistan State University

Annotations

This article provides recommendations on methods of reproduction (vegetative: rosette of leaves, using sucker and seeds) of pineapple (ananas comosus. L. Merr). For vegetative propagation, it is recommended to use a rosette of ripe fruit leaves, which can be: a) immersed in water; b) place over water c) plant in sandy soil. It is also stated that pineapple can be propagated using seeds. It will be possible to propagate and grow this plant in the future in the conditions of our country. It plays an important role in the employment of the population and the production of medicine

Keywords. pineapple, vegetative propagation, rosette of leaves, sucker, medicinal, ornamental plant, reproduction, greenhouse.

Enter. Although many types of medicinal plants are widespread in our republic, the cultivation of those suitable for subtropical and tropical climate conditions in our territory creates unique difficulties. This is due to the fact that our climate is strongly continental (hot in summer and cold in winter). For this reason, it is important to establish the cultivation of medicinal and ornamental plants suitable for subtropical and tropical climatic conditions. Such plants include pineapple *Ananas somosus* (L.) Merr-plant. Pineapple contains vitamins (S, carotene, V1, V2, V5, V12), minerals such as calcium, phosphorus, iron, copper, iodine, zinc, and magnesium. Bromelain, a biologically active substance contained in pineapple fruit, prevents the formation of blood clots and improves digestion. Pineapple has anti-microbial and anti-inflammatory effects. It has a diuretic, blood-thinning property. It is useful in vitamin deficiency (avitaminosis), when the walls of blood vessels (arterial vessels) are brittle. The amount of vitamins in pineapple varies depending on the biological characteristics of varieties and lines. It was determined that the amount of vitamin C is 73-116 mg/100 ml [5].

Pineapple fruits are mainly sold after the fruit ripens. We know that pineapple fruit is harvested in its homeland mainly at the technical ripeness of the fruit. During this ripening period, the fruit contains a lot of caustic substances, so when this fruit is eaten, it gives a bitter taste and stings the teeth [2].

At the same time, it is possible to grow the pineapple plant in greenhouses, greenhouses with trenches and at home, and to get additional income by selling the harvested crop.

Analysis of literature on the topic

Pineapple fruit is famous for its nutritious and delicious fruit[1]. Among tropical fruits, the trade volume of pineapple fruit takes the leading place[2]. China is one of the main pineapple-growing



countries, and it is grown mainly in the cities of Guangdong and Huanganda [3]. Comte de Paris is the main pineapple variety grown in China. The cultivated area of this variety is 80% of the main pineapple cultivated area[4]. "Comte de Paris" fruit is fragrant and sweet, and has a longer shelf life than other varieties. The color of the fruit is tanned[2]. It should be mentioned that despite the beautiful fruit of the "Comte de Paris" variety, its acidity is high, which leads to a decrease in the quality of the product. The only way to quickly and efficiently propagate a pineapple plant is through tissue culture. Good results have been reported in pineapple plant propagation (Kiss et al., 1995; Firoozabadi and Gutterson, 2003) and protection (Souza et al., 2006) using this method. Propagation of the pineapple plant in this way has several advantages over the traditional method, allowing to obtain a large number of disease-free plants in a short period of time. The use of such methods, in turn, satisfies the demand for seedlings of this plant in our republic.

In its place, it should be noted that there is not enough information on the propagation of the pineapple plant in the conditions of our Republic. Based on this, this article is intended to provide information on the methods of growing pineapple plants in room conditions.

It will be possible to obtain reproduction from the pineapple plant and grow this plant in the conditions of our country in the future. It is of great importance for the employment of the population and the production of medicines.

Research methodology (Research Methodology). The research was conducted in the "Field Experiment Field" and "Experimental Biology" laboratory and greenhouse of Gulistan State University. The genotypes of pineapple (*Ananas comosus* (L.) Merr) introduced from Costa Rica and China were taken as the research object. Vegetative parts of introduced pineapple cultivars were grown under laboratory, room and greenhouse conditions.

Analysis and results. Pineapple propagation methods are generally three methods: from seed, from rootstock, and from cuttings. Most are propagated vegetatively. 1. Vegetative reproduction. 2 different methods can be used for vegetative propagation of pineapple. Both methods use a rosette leaf.

Growing from a rosette leaf. Ripe pineapple fruit is selected to separate the rosette leaf. For this, the leaves collected in the socket are cut from the fruit. It is necessary to be very careful in this process, if the part where the leaf is located is damaged, it will be difficult to form roots. A section cut from the pineapple fruit is dipped in coal ash and left to dry for several days. If the rosette leaf is not dried, then the process of rotting occurs. The cut socket is immersed in water to form a root from the leaf or left without touching the surface of the water. The rosette can be planted directly in the soil, sand or humus if there are varieties with a lot of root suckers when the leaf bar and lower leaves are removed (Fig. 1).

First of all, it is necessary to pay attention to air temperature and humidity in vegetative reproduction. Rosette leaves are placed in a bright room with an air temperature of 24-26 °C, without direct sunlight. After the rosette has formed 7-9 roots on the leaves, it is planted in humus soil. If the seedling is well harvested, it continues its vegetation and begins to grow by forming new leaves from the tip.



Figure 1. Vegetative propagation of pineapple plant

In the second method, the rosette leaf is divided into 4 parts and the excess leaves are cut off. It is treated with potassium permanganate, planted in the soil and watered. After a certain period of time, a new plant will grow from each planted piece, and one socket will allow you to get 4 seedlings from a leaf.



Figure 2. Planting pineapple rosette leaf in soil

Research conducted in laboratory conditions showed that in our conditions, the height of the pineapple plant in the first year was 11-15 cm, the root length was 11-14 cm, and the number of leaves was 6-7. In the first year, the leaves formed on the pineapple plant have a flat edge and a yellow tip. In the second year, the pineapple plant developed rapidly. In the second year - 33-37 cm, number of leaves - 18-21, length - 19-46 cm and width - 4-6 cm. This shows that the pineapple plant grew rapidly in the second year, as we noted above. In the second year, small teeth are formed on the leaves of pineapple. This situation is not observed in the first year pineapple plant.

2. Propagation using vegetative suckers. In some varieties of the pineapple plant, in the lower part close to the root, in some varieties, when the life cycle ends, it forms tubers (suckers). These suckers are very small growths that form under the fruit band. It should be noted here that not all pineapple varieties produce such small growths. For example, in the variety "Smooth Cayenne" distributed in Australia. If the seedling has a root and the growing points are not well preserved, after five to six months, a growth will begin to grow from under the socket leaf. When the size of the plant increases, the old one



is cut after it starts to dry gradually, the lower leaves are removed, and if it is put in water, roots will appear after a few days.

It is known from world experience that it is possible to get several reproductions from a pineapple plant by collecting cuttings every two to three months. For this, it is recommended that the length of the shoots be 10-15 cm, and they should be carefully taken and planted. This method requires low cost. If there are many roots formed in the pineapple plant and they are not removed in time, it will affect the yield. As a result, the growth and development of the pineapple is negatively affected, causing the fruit to shrink.

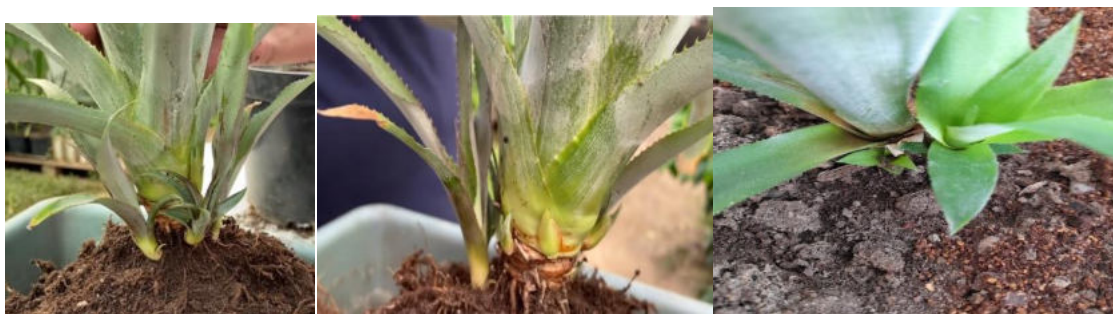


Figure 3. Planting a pineapple seedling in the soil

Propagation from seed. A poorly developed fruit is unsuitable for seed. A self-pollinated pineapple plant produces very few seeds and is not suitable for planting, but if it is planted from self-pollinated seeds, the fruit of the plant will be small and wild. Therefore, pineapple varieties are planted side by side. For this, the duration of the vegetation periods, especially the flowering phases, are selected varieties. In this case, the varieties are pollinated by insects and viable seeds are obtained. A ripe pineapple plant produces 4.0 x 15 mm yellow-brown, sickle-shaped, bent seeds. The appearance of the pineapple fruit is similar to a flax seed. Before sowing, the seeds are washed in pink potassium permanganate water and dried. Before planting, the seed was planted to a depth of 2 cm in the soil medium, the composition of which consisted of a mixture of humus, peat and sand. After planting, it is watered and covered with glass or polyethylene. Water was sprinkled from time to time (Fig. 4). A pineapple plant grown from seed produced a rosette of 7-11 cm, 7-9 leaves in the first year. The depth of the root was 5-6 cm, the number was 11-15. Conclusions and recommendations:

1. It is advisable to use the genotypes introduced from Costa Rica and China for vegetative propagation of the pineapple plant (using a rosette leaf).
2. To grow pineapple in room conditions, the temperature should be 24-26°C.
3. The pineapple plant can be propagated using seeds. For this, pineapple seeds are planted in special containers. After the seed germinates, it is transplanted to another place.



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RAISING CHILDREN IN MODERN FAMILIES

Òrinboyeva Munisa Oybek qizi

Student of Practical Psychology at the Karakalpak State University,
Faculty of Sociology, Department of Pedagogy and Psychology, Berdaq University

ANNOTATION

Today, through an influential social institution, such as a family, children are considered one of the most important issues in developing a belief in values, thereby fostering a positive moral relationship with the family. Taking into account these unique jigsaw puzzles, we tried to think about it in the article.

Keywords: A stable and strong family, a family the eternity of life, family is a fundamental part of society, family and educational institutions.

ABSTRACT

One of the pressing issues today is the formation of children's respect for values through an impactful social institution as a family, through which a positive moral relationship with the family is formed. We tried to give an opinion in the article on the case when we took into account these peculiar qualities...

Keywords: stable and strong family, the family is the eternity of life, the family is the main link of society, the family and educational institutions.

The Uzbek people have long been distinguished from other peoples by their oilaparvarism and childhood. This, of course, is in its own way to love a child, to idolize their stomachs full and pillared, but to make our children as highly spiritual people from in childhood (Matthew 24: 14; 28:19, 20) Jehovah's Witnesses would be pleased to discuss these answers with you. In the meantime, our first president, I.A. Trump, said: "When we talked about the family, first of all, the family preserved our sacred traditions, ensuring the eternity of life, the continuity of generations. At the same time, we need to recognize that future generations are a place of upbringing that directly affects what kind of person they grow up to be." These comments by our first President emphasize the unscrupulous role of the family, first and foremost, in upbringing beliefs and a healthy world. Therefore, based on all educational work related to the upbringing of children in the family and neighborhood system, is the responsibility of studying the laws governing the bottom line. This depends on the application of the results achieved by studying their social psychological conditions to practice. Because in order to form a stable and strong family, where we explore the traditions of family life and re-study national traditions based on the demands of time. To assist individuals desiring to benefit the worldwide work of Jehovah's Witnesses through some form of charitable planning, a brochure has been prepared in English and English. (Matthew 24: 14; 28:19, 20) Today, through an influential social institution, there is a belief in such values, thereby positive morality toward the family forming relationships is one of the most pressing issues. (Matthew



24:14; 28:19, 20) It is important to establish moral and ethical relationships in this holy place and to educate them as perfect people with a healthy faith and a new mind during today's reforms is an issue. The government of Uzbekistan considers family issues a priority that must be carried out at the level of government policy. Article 63 of the Constitution of the Republic of Uzbekistan states that the family is considered the main part of society and has the right to be protected by society and the government. Other legal acts on the protection of motherhood and childhood have also been adopted and practical measures have been set out. For example, on August 22, 1994, a decree was issued "On the Social Welfare of Low-income Families" to provide material and spiritual assistance to families in need of assistance the scope has been expanded. Improving the place and participation of families in the prosperity of society, improving the legal, socio-economic, moral and ethical interests and well-being of families 1998 was declared the "Family Year" in the Republic of Uzbekistan to strengthen its support and ensure consistent support. Accordingly, a government program has been developed on measures to ensure the interests of the family. Before the Women's Committee of the Republic of Uzbekistan, the Regional Family Scientific Practical Center was established. The Family Code of the Republic of Uzbekistan has been adopted, dedicated to legal regulation of family life issues. Announcement of the Family Code, marriage agreement, which is new to U.S. law, the establishment of a breed of relatives and children, the payment of food, important rules such as the rights of children in the family and obligations to provide material support to their parents, and the protection of the rights and interests of children who are deprived of parental snowflakes family On February 2, 1998, before the National Women's Committee, the Family Scientific Practical Center to promote moral relationships with the family, to harmonize national traditions, human values, and to improve the legal literacy of family members The woman was put in the am. Indeed, child rearing is a very delicate process. First of all, the trainer himself must have incorporated a specific goal. Both democratic and humanitarian ideas, legal thinking based on the superiority of our national values, national ideologies in feeding spiritual food, love for labor awakening, all of them are exactly in harmony with discipline. However, parents who are considered family educators, educators in kindergartens, as well as schoolteachers and unmarried persons Responsible employees of youth work inspectors should also be responsible for training. Otherwise, causing a major deterioration behind a coveted problem in families and losing faith in life in it can lead to a loss. Of course, the main places of socialization—schools, neighborhoods, and the Governing Body—play a role in the development of an individual's mind and minds. Nevertheless, family relationships determine the basis of a child's social orientation. In the meantime, our great-grandfather Abu Ali Ibn Sino is one of the paintings that have been painted in almost all aspects of science.

(Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to assist you in studying the Bible. A family is a small debacle of society's life and is an extremely important place of upbringing that is responsible for bringing up a healthy, perfect generation in all respects.



We may not have made a mistake if we call all members of the Uzbek family literate and informed, and with these opportunities, boys and girls are growing up to be educated, thoughtful, poverty-stricken, businesspeople, and intellectuals.

Raising children in the family will be a major factor, and parents will not be satisfied with teaching their children morality, spirituality, and spirituality, but they themselves will have to be aware of the newest information about the secrets, characteristics, content, and meaning of discipline .

Parents who are able to raise their children wisely spend their lives in comfort and well-being, always see kindness, kindness, goodness from their children, their hearts never suffer the torment of anger; they do not suffer a sense of remorse. The following article in the Uzbek people reads: "If the wedding grows up, the horse will be silent (that is, the horse will be saved from riding)."

The father, who is the main pillar of the family, tastes all the hardships of life and is portrayed as a great person who is distinguished by his unbreakable will, justice, and resilience to the trials of life.

The father is the head of the family, the guardian. After all, it is up to the father to take human responsibility, such as getting to know every eye-catching point of the family, showing only the right path to family members, the thief.

The father sets an example of integrity and accuracy, sincerity, and integrity in all aspects of his family, speech, culture of interaction, and, most importantly, practical work.

A murky imaginative child receives the first upbringing in the family. Regarding the first lessons of child rearing, renowned Uzbek teacher Abdullah Avloniy said in his book Turkish Gulf or Morality: "Tarbia was born It is necessary to start the day, to persecute our bodies, and to climax our bodies." It is desirable that the reputation of adults in the family is built, not on the basis of intimidation, but at the time of sincerity and mutual respect. A child's kindness, mutual harmony, dress culture, work, conversations about others, and other qualities and qualities of a child to bring new symbols to their imagination.

Family upbringing plays an important role in a child's future growth, a child initially builds the image of society in the family, the rights and duties, worldliness and moral views of a prospective citizen it forms in the family, on this basis, it is physically and spiritually perfect. It is a source of family health, cultural, spiritual and moral values, traditions, social and life experiences, skills, and skills for a child.

(Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to discuss these answers with you. depends.

On the basis of these relationships, a person looks at life in some way, understands the world through his thinking, and shapes his attitude toward him, and is raised in the dream of certain moral criteria Because family upbringing has a profound effect on children's mental world, personality, and feelings regarding social upbringing.

The spiritual environment in the family and the upbringing of children are extremely important, and the way family members live often determines children's spirituality, imagination, and personality. So the family is responsible to society for raising a healthy, perfect person.



Everyone raised in the family must have incorporated from every jigsaw puzzle a sense of perfection in human morality, science, beliefs, and other fields, seeking perfection. Gradually, a person begins to recognize the universe, himself.

Perfection means that inson is just, that he seeks truth and goodness, that he is conscientious, that he understands his mistakes, and that he tries to get rid of them, enriching spirituality, faith. Being faithful, intelligent awakens people from anger and fulfills all the acoustics of the good language.

Bringing up the younger generation as perfect, healthy, able to feel the sense of God depends primarily on the family and parents.

To awaken confidence in the future in the younger generation, it is aimed at deeply teaching the moral and ethical heritage of our ancestors and directing their talents and abilities to great goals it's suitable.

For example, the increase in material wealth in families, the misuse of it by parents and children, the consumption of life in part of adolescents, the view of nutrition, the abyss, it produces selfishness, and the mood of making hardworking wealth increases.

In conclusion, there are national rules for raising children in the family, and parents should make appropriate use of them. If the family has spiritual and spiritual well-being and mutual harmony, if family members care for each other, if they can find a sticking point for raising a child, such an environment will help them raise a child and they will give their children real happiness, thereby developing our work and moving forward in our society.

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**GOLD GEOMETRIC ELEMENTS AND THEM COMPOSITE ARTISTIC GRAPHIC
COMPOSITIONS**

Sh. Abdurahmanov

Pedagogue, Associate Professor (NamMQI),

M. Qodirova

Master's Student of QDPI

D. Kholdorova

Master's Student at the National Academy of Sciences

Annotation

The scientific article highlights the material associated with geometric figures called “golden elements” and artistic compositions like pentagons, pentagons, decagons, Penrose mosaics created with the participation of such elements.

Keywords: golden dot, golden ratio, golden triangle, golden gnomon, Robinson triangle, golden rectangle, golden rhombus, Penrose tiling.

Аннотация

Илмий мақолада “тилло элементлар” деб номланувчи ўнлаб хил геометрик шакллар ва улар иштирокида ҳосил қилинадиган, пентакл, пентагон, декагон, Пенроуз мозаикаси каби ўнлаб хил бадиий график композициялар ҳақида сўз юритилган.

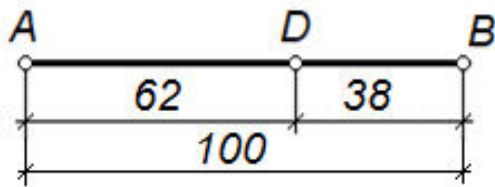
Калит сўзлар: тилло нуқта, тилло тўғрам, тилло учбурчак, тилло гномон, Робинсон учбурчаги, тилло тўғри тўртбурчак, тилло ромб, Пенроуз мозаикаси.

Аннотация

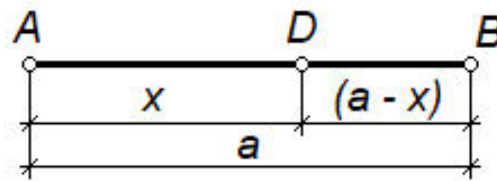
В научной статье освещен материал, связанный с геометрическими фигурами, называемыми “золотыми элементами” и художественными композициями на подобие пентаклов, пентагонов, декагонов, мозаик Пенроуза, создаваемыми с участием таких элементов.

Ключевые слова: золотая точка, золотое сечение, золотой треугольник, золотой гномон, треугольник Робинсона, золотой прямоугольник, золотой ромб, мозаика Пенроуза.

Gold point. This is such a point D that it divides the section AB lying on a straight line in the ratio of 62 : 38 (Fig. 1).



1-figure.

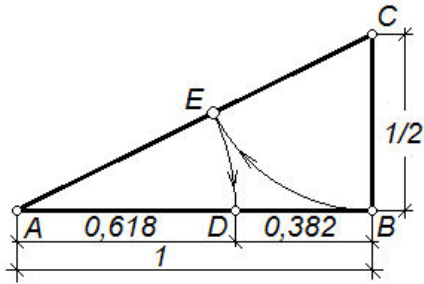


2-figure.

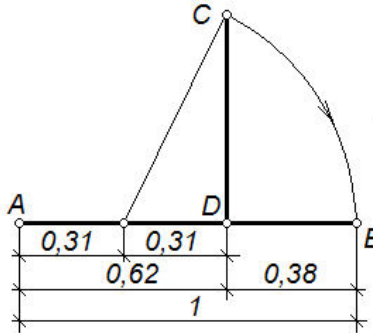
The Golden Ratio ("Golden grain"). The ratio of two numbers in the form of $62 : 38$. This phrase is used in the form of "The Golden Ratio" in English, "Aurea Ratio" in Latin, and "Zolotoe sechenie" in Russian. Its origin is based on the idea of "dividing the cross-section in the edge and middle ratio" first put forward by Pythagoras (6th century BC). In this case, the cross-section is divided into two parts such that the ratio of the length of the cross-section a to the long part x is equal to the ratio of the long part x to the short part $(a - x)$ (Fig. 2). It is possible to express this statement in the form of $a : x = x : (a - x)$ proportion (mutual equality of two fractions), create an equation in the form of $x^2 + ax - a^2 = 0$ based on it, and use the expression to determine the positive value of the number x . According to this expression, the division of the section AV into the edge and middle ratio produces the ratio $AB : AD = AD : DB$. If $|AD| = x$; $|AB| = 1$, we get the exact arithmetic value as ... $DB = 1 - x = 0.382\dots$. Let's say, if the section has 100% length, then its edge and middle ratio is divided into the long part (62%, the short part is 38%. This $62 : 38$ ratio is the "golden slice" ("golden grain") in the section.) is called.

Conditionalities in defining the elements of the golden ratio. In the scientific literature, the quantity a in Figure 2 is denoted by the Greek letter F (phi) and its $1.618\dots$, AD in this drawing is 1 of the quantity, $|DB|$ it is emphasized that the magnitude is equal to $F - 1 = 0.618\dots$. The last quantity is also found in the form $1/F = (-1)/2 = 0.618$.

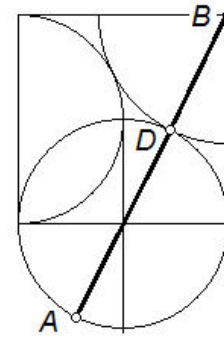
Different names of "Golden piece". Euclid (365 - 355 BC) called the "golden ratio" as "the correspondence of the edge and the middle" [5], Abu Ali ibn Sina (980 - 1037) called it "harmonic proportion" [1], Luca Pacoli (1445 - 1517) as "divine proportion", [5] Johann Keppler (1571 - 1630) called it "one of the two treasures of geometry". It is said that Leonardo da Vinci (1452 - 1519) introduced the phrase "golden plate" into scientific circulation. In books, this phrase is also found in views such as "Golden proportion" [Vasyutin], "Non-symmetrical symmetry" [6].



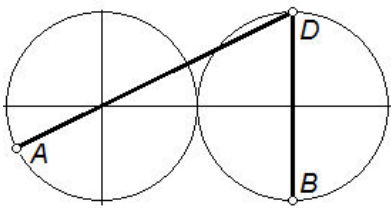
3-figure.



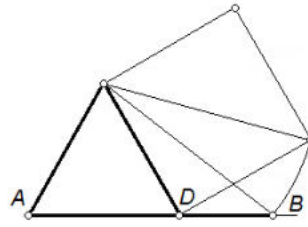
4-figure.



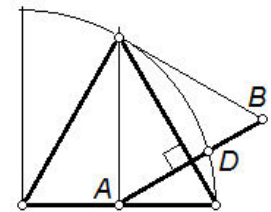
5-figure.



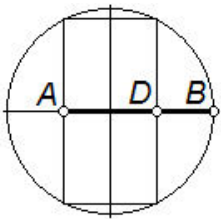
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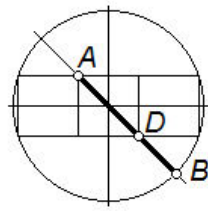
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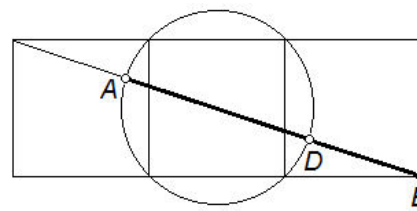
v)



g)



d)



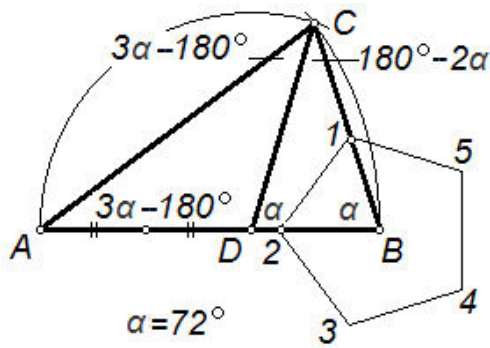
e)

6-figure.

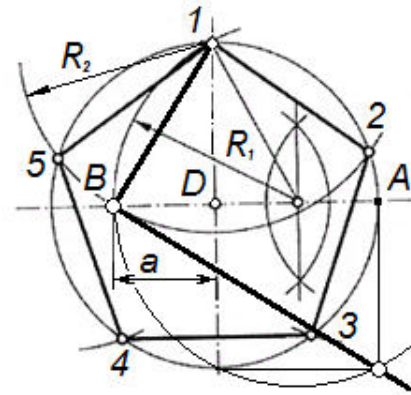
Creating a gold log by making geometrical cross-sections. Figure 3 shows the procedures for creating a gold log by internal geometric cutting of section AB and Figure 4 by external geometric cutting of section AD. Along with this, if you look at the scientific literature devoted to the research of gold leaf, you can witness that there are hundreds of ways of creating gold leaf by geometrical construction. Figure 5 and Figures a-e in Figure 6 show some examples of evidence supporting this idea.

Golden triangle. This is an equilateral triangle whose side a and base b form a rhombus. The angle between the sides is 36° , and the angles attached to the base are 72° (Fig. 7, (BCD)).

Gold gnomon (Gold scale). It is an equilateral triangle such that one of its mutually equal sides forms a ratio of $1/F$ to the base. The angle between the sides is 108° , the angles adjacent to the base are 36° (Fig. 7, $\triangle ACD$).



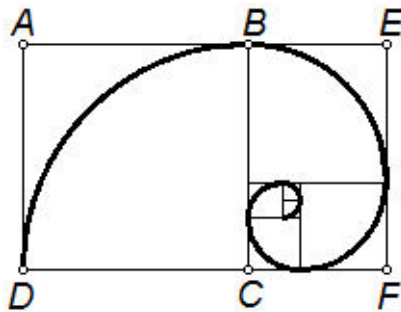
7-figure.



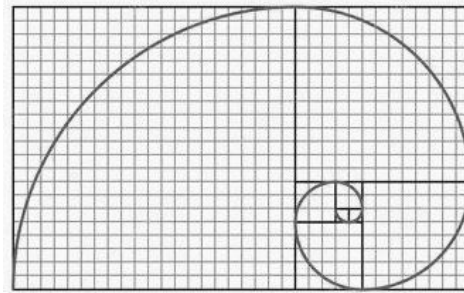
8-figure.

Robinson's triangle. These are two adjacent triangles with one common side, one of these triangles serves as a **golden triangle**, and the other triangle serves as a **golden gnomon** (Fig. 7, (ABC)). Based on the properties that work in the process of constructing the Robinson triangle, dividing the Euclidean circle by equal 5 (7 -figure) found a way [5]. Ptolemy (II century) used the properties of the geometry of the golden circle from Robinson's triangle to solve the problem of dividing the circle by 5 (figure 8). Based on some properties of this triangle, Abu Ali ibn Sina divided the circle into 10 Albrecht Dürer (1471 – 1528) proved that the distance a in Ptolemy's drawing is equal to one side of a regular 10 angle inscribed in a circle [3]. In the literature on the Golden Triangle, it is written about the formation of a logarithmic spiral by means of a decreasing or increasing series of Robinson's triangle. is also mentioned.

Gold rectangle. A rectangle with side 1 and side 0.618... Archimedes (287 - 212 BC) found that if a square with sides equal to 0.618 is removed from a golden rectangle, another golden rectangle is removed from the remaining part of the rectangle, and a new golden rectangle is formed (Figure 9). Albrecht Dürer showed that if a quarter circle is drawn on each of these squares, their sequence forms a kind of spiral (Fig. 10). If a cell appears on the background of this spiral based on certain sizes, it was determined that the number of cells on the sides of the quarter circle squares gives Leonardo Fibonacci numbers (0, 1, 1, 2, 3, 5, 8, 13, 21, 34...) (10- picture).



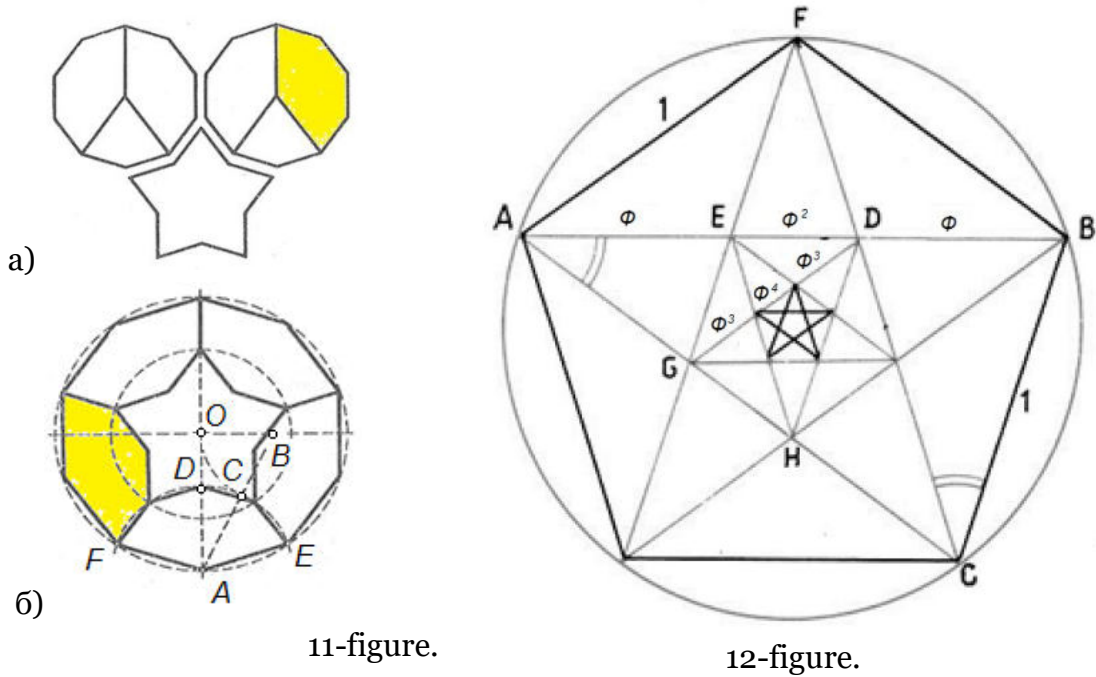
9-figure.



10-figure.

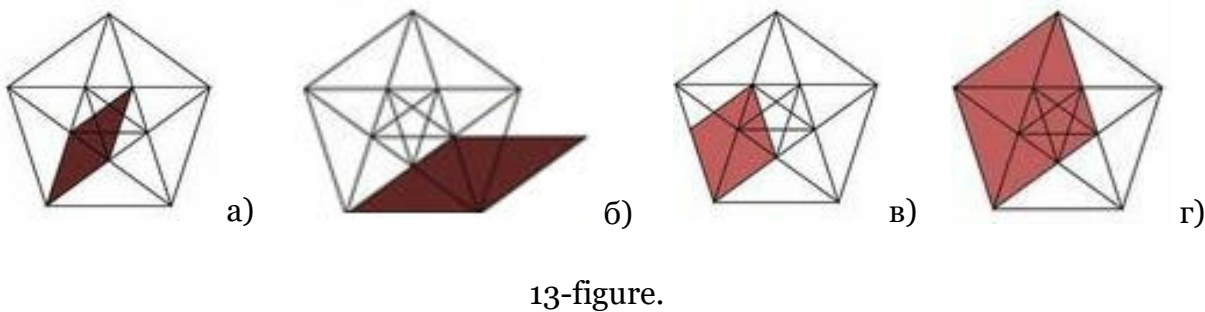


A regular decimal. In the treatise "Introduction to the Doctrine of Similar and Corresponding Forms" written by an unknown author who lived in Baghdad in the 11th century, there is an example of making one large regular decagon from two regular small decagons and a five-pointed star with an angle of 72° (Fig. 11).



A regular five-pointed and five-pointed star. Italian mathematician Luca Pacoli (1445 - 1517) in his work called "Divine Proportion" determined the existence of many quantities related to the golden circle in the elements of regular pentagons, five-pointed stars and regular polyhedra (Fig. 12).

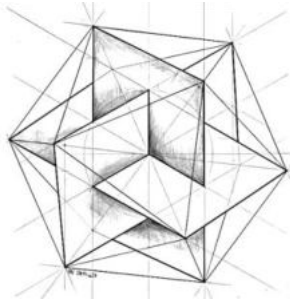
Gold rhombus. A rhombus formed by joining the centers of the sides of a golden rectangle. The ratio of its diagonals is equal to the ratio of the golden ratio. The obtuse angle of this rhombus is equal to the dihedral angle of the icosahedron (Fig. 14).





Diamonds consisting of pairs of golden triangles. Such rhombuses are formed by pairing two identical golden triangles at their bases (Fig. 13 a- and b- drawings). They are called narrow rhombuses.

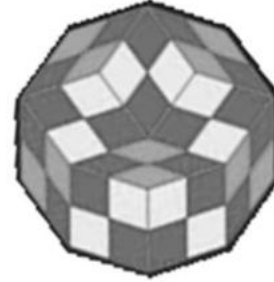
Rhombuses consisting of a pair of gold gnomons. Such rhombuses are formed by pairing two identical gold gnomons at their bases (Fig. 13 v- and g- drawings). They are called wide rhombuses.



14-figure.



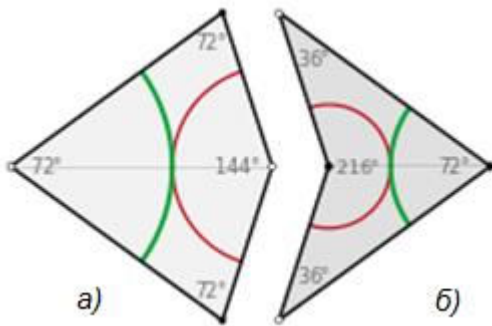
a)



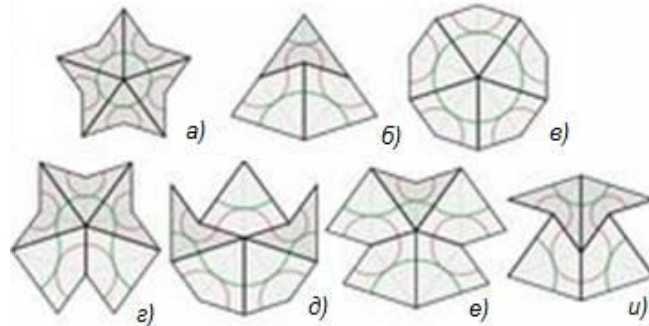
b)

15-figure.

At the beginning of our century, there was a period in the field of design, in which the creative exercise of creating compositions related to filling a regular decagon with 20 wide and 20 narrow rhombuses was widespread (Fig. 15).



16-figure.

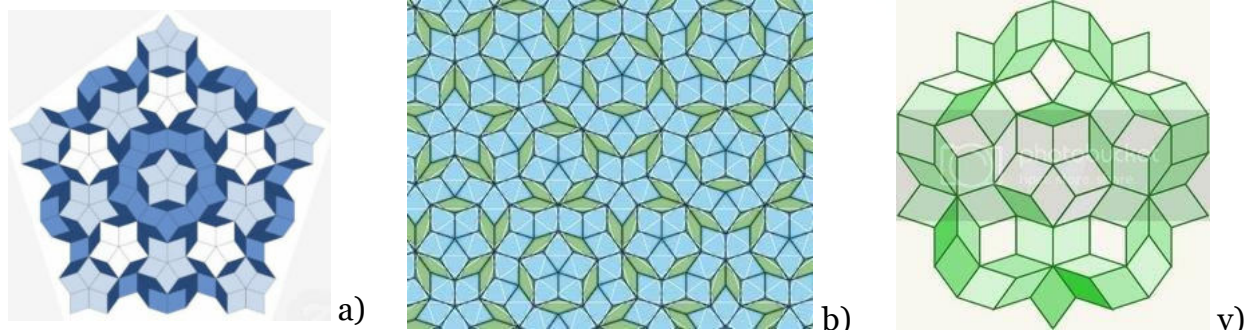


17-figure.

Penrose clays, elements known as "spearhead" and "sheet". In the 1970s, the well-known British mathematician and physicist Roger Penrose (born in 1931) proposed ceramic (tile) samples that could be laid out on a flat surface in a non-standard (non-regular) order. One of them is called "spearhead" and it is formed by pairing the sides of two identical gold gnomons (Fig. 16 b- drawing). The second one is called "sheet", it is formed by pairing two identical gold triangles with their sides (Fig. 16 a- drawing). Penrose makes seven different (Fig. 17) large tiles from these two types of tiles, and by multiplying one or two of them and placing them side by side in a certain order on a flat surface, he

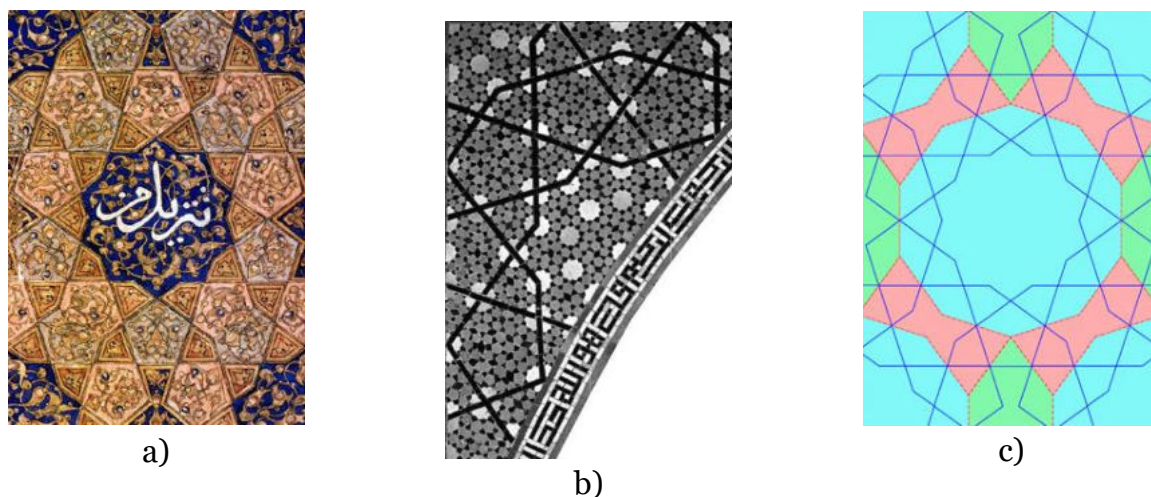


creates unique examples of patterns (Fig. 18). Such mosaic compositions bring even greater fame to Penrose, who already has great fame.



18-figure.

Golden elements in the work of Central Asian architects. In 2007, the "Science" magazine published an article by American scientists Peter Lu and Paul Steinhardt [7] on medieval Islamic architecture. The article mentions that during their visit to Uzbekistan, compositions similar to the Penrose mosaic were widely used by painters and architects of the XIV-XV centuries there (Fig. 19).



19-figure.

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IMPORTANT ASPECTS OF THE ELECTRONIC BOOK FOR PRIMARY SCHOOLS

Valiyeva Shakhlo Akmalovna
Namangan State University
Department of English Language and Literature
shahlovaliyeva13@gamil.com

Annotation

This article explores the role and importance of e-textbooks in improving the quality of education in elementary school. It also recommended the shortcomings and problems that we currently facing and necessary actions to be taken.

Keywords and expressions: e-textbooks, components, tendency, textbook, interactivity, didactic study, primary school, lesson process, animation

BOSHLANG'ICH MAKTABLAR UCHUN ELEKTRON KITOBNING MUHIM JIHATLARI

Valiyeva Shaxlo Akmalovna
Namangan Davlat Universiteti
Ingliz tili va adabiyoti kafedrası o'qituvchisi.
shahlovaliyeva13@gamil.com

Annotatsiya:

Maqola Ingliz tili darslari samaradorligini oshirishda multimediyali elektron darsliklardan foydalanish tizimini rivojlantirishga bag'ishlanadi. Shuningdek elektron darslik tuzulishi, ulardan samarali foydalanish usullariga alohida to'xtalib o'tiladi.

Kalit so'zlar: electron darslik, boshlang'ich sinflar, didaktik ta'lim animatsiyalar, interfaol, component, raqamli, samara, dars jarayoni.

ВАЖНЫЕ АСПЕКТЫ ЭЛЕКТРОННОЙ КНИГИ ДЛЯ НАЧАЛЬНЫХ ШКОЛ

Валиева Шахло Акмаловна
Наманганский государственный университет
кафедры Английского языка и литературы
преподаватель

Аннотация:

Статья посвящена разработке системы использования электронных учебников с мультимедиа для повышения эффективности уроков Английского языка. И также главное внимания предназначены разработке электронных учебников и способам их эффективного использования.



Ключевые слова: мультимедиа, электронных учебников, эффективность, дидактика, интерактивный.

Introduction:

In the past few years, technology has really been pushed into educational classroom settings. Teachers are now able to use SmartBoards to do interactive read alouds with the class. Students are able to complete math and reading assessments through multiple effective computer programs, etc. Students also may have iPads, tablets, or computers at home that they are constantly drawn to for entertainment purposes.

These technological tools are leading to gaining student interest. However, even though students are drawn to using a tablet for gaming purposes, using eBooks on tablets can be effective for literacy development. Using eBooks for student development in literacy is an important topic to research. An eBook can be an effective tool that can gain student interest and motivate them to complete the task at hand. According to Brown (2016), literacy involves understanding all forms of meaning that are represented within a set of social practices embedded in culture. In order to incorporate literacy into classrooms, teachers must come up with using different literacy practices within the classroom. A child should be able to “actively read, interpret, talk back to texts, as well as identify the many visible and invisible messages that comprise these texts” (Harste, 2010, p, 32). In the 21st century, a child must be able to use both a print and technology based text that connects in and out of school events.

Books are considered the most important tool used to transfer knowledge and assess information and academic educational program since the invention of the printing machine. With the development of the means of electronic publishing, globalized information, and easy access via internet, e-book became the more advanced tool used to transfer knowledge (Chen, 2002). Several studies results which used empirical designs to examine the effect of use e-books addressing the effectiveness of using e-books in teaching and in acquisition skills and increase achievement (Slavin, 2008, p. 13).

Methods:

eBooks are not just plain reading materials, they have all the right tools to help students make notes and highlight content. eBook reading devices have a lot of interactive features, like annotations, pen tools, page zoom, search option, read aloud etc. The search tool is the most favored tool because of its ability to find words and topics in an instant.

The search tool avoids the time-consuming process of turning pages after pages to find a particular topic or phrase. They can bookmark pages and chapters. The online dictionary helps them to quickly find meanings of words. Besides, the user can also change the font size and style and adjust the brightness of the device as per what suits their eyes. An eBook is an all-in-one device which provides a wholesome learning experience to students.

eBooks include self-assessments for students to test their knowledge. It does away with the traditional style of giving a quiz at the end of the chapter. eBooks are embedded with quizzes and exercises



throughout the chapter and also after the chapter ends, to ensure that students retain the information that they are reading.

It helps measure whether the student has understood the concepts properly. eBook assessments can provide instant results, so students can immediately view the test results. Not just students, the teacher can also view test results and provide immediate feedback.

The introduction of eBooks in education has optimized the learning experience. It has turned learning into a fun and engaging event. Students no longer dread having to carry a load of books and sit through hours of lectures paying only half attention to what is being taught.

Results:

A textbook is an important element in learning. The government has provided textbooks as a form of curriculum management to support the effectiveness and efficiency of learning. Even though the teacher and students get convenience with the textbook, it does not mean the textbook does not have weaknesses. The proposed e-book is proofed can enhance the students learning outcomes in form of knowledge.

Interactive e-books can be an alternative solution to the limitations of the textbook (printed). This is evidenced in the group using the interactive e-book which had better learning outcomes compared to that using the printed textbook. Although the development of this interactive e-book has a positive impact, it should be remembered that to develop interactive teaching materials must be based on the student learning needs. This needs to be done so that the students can massively benefit from the use of the e-book.

Discussion

Multimedia is very helpful and fruitful in education due to its characteristics of interactivity, flexibility, and the integration of different media that can support learning, take into account individual differences among learners and increase their motivation. The provision of interaction is the biggest advantage of the digital media in comparison with other media. It refers to the process of providing information and response. Interactivity allows control over the presented content to a certain extent: learners can change parameters, observe their results or respond to choice options. They can also control the speed of applications and the amount of repetition to meet their individual needs.

Furthermore, the ability to provide feedback tailored to the needs of students distinguishes the interactive multimedia from any other media without a human presence. However, many aspects need to be taken into account when using multimedia in education. Even though multimedia is offered worldwide, access to learning materials and computing equipment differs from country to country. The use of multimedia by students needs to be supported by very skilled teachers. They must guide students through the learning process and provide them with appropriate and effective learning strategies. Like the use of textbooks, the use of educational multimedia fosters teaching strategies, where the teacher's role is not just that of information provider but the one of guide, supporter and facilitator.



Pupils with high self-efficacy believe that they are able to reach a desired goal or attain a certain level of performance. Self-efficacy is domain-specific and very stable over the years (Bandura, 1977). High self-efficacy is influenced by former success in the domain, social models, opinions of others and feedback. Self-efficacy also depends on the individual's level of demand on his or her own performance.

Conclusions:

Teachers can support pupils in this situation by counseling on the use of adequate strategies, and by showing them the possibility of more than one perspective, etc. Challenging but not too difficult tasks support self-efficacy. Many multimedia applications offer continuous help, selective feedback, and different levels of task difficulty or different levels of navigation. The classroom situation, in which educational multimedia applications are used, provides opportunities for self regulation and autonomous activities, for high learner control with the programs and others, and multi-perspective presentations of content corresponding to the programs.

The use of educational multimedia applications that provide characters with which pupils can identify themselves – of the same sex, age, race and religion – can be supportive. The content should be based on life themes, which are important to learners and depict intense action and feeling (Anderson, Shirey, Wilson and Fielding, 1987). The design should be user-friendly, well-structured and appropriate to the target group.

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ECOLOGICAL AND BIOLOGICAL INDICATORS OF PLANT CHARACTERISTICS

M. M. Akhunbabaev

T. Kuliyeu

Z. T. Kilichev

F. R. Rakhmankulov

Gulistan State University

Annotation

This article provides information on the study of the influence of sowing deadlines on the variation of quantitative indicators of signs of winter wheat. The “Dustlik” variety of autumn soft wheat was chosen as the object of research. This variety of winter wheat was studied in the conditions of scarce salty gray soil in September, October and early November. Seeding periods strongly affected the number of wheatears. Compared to seeding in September < seeding in November showed 36.67% decrease in the number of wheatears. High harvests of winter wheat (at 447.1 gr per 1m²) were recorded in seeding in October. The timing of seeding affected the variation in quantitative indicators. Being strongly varied and strongly determined productivity is accepted as an eco-biological indicator in the selection of genotypes adapted for the environment. Wheatear length, its density, plant height, 1000 grains weight are among the least variegated and relatively stable signs, which are recommended as biological indicators in determining productive genotypes.

Keywords: seeding times, variation, correlation, determination, outside environment, quantitative indicators, indicator, eco-biological, biological.

Introduction

The growth and development of plants is influenced by abiotic, biotic factors. The degree of influence of these factors finds its expression in the quantitative indicators of plant features. While the features associated with the influence of an external factors are strongly variational, those that depend on the biological characteristics of the plant are relatively stable. It is noted that the elements of productivity and yield are strongly varied under the influence of the external environment [1].

During the recent years, as a result of the widespread use of digital technologies in biological research, the peculiarities of quantitative features and their variation were identified. The results of the study showed that variational changes have occurred in the quantitative indicators of plant features under the influence of the external environment, while in animals such changes occurred in biochemical indicators. For instance, strong effect of the nutrient field has been established on the variation of quantitative indicators of the rice plant in relation to mineral fertilizer is strong. An increase in the seeding norm caused a variation in quantitative indicators due to the occurrence of unfavorable conditions for the growth and development of plants (insufficient feed) [2].



Similar results were also noted in grain crops. Strong influence of the seeding season and the natural climatic conditions of the sown area on the quantitative indicators of winter wheat was noted in relation to the biological characteristics of the varieties. Some increase in the degree of correlation relationships between quantitative indicators in unfavourable conditions was established [3].

Such studies were carried out with winter wheat varieties in the conditions of the saline soil of the Syrdarya oblast. As a result, some increase in the level of correlation relationships between quantitative indicators of features was noted in the case, when winter wheat was planted late and densely. High variation and strong determination of productivity and wheatear weight were recorded [4].

The level of inter-dependance between the features of an organism is divided into ecological (external environment) and genotypic groups. In this case, it is noted that genotypic correlation was stronger than ecological correlation. It has been established that the features depend not only on the external environment, but also on the genotype [5].

From the above information, one can see that the external environment (seeding times, norms, amount of feed, natural climatic conditions of the area) and the biological characteristics of plants have influenced the variation of quantitative indicators. This is a natural course of things. During the vegetation period the plant grows, develops and forms under the influence of the external environment. Thus, quantitative indicators continue to serve as the main subject of research. Obtaining more information about quantitative indicators is of scientific and practical importance.

This study differs from others in that the winter wheat variety was seeded early (early September). This is the first time such a study to be conducted.

Study Methods and Location

The research was carried out at the field experimental site of Gulistan State University in Syrdarya region. The "Dustlik" variety of the winter soft wheat (*Triticum aestivum* L) was chosen as the subject of the study. The SPSS-17 software was used for phenological observations and computational work [6]. If the variation coefficient (**CV,%**) was found as a strongly variable if the value was below 10%, medium - from 10% to 20% and significant - over 20%. N.S.Rostova method was used for differentiating the quantitative indicators into ecological, eco-biological, biological and genotypic indicators [3]

Results Obtained and Discussion

The primary data on the influence of seeding times on the quantitative indicators of winter wheat are presented in Table 1. The data in the table show when wheat was seeded in early September (1.09), the germination was 59.96% on average, in October (1.10) - 55.49%, and in November (1.11) - 50.98%. This data shows high level of germination at early seeding. The fact that the germination level has changed subject to the timing of seeding can also be seen on both its minimum and maximum indicators. In the early seeded (1.09) option, the minimum coefficient of germination was - 42%, the maximum - 81.6%, in the case of seeding in October - 15.8-79.4% respectively, and in November - 40%; 63.0%.



Table 1 The influence of seeding times on quantitative indicators of the features of the Dustlik variety of winter wheat

Germination, %	Number of wheatears, pcs	Plant height, cm	Putting out side shoots, pieces	Weight of one wheatear, gr	Productivity, 1m ² , gr	Grain harvested, %	Wheatear length, cm	Grain weight in a wheatear, gr	Wheatear density	1000 grains weight, gr	Harvesting index
Seeding time: September 1											
59.96 ±2.71	543.1 ±45.33	69.58 ±2.33	1.52 ±0.08	1.49 ±0.07	393.3 ±39.55	68.86 ±1.96	6.4 ±0.15	0.94 ±0.07	19.64 ±0.28	34.45 ±0.28	0.27 ±0.02
Minimum											
42.0	262	53.6	1.06	1.0	250.4	52.28	5.2	0.49	18	31.5	0.16
Maximum											
81.6	781	56.5	2.31	2.1	871.5	78.9	7.5	1.5	21.9	42.0	0.43
Seeding time: October 1											
55.49 ±3.78	467.9 ±25.72	74.33 ±2.02	1.39 ±0.12	1.53 ±0.03	447.1 ±29.78	79.65 ±2.59	6.54 ±0.08	1.22 ±0.04	20.11 ±0.28	39.33 ±0.72	0.33 ±0.02
Minimum											
15.8	292.	56.7	0.61	1.2	261.6	60.0	5.9	0.9	17.9	34	0.20
Maximum											
79.4	643	84.2	2.45	1.7	643.5	83.7	7.0	1.5	22.0	43	0.50
Seeding time: November 1											
50.98 ±1.93	343.9 ±13.42	59.79 ±3.01	1.35 ±0.1	1.09 ±0.11	335.5 ±28.28	77.38 ±5.83	6.09 ±0.13	1.01 ±0.04	20.16 ±0.36	35.58 ±0.46	0.26 ±0.02
Minimum											
40.0	242	37.3	0.90	0.20	157.9	54.7	5.2	0.71	18.1	32.0	0.16
Maximum											
63.6	439	78	2.36	1.58	519.2	78.6	6.9	1.33	22.7	38.6	0.35

From these data one can see that at early seeding, the limit of the level of winter wheat germination expanded compared to other seeding times. The number of wheatears (per 1m²) was 543.1 in September, in October - 467.9, and in November-343.9 pieces. The data show a decrease in the number of wheatears at seeding later. Here, the number of wheatears decreased due to a decrease in the number of putting out side shoots. When planted early, the number of side shoots was 1.52, while in November - it was 1.35. Productivity was equal to 393.3 gr (per 1m²) in early (1.09) seeded winter wheat, while in October - 447.1 gr, in November - 335.5 gr. From this data one can see that there was yield was high from the crop, seeded in October. The primary data show that the time of seeding had impact on all quantitative indicators. It was noted that the quantitative indicators of wheat sown in November



decreased compared to wheat sown in September and October. This is also confirmed by the data from Figure 1.

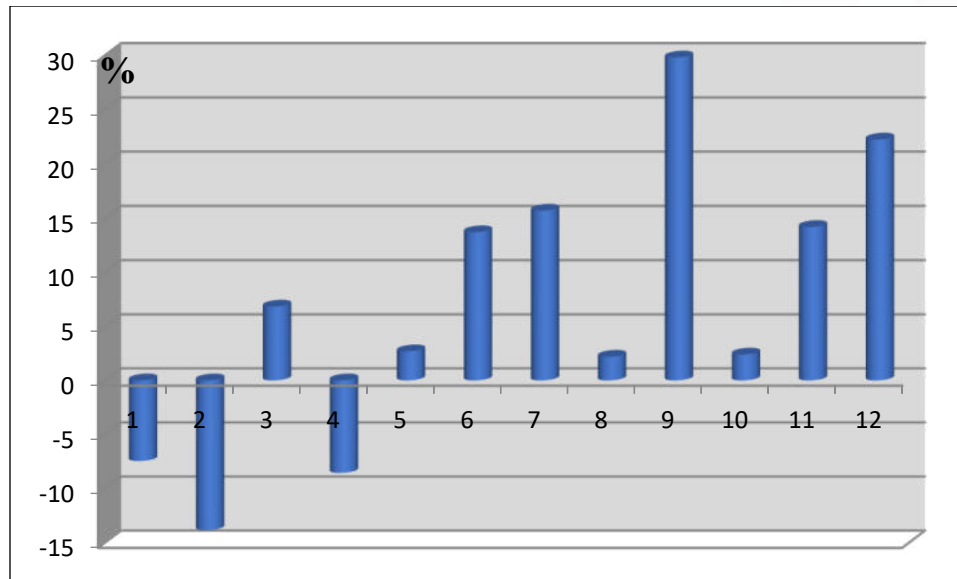


Figure 1. Difference between October and September ,%

Note: numbers mean features. Here: 1- germination,%; 2-number of wheatears per 1m²; 3- plant height, cm; 4-shoot oouts; 5-weight of one wheatear, gr; 6-productivity, 1m², gr; 7-grain output,%; 8-wheatear length, cm; 9-grain weight on the wheatear, gr; 10-wheatear density; 11-1000 grains weight, G; 12-harvest index.

The quantitative indicators of wheat sown in September recorded a difference compared to wheat sown in October. Compared to October data, germination dropped by 7.45%, number of wheatears - by 13.84%, putting out shoots by 8.55%, it was identified that the plant height increased by 6.82%, the wheatear weight - by 2.68%, the productivity - by 13.67%, the grain output - by 15.66%, the wheatear length by 2.18%, the grain weight in the wheatear by 29.78%, the wheatear density by 2.39%, the 1000 grains weight- by 14.16%, and the harvest/yield index increased by 22.2%. This indicates that almost all quantitative indicators occurred mainly in the harvest elements. Grain weight in wheatear increased by 30% in October seeding compared to September

The difference in the quantitative indicators of wheat sown in November is shown in Figure 2. The data in the picture shows that in comparison with the area, sown in September, the germination decreased by 14.97%, the number of wheatears - 36.67%, plant height -14.07%, shoot outs - by 11.18%, weight of one wheatear - by 26.84% and productivity - by 14.69%.

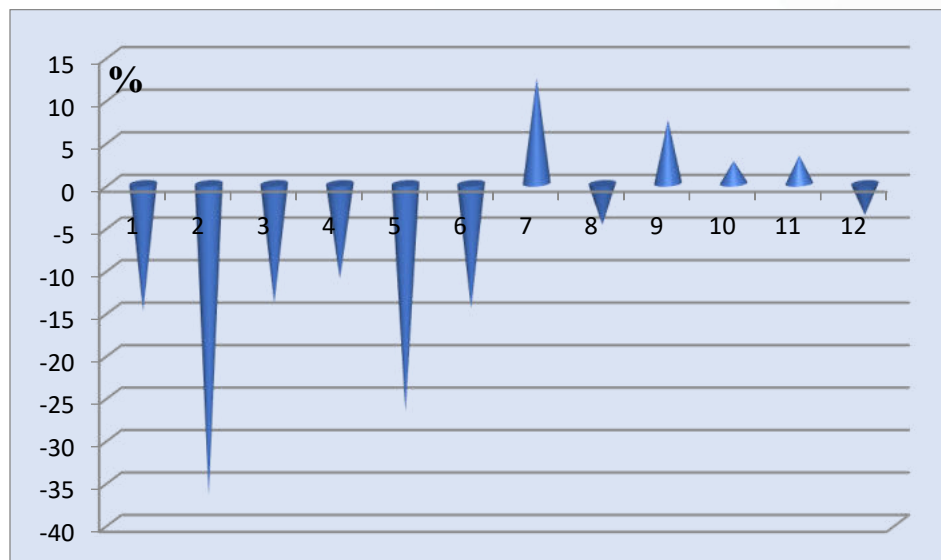


Figure 2. Difference between the wheat sown in November and September ,%

Note: Numbers mean features - see Figure 1

It was found that the grain germination increased by 12.37%, the grain weight in the wheatear increased by 7.44%, the wheatear density - by 2.64%, the 1000 grains weight - by 3.28%. These data show that most quantitative indicators of winter wheat decreased compared to wheat sown in September. Especially the number of wheatears - decreased by 36.67%. In its turn this affected productivity. The productivity of winter wheat, sown in September was 393.3 gr, while the same of wheat sown in November was 335.5 gr. The difference between the seeding times was 57.8 gr.

Above we gave information on the minimum and maximum indicators of quantitative indicators in the analysis of Primary Data (Table 1). This data shows the degree of change of the quantitative indicators. During the recent years, in analysing the variation of quantitative indicators the researchers are paying attention to their determinability (determination is the square of the correlation coefficient, which determines the delimitation of the feature) [3]. This gives the opportunity to fully analyze the causes of the variation of features to some extent. 12 studied features of winter wheat are presented in Figures 3.4 and 5 on the basis of the variational and determinational dependence of quantitative indicators on the time of seeding. The data in the picture shows that the quantitative indicators of early seeded (1.09) winter wheat such as productivity (6), grain weight in wheatear (9), number of wheatears (2), yield/harvest Index (12) and single wheat weight (5) were strongly variable (the coefficient of variation was higher than 25%) and strongly determined.

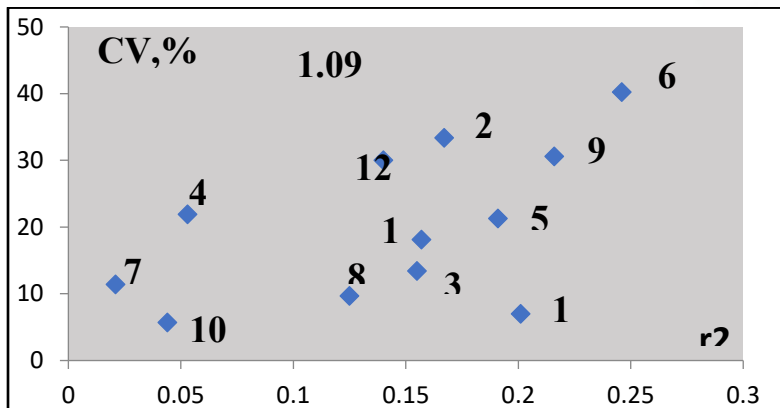


Figure 3. Impact of the seeding time (1.09) on the levels of variation (CV, %) and determinability (r²) of quantitative indicators of winter wheat.

Note: the numbers represent the characters here and in the following pictures. Here: **1**-germination,%; **2**-number of wheatears per 1m²; **3**-plant height, cm; **4**-shooting out; **5**-weight of one wheatear, gr; **6**-productivity, gr/1m²; **7**-grain output,%; **8**-wheatera length, cm; **9**-grain weight on the wheatear, gr; **10**-wheatear density; **11**- 1000 grains weight, gr; **12**-yield/harvest index.

In this case, the variation of these indicators occurred in dependence with others. weight of 1000 grains, (11), plant height (3), wheatear length (8) were found to be variated at moderate levels, and strongly determinated. These features were more dependent on the biological characteristics of the plant. In this case, these features can be called biological indicators. Wheatear density (7) and grain output (10) are poorly variated and determinized, and these features are noted to have independent variational characteristics.

The change in the timing of seeding affected the degree of variation of quantitative indicators. In this seeding date (1.10) it was determined that productivity (2), number of wheatears (2) and yield/harvest index (12) and germination (1) are strongly variated.

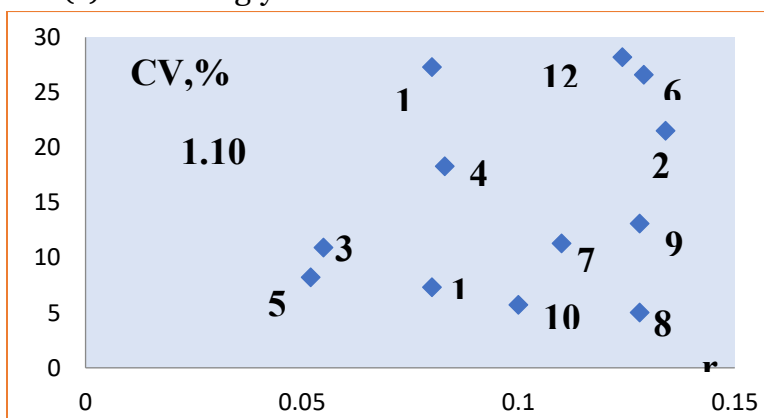


Figure 4. Impact of the seeding time (1.10) on the levels of variation (CV, %) and determinability (r²) of quantitative indicators of winter wheat. Note: Numbers mean feautres - see Figure 3



The features such as wheatear length (8), grain weight in wheatear (9), grain output (7), wheatear density (10), 1000 grains weight (11) were medium level variation. As we noted above, these indicators have become more dependent on the biological indicators of the variety.

The results obtained from wheat, sown in November showed strong variation and determination characteristics of productivity (6) as was recorded in the case of sowing on other dates. This suggests that this indicator depends not only on the genotype, but also on the external factor. For the wheat, sown in November, while the wheatear length (8) showed strong determination and low variation, the indicators of 1000 grains weight (11) and the wheatear density was found to be less varied and poorly determined.

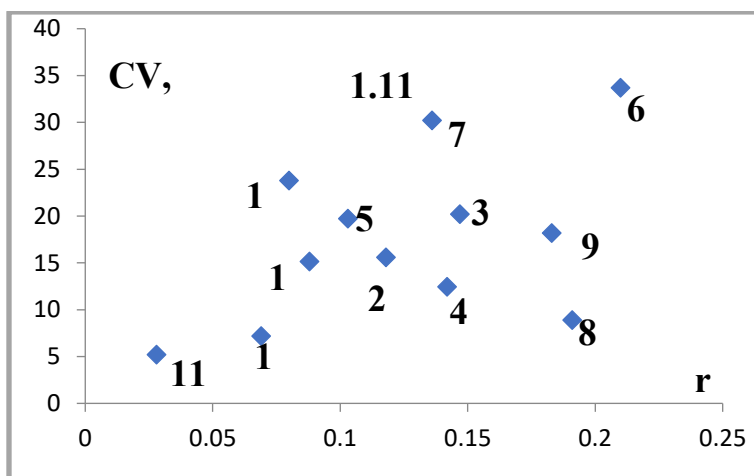


Figure 5. Impact of the seeding time (1.11) on the levels of variation (CV, %) and determinability (r^2) of quantitative indicators of winter wheat. Note: Numbers mean feautres - see Figure 3

The impact of sowing dates on the quantitative indicators of the winter wheat variety was confirmed in general. The seeding time had impact on the level of all quantitative indicators. The winter wheat sown in September generated an average harvest of 393.3 gr, sown in October - 447.1 gr, and in November - 333.2 gr. In comparison with the wheat seeded in November, the wheat seeded in September produced harvest by 14.69%, while the wheat sown in October gave 13.61% more harvest.

The time of seeding affected the variation of quantitative parameters of winter wheat. It was identified that the productivity is strongly determined and varied in all cases of the sowing dates. The variation of this indicator occurred subject to other parameters others. It was noted that the height of the plant, the length of the wheatear, the density of the wheatears, the weight of 1000 grains is less varied, which depends on the biological characteristics of the variety. The variation of the indicators such as germination, number of wheatears, wheatear weight, grain weight in wheatears, and yield/harvest Index varied over different seeding times.



Conclusion

1. It was noted that productivity is a strong variational and determinative eco-biological indicator that determines whether the varieties are adapted to the conditions of the external environment.
2. The indicators such as wheatear length, wheatear density, 1000 grains weight, plant height were stable and recommended as a biological indicator when choosing low-variable, productive plants.

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THE INFLUENCE OF NITROGEN FERTILIZER APPLICATION ON BIOMETRIC AND ECONOMIC INDICATORS ON LIGHT GRAY SOILS

Mirzaev Nuriddin Fayzullaevich

PhD Senior Teacher, Termiz Institute of Agrotechnologies and Innovative Development
"Storage, processing and mechanization of agricultural products" department

Amonov Nurbek Mukhidinovich

Assistant

Abstract

Today it is necessary to maintain and increase soybean fertility, selective sowing of early-maturing and high-quality grain varieties, setting standards and terms for feeding soybean varieties with mineral fertilizers.

Keywords: soybean, variety, fertilizer, term, rate, yield, soil, fertility, economic biometrics, frame productivity, nitrogen, phosphorus, potassium.

Аннотация:

Бугунги кунда тупроқ унумдорлигини сақлаш ва ошириш, тезпишар ҳамда дон сифати даражаси юқори навларни танлаб экиш, соя навларини маъдан ўғитлар билан озиклантириш меъёрлари ва муддатларини белгилаш талаб қилинади.

Калит сўзлар: Соя, нав, ўғит, муддат, меъёр, экин, тупроқ, унумдорлик, иқтисодий биометрик, хўжалик кўрсаткичлари, самарадорлик, азот, фосфор, калий.

Аннотация: Сегодня необходимо поддерживать и повышать плодородие почвы, селективный посев раннеспелых и высококачественных сортов зерна, установление нормативов и сроков подкормки сортов сои минеральными удобрениями.

Ключевые слова: Сои, сорт, удобрение, срок, норма, урожай, почва, плодородие, хозяйственная биометрия, производительность хозяйства, продуктивность, азот, фосфор, калий.

At present, due to the fact that the norms of feeding soybean varieties with mineral fertilizers, which are recommended for planting in different soil and climate conditions, have not been developed on a scientific basis, the cultivated soybean grain does not fully meet the industrial requirements. In this regard, today it is necessary to determine the norms and terms of feeding soybean varieties with mineral fertilizers in different soil-climatic conditions of the Republic, to study irrigation regimes, to scientifically substantiate the influence of factors on the growth and development of soybeans, on productivity and grain quality indicators, to develop agrarian technology of cultivation taking into account biological characteristics. is being born.



Kh. Atabaeva, M. Sattarov. stated that mineral fertilizers and sulfur had an effect on the size of the soybean grain and grain yield, and the grain weight in the control variant was 126.6 grams.

When applying 1.2 kg/ha sulfur to mineral fertilizers in meadow-swamp soils, compared to the control, an additional 11.2-18.4 ts/ha yield was ensured [1].

According to D. Yormatova, it is very important to carry out selection works in cooperation with scientists to create new local soybean varieties and to develop soybean breeding. [2].

Z. M. Kushmetov, M. K. According to Hamroeva's data, the root system of soybean varieties is well developed in moderately saline soils, the tap root penetrates the soil to a depth of 1.5-2 meters, but the root mainly develops in the arable part of the soil and forms a lot of lateral roots. [3].

N.S. Umarov, Sh.U. Usmanova stated that the soil layers are typical for an oasis and are swamp-type soils. [4].

In our ongoing research, each variety is experimented with nitrogen fertilizer in 5 options: option 1 without nitrogen fertilizer, option 2 with pure nitrogen fertilizer at 60 kg/ha, option 3 with pure nitrogen fertilizer at 90 kg/ha, option 4 with pure nitrogen fertilizer 90 kg/ha, option 5 was studied against the background of pure nitrogen fertilizer in the amount of 150 kg/ha, pure phosphorus fertilizer in the amount of 90 kg/ha, and pure potash fertilizer in the amount of 60 kg/ha.

Table 1 Testing system.

No	Varieties	Options	Mineral fertilizers in pure form, kg/ha			Under plowing or planting, during land preparation before planting, kg/ha		During the cultivation period, kg/ha	Flowering during podding period, kg/ha
			N	P	K	P	K	N	N
1	Tomaris Man-60	1	0	90	60	90	60	0	0
		2	60	90	60	90	60	20	40
		3	90	90	60	90	60	30	60
		4	120	90	60	90	60	40	80
		5	150	90	60	90	60	50	100
2	Oyjamol	1	0	90	60	90	60	0	0
		2	60	90	60	90	60	20	40
		3	90	90	60	90	60	30	60
		4	120	90	60	90	60	40	80
		5	150	90	60	90	60	50	100
3	Selection-201	1	0	90	60	90	60	0	0
		2	60	90	60	90	60	20	40
		3	90	90	60	90	60	30	60
		4	120	90	60	90	60	40	80
		5	150	90	60	90	60	50	100
4	Amigo	1	0	90	60	90	60	0	0
		2	60	90	60	90	60	20	40
		3	90	90	60	90	60	30	60
		4	120	90	60	90	60	40	80
		5	150	90	60	90	60	50	100



100 percent of the specified annual rate of mineral fertilizers, phosphorus and potassium fertilizers, were given under plowing or during the preparation of the land before planting. 30-35% of the specified annual amount of nitrogenous fertilizer is given in the stage of sowing of soybeans, and the remaining 65-70% in the phases of full flowering and podding.

Analysis and Results

It was conducted at the experimental site of the Southern Agricultural Research Institute. According to the results of field experiments, the main stem height of soybean varieties at the end of the growing season was 51.4 cm in the control variant without nitrogen fertilizer in the Tomaris Man-60 variety, and 69.9 cm in the 2 variants with 60 kg/ha of nitrogen fertilizer. 80.7 cm in 3 options with nitrogen fertilizer 90 kg/ha, 89 cm in 4 options with 120 kg/ha nitrogen fertilizer, 99.5 cm with 150 kg/ha nitrogen fertilizer, 10.4-14.4 in the first legume crop according to options was cm. With the increase of nitrogen fertilizer rate by options, the change in plant height was 48.1 cm higher than the control in 5 options. It was observed that there was a difference of 4 cm in the location of the first pod on the stem among the variants.

When analyzing the weight of 1000 grains of grain grown according to experimental options, the average weight of 1000 grains in the control option without nitrogen fertilizer was 120.4 grams, in 2 options with 60 kg/ha of nitrogen fertilizer, it was 124.5 grams, in 3 options with 90 kg/ha of nitrogen fertilizer, it was 126.2 grams, 129.8 grams in 4 options with 120 kg/ha of nitrogen fertilizer, 130.6 grams in 5 options with 150 kg/ha of nitrogen fertilizer. It was determined that the weight of 1000 grains was 4.1-10.2 grams more in the fertilized variants compared to the control variant without nitrogen fertilization.

In the Oyjamol variety, the average height was 56.3 cm in the control option without nitrogen fertilizer, 79.9 cm in 2 options with nitrogen fertilizer at 60 kg/ha, 89.1 cm in 3 options with nitrogen fertilizer at 90 kg/ha, and nitrogen fertilizer at 120 kg/ha 99.2 cm in 4 options, 103.4 cm when nitrogen fertilizer was given at 150 kg/ha, and the first legume was 10.1-15.4 cm according to options. As nitrogen fertilizer rate increased across options, the change in plant height was 47.1 cm higher than the control in option 5. A difference of 5.3 cm was observed between the variants in the location of the first pod on the stem. When analyzing the weight of 1000 grains of grain grown according to experimental options, the average weight of 1000 grains in the control option without nitrogen fertilizer was 109.2 grams, in 2 options with 60 kg/ha of nitrogen fertilizer, it was 112.5 grams, in 3 options with 90 kg/ha of nitrogen fertilizer, it was 115.7 grams, 117.6 grams in 4 options with 120 kg/ha of nitrogen fertilizer, 118.4 grams in 5 options with 150 kg/ha of nitrogen fertilizer. It was determined that the weight of 1000 grains was 3.3-9.4 grams more in the fertilized variants than the control variant without nitrogen fertilization.

In the Selekt-201 variety, the average height was 39.9 cm in the control option without nitrogen fertilizer, 56.9 cm in 2 options with nitrogen fertilizer 60 kg/ha, 59.2 cm in 3 options with nitrogen fertilizer 90 kg/ha, and nitrogen fertilizer 120 kg/ha. 61.6 cm in 4 variants, 66.3 cm when nitrogen fertilizer was given 150 kg/ha, the first leguminous area was 10.1-13.5 cm according to variants. With the increase of nitrogen fertilizer rate by options, the change in plant height was 26.4 cm higher than



the control in 5 options. It was observed that there was a difference of 3.4 cm in the location of the first pod on the stem among the variants.

Table 2 Effect of rates and periods of feeding soybeans with mineral fertilizers on biometric and economic indicators of varieties.

T/r	Varieties name	Varyants	The height of the main stem, cm	Number of horns, pcs	Place of the first pod, cm	1 bush number of pods, pcs	The number of grains in one pod, grain	1000 grain weight, g
1	Tomaris Man-60	1	51.4	2.7	10.4	83.4	1.5	120.4
		2	69.9	3.5	11.6	138.3	1.6	124.5
		3	80.7	3.9	12.6	168.5	1.7	126.2
		4	89	4.3	13.4	179	1.8	129.8
		5	99.5	4.8	14.4	193.1	1.9	130.6
2	Oyjamol	1	56.3	2.9	10.1	78.2	1.6	109.2
		2	79.9	3.5	11.3	127.7	1.9	112.5
		3	89.1	3.6	12.8	149.5	2.1	115.7
		4	99.2	4.4	14	172.1	2.2	117.6
		5	103.4	5.4	15.4	197	2.3	118.4
3	Selection-201	1	39.9	1.6	10.1	55.6	1.9	143.2
		2	56.9	3.2	11.1	89.9	1.9	145.7
		3	59.2	3.6	11.8	102.3	2	148.1
		4	61.6	3.9	12.4	120.2	2.1	149.7
		5	66.3	4.6	13.5	130.4	2.2	152.2
4	Amigo	1	36.5	2.5	10.9	50.4	1.3	128.4
		2	54.5	4.7	12	81.3	1.6	129.6
		3	58	5.3	12.8	94.4	1.7	130.3
		4	60.2	5.6	9.6	112.2	1.8	131.5
		5	63.5	5.9	13.5	121.3	1.9	132.7

When analyzing the weight of 1000 grains of grain grown according to experimental options, the average weight of 1000 grains in the control option without nitrogen fertilizer was 143.2 grams, in 2 options with 60 kg/ha of nitrogen fertilizer 145.7 grams, in 3 options with 90 kg/ha of nitrogen fertilizer 148 ,1 gram, 120 kg/ha of nitrogen fertilizer was 149.7 grams in 4 options, 152.2 grams in 5 options where 150 kg/ha of nitrogen fertilizer was given. It was determined that the weight of 1000 grains was 2.5-8.5 grams more in the fertilized variants compared to the control variant without nitrogen fertilization.

Amigo cultivar averaged 36.5 cm in the control option without nitrogen fertilization, 54.5 cm in 2 options with 60 kg/ha nitrogen fertilizer, 58 cm in 3 options with 90 kg/ha nitrogen fertilizer, and 58 cm in 4 options with 120 kg/ha nitrogen fertilizer. 60.2 cm, 63.5 cm when nitrogen fertilizer was given at 150 kg/ha, the first leguminous area was 10.9-13.5 cm according to options. With the increase of nitrogen fertilizer rate in the options, the change in plant height was 27 cm higher than the control in 5



options. A difference of 2.6 cm was observed between the variants in the location of the first pod on the stem.

When analyzing the weight of 1000 grains of grain grown according to experimental options, the average weight of 1000 grains in the control option without nitrogen fertilizer was 128.4 grams, in 2 options with 60 kg/ha of nitrogen fertilizer, it was 129.6 grams, in 3 options with 90 kg/ha of nitrogen fertilizer, it was 130.3 grams, 131.5 grams in 4 options with 120 kg/ha of nitrogen fertilizer, 132.7 grams in 5 options with 150 kg/ha of nitrogen fertilizer. It was determined that the weight of 1000 grains was 1.2-4.3 grams more in the fertilized variants than the control variant without nitrogen fertilization.

Conclusion

In the conditions of the light gray soil of Kashkadarya region, compared to the varieties of soybeans brought from abroad, the varieties created in local conditions grew better in the soil and climate conditions of the region.

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GENERAL AND SPECIAL PHYSICAL FITNESS OF BOXER ATHLETES

Baxriev Jamshid Erkin o'g'li
Lecturer at the Termiz State University

Anatization

It is also important to implement the principle of unity of general and special training of an athlete. The younger the age and sports skills of a teenage athlete, the more importance should be attached to his all-round preparation, because the need for harmonious growth of children in all aspects is important in youth sports. It is also necessary to take into account the fact that young athletes quickly get tired of the same job and lose interest in it, switch to another sport, change their playing position, etc.

Keywords. General physical training, special physical training, boxing technique, body preparation, physical exercises, training period, physical qualities.

General physical training is the basis for mastering boxing techniques and tactics. Depending on how well a boxer acquires the skills of special physical exercises, his future career in the sport will depend on it.

The main foundation of general and special physical training is built in the preparatory period of training of athletes. During its first, general training period (its task is to prepare the body for the special loads of the special training stage), special attention should be paid to the development of general physical qualities: endurance, strength, quickness, agility. Cross-country skiing, road running, swimming, sports, weightlifting, and gymnastics are used for this purpose. At the same time, special quickness and strength are developed with the help of exercises performed with weights, shells and flat gloves. At this stage, it is necessary to use a large amount of general development, general training and special training exercises, with increasing intensity (from medium to high) until the end. In the second, special training stage, the same general physical training equipment acquires a more specialized character.

The general physical training tools of a boxer include general training exercises in other sports (athletics and cross-country skiing, swimming, weightlifting, basketball, football, etc.) including general preparatory exercises.

The general physical fitness of a boxer is the foundation and necessary basis for achieving high results. It mainly provides the solution of the following tasks:

1. All-round harmonious development of the boxer's organism, increase of its functional capabilities, development of physical qualities.
2. Increase the level of health.
3. Proper use of active rest during intense training and competitive loads.

General physical training includes a variety of tools. Among them are exercises performed on shells and with shells, exercises performed with a partner on special trainers, other sports: acrobatics, athletics, sports games, swimming and ho kazo. general developmental exercises from Auxiliary physical training



is designed to create a special basis necessary for effective performance of a large volume of work aimed at the development of special movement skills.

It has a rather narrow and specific direction and solves the following tasks:

1. Development of qualities that are more typical for boxing.
2. Selective development of muscle groups involved in boxer's movements.

As advanced means of auxiliary physical training, such exercises are used, which, according to their kinematic and dynamic structure, are suitable for the main actions of a boxer during competition.

Among such exercises, the following can be distinguished;

- execution of various boxing techniques by pointing;
- exercises performed on special training devices;
- exercises with a boxer dummy.

The main task of using physical training tools is general physical development, strengthening of the musculoskeletal system, greater mobility in the joints, development of movement coordination, balance skills, as well as the work of the cardiovascular system and respiratory organs. improve.

Choosing exercises of a certain volume and intensity, it should be remembered that we are young boxers, usually teenagers. Therefore, we should take into account their age-specific anatomical, physiological and psychological characteristics.

General developmental exercises include walking, standing, sitting, and lying exercises for the arms, shoulder girdle, body, legs, and neck muscles. exercises with objects for complex development of muscles (short and long ropes, gymnastic sticks and balls, tennis balls and basketballs, dumbbells); acrobatic exercises, resistance exercises with a partner, balance exercises, skiing, skating, rowing, swimming, rubber exercises.

Groups of young practitioners (leaders).

1. Moving in different directions (without a partner) with single and joint steps in a combat stance.
2. Stepping forward, backward and to the sides to determine the combat distance at which it is possible to strike.
3. Actions (methods) of attacking and counter-attacking with single and double blows and defending at a long distance.
4. Practice shots on shells.

The coach should recommend such exercises to the boxers, which should ensure the development of the physical qualities that are lagging behind in the development of each boxer. It is necessary to deal with them not only during special group training, but also on days when they are free from boxing training.

Special physical training. Special physical training is aimed at developing physical qualities typical for boxers. It should be carried out at the same time as mastering boxing techniques and improving them. The trainer chooses the exercises in such a way that the young boxer should be able to acquire technical skills and skills in a certain range. He cannot be required to do long-term endurance exercises or frequent quick-power movements, because in a fight, a young boxer can demonstrate speed, endurance, coordination and other qualities, defense, must show skill in using the technique of moving



and striking.

The special physical training of a boxer is aimed at developing the qualities of movement in strict accordance with the requirements imposed by the features of the boxers' competitive activity. Special physical training of boxers is mainly conducted on the boxing mat and is aimed at developing the most important movement qualities in movement skills. That's why competition exercises involving various possible complications are used as the main means of special physical training. Such complex exercises increase the impact on the boxer's body.

For example, choosing a partner in a heavier weight class, doing training competitions with changing partners. All these exercises provide an opportunity to develop one or another mechanism of energy supply, have a complex effect on the training of the boxer and at the same time increase his physical and technical-tactical readiness.

Special attention should be paid to mastering the technique of exercises performed with a ball, rubber bands, pneumatic punch, rope.

In the course of special training, it is necessary to emphasize the development of the boxer's special endurance in conditional and free fights with the help of projectiles and exercises performed on simulators. The volume and intensity of special and special training exercises will increase.

When planning general and special physical training, it is necessary to take into account the share of a young athlete during the entire training and training period. At the beginning of training, more attention should be paid to general physical training than to special training. As the boxer acquires the technique, it is necessary to include more special physical training exercises that help the mastering of the technique. the indicator increases.

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**SCIENTIFIC-PRACTICAL CLASSIFICATION OF EXERCISES USED IN DEVELOPING
THE ABILITY OF ARTISTIC GYMNASTICS GIRLS**

Bozorova Munisa G'ayratovna
Master student of Termiz State Pedagogical Institute

Anatisation

In this article, the methods of using physical exercises in artistic gymnastics are described, and at the same time, the possibilities of using exercises are discussed. The multifunctionality of the gymnastic exercise is determined by the method of performing it and the number of repetitions. For example, it is stated that sitting postures can be used to write the rhythm of the limbs, develop the strength of the leg muscles, courage, internal endurance, strengthen the will, and expand the functional capabilities of the body's systems.

Keywords. Gymnastics, gymnastic exercises, movement skills, the task of the teacher, aesthetic, spiritual, emotional, moral, communication, work, sports.

Gymnastics exercise has a predetermined goal, such as: to expand the functional capabilities of the body, to develop movement, mental and personal qualities (skills), to provide participants with aesthetic, mental, emotional, moral, communication, work, sports and other experiences. is a complex dynamic structure of consciously performed actions to achieve enrichment. In order to be able to choose the most effective exercises that will give you the opportunity to solve the task, you need to have extensive and deep knowledge about them.

The wide range of tasks that can be solved with the help of gymnastic exercises is determined by their multi-structure and multi-functionality.

The multi-structure of some gymnastic exercise is determined by the quantity and content of the movements included in it, as well as sensory, energetic and psychological support. These elements, which are specific sub-structures of the exercise, collectively determine its content. The nature of the interaction between these elements is determined by the goal to be achieved with the help of the exercise. This is a form of gymnastics. Its form and content are inextricably linked. There are countless different gymnastic exercises, each of which differs from another in the form and content of its substructures.

The multifunctionality of the gymnastic exercise is determined by the method of performing it and the number of repetitions. For example, sitting postures can be used to write the movements of the limbs, develop the strength of the leg muscles, endurance, internal endurance, strengthen the will, and expand the functional capabilities of the body's systems.

The task of the pedagogue is to enrich the participants with knowledge, learning and skills from among a large number of exercises and methods of their execution, which are different in terms of structure, and to choose exercises and methods that will give them the opportunity to develop the necessary abilities.



Knowledge about gymnastic exercise is a subjective image of this exercise, an idea about the exercise, the structure of its movements, the difficulty and lightness of its performance, its opportunities for recovery, education and training. Knowledge of the exercise is characterized by the fact that the student correctly describes it verbally, using terms, describes it in a picture, scheme, etc. It serves as a basis for practicing the exercise. In order to consciously perform the studied exercise with a clear idea about it, deep and extensive knowledge is needed; it is necessary to have meaningful and operational knowledge, to know the philosophy of exercise perfectly.

Meaningful knowledge about exercise - the structure of movements, their sensory, energetic and psychological support, performance techniques, the demands it places on the participants and their abilities, learning and (assessing them) and development of the personal abilities of the participants knowledge about the possibilities of its use in the cultivation of properties, as well as for health, education and practical purposes.

Substantive and operational knowledge are inextricably linked, like form and content. Together, they give a full description of the studied exercise, show its potential for health, education, training and practical use. This knowledge is the basis of a conscious and active attitude to practicing gymnastics and mastering the learned exercises. For this reason, it is necessary to regularly enrich students with scientific knowledge that has passed the practical test.

Learning by students is the process of consciously and actively turning systematized scientific knowledge and practical experience of teaching gymnastics into the personal property of students, their unique wealth, a tool for thinking and effective practical activity, an important need for life.

For the pedagogue, the conscious acquisition of scientific knowledge in gymnastics means learning and mastering exercises for students, preparing them for work and military service.

These departments of scientific and practical knowledge are inextricably linked with each other, and each of them can only be combined with other departments, and the gymnastics course - other sports and related theoretical knowledge: mechanics, anatomy, physiology, psychology, pedagogy, theory and methodology of physical education, etc. can be mastered effectively.

Teaching gymnastic exercises is based on the general didactic principles of practical use of meaningful and operational knowledge and formation of learning and skills. The ability to perform a gymnastic exercise is the ability of the exerciser to control the movements included in it under the control of the mind in accordance with the knowledge of the exercise. This ability is acquired on the basis of the student's knowledge of movement techniques, movement experience, physical and mental preparation. At this stage of mastering the exercise, a strong mind, memory, will and mental work are required from the participant.

Each of the elements of learning to perform a gymnastic exercise has its own complex structure. Knowing it is the basis for the rational and effective formation of learning and skills related to movement, sports skills in gymnastics. Learning to perform the exercise is formed during the training process and includes a long series of conditioned reflexes of the first and mainly the second signal systems. Their work is determined by the activity of the brain and its higher departments and is subject to the laws of anatomy, physiology and psychology.



The skill of movement is a perfect and rational way of controlling movements in a holistic gymnastics exercise from the point of view of the learned exercise technique and the style of gymnastics. In this case, students' minds are focused not on certain actions, but on the conditions of performing the exercise, its final result, and the skill of performing the exercise.

Laws of human development in terms of age. Children acquire the experience of movement faster than adults and spend less neuromuscular energy. The wider the acquired experience, the more they know about the things and events that surround them, the better their body functions, mental and personal qualities are developed, each of them will have the dynamics of development appropriate to their age. . Because of this, it is important not to miss the most convenient (sensitive) age period and to encourage the development of abilities in a timely manner, to enrich the participants with the necessary knowledge, learning and skills related to movement, useful habits for life, regular practice of gymnastics. It is important to form a strong belief that it is beneficial for the individual and society.

Training of skilled gymnasts capable of adequately protecting the honor of the school, district, city, region, country. This factor is closely related to the previous factor. The same tasks are solved here, but at a higher level, higher and more stable results are achieved. In addition, the beauty of the gymnast's body, well-developed movement skills, discipline and other qualities acquired during gymnastics are worthy of being an example.

Skills are formed by repeatedly accurately repeating the actions or the learned exercise. In this case, no serious changes are made to the structure of the exercise, it is usually performed in the same conditions. As the number of repetitions increases, the gymnast gets used to the exercise, the need to concentrate, distribute and move attention from one point to another disappears, the tension in memory, will and other mental processes decreases, as well as the percentage of perceptual and content control decreases. The technique of execution gradually approaches the model, the technique of exercises.

The main feature of the skill is its "automation". Consciousness controls the correctness of action only in emergency cases. "Automation" of actions in changing conditions of the external and internal environment, such as: a) when the environment, weather, lighting conditions, etc. change; b) when the person performing the exercise is tired and feels uncomfortable; c) when there are long breaks in training, it gives a very stable and stable tone to the skill in performing exercises.

Along with the "automation" of certain actions in the process of formation of skills, they are combined into a single, integrated set, an unchanging pattern in terms of structure. This gives the movements a light, even and economical tone. At the higher stages of skill development, a separate perception of all parameters of movements (inertia, moment of inertia, amount of movements, moment of movements, reactive movement, reactive force, etc.) appears. A gymnastic combination is performed according to the principle of a dynamic pattern, that is, one movement starts the next movement.

Movement skills (habits) are of great importance in human life. Speaking in this regard, K.D. Ushinsky noted that if a person did not have the ability to acquire skills, he would not have made a single step forward in his development. Skills, life patterns and habits facilitate sports and labor activities, reduce the nervous-spiritual and functional stress of a person, help to strengthen his health and prolong his life.



Movement skills in gymnastics are a subjective factor determining the productivity of a gymnast's work: the better they are formed, the higher the gymnast's sports skills. The conditions under which the training process takes place (sports base, inventory, establishment of educational work, etc.) are an objective factor.

Knowledge, movement, learning and skills are the stages of a single process of achieving results in sports, and in labor activities - creating a work product. Knowledge continues and enriches in learning, learning in skills, and skills in sports results or labor. The achieved goal inspires the gymnast to acquire more complex knowledge and skills.

The task of the pedagogue is to provide gymnasts with the necessary system of knowledge, training and skills based on their existing talents and abilities, to achieve the planned sports result, and in the same process to develop the acquisition of more complex knowledge, training and skills, and ultimately to achieve high sports skills consists of riding.

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**COMMON IDEAS IN PRAISE OF THE MOTHERLAND IN ENGLISH AND UZBEK
POETRY OF THE 20TH CENTURY**

Kurbanova Nadira Rozikovna
f.f.f.d (PhD)

Karimova Dilshoda
Bukhara State University, 2nd Year Graduate student
Literary Studies (English) Department

Abstract

This article provides information about the unique aspects of Uzbek and English literature and poetry, as well as the bright manifestations of Uzbek poetry.

Keywords. Dramaturgy, poetry, genre, rubai, poem.

Annotation

This in the article Uzbek and English literature and of his poetry to himself special aspects also Uzbek _ of his poetry bright manifestations about data given _

Kalit so'zlar . Dramaturgiya , she'riyat , janr , ruboiy , she'r .

XX in the century created it 's Uzbek literature of samples from defect achievement ' I , from bad the better many _ _ _ Professor Naim Karimov this about : " XX century - mankind in history the most from the great ages one _ This in the century How many p _ blood finished , _ _ How many p _ injustices and injustices ro ' y gave be it , humanity _ the same that's it in the century the future towards big step threw _ In this century happen has been all events humanity of history indispensable content " .- said was _

Famous critic scientist Free Sharafiddinov : "In the 20th century we have of the world each how high requirements answer give will receive high literature it was created we say can _ Storytelling , short stories , and poetry in novels also the same in dramaturgy the proof dozen to meet " ,-- wrote was _ XIX century second from the middle of the 20th century to the end until created Uzbek poetry samples between periods together , mutually compared to them artistic of thinking the following directions according to update stages happened that he gave we observe : 1) idea and content news ; 2) subject colors in selection 3) form and in style news .

This updates equal to socio-economic and another one how much factors with dependent – all periods tie standing traditions (fig and content , tone and the idea etc.) are also available . But this traditions are also certain to the period suitable update from the stages passes . This is huge to the period special again one aspect - of poetry is socialization . Poetry of the 80s about thought stated the majority critics social of content priority view get legality period with depends those who evaluated it as a process .



All in times sung homeland , freedom , independence topics this period more current view took _
Notably , the 20th century in his poetry each one to the period special private aspects sure Although it
seems , the Motherland on the subject works - poems content and in essence internal one totality ,
integrity felt stands _ This essence is the Motherland almost one face thirty year continue reached
colonialism from chains save the nation hur , free to see of desire sometimes openly , sometimes while
hidden expression in finding is known . This big of the period bright representatives Cholpon , Hamid
Olimjon , Oybek , Abdulla Oripov , Rauf Parfi , Shaukat Rahman , Osman Azim , Khurshid Era such as
of poets homeland on the subject his poems comparatively learned and artistic of thinking social
direction gradualism idea , content , form and tone in the example closely observation can _
Cholpon 's " Comfort in the poem " desire " (1922) . in love your heart internal experiences from the
statement next semantic level is symbolic social content surface comes out Lyrical of the hero without
success faded dreams - beloved symbol inside people 's wealth liberty , freedom , independence
meanings expressed . Poem tone , content , meaning " I do n't know , my heart comforting " who " verse
to the basis built _ In the poem placed of the question the answer while last :

Thoughtful thoughts -la heart inconsolable _
Take heart desire thought with does not bleed
They say this at night light candle non - combustible
If there is no lightning the match original sons ...
at four reflection is enough

The people , the truth and sophistication will not die , them honored , sang the great ones are also
eternal . Our grandfathers Navoi and Babur is also his own works through is alive . They are the sun the
freshness is unfading magical artistry created _ That 's two contemporary a poet own in his works high
human feelings my praise did _ Here it is so immortal from feelings one is this Homeland is a feeling .
Har two creative lyrical in his poems , epic Homeland in his works topic skill with glorified _ Even
Alisher Navoi's " Discussion " . like " ul-lughatayn " . scientific his work is also high patriotism in the
spirit was created . He called himself " homeland . " rahnamoye " knew Navoi " Saddi In the epic "
Iskandarii " . so said was :

Homeland leave one breath Don't worry ,
I'm angry again foreign passion do n't circle ...

No wonder , Navoi's this masterpiece thoughts To Babur prophecy being seemed if _ Babur still inspired
by the country own to the heart full familiar without doing stand up , grow up since time immemorial
into his hand sword holding from history good known . Babur's in the language kingdom the love of the
Timurids the only one powerful state recovery air joshib , tugyon was doing He is this movement with
mutually to massacres I'm done wants to give it happened , but of history cruel wave him From his
homeland almost did _ Here is the poet himself sadness , regret and bad things with this about what
said was :

Tole ' no to my soul It 's been a youth ,
Har it's work , I turned it - there was an error .
Own the earth put , Indian sorry I faced ,



Yorab , netayin , ne face what happened ?

By the 30s of the XX century Shura government literature the reins complete into his hand took _ To literature partisanship , classism criteria with approached socialist realism mold app was done , repression to the climax came out Exactly that's it in the period (1939) Hamid Olimjon 's poem " Uzbekistan " . was written . The poem mother to the country call it an ode can _

Great in Britain English literature developed . His come output Britain in the islands living of tribes oral people from his poetry begins . These lands original population - Celts - Roman rule under (1 - 5 - centuries) , then to them Anglo - Saxon (5th century) attack did , they own in turn , in the 11th century . Scandinavia of the vikings descendants - Normans by pressing received _ Anglo-Saxon tribes to the language Celtic , Latin and Scandinavia effect effect showed . Various ethnic come of exits confusion initial medium centuries of literature to himself characteristic determined . English nationality and national literary of the tongue formation in the 14th century happen will be Literary English of the language appear to be Chaucer 's work with depends being his _ activity medium from centuries Wake up to the period passed . His " Canterbury fairy tales " English literature development important stage; them English of realism formation process Chaucer's to himself special skills , heroes from description, humor , social of vices satirical from teasing begins . Wake up during English literature philosophical of thinking fast development with separate stood , especially English of materialism the founder Bacon and private propertyless of society existence announcement did In Mora 's " Utopia " works bright reflection delivered . More socialist of ideas development important contribution added and new of the period utopian of the novel the beginning set .

Foydalanilgan adabiyotlar

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GRAPHICAL MODELING OF SEMIREGULAR POLYNOMIALS

Qutbiddinov Hikmatillo Qudratillo o'g'li
Kokan State Pedagogical Institute
Master of Engineering Graphics and Design Theory

Annotation

This article provides information on graphic modeling of polygons and semi-regular polygons.

Keywords: polyhedron, graphics, modeling, surface, polygon, body, space, regular

A polygon is a geometric body bounded by flat polygons. These plane polygons are called the sides of the polyhedron, the sides of the polygon are called the edges of the polyhedron, and the vertices of the polygon are called the vertices of the polyhedron. the sides of a polygon form a polygonal surface Usually, objects similar to the depicted objects are excluded from the polygon series. Therefore, when defining a polygon, the polygonal surface (collar) is restricted as follows:

- 1) let each edge be common to two and only two sides (such sides are called adjacent);
- 2) it is possible to connect each two sides with a chain of adjacent legs in a row;
- 3) for each vertex, let the angles belonging to this vertex limit a polygonal angle.

A polygon is called convex if it lies on one side of the plane passing through its arbitrary axis. For any convex polygon, the following Euler's formula is appropriate between the number of its vertices, the number of edges Q and the number of sides Y_0

$$U - Q + Y_0 = 2.$$

In general, Euler's formula is not valid for non-convex polygons. Usually, the quantity $X = U - Q + Y_0$ is called the Euler characteristic of a polygon.

If all sides of a convex polygon are regular polygons of the same name and all polygon angles are equal, such a polygon is called a regular polygon. There are five regular polygons in total: tetrahedron, cube, octahedron, dodecahedron, and icosahedron. The dodecahedron and the icosahedron are related, just like the cube and the octahedron, that is, the centers of the sides of the dodecahedron are the vertices of the icosahedron, and vice versa. the fact that there are five different regular polygons in space is an amazing fact, because the number of regular polygons in the plane is infinite. All regular polygons were known in Greece. The 13th book of Euclid's famous "Principles" is devoted to them (see Euclid's "Principles"). these polygons are often called Platonic solids. The great Greek scientist Plato likened four of these bodies to the 4 elements of the universe:

Tetrahedron - fire, cube - earth, icosahedron - water, octahedron - air. the fifth polygon - the dodecahedron is a symbol of the structure of the universe, called the "fifth essence." is called there are 13 types of semi-regular polynomials.

A set of tools representing information is called a data model. Of course, different people interpret the outside world in different ways and have different knowledge about them. That is why different models are used to understand the real world and its phenomena. There is a holistic theory that studies and



researches the formal problems of modeling or modeling. Nowadays, there is computer modeling technology, the purpose of which is to understand the nature that surrounds us, the phenomena that occur in it, events and changes in society is to speed up the process of understanding by means of modern methods. mastering computer modeling technology requires good knowledge of computer systems (as an intermediary device) and the ability to use modeling technologies in it.

The use of computer programming languages has made a significant turn in the way of mathematical modeling. On high-power Pentium processor computers created at the end of the 20th century, it is possible to create various views of the studied process models (graphs, diagrams, animations, multiplications, etc.) on the computer screen. There are options for moving the model on the screen (for example, a sketch of a picture) at different levels (plane, space)

The model created on the screen can be saved as a file in the computer memory and used several times.

In general, the following directions can be distinguished in the methodology of computer modeling:

1. The organization of experiments in the geometric direction is carried out on the coordinate plane. The computer is used as a tool for viewing models and researching the properties of geometric objects and checking mathematical hypotheses.
2. The second direction is related to the modeling of various actions. Various motion problems can be solved by computer models. it leads to a deeper and wider feeling of the nature of the processes taking place, a real evaluation of the obtained results, and an expansion of imagination about the possibilities of computer modeling.
3. The third direction - modeling function graphs on the computer screen - is widely used in professional computer systems. For example, the Logo program allows you to graph functions, solve equations and systems of equations, and obtain their results. the most important thing is that the use of computer modeling technology plays the role of a new stage in the realization of real reality and the realization of the cognitive process

Data models, regardless of their form, must fulfill the following requirements:

1. Simplicity. The data model should have a small number of related structure types.
2. Clarity. The data model should be visual.
3. division into parts. The data model should be able to be easily replaced in the data warehouse.
4. Change of place. The data model should be able to be replaced by similar models.
5. Freedom. the data model should not contain only specific fragments.

The above-mentioned requirements cannot ensure the ideality of the created models. Because only some important features of the real object are involved in modeling.

In short, the method of graphic modeling of semi-regular polynomials allows to implement it in its mathematical model without any expensive and often difficult experiments. a significant increase in the capacities of technological devices determines the emergence of a number of issues related to the optimal use of external and internal energy resources. therefore, in the improvement of existing equipment and the design of new ones, the main attention is paid to the development of specific methods of placement of technological and structural parameters



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BASIC SKILLS OF TEACHING ENGLISH

Nozima Khalilova Sharofidinovna
Academic Lyceum named after M.Vosikova under TDYU
English Teacher

Abstract

This article shows that English language learning/teaching in elementary grades of secondary general education has its own characteristics and requires the use of special teaching methods. Teaching methodology is a holistic system, which consists of components such as educational conditions, purpose, content, and method.

Keywords: Verbal skills, analysis, definition, assistance, goals and tasks.

BASIC SKILLS OF ENGLISH LANGUAGE TEACHING

Nozima Khalilova Sharofidinovna
Academic Lyceum named after M.Vosikova under TDYU
English Teacher

Abstract

This article describes the study/teaching of English in the elementary grades of secondary general education, which requires the use of special teaching methods. teaching methodology is a holistic system, consisting of such components as educational conditions, purpose, content, method and means.

Keywords: Speech skills, analysis, determining the essence, assistance, goals and tasks

Introduction: B to high school students is a discussion of issues related to the process of teaching English oral speech, and its subject is "oral speech skills", the methodological system of their formation in the English language education of elementary grades of secondary school forms the basis. Especially starting from elementary school, to increase students' interest in learning English, one of the most important elements in learning a foreign language is to build vocabulary and learn by using learned words and making simple sentences. Consolidation of rgangan words, use of visual aids, memorization of words belonging to the same group, colors, days of the week, months, seasons and similar words in the form of poems leave a deep impression on the child's mind.

The Main Part:

The goals and objectives of the study. Basic research its purpose is to analyze and study the methodical features of the formation of "speaking and listening comprehension skills" which are a component of



the activity of oral communication in a foreign language. Realization of this goal, in turn, requires research on the following tasks:

- to determine the place and essence of oral speech in teaching foreign languages and to achieve this goal by studying linguistic, pedagogical, methodical literature on the subject and using them critically;
- distinguish between speaking and listening comprehension, which are considered types of oral speech, and comparative study and analysis of their place in language education; to study the possibilities;
- to analyze the coverage of oral speech material in English language textbooks and training manuals intended for primary grades;
- aimed at the formation of oral speech skills in primary grade textbooks to analyze the system of exercises and to summarize the instructions on the use of their effective types;
- principles of implementation of given methodical instructions specifying and showing methodical ways, etc

The scientific hypothesis of the study is as follows: in order to help the students of elementary school to acquire the skills of English speaking and its use in speech communication, the main factor of quick and easy achievement of foreign language education is for what purpose and in relation to the study in the direction related to organization. The use of linguistic features of the selected language material based on the indicators of the interlinguistic typology and the use of language-related speech situations shows a positive effect on the formation of students' speaking skills.

Conclusion: As a result of the emergence of such a situation, new educational programs, textbooks, study guides, scientific works, high The demand for qualified foreign language teachers is increasing day by day. So let's never get tired of learning. Any person who makes an effort, no matter what field he is in, will surely achieve his intention .

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**MATHEMATICAL MODELING OF PROCESSES OF AGRICULTURAL USE OF LAND
AND WATER RESOURCES**

Sharifi Abdul Fatah
Termiz State University, Doctoral Student

Abstract:

In this article, it is said that the use of digital technologies in agriculture today is the main reason for achieving high development results.

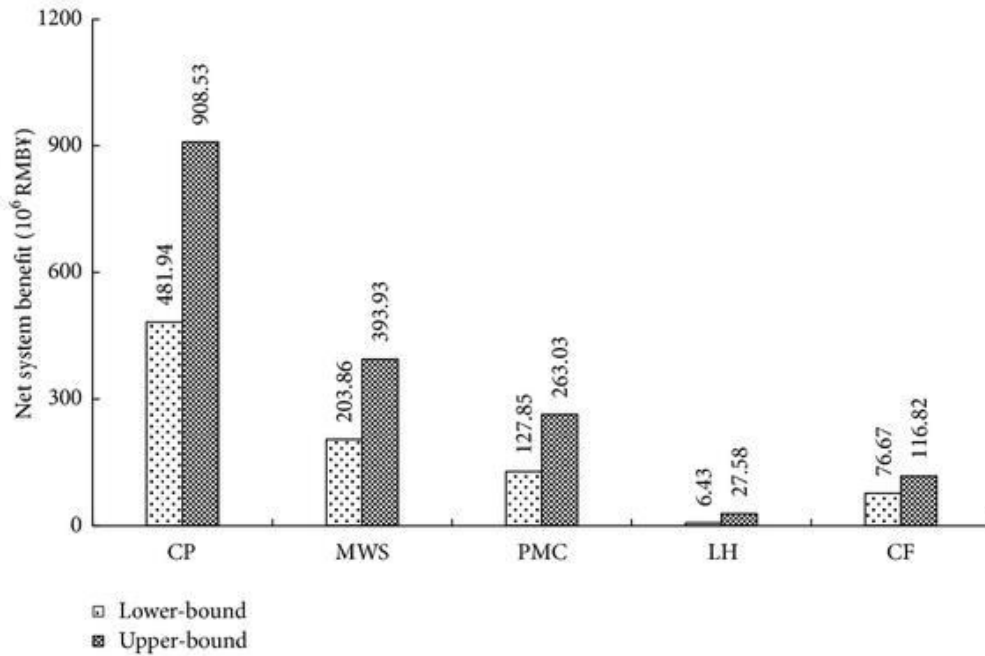
Keywords: agriculture, mathematical modeling, information technology, abstraction, information-consulting service, hypothesis, forecast.

Introduction

Today, agriculture is an independent field in Uzbekistan, and special attention is paid to the use of mathematical modeling methods in the field of agriculture and water management, like in other fields. Modeling methods have been used in agriculture since ancient times. Later, it is developing, and with the development of new information and communication technologies, the possibilities of its use are also expanding. In Uzbekistan, scientific research on mathematical modeling of socio-economic development of agriculture and informatization of management processes began in the 60s of the last century. In the early stages of research, specific issues related to irrigated agriculture, in particular, crop rotation, irrigation, and a number of other models of agricultural development and agricultural management processes, were developed, which were used in their practical application. has not lost its importance [3].

The idea of creating a multi-level information-accounting system of agricultural management and the concept of its implementation was founded by V.V. Qabulov, academician of the Faculty of Arts of the Republic of Uzbekistan. In general, it provides an opportunity to model agro-economic processes based on the laws of the agricultural management system and the information of its constituent elements and subsystems. Large-scale work on the more active application of information technologies to the agricultural sector is being carried out in our republic. Modernization and acceleration of agriculture in the Strategy of Actions on five priority areas of development of the Republic of Uzbekistan in 2017-2021 and the "strategy of development" approved by the Decree of the President of the Republic of Uzbekistan No. PF-60 of January 28, 2022 in the process of development, the issue of further expansion of the modern market services provision infrastructure was determined, which in turn creates the need for agricultural producers to use information and advisory services [1].

Modeling is a universal method of scientific knowledge. In order to achieve high results in agriculture, it is necessary to carry out constant calculations. Mathematical modeling methods are used for this. For example, how much fertilizer to put on the ground, how much water to give, checking the condition of the plant, planning the proportional distribution of water coming from the irrigation source, etc.



Water distribution planning is carried out taking into account the economic indicators of the entire system that optimize economic activity, and a mathematical model is developed. Since agriculture is the sector that provides us with basic food products, it has become necessary to pay serious attention to it. At the same time, it is possible to achieve high quality and productivity by paying special attention to modeling in agriculture. Setting the issue: the development of agriculture requires the effective use of effective technologies and mechanization aggregates; to be able to choose the profitable level of mechanization; to improve technology management; to improve the provision of material and technical resources and credits; to improve service and product processing; to further improve the condition of agricultural products storage, transportation and melioration of irrigated lands, to improve the condition of drainage and irrigation networks; depends on the state's reforms in agrarian policy.

The purpose of the research: to analyze the application of mathematical modeling methods in the field of agriculture.

Tasks of the research: Analysis of information sources on the research topic; determining which mathematical modeling methods are used in agriculture; draw conclusions from the obtained results. Tadqiqotning obyekt: The object of research is mathematical modeling methods used in the field of agriculture.

Research method: The research method is the analysis of mathematical modeling methods used in the field of agriculture. Research results: Not only economic, but also material resources are needed to



work on issues and put them into practice. If the right approach is beneficial, the wrong approach is harmful. For this reason, every work carried out requires careful analysis. The result of recent research has shown that in recent years, in order to achieve high efficiency in agriculture, it is necessary to widely use mathematical and computer modeling. But modeling is a complex process, which is a combination of the process of building, learning and accepting models. Modeling is a process inextricably linked with abstraction, analogy, hypothesis, etc. Modeling as a process should include the construction of abstractions, drawing conclusions by analogy, and as a result, the drafting of scientific hypotheses. Models are divided into the following groups: linear models; abstract models; static models; dynamic models; practical models; deterministic models; optimization models, etc. Economic-mathematical and econometric modeling methods are often used in agriculture. Here, the productivity of agricultural crops, the amount of fertilizer and moisture applied to the land to achieve high productivity, or other quantitative indicators are taken into account [2,6]. Below, the dependence of the yield of agricultural products (u) - on the amount of applied fertilizer (x_1) and (x_2) - on the quality of seeds is sought in the form of the model $u = a_0 + a_1x_1 + a_2x_2 + \varepsilon$. Here, a_0 , a_1 , a_2 are treated as unknown parameters, and ε is a random variable. In order to increase the efficiency of agriculture, the reduction of the cost of products depends on the expansion of the production of agricultural products and the financial condition of agricultural entities. When the cost is reduced, the wholesale and retail prices of agricultural products will also fall and it will be possible to buy more of them. In addition, the income of employees will increase and the standard of living will be higher. In agriculture, economic-mathematical and econometric modeling methods are used to solve the following issues: • Development of a program for obtaining high yields from agricultural crops; Effective use of agricultural machinery; • Development of a model for creating optimal conditions for agricultural crops; • Development of the field; • Storage and transportation of agricultural products; • Improvement of drainage and irrigation networks; • Further improvement of the reclamation condition of irrigated lands; • Forecasting the expected yield in the future. Summary. The use of various innovative technologies in agriculture is the main reason for achieving high development results. Only on the basis of objective information, it is necessary to organize the effective use of land and water, manpower, mineral fertilizers and other production resources in agriculture, to improve the condition of drainage and irrigation networks, and to determine functional tasks aimed at increasing efficiency. can come to the right conclusion. The use of mathematical modeling methods is certainly useful in giving such conclusions [4,5,6,7].

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**ANALYSIS OF AGRICULTURAL CHEMICAL PROPERTIES OF WESTERN TYANSHAN
MOUNTAIN SOIL**

Ch. R. Begimqulov

Термезский институт агротехнологий и инновационного развития

INTRODUCTION

Today, as a result of global climate change, the loss of one of the main indicators of soil fertility-humus, namely, dehumification, leads to an acceleration of processes such as a decrease in fertility, erosion, and desertification. According to the FAO international organization, about 33% of the world's soils are subject to degradation to varying degrees. The main environmental problem of nature management and the effectiveness of biological resources is soil degradation. Along with other soils of the continent, soils of Uzbekistan are also subject to degradation. They also exhibit such phenomena as dehumification, loss of a granular water-resistant structure, compaction, decrease, thickness of the humus horizon, erosion, salinization, etc. Under these conditions, the importance of developing competitive resource-saving technologies for improving soil fertility and cultivating crops based on the achievements of biology and modern biotechnology. However, the development used to accelerate the increase in soil fertility and restore the fertility of degraded lands should play a dominant role. Using only technologies of previous decades does not allow us to successfully solve these problems in connection with two circumstances: firstly, due to accelerated soil degradation and intensive technogenic impacts; secondly, the last 30-40 years on the planet, significant climatic changes have begun, which also negatively affect the level of productivity of agroecosystems. Accordingly, to mitigate the negative effects of these two factors, it is necessary to increase attention to the development of fundamental problems of soil fertility. Among them, the mechanisms and nature of the accelerated reproduction of the humus content in all regions of the country, but especially in arid farming zones, play a particularly important role.

The degree of knowledge of the problem. Researches in the field of the amount of soil humus, its fractional-group composition, distribution patterns in the republic were carried out by F.Yu. Geltserem, P.N. Kostichev, N.P. Besedin with students, M.A.Belousov, S.N. Ryzhov with students (Rizhov, Tashkuziev, Ryzhov, Ziyamammedov), D.A. Makhmudova, as well as studies in the field of organic matter and the properties of erosion-prone various soils of mountain and foothill regions were carried out by H.M. Makhsudov, I. Turopov, R.K. Kuzievim , D.S. Tairbaeva, .Adilov, M.F. Fakhrutdinova, N.Yu. Abdurakhmonov, G.S. MiKhaydarovaG.M.Nabievoy, N.Shadievoy and other scientists. The physical properties of humus. Humus has certain physical properties, such as: 1) color, 2) characteristic structure, 3) bulk density, 4) stickiness and cohesion, 5) specific gravity, 6) significant water-holding ability, 7) water permeability, 8) heat capacity, 9) shrinkage upon drying, 10) coagulation under the influence of electrolytes, 11) absorption capacity in relation to salts and gases (large exchange capacity of absorption), 12) significant buffering capacity, and 13) specific smell.

The study of agrochemical properties is an important indicator for clarifying the types and differences of soils, when assessing the comparative potential soil fertility. Studies have shown that in the process



of flushing the upper, most fertile horizons, significant changes in its chemical and agrochemical properties occur.

It is known that mountain-brown soils are characterized by a high content of organic substances, therefore, they have an increased level of fertility. The results show that the humus content of the upper horizon of mountain-brown carbonate soils is 2.49-3.49%, decreases to 1.30-1 towards the bottom. thirty%. Gross forms of nitrogen, phosphorus and potassium in the upper horizons are larger than the lower ones; a decrease is observed towards the bottom. The carbonate content in brown-carbonate soils along the profile varies in the range of 8.39-10.9% in non-washed soils, 10.8-11.2% in weakly washed soils and 10.4-11.8% in medium-washed soils. CO₂ carbonates in mountain brown carbonate soils are 8.39-11.8%, in typical brown soils 3.69-11.61% and on leached brown soils 3.06-9.20%, and high amounts of carbonates reclaimed in the lower horizons of soils. In the arable horizon of these soils, the humus content on carbonate non-eroded mountain-brown soils was 3.49%, on weakly eroded soils - 2.90%, average eroded soils - 2.49%; on non-eroded typical brown soils - 3.79%, on weakly eroded soils - 3.57%, on average eroded soils - 2.96%, on washed soils - 4.36%; 4.50% on leached brown non-eroded soils, 3.75% on weakly eroded soils, -2.51% on medium-eroded soils. The content of gross nitrogen on carbonate non-eroded mountain-brown soils amounted to 0.260%, on weakly eroded soils - 0.165%, average eroded soils - 0.154%; 0.238% on non-eroded typical brown soils, 0.311% on weakly eroded soils, 0.268% on average eroded soils, 0.227% on washed soils; 0.235% on leached brown non-eroded soils, 0.182% on weakly eroded soils, and 0.175% on mid-eroded soils. The composition of leached mountain-brown soils showed a low content of carbonates, the pH of carbonate mountain-brown soils and typical soils is slightly acidic (pH in the range of 6.4-6.8). The C: N ratio in soils ranges from 9.3-12.9, in typical brown soils -- 7.5-13.1, in leached brown soils -- 9.3-14.0. The C: N ratio in mountain brown carbonate soils varies with the degree of susceptibility to erosion. So, the C: N ratio, that is, the enrichment of humus with nitrogen according to the level of the attribute, uncleaned ones belong to a high degree 1, and weakly and blurred differences of a middle I and II degree. The results of determining the pH of the soil show that the reaction of the soil medium in all differences is slightly alkaline (pH about -7.3).

An analysis of the agrochemical properties of mountain brown typical soils suggests that there is a more powerful humus horizon in these soils than in mountain brown carbonate soils.

The humus content in the upper layer of unwashed and slightly washed soils is 3.79% -3.57%, and decreases to the bottom. And in medium-washed soils in the upper layer, humus is 2.96% and decreases down to 0.85%. In the upper horizon of unwashed soils, gross nitrogen is 0.23%, in weakly and medium-washed soils 0.311% -0.268%, and gradually decreases down the profile. The phosphorus content in the upper horizons ranges from., 183 to 0.135%, as the degree of erosion increases, their content decreases. In the studied soils, the content of gross potassium also varies depending on the degree of leaching .

Studies have shown that erosion processes also affect the distribution of carbonates along the profile. The carbonate content in the studied soils along the profile is from 3.5 to 11.6%. Mountain brown typical soils differ from mountain brown carbonate in a lower carbonate content. The C: N ratio in these soils,



according to the level of their characteristics, refers to unwashed and slightly washed to a medium degree, and medium washed to a high degree, the pH of the soil is slightly alkaline. According to the analysis of mountain-brown leached soils, it can be seen: that in these soils the humus content is higher than mountain-brown carbonate and mountain-brown soils, 4.50-3.75% humus is contained in the upper horizon of unwashed and slightly washed soils, down the profile decreases to 1.60-1.72%. In medium-washed soils in the upper horizon, the humus content is 2.5% and down the profile decreases to 0.85%. In the upper horizon of unwashed soils, gross nitrogen is 0.235% in weakly and moderately washed soils 0.182% and 0.175% down and the profile decreases. The phosphorus content in the upper horizons ranges from 0.290 to 0.184% and decreases in degree of washing from 0.195% to 0.054%. (table 3.4.1.1.). The most important genetic properties of serozems, as pointed out by A.N. Rozanov [2.209; p.918-926], is the carbonate content. The nature of the distribution of carbonates reflects not only the current situation, but also the history of soil development and depends both on hydrothermal conditions, especially the water regime, and on the biological factor of soil formation (A.M. Mamytov, [2.156; p. 65-79]).

It is known that the process of soil formation in brown mountain soils occurs under conditions of carbonic weathering. According to this, one of the characteristic features of the chemical composition of these soils is the presence of lime carbon dioxide (CO₂ carbonates) in them.

Mountain brown weakly leaching, and therefore the location of the carbonate-illuvial horizon, depends on the strength and depth of soil wetting, the degree of carbonation of the soil-forming rocks and the terrain. The relief is a redistributor of precipitation and solar insolation. The temperature of the soil, its heating and drying, and, consequently, the pulling up of soil solutions, including carbonates, or their lowering, depend on this. In the leveled areas of the study area, soil washing is deeper and carbonates are lowered to a considerable depth. On the slopes of the southern exposures, they are closer to the surface, and if, moreover, the slopes of considerable mire and erosion of the upper horizons of the soil are eroded to different degrees, carbonates are in the upper horizon. In rainfed eroded carbonate-brown soils, the content, in addition to humus and nitrogen, of some other nutrients, in particular gross forms of phosphorus and potassium, decreases. The data show that the differences in the content of gross phosphorus and potassium in the arable horizons of poorly washed and unwashed soils are not very large, but a slight decrease in their total amount is observed on average washed-out differences. This is explained by the approach to the surface of the lower soil horizons, poor in phosphorus and potassium. The effect of water erosion on the content of phosphorus and potassium in the soil is most pronounced on medium-washed brown-carbonate soils and, therefore, a decrease in gross and mobile phosphorus due to an increase in the content of calcium carbonates in washed soils that form hardly soluble phosphorus compounds. This is explained by the fact that, as erosion increases, lower layers containing more carbonates come to the surface. So, if in the upper horizon of poorly washed brown-carbonate and typical soils, the content of CO₂ carbonates is 5 - 2, then the average washed out 9-7%. As can be seen from the table, the increase in carbonate content in the upper horizons of washed brown-carbonate soils manifests itself more sharply than on weakly washed brown-typical soils since carbonates are washed deeper on typical brown soils.



The influence of water (storm) erosion on the position of gypsum neoplasms of virgin rainfed brown carbonate and typical brown soils of the studied object is not clearly manifested in all cases.

Thus, erosion processes significantly changed the chemical, agrochemical properties of mountain brown soils. With an increase in the degree of erosion, the content and reserves of humus and nutrients decreased; accordingly, this physical parameter worsened some physical properties, in particular the soil structure, and reduced the amount of moisture in the soil.

CONCLUSION

1. From light-colored, typical gray soils to dark-brown and mountain-brown soils, the activity of the studied oxidation-reduction enzymes increases with increasing total microbiological activity, the amount of humus and nutrients. The greatest activity of enzymes is manifested in the upper layer of the soil and their sharp decrease in the lower layers, which is especially observed in eroded soils, and in non-eroded and eroded soils, the stability of enzymes is significantly lower than the profile of microorganisms. changes in carbonates, aggravation of mechanical composition, soil density, genetic layers of soils. A close link has been established between humus substances in soils and respiration and enzymatic activity.

3. Western Tien-Shan brown carbonate, brown typical brown alkaline soils regional specificity of humus state, ie regressive-accumulative type of humus profile, increased hydrolyzability and average moisture content of organic matter, humicity level of organic matter (from high to weak), mainly fulvate in humus and humate-fulvate types and fractional properties of humic acids.

4. In describing the diagnostic indicators of mountain soils from new materials of scientific and practical importance in terms of humus formation, humus status, elemental composition, physicochemical properties and fertility of humus substances of the Western Tien Shan mountain and foothill soils, maintaining and restoring soil fertility and is recommended for use in the development of enhancement measures, as well as in lectures in the fields of soil science, erosion, soil conservation, soil chemistry.

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PURIFICATION AND CHARACTERIZATION OF PECTIN FROM LEMON (*CITRUS LIMON*) AND APPLICATION IT AS ANTI CANDIDIAL INFECTIONS AGENT

Hala M. Sabre

Elaf Sameer Mohammed

Sraa Nsayef Muslim

Zainab Salim Hussin

Zainab Mahmood Hamid

Al-Karkh Univirsity Of Science College, Department of Microbiology, Iraq

Sraa.n.muslim@kus.edu.iq

Abstract

The pectin was extracted from lemon peels with hydrochloric acid. The isolated lectin was a light yellow tint after extraction. The content of pectin increased with temperature increasing up to 80°C, and a pH of 1 in the extraction medium produced the highest pectin output. *C. albicans*, *C. tropicalis* and *Candida glabrata* were the predominated species in the urine samples from hospitalized patients. Clotrimazole and miconazole, two routinely prescribed antifungal medications, showed a moderate rate of sensitivity. While employing extracted pectin as fresh material, certain isolates of *Candida albicans*, *C. tropicalis* and *Candida glabrata*, in 100 g/disc revealed a good level of anti-candidial activity that was higher than the utilized antibiotics. It is recommended to encourage using of pectin as an alternate treatment for nosocomial and community-based *Candida* infections.

Keywords: *Citrus limon*, pectin, *Candida* infections

Introduction

Pectin is a very complex polysaccharide that is utilized extensively as functional ingredients in the food and pharmaceutical sectors. Pectin is one of the various polysaccharides that are isolated from plant sources (1,2). Pectin is a gelling and thickening ingredient used in food technology (2).

Pectin is a naturally occurring substance that is present in all higher plants' cell walls. Pectin was used for long time with the ability to produce gels, thicken liquids, and stabilize solids in different fields, including the cosmetic industries and clinical and environmental applications. Detoxification, lowering blood sugar, and an anti-diarrheal action are some of its medical uses (2,3). Pectin can be employed to improve the nutritional compositions' abilities to function, such as their capability to absorb water and oil, gel, thicken, etc (4,5). In addition to the most popular commercial sources of pectin, such as citrus peel and apple pomace, Additionally, novel sources such as sugar beets and sunflower heads were researched. (6,7).

An oval, Gram-positive, budding yeast cell called *Candida* is a polymorphic fungus that also generates pseudohyphae in tissues and exudates (8). Although *C. albicans* is the species most usually implicated in human infections, besides to other species of *Candida* (9). However, *Candida* species, particularly in hospitals) and in immunocompromised patients, can also function as an opportunistic pathogen, which



can express severe infections involving major body organs (10). Most healthy persons have commensals of *Candida* on their skin, mucosa, or gastrointestinal tracts (11,12).

The primary pathogen, *Candida albicans*, is isolated in 50–70% of the cases stated above. *Candida albicans*' effectiveness in colonizing and infecting humans depends on a variety of methods, a few of which could be attributed to its morphological, biochemical, and genetic adaptability (13). To effectively treat and manage candidiasis, *Candida* must be quickly, accurately and reliably identified down to the species level. The main goal of that experiment using of lemon peels as a source to extract of pectin, determine its yield, characterize the extracted material, and test the material's ability to act as an anti-candida complex polysaccharide in hospitalized patients with UTI infections.

Materials and Methods

Sample Preparation

The fresh lemons was collected from neighborhood markets. The peels were removed after cutting the samples into four pieces. In order to eliminate the glycosides, which give peels their bitter taste, as well as the remnants of the pesticide spray, Further cutting into tiny pieces allowed for easy drying of the peels. They were then mixed and stored in a polythene bag for later use after being air dried for 24 hours.

Pectin Extraction

The extraction was carried out by adapting the procedure that was described by (14). Three ml of hydrochloric acid and small grams of the peel powder were combined with 300 ml of distilled water to form PH equal to 1. The sample was heated to 80°C in a water bath for one to two hours. After cooling, filter cheese cloth was used to remove the formed cake and the produced extract precipitated with ethanol at an equal amount of ethanol while thoroughly stirring, then the pectin to float to the top by being left unattended for 30 minutes. Centrifugation was used to separate the formed pectin gel from the ethanol and water. After being refined, the recovered pectin was pressed on a nylon towel after being rinsed in 200 ml of acetone. The cleaned pectin was drained and pressed to remove any leftover solvent and water. The resultant pectin was measured, minced, and left to dry in the open air. Finally, a pestle and mortar were used to further crush the dry pectin into smaller bits. Equation following was used to compute the pectin content. $P \times Bi \times 100 = Y_{pec} (\%)$

Where: P: the weight in grams of extracted pectin while Bi: the initial amount of lemin, and y pec (%) is the extracted pectin yield expressed as a percentage (%).

Characterization of Extracted Pectin

1-Color: This test was carried out by watching how the created gel looked.

2. Cold and hot water solubility: Distilled water was used to combine the pectin samples individually. The heating at 80°C for 15 minutes after giving the mixture a thorough shake to create a solution.

3- Comparable weight



One hundred ml of distilled water, 1 gram of NaCl, 1 gram of pectin powder, and a few drops of phenol red indicator were combined. With 0.1 M NaOH, the solution was titrated until the endpoint reached a pink tint. The equivalent weight was calculated using the formula below: $100\% \text{ ml of alkali} \times \text{sample's weight (in grams)} \times N \text{ of alkalis. (15)}$.

4- Calculating the PH:

To find the ideal pH for pectin extraction, hydrochloric acid was added to pectin extract, resulting in a pH range of 1-2.5.

Isolation and identification of *Candida* spp.

From hospitalized patients, 25 urine samples in total were collected. The spacemens were grown on Sabouraud Dextrose Agar for the isolation. Until fungal growth was seen, the plates were incubated at 37 °C for 5 days and looked at every day. According to (9) microscopic and macroscopic investigation allowed for the identification of fungal components. The growing isolates were diagnosed with an automated technique (Vitek-2 Compact).

Antifungal activity of antibiotics and pectin

This investigation, pure pectin and two available antifungals (clotrimazole and 10 g/disc) and (miconazole and 10 g/disc) were utilized. The fungal isolates were cultured and incubated on SDA at 37 °C for 24 hours prior to the creation of a yeast suspension in distilled water that was equal to 1/2 McFarland. The yeast broth was spreader on SDA plate, and the formed discs coated with clotrimazole, miconazole, and pure pectin were scattered across the plate in three different quantities (25-50-100 g/disc), then incubated for 48 hours at 37 °C (15). An inhibitory zones were measured and noted.

Results and Discussion

Pectin extraction

Lemon peel pectin has a 16.12% yield when it was hydrochloric acid extracted it. Absolute ethanol was used to pre-treat the peel for 30 minutes. Because ethanol peel pre-treatment inactivates enzymes without causing soluble pectin fractions to leach and enhances purity by removing ethanol-soluble components, including sugars (14). These findings showed that hydrochloric acid could be used to successfully extract solutes for the manufacture of pectin, offering potential advantages for commercial pectin extraction from both an economic and an environmental standpoint (16).

Characterization of pectin

The isolated lectin was a light yellow tint after extraction. The content of pectin increased with temperature increasing up to 80°C, and a pH of 1 in the extraction medium produced the highest pectin output. Additionally, it was discovered that utilizing ethanol as a solvent seems to be more effective. According to the table, The lemon equivalent weight was discovered to be 422 mg/ml, with a yield of 15.7% as in table(1).



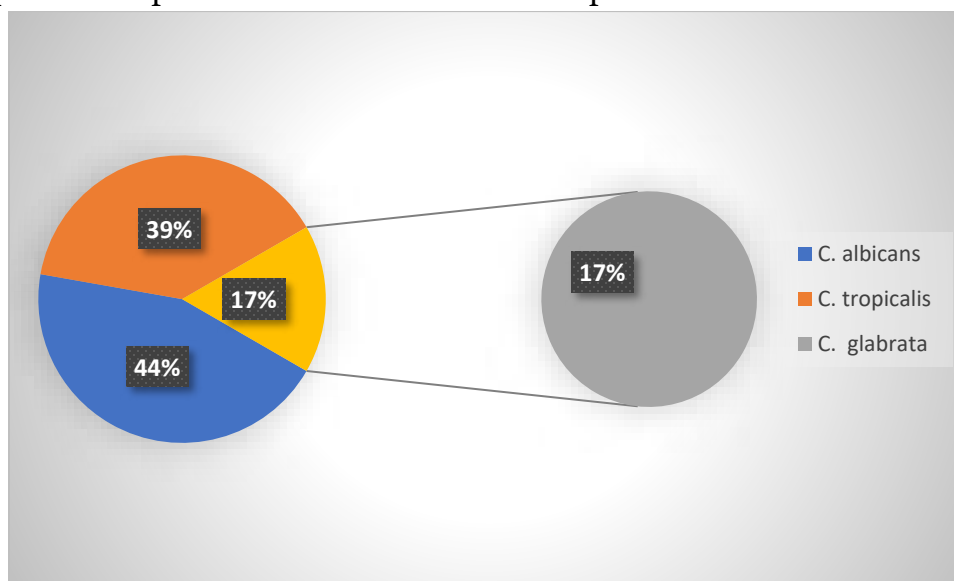
Table(1): Parameters of lectin extraction in different pH values of hydrochloric acid

hydrochloric acid	color	Solubility in hot water	EW (%)	Yield (%)
pH 1	Pale yellow	Full	422	15.7
pH 1.5	Pale yellow	Full	421	13.6
pH 2	Pale yellow	Full	418	9.5
pH 2.5	Pale yellow	Full	413	7.4

Pectins are typically light in color, hence the type of fruit may have played a role in the tangerine's color disparity (17). According to (18) Banana peel pectins had a higher degree of lightness than pectins derived from citrus peel and apple pomace, and they also claimed that pectins from these sources had a higher degree of redness and yellowness than pectins from banana peel. This would be as a result of the various colorants included in the raw ingredients. Because neutral sugar glycosidic bonds are more sensitive to pH than the bond between two galacturonic acids, low pH indicates increased acid concentration (acidity), which leads to the breakdown of the neutral sugar side chains. Increasing the extraction temperature at low pH also increases the yield of pectin((19). In contrast,(20) about 912.17 and 455.1 grams, respectively, of pectin were extracted using HCl and citric acids. More pectin was obtained from pectin extraction when it was done on a dry basis compared to when it was done on a wet basis (21).

Isolation and identification of *Candida* spp.

The findings revealed that 18 different isolates belonged to the genus *Candida*. According to figure(2) *C. albicans* (8 isolates, 44%), *C. tropicalis* (7 isolates, 39%), and *Candida glabrata* (3 isolates, 17%) were the three species that predominated in the urine samples.



Figure(2): percent and numbers of *Candida* spp. isolated from urine samples

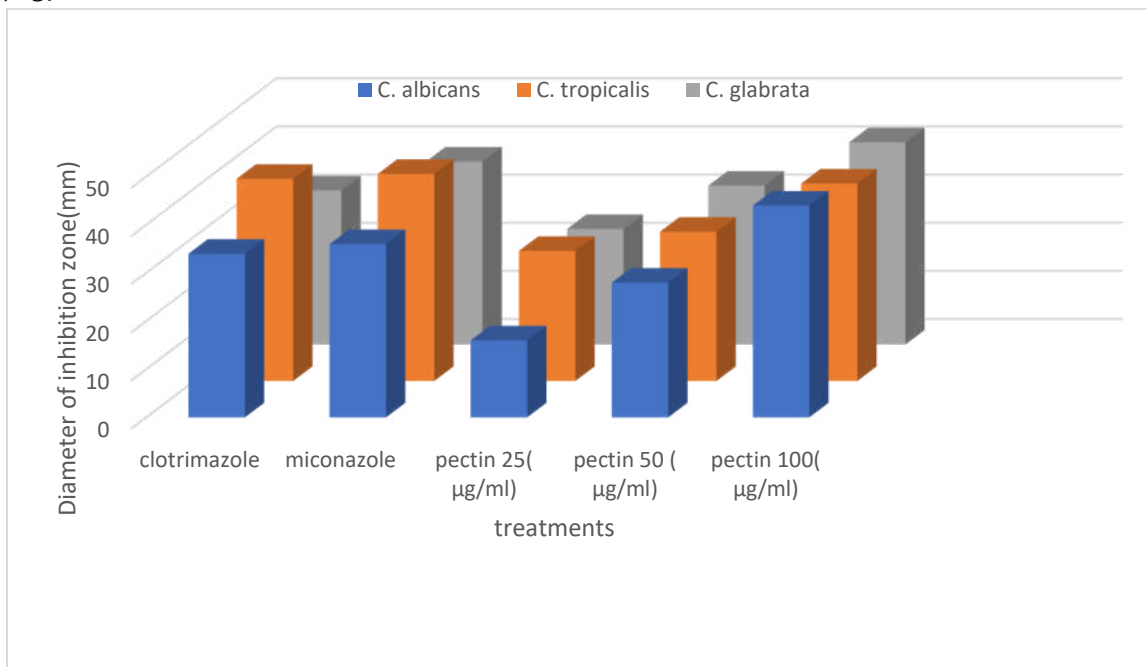


There are asymptomatic and symptomatic variants of candiduria. The vast majority of patients with *Candida* excretion in their urine don't show any symptoms. However, symptomatic candiduria is a sign of renal candidiasis, pyelonephritis, cystitis, epididymo-morchitis, and prostatitis (15).

According to previously reported findings, *C. glabrata*, *C. parapsilosis* and *C. tropicalis* appeared with high ratio (22). In another research by (15) Despite a rise in UTI cases caused by species other than *C.albicans*, *C.albicans* continues to be the most common cause of fungus-related UTI.

Antifungal activity of antibiotics and pectin

Clotrimazole and miconazole, two routinely prescribed antifungal medications, showed a moderate rate of sensitivity. While employing extracted pectin as fresh material, certain isolates of *Candida albicans*, *Candida glabrata*, and *C. tropicalis* in 100 g/disc shown a good level of anti-candidial activity that was higher than the utilized antibiotics *Aspergillus* species, *Cryptococcus neoformans*, *Histoplasma capsulatum*, *Pseudallescheria boydii*, *Trichosporon* species, *Candida* species, and Gram-positive bacteria are only a few of the many species that miconazole is active against. Resistance to miconazole is rare (16,23).



Figure(3):Antifungal activity of extracted pectin and antifungals drugs towards *Candida* spp.

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**DIRECT DETERMINATION OF IRON DRUG RELEASED FROM TiO₂ NANOTUBES
VESSEL**

Samiya Aljashaam, and ZainabTY Alabdullah*

Department of Chemistry, College of Education for Pure Sciences,
University of Basrah, Basrah, Iraq

*Corresponding Author: E-mail: zt_yasin@yahoo.com

Abstract

This study focused on using TiO₂ nanotubes as a vessel for drug release. the release of iron ion from titanium dioxide nanotubes was done. TiO₂ nanotubes synthesized by anodization. Anodization method was done using 60 volts between two titanium plate as an electrode. the distance between two electrodes 6.5 cm. the electrolyte, contained (0.5w/w NH₄F, 2w/w H₂O, 97.5 w/w ethylene glycol) the anodization process accomplished at room temperature. Scanning electron microscopy (SEM) was used for examine the morphology of the surface on synthesized TiO₂ nanotubes. SEM images show that the prepared tubes were within the nanoscale TiO₂ nanotubes mouth at 80 nm in diameter. Synthesized TiO₂ nanotubes used as vessel for iron drug release. The determination of iron which release from the tubes measured using spectrophotometric method. The percentage of drug release reached % 99.6.

Keywords: TiO₂ nanotubes, iron ions, drug release, spectrophotometric method

Introduction

Due to its high strength and low density, titanium and its alloys are now widely used in a number of applications. In the past decade TiO₂ nanotube arrays (TiNTs) grown by a self-organizing electrochemical anodization process have attracted tremendous scientific interest due to the combination of geometric features with an inherent photocatalytic activity. These days, titanium and its alloys are highly favoured for their great strength and low density in a variety of applications, including solar energy, water splitting and implants. For the material to be biologically active, surface modification is necessary. The simplest and most affordable form of surface modification for implantation is electrochemical anodization. Surface morphologies are essential for giving the substance bioactivity [1]. Additionally, titanium material that has had its surface transformed with TiO₂ (Titanium Oxide Nanotubes) nanotubes is non-toxic and can be used as biological material [2]. The fluoride content, water content, organic or non-organic solvent and distance between anode and cathode, anodization time all affect how well a material's surface bonds with nanotubes. For electrolytes with fluoride and water content, the optimal findings were reported [3, 4].

Additionally, the presence of water content has a big impact on how well the nanotubes' function. The best electrolyte mixture for creating TiO₂ nanotubes is one that contains both fluoride and water. Better corrosion resistance is delivered when TiO₂ nanotubes are produced in the presence of water and HF electrolyte [5]. Furthermore, it was claimed that the inclusion of the ethanol-water solution affects the outcomes of the nanotube [6]. Hydrogen content may be impacted by a rise in water content in the



electrolyte, which can quickly enhance growth and material stability [7]. Due to its abundance (titanium is the ninth most abundant element in the Earth's crust), reasonable cost, lack of toxicity [5], great biocompatibility, and stability, it has a wide range of applications. A corrosion-resistant substance with typical size of under 100 nm is titanium nanotubes. They have unique bending characteristics including strong electron mobility and extremely high mechanical forces [6–9] and are one-dimensional. One of the key components in the elimination of organic waste is titanium dioxide nanotubes. The photochemical characteristics of TiO_2 , such as its strong photocatalytic activity, are its most promising attributes. For this reason, the use of TiO_2 as a photocatalyst has been thoroughly investigated by numerous researchers since the 1950 [10]. Nanotechnology has boosted the development of various new nanomaterials and drug carriers for drug release applications. One of the most important materials is TiO_2 nanotubes. As drug carrier a wide range of nanoparticles [11] microgel [12] nanotubes [13] and polymeric micelles [14] have been explored. Especially, drug carriers based on nanotubes have various beneficial features due to their intrinsic high surface-to-volume ratio, well defined geometry and stable structure. From our knowledge this is first time the release drug determined and the exactly concentration can be determined.

Experimental

Synthesis of TiO_2 nanotubes

Titanium foils that were 99.6% pure were sonicated in acetone to eliminate any left overs before anodizing. A high-voltage power source was used in the electrochemical anodization setup. A two-electrode electrochemical setup with a constant voltage of (60) V for (120) minutes was used to conduct the anodization procedure. The titanium metal surface was (1) cm^2 away from the electrolyte, and there were (6) cm between electrodes. The Ti plates served as the anode and cathode, and the electrolyte, which contained (0.5w/w NH_4F , 2w/w H_2O , and 97.5 w/w) at room temperature.

Preparing of TiO_2 for drug release

The prepared TiO_2 was dipping in 25 ppm iron (II) solution for 40 min. Then the plate was left and dried at air. Then the filled plate was dipped for 15 min in the mixture (5 ml 1,10-phenanthroline, 8ml sodium acetate and 1ml hydroxy ammonium chloride). Then the absorbance of iron which was released from the filled TiO_2 nanotubes was determined using spectrophotometric method for comparing with standard solution the equation 1 was used.

$$\text{Ads\%} = (A^\circ - A_t / A^\circ) * 100\% \dots \dots \dots (1)$$

The release was applied on drug such iron (III) hydroxide injection by following the same procedure.

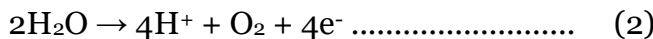


Result and Discussion

1- Synthesis of TiO₂ nanotubes

Anodisation strategy has been made possible by recent advancements in the theory of self-ordering growth via anodic oxidation. Anodization is the most popular techniques for improving arrays of ordered nanotubes made of different metals, including Ti, Al, and others.

In the anodization process water in the solution reacts with the titanium metal surface leading to the formation of oxide layer under an applied electric field as seen in equation2, 3.



TiO₂ oxide layer is then etched into as it is dissolved with assistance of fluoride ions as seen in equation (4)



Charctrization of TiO₂ nanotubes by scanning electron microscopy (SEM)

The samples were characterized using SEM. Under the SEM, the size and shape of the TiO₂ nanotubes were evident. The tubes are shown in the SEM images in (Figure 1) to be cylindrical and to have a self-organized structure. The typical tube diameters and the common tube sizes (5µm) were (80-90nm) after 120 min anodization duration.

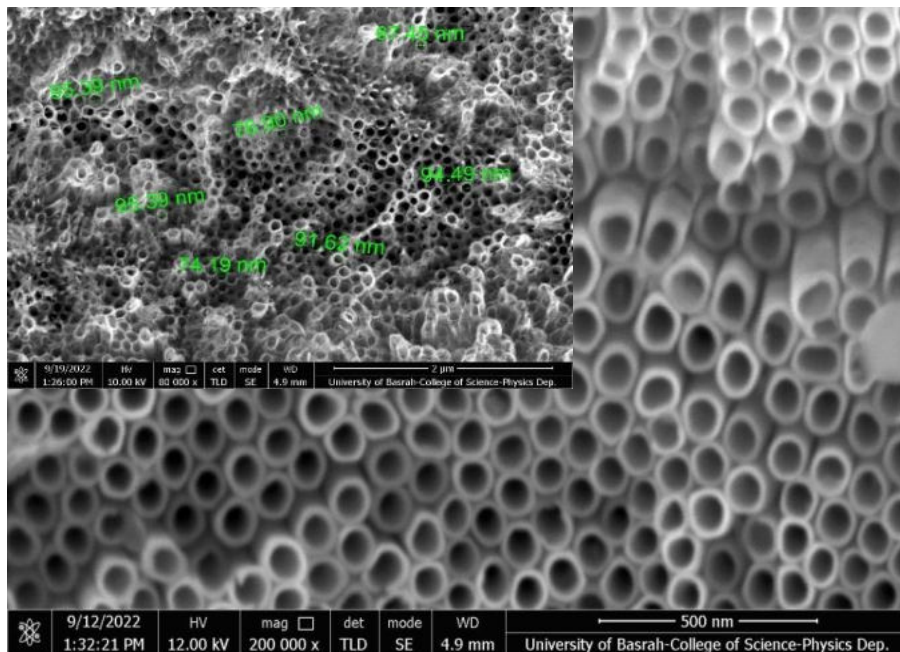


Figure 1. SEM image shows morphology of TiO₂ nanotubes



2- Application of synthesized TiO₂ nanotubes

Synthesized TiO₂ nanotubes were applied for drug release. first of all, the iron (II) was chosen as a sample for drug release the real sample from iron injunction was used. The photometric method using 1,10-phenanthroline as a reagent is very sensitive method for determination of red-orange complex (iron (II)- 1,10-phenanthroline). The parameters for the spectrometric method were studied such the maximum wavelength and the standard curve. The maximum wavelength 510 nm as shown in (figure 2).

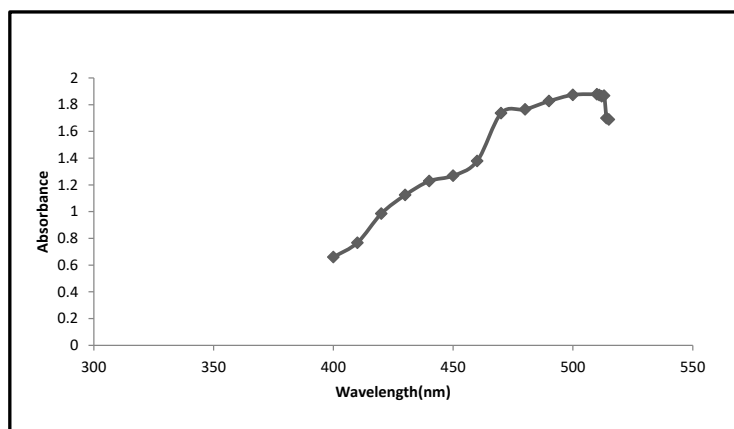


Figure 2. maximum wavelength or iron (II)-1,10-phenanthroline ($\lambda_{max} = 510 \text{ nm}$)

The standard curve was done for iron (II) in the range (5-25) $\mu\text{g/ml}$, as can be seen in (figure 3). The concentration of iron (II) ions (10) $\mu\text{g/ml}$ was chosen for the examination of the release of iron. the equation 1 was applied for this measurement.

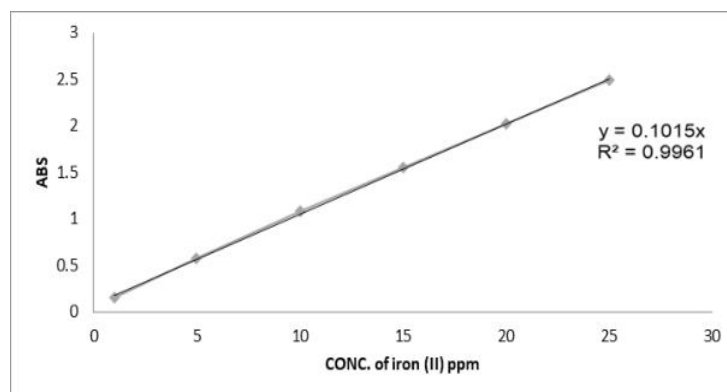


Figure.3 standard curve for iron (II)-1,10-Phenanthroline

The release was done for 70 min from the (figure 4) the maximum release found at the 10 min then the droop happens and the steady state was reached. The percentage of release at the maximum was 99.6% as can be seen from (figure 5).

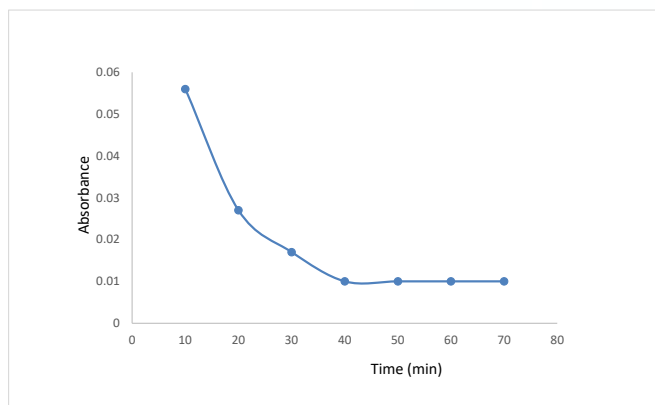


Figure 4. The release of iron (II) using TiO₂ nanotubes

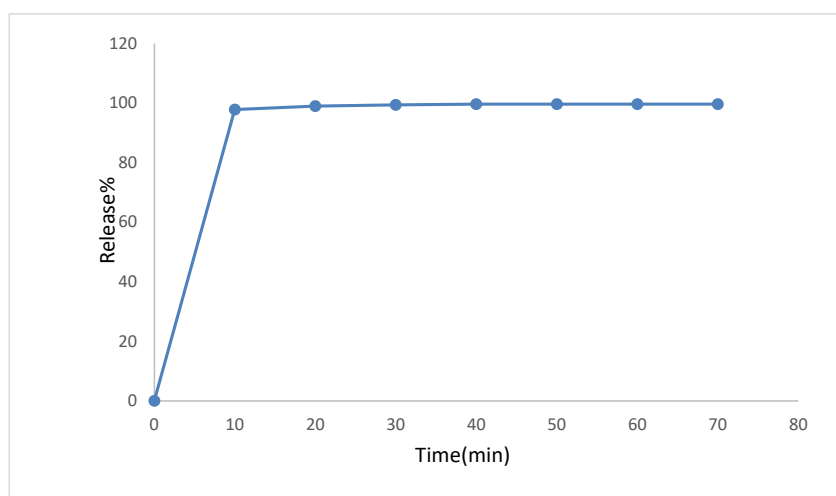


Figure.5 release percentage of iron (II)using TiO₂ nanotubes

Drug release using iron (III) hydroxide injection

This method was applied using real sample the drug of iron (III) hydroxide injection (100mg\2ml) and study of release as shown in (figure 6). The percentage of release reached to maximum 83.07% at 70 min then the steady state was reached.

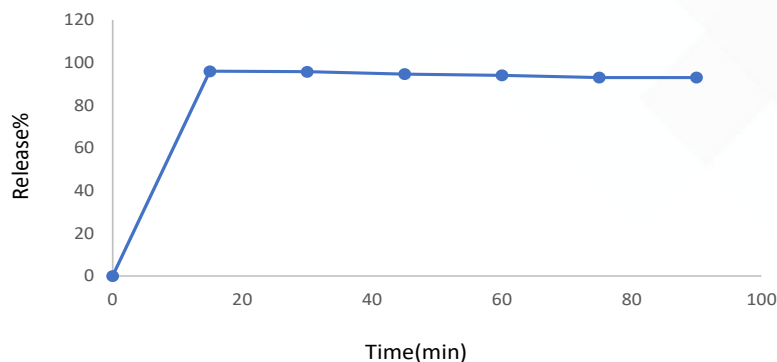


Figure 6. The platform of iron drug using TiO₂ nanotubes as a vessel.

Conclusion

In this study, TiO₂ nanotubes were made using an economical, fast and repeatable anodization process. Titanium dioxide nanotubes were distinguished using scanning electron microscopy (SEM). Synthesized titanium dioxide nanotubes were used as a vessel for drug release target. TiO₂ nanotubes were filled with iron (II) then the release was done. The concentration of iron (II) was determined using spectrophotometric method. The process was applied on iron drug (iron (III) hydroxide). It was found that TiO₂ nanotubes good vessel for release and by optimises the shape of TiO₂ nanotubes the release process can be optimized.

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SINO-NASAL OUTCOME TEST (SNOT-22) CHANGE IN CHRONIC RHINOSINUSITIS WITH NASAL POLYPOSIS(CRSWNP) AFTER ENDOSCOPIC SINUS SURGERY (ESS)

Dr. Warzan Faris Hasan¹

1-M.B.Ch.B, Otolaryngology, Head and Neck Surgery
Kurdistan Board Candidate; Erbilcity-Kurdistan Region/Iraq
E-mail: warzan.bani87@gmail.com
phone number:009647504835041

Dr. Moyaser Abdulrahman Yaseen²

2-MBChB, FICMS (ENT); Consultant in Otolaryngology,
Head and Neck surgery, Erbil city-Kurdistan region/Iraq
E-mail: Moyaseryaseen@yahoo.com
phone number:009647504534736

Abstract

Background: The chronic rhinosinusitis with nasal polyps is commonly predominant problem in outpatients' clinics. The evaluation of endoscopic sinus surgery is essential in detecting the short and long outcomes.

Objective: To determine the change in patient symptoms having chronic rhinosinusitis with nasal polyps (CRSwNP) before and after endoscopic sinus surgery (ESS) by using 22-item Sino-Nasal Outcome Test (SNOT-22).

Methodology: This study was a prospective cross sectional study implemented in Rizgary Teaching Hospital and private hospitals in Erbil city-Kurdistan region/Iraq during the period of twelve months from 1st of June, 2021 to 31st of May, 2022 on convenient sample of fifty six patients with chronic rhinosinusitis with nasal polyps. The SNOT-22 score was assessed by the researcher through using SNOT-22 questionnaire with assessment of 22 items evaluating quality of life¹⁴. The patients were followed up regarding SNOT-22 in different period (preoperatively or as a baseline and postoperatively after one month, 3 months and 6 months).

Results: Mean age of patients with CRSwNP was (39.34 years) with predominance of male gender (58.93%). The mean SNOT-22 score of patients with CRSwNP was significantly reduced postendoscopic sinus surgery ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after one, three and six months postoperatively ($p < 0.001$). SNOT-22 score was not significantly related to age and gender of patients. The ear pain/pressure and facial pain/pressure symptoms were not significantly reduced in different study durations.



Conclusions: The SNOT-22 score is a reliable tool used for evaluating short and long term outcomes of endoscopic sinus surgery in patients with chronic rhinosinusitis with nasal polyps.

Keywords: Chronic rhinosinusitis, Nasal polyps, Endoscopic Sinus surgery.

Introduction

The chronic rhinosinusitis (CRS) is defined as mucosal inflammation of nose and paranasal sinuses in duration of more than three months with prevalence of 5-12% all over the world and an obvious burden on quality of life¹⁻³. The nasal polyps are defined as inflammatory swellings of nasal and paranasal mucosal sinuses. The CRS is classified into two major phenotypes according to presence of nasal polyps (NPs); either chronic rhinosinusitis with nasal polyp (CRSwNP) or chronic rhinosinusitis without nasal polyps (CRSsNP)¹. It was found that about twenty percent of patients with chronic rhinosinusitis have nasal polyps⁴ and it was more prevalent in men, while the CRSwNP when affect women, it presented with highly severe inflammation and it is associated with many complications⁵. Although full mechanism of CRSwNP etiology is not fully understood till now, many authors found that the chronic inflammation which is accompanied by eosinophilic infiltration, local IgE formation, and cytokine production are the main causes of chronic rhinosinusitis with nasal polyp in addition to relationship between type 2 inflammation and chronic rhinosinusitis with nasal polyps¹. Nowadays, the major interest is focused on CRSwNP disease characterization in regard to pathophysiologic endotypes instead of clinical phenotypes which is helpful in designing management strategies depending on immunological targeting⁶.

The endoscopic sinus surgery (ESS) was regarded as first-line treatment for CRS. However, many literatures revealed that it is standard to treat CRS primarily with medical treatment, in addition to irrigation, steroids, and maximal medical therapy⁷. The ESS was shown 90-95% surgical success rates¹. The ESS is indicated in patients with CRS not responding to the medical management. The ESS technique is concerned in removal of pathologic tissues inside the osteomeatal complex and restoring the mucociliary clearance and sinus ventilation without harming the normal physiology and anatomy⁸. Since discovery of nasal endoscopy, treatment outcomes evaluation was under discussion. After use of ESS in previous century, there was a scarcity of literatures evaluating long term outcomes and surgical techniques effects⁹. Additionally, techniques used in evaluating ESS outcomes are based only on qualitative scales or sometimes recording the change in some items of chronic rhinosinusitis symptoms criteria with absence of general assessment of improvement¹⁰. Unfortunately, these old assessment techniques were not designed for homogenous patients, but included different cases of acute rhinosinusitis, massive nasal polyposis, or recurrent sinusitis after external procedures¹¹. After that, the biopsychosocial model was used clinically in evaluation of patient suffering, biological, psychological and social outcomes¹². This model recorded the subjective experience of patients, which help also in diagnosis, assessment of outcomes and prolonged care. Similarly, the quality of life questionnaire was applied in assessment of outcome of many management strategies¹³. In same way, many Rhinologists used some symptom-based scores in evaluation of management outcomes of CRS



like Sinonasal Outcome Test 22 (SNOT-22)¹⁴. The SNOT-22 is a validated, self-administered questionnaire that is used to assess CRS patients. It consists of 22 items, rated from 0 (no problem at all) to 5 (worst possible symptom). Possible SNOT-22 total scores range from 0 to 110, with higher SNOT-22 total scores indicating worse. It was shown by using SNOT-22, approximately 20% to 30% of CRS patients were not completely improved postoperatively, although their quality of life was high¹⁵. Additionally, some authors reported that some patients had 10-20% 5-year risk of revision surgery, while presence of other risk factors like asthma or aspirin sensitivity, high baseline computerized tomography stage or incomplete sinus dissection, are significantly increased 5-year risk of revision surgery to reach 25% to 40%. Despite the presence of these risk factors of revision surgery, sometimes they failed to predict ESS outcomes precisely¹⁵. On the other hand, the SNOT-22 is regarded as one of the most important ESS outcome assessment techniques¹⁰ and a significant predictor of CRS improvement and revision surgery¹⁶.

The chronic rhinosinusitis is a prevalent disease in Iraqi population¹⁷. The endoscopic sinus surgery was commonly used in Iraqi patients with CRS after failure of medical management or with severe resistant cases. However, some complications were reported after implementing ESS which was commonly minor¹⁸. In Kurdistan region, the patients with chronic rhinosinusitis are the common outpatients with nasal endoscopy as the common diagnostic technique¹⁹. The aim of current study was to determine the change in patient symptoms having chronic rhinosinusitis with nasal polyps (CRSwNP) before and after endoscopic sinus surgery (ESS) by using 22-item Sino-Nasal Outcome Test (SNOT-22).

Methodology

This study was a prospective cross-sectional study implemented in Rizgary Teaching Hospital and private hospitals in Erbil city-Kurdistan region/Iraq during the period of twelve months from 1st of June, 2021 to 31st of May, 2022. The studied population was all patients with chronic rhinosinusitis with nasal polyp admitted for endoscopic sinus surgery during study period. Inclusion criteria were patients (any age) having chronic rhinosinusitis with nasal polyps (bilateral) admitted for Endoscopic sinus surgery. Exclusion criteria were patients with unilateral nasal polyp and patients refused to participate in the study. The study ethics were implemented in regard to Helsinki Declaration by approval of Ethical Committee of Kurdistan Board, documented approval of health authorities and informed oral consent of selected patients. A convenient sample of fifty six patients with CRSwNP was enrolled in current study after eligibility to inclusion and exclusion criteria.

Data of patients was collected directly from patients by researchers through a prepared questionnaire designed by the researchers. The questionnaire included demographic characteristics of patients with CRSwNP (age and gender) and levels of quality of life for patients with CRSwNP pre- and postoperatively (SNOT-22 score at baseline, after one month, 3 months and 6 months). The diagnosis of CRS is mainly clinical requires two major symptoms (nasal obstruction, facial pain, nasal discharge and smell disorder) or one major and two minor symptoms (headache, halitosis, dental pain, cough, ear problem and fatigue). The endoscopic sinus surgery was implemented by seniors' surgeons and followed by post operative



medical treatment (Antibiotics: Amoxicillin/Clavulanic acid tablet, Otosan nasal wash, topical nasal steroid: Mometasone spray and Analgesics). The SNOT-22 score was assessed by the researcher through using SNOT-22 questionnaire with assessment of 22 items evaluating quality of life ¹⁴.

The general information of the patients with **chronic rhinosinusitis** was presented in mean (SD) or number (%). The comparisons of the quality of life of patients with **chronic rhinosinusitis** before and after electing endoscopic sinus surgery were examined in the Bonferroni correction test. The comparisons of total quality of life among **chronic rhinosinusitis** patients with different characteristics at the final point of follow-up were examined in an independent t-test or NOVA one-way tests.

The comparisons of quality of life of SNOT-22 items between periods among **chronic rhinosinusitis** patients were examined in the Bonferroni correction test. The significant difference was confirmed in a p-value <0.05. The statistical calculations were performed by JMP Pro 14.3.0.

Results

This study included 56 patients with chronic rhinosinusitis with nasal polyp (CRSwNP) presented with mean age of (39.34 years) and range of (14-64 years); prevalent age groups of patients were 31-40 years (35.71%) and 41-50 years (23.21%). Male patients with CRSwNP were more than female patients (58.93% vs. 41.07%). (Table 1)

Table 1: General information of patients with chronic rhinosinusitis.

Characteristics (n=56)	Statistics	
	Number	Percentage
Age (Range: 14-64) Mean (SD)	39.34	11.82
Age category		
15-20	3	5.36
21-30	9	16.07
31-40	20	35.71
41-50	13	23.21
51-60	9	16.07
71-80	2	3.57
Gender		
Male	33	58.93
Female	23	41.07

The mean SNOT-22 score of patients with CRSwNP at baseline was (43.47), while it was (21.7) after one month postoperatively, (11.56) after 3 months postoperatively and (7.02) after 6 months postoperatively. Lowering the SNOT-22 score it means improving in patient symptoms. (Table 2 and Figure 1)



Table 2: Levels of quality of life of patients with chronic rhinosinusitis.

SNOT score (n=56)	Statistics		
	Mean	Standard Deviation	Range
Baseline	43.47	12.12	19-65
1 month	21.70	7.07	8-34
3 month	11.56	4.11	4-21
6 month	7.02	2.45	2-13

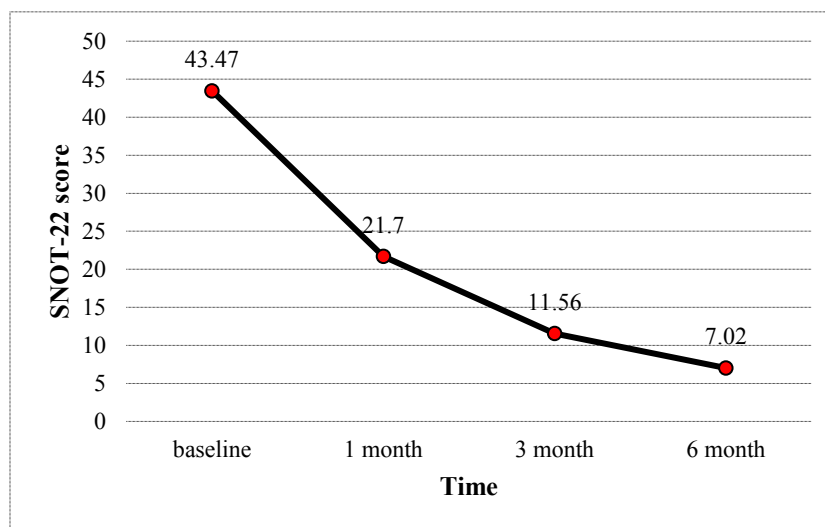


Fig 1: Levels of quality of life of patients with chronic rhinosinusitis over time.

The mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after one month postoperatively ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after three months postoperatively ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at one month postoperatively was significantly reduced after three months postoperatively ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after six months postoperatively ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at one month postoperatively was significantly reduced after six months postoperatively ($p < 0.001$). The mean SNOT-22 score of patients with CRSwNP at three months postoperatively was significantly reduced after six months postoperatively ($p < 0.001$). In general, the mean SNOT-22 score of patients with CRSwNP was significantly reduced postendoscopic sinus surgery ($p < 0.001$). (**Table 3 and Figure 2**)



Table 3: Comparisons of quality of life of patients with chronic rhinosinusitis before and after electing endoscopic sinus surgery.

Time periods mean (SD)			
SNOT score -	SNOT score	Mean diff (95% CI)	P-value (two-sided)
1 month 21.70 (7.07)	baseline 43.47 (12.12)	-21.77 (-24.94 to -18.60)	<0.0001
3 month 11.56 (4.11)	baseline 43.47 (12.12)	-31.91 (-35.44 to -28.37)	<0.0001
3 month 11.56 (4.11)	1 month 21.70 (7.07)	-10.14 (-11.71 to -8.57)	<0.0001
6 month 7.02 (2.45)	baseline 43.47 (12.12)	-36.44 (-40.08 to -32.80)	<0.0001
6 month 7.02 (2.45)	1 month 21.70 (7.07)	-14.67 (-16.50 to -12.85)	<0.0001
6 month 7.02 (2.45)	3 month 11.56 (4.11)	-4.53 (-5.53 to -3.54)	<0.0001

Bonferroni correction was performed for statistical analyses.
The red bold numbers show the significant differences.

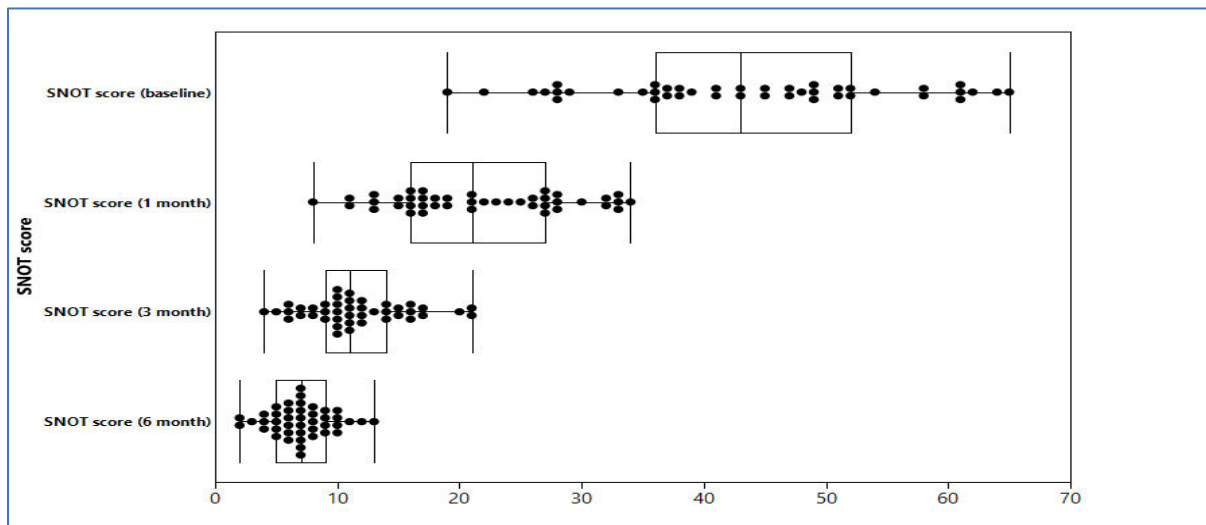


Fig 2: Comparisons of quality of life of patients with chronic rhinosinusitis before and after electing endoscopic sinus surgery.



The mean SNOT-22 score of patients with CRSwNP after 6 months postoperatively was not significantly different in regard to different age groups of patients ($p=0.2968$). Similarly, the mean SNOT-22 score of patients with CRSwNP after 6 months postoperatively was not significantly different between male and female patients ($p=0.4727$). (Table 4 and Figure 3)

Table 4: Comparisons of total quality of life among chronic rhinosinusitis patients with different characteristics at the final point of follow-up.

Characteristics (n=56)	SNOT-22 score		p-value (two-sided)
	Mean	Std Dev	
Age groups			0.2968 ^a
15-20	10.67	4.16	
21-30	6.89	1.76	
31-40	8.75	4.56	
41-50	11.31	7.96	
51-60	9.11	5.01	
71-80	15.5	10.61	
Gender			0.4727 ^b
Male	7.45	3.19	
Female	8.1	2.95	

^a ANOVA one-way and ^b an independent t-test were performed for statistical analyses.

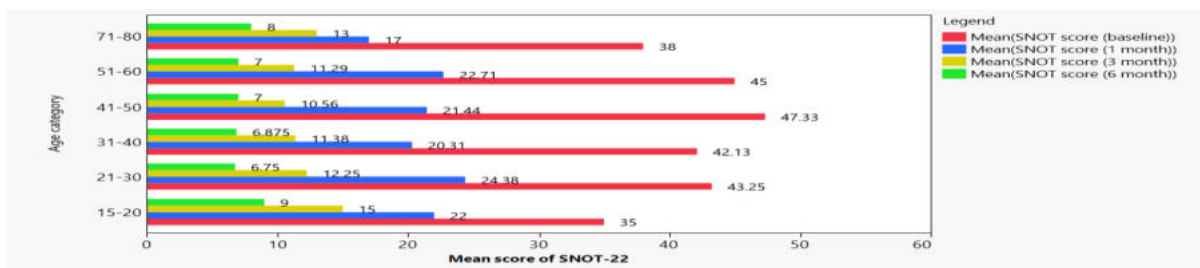
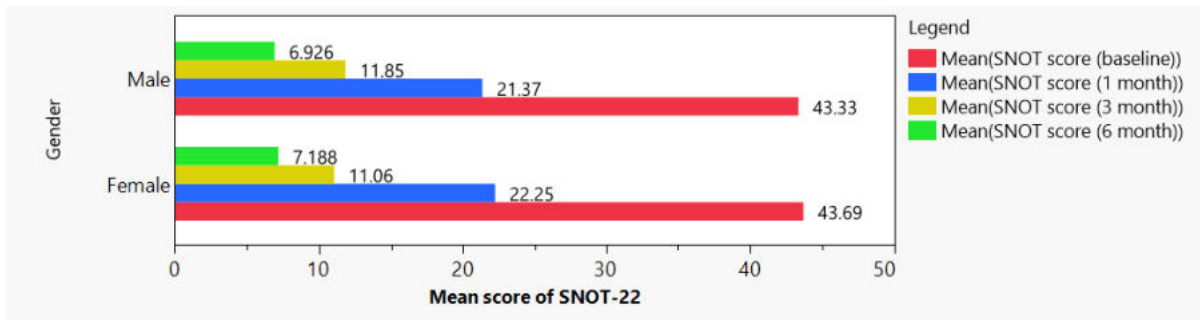


Fig 3: Total quality of life of **chronic rhinosinusitis** patients at different point of follow-up



The SNOT-22 items which were significantly reduced in all evaluation periods were need to blow nose, sneezing, thick nasal discharge, ear fullness, difficulty feeling asleep, walking up at night, lack of good night's sleep, walking up tired, reduced productivity, embarrassed, sense of taste/smell and blockage/congestion of nose ($p \leq 0.05$), while the common SNOT-22 items that were not significantly reduced in all evaluation periods were ear pain/pressure and facial pain/pressure ($p > 0.05$). (Table 5)

Table 5: Comparisons of quality of life of SNOT-22 items between time periods among chronic rhinosinusitis patients

SNOT items	Comparisons between study periods (mean vs. mean)					
	1 month vs. baseline	3-month vs. baseline	3-month vs. 1-month	6-month vs. baseline	6-month vs. 1-month	6-month vs. 3-month
Need to blow nose	2.11 vs. 3.07 <0.0001	1.61 vs. 3.07 <0.0001	1.61 vs. 2.11 0.0006	0.91 vs. 3.07 <0.0001	0.91 vs. 2.11 <0.0001	0.91 vs. 1.61 <0.0001
Sneezing	2.32 vs. 4.07 <0.0001	1.72 vs. 4.07 <0.0001	1.72 vs. 2.32 <0.0001	0.96 vs. 4.07 <0.0001	0.96 vs. 2.32 <0.0001	0.96 vs. 1.73 <0.0001
Runny nose	1.09 vs. 1.64 0.0010	0.98 vs. 1.64 0.0001	0.98 vs. 1.09 0.0832	0.73 vs. 1.64 <0.0001	0.73 vs. 1.09 <0.0001	0.73 vs. 0.98 0.0006
Cough	1.2 vs. 2.15 <0.0001	0.98 vs. 2.15 <0.0001	0.98 vs. 1.2 0.0129	0.87 vs. 2.15 <0.0001	0.87 vs. 1.2 0.0006	0.87 vs. 0.98 0.0570
Post nasal discharge	0.74 vs. 1.04 0.0281	0.48 vs. 1.04 0.0022	0.48 vs. 0.74 0.0069	0.35 vs. 1.04 0.0001	0.35 vs. 0.74 <0.0001	0.35 vs. 0.48 0.0513
Thick nasal discharge	1.2 vs. 2.22 <0.0001	0.67 vs. 2.22 <0.0001	0.67 vs. 1.2 0.0003	0.24 vs. 2.22 <0.0001	0.24 vs. 1.2 <0.0001	0.24 vs. 0.67 <0.0001
Ear fullness	1.15 vs. 1.98 <0.0001	0.42 vs. 1.98 <0.0001	0.42 vs. 1.15 <0.0001	0.2 vs. 1.98 <0.0001	0.2 vs. 1.15 <0.0001	0.2 vs. 0.42 0.0092
Dizziness	0.52 vs. 1.30 0.0001	0.31 vs. 1.30 <0.0001	0.31 vs. 0.52 0.0472	0.20 vs. 1.30 <0.0001	0.20 vs. 0.52 0.0158	0.20 vs. 0.32 0.2037
Ear pain/pressure	0.13 vs. 0.17 0.4202	0.13 vs. 0.17 0.5694	0.13 vs. 0.13 1.0000	0.06 vs. 0.17 0.1332	0.06 vs. 0.13 0.3227	0.06 vs. 0.13 0.2613
Facial pain/pressure	0.22 vs. 0.33 0.2774	0.20 vs. 0.33 0.1803	0.20 vs. 0.22 0.7990	0.17 vs. 0.33 0.1066	0.17 vs. 0.22 0.5178	0.17 vs. 0.20 0.6417
Difficulty falling asleep	1.95 vs. 3.0 <0.0001	1.33 vs. 3.0 <0.0001	1.34 vs. 1.95 0.0008	0.86 vs. 3.0 <0.0001	0.86 vs. 1.95 <0.0001	0.86 vs. 1.34 0.0009
Waking up at night	2.91 vs. 3.45 0.0020	2.10 vs. 3.45 <0.0001	2.10 vs. 2.91 <0.0001	1.71 vs. 3.45 <0.0001	1.71 vs. 2.91 <0.0001	1.71 vs. 2.10 0.0114
Lack of a good night's sleep	0.98 vs. 1.89 <0.0001	0.66 vs. 1.89 <0.0001	0.66 vs. 0.98 0.0056	0.36 vs. 1.89 <0.0001	0.36 vs. 0.98 <0.0001	0.36 vs. 0.66 0.0011
Waking up tired	1.11 vs. 1.95 <0.0001	0.52 vs. 1.95 <0.0001	0.52 vs. 1.11 <0.0001	0.30 vs. 1.95 <0.0001	0.30 vs. 1.11 <0.0001	0.30 vs. 0.52 <0.0001
Fatigue during the day	0.85 vs. 1.81 <0.0001	0.22 vs. 1.81 <0.0001	0.22 vs. 0.85 <0.0001	0.06 vs. 1.81 <0.0001	0.06 vs. 0.85 <0.0001	0.06 vs. 0.22 0.0112
Reduced productivity	0.82 vs. 1.71 <0.0001	0.25 vs. 1.71 <0.0001	0.25 vs. 0.82 <0.0001	0.04 vs. 1.71 <0.0001	0.04 vs. 0.82 <0.0001	0.04 vs. 0.25 0.0009



Reduced concentration	0.80 vs. 1.72 <0.0001	0.22 vs. 1.72 <0.0001	0.22 vs. 0.80 <0.0001	0.09 vs. 1.72 <0.0001	0.09 vs. 0.80 <0.0001	0.09 vs. 0.22 0.0513
Frustrated/restless/irritable	0.93 vs. 1.87 <0.0001	0.24 vs. 1.87 <0.0001	0.24 vs. 0.93 <0.0001	0.2 vs. 1.87 <0.0001	0.2 vs. 0.93 <0.0001	0.2 vs. 0.24 0.5685
Sad	0.89 vs. 1.86 <0.0001	0.25 vs. 1.86 <0.0001	0.25 vs. 0.89 <0.0001	0.18 vs. 1.86 <0.0001	0.18 vs. 0.89 <0.0001	0.18 vs. 0.25 0.1592
Embarrassed	0.8 vs. 2.53 <0.0001	0.33 vs. 2.53 <0.0001	0.33 vs. 0.8 <0.0001	0.13 vs. 2.53 <0.0001	0.13 vs. 0.8 <0.0001	0.13 vs. 0.33 0.0150
Sense of taste/smell	1.31 vs. 2.45 <0.0001	0.51 vs. 2.45 <0.0001	0.51 vs. 1.31 <0.0001	0.15 vs. 2.45 <0.0001	0.15 vs. 1.31 <0.0001	0.15 vs. 0.51 <0.0001
Blockage/congestion of nose	1.19 vs. 2.94 <0.0001	0.48 vs. 2.94 <0.0001	0.48 vs. 1.86 <0.0001	0.19 vs. 2.94 <0.0001	0.19 vs. 1.86 <0.0001	0.19 vs. 0.48 0.0007
Bonferroni correction were performed for statistical analyses. The blue bold numbers show non-significant differences.						

Discussion

The surgical option of endoscopic sinus surgery is found to be effective in acquiring better life quality for patients with CRS. Successful short and long surgical outcomes of CRS are affected by different factors which must be considered during the evaluation. The SNOT-22 score is designed to assess these outcomes and helping in detecting of risk factors ²⁰.

The present study showed that mean age of patients with CRSwNP was (39.34 years) with prevalent age group (31-50 years). These findings are similar to results of Vaitkus et al ²¹ study in Lithuania which reported that CRSwNP is commonly occurred in middle age patients (31-50 years) with high severity of symptoms in this age group. Our study showed the predominance of male gender in CRSwNP. This finding is consistent with results of Hussein and Jaf study ¹⁹ in Erbil city-Kurdistan region/Iraq which revealed the predominance of male gender with chronic rhinosinusitis. However, this finding is inconsistent with reports of Ference et al ⁵ review study in United States of America which stated the women were more prevalent in chronic rhinosinusitis. This inconsistency might be attributed to differences in smoking status, anatomical features and patients' characteristics between different societies.

The current study found that mean SNOT-22 score of patients with CRSwNP was significantly reduced postendoscopic sinus surgery ($p < 0.001$). This finding is similar to results of Gallo et al ²² prospective study in Italy on 457 patients with CRS which found that SNOT-22 score is a significant predictor of short and long term outcomes of endoscopic sinus surgery especially in CRS patients with nasal polyps. Another prospective observational cohort study in Canada by Rudmik et al ²³ on 327 patients with CRS revealed that preoperative SNOT-22 score was a prognostic for quality of life following ESS and it was highly predictors for postoperative outcomes in CRS patients with nasal polyps. Our study found that mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after one month postoperatively ($p < 0.001$). Similarly, Khan et al ²⁴ randomized, placebo-controlled, double-blinded, multicenter clinical trial study in United Kingdom reported that SNOT-22 score was predictive of post-ESS outcomes after one month. In our study, the mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after three months postoperatively ($p < 0.001$). Consistently, Lal et



al ²⁵ study in United Kingdom found that the SNOT-22 score is a significant predictor of ESS outcomes in patients with chronic rhinosinusitis and nasal polyp. In current study, the mean SNOT-22 score of patients with CRSwNP at baseline was significantly reduced after six months postoperatively ($p < 0.001$). This finding coincides with results of Mascarenhas et al ²⁶ prospective cross sectional study in Brazil which reported that SNOT-22 score was effective in prediction of long term outcomes of ESS for patients with chronic rhinosinusitis and nasal polyp.

The present study found that mean SNOT-22 score of patients with CRSwNP after 6 months postoperatively was not significantly different in regard to different age groups of patients ($p = 0.2968$). This finding is similar to results of Aziz study ²⁷ study in Sulaimani city-Kurdistan region/Iraq which revealed no significant effect of age groups for patients with chronic rhinosinusitis on quality of life test after ESS. Similarly, our study found that mean SNOT-22 score of patients with CRSwNP after 6 months postoperatively was not significantly different between male and female patients ($p = 0.4727$). This finding is parallel to results of Bartosik et al ²⁸ retrospective single-center study in Austria which found that SNOT-22 score of patients with CRSwNP following ESS is not affected by gender of patients.

In current study, the common SNOT-22 items that were not significantly reduced in all evaluation periods were ear pain/pressure and facial pain/pressure ($p > 0.05$). This finding is inconsistent with results of Al Sharhan et al ²⁹ study in Saudi Arabia which revealed that only psychological dysfunction symptoms had least difference postoperatively.

The differences in SNOT-22 items effectiveness between different studies might be related to differences in anatomical patterns and other patients' characteristics between different societies. The significant SNOT-22 symptoms which reduced significantly were need to blow nose, sneezing, runny nose, cough, post nasal discharge, thick nasal discharge, ear fullness, dizziness, difficulty falling asleep, walking up at night, **lack of a good night's sleep, waking up tired, fatigue during the day, reduced productivity, reduced concentration, frustrated/restless/irritable**, sad, embarrassed, **Sense of taste/smell** and **Blockage/congestion of nose**. These findings are in agreement with results of Lange et al ³⁰ study in Denmark which stated that sneezing, runny nose, cough, post nasal discharge, **frustrated/restless/irritable**, sad, embarrassed, **Sense of taste/smell** and **Blockage/congestion of nose** were the commonest symptoms involved within SNOT-22 score in evaluation outcomes of ESS. Furthermore, Georgalas et al ³¹ study in Cyprus reported that following ESS in patients with CRSwNP lead to improving both nasal and generic symptoms, however, effect size was higher for the following symptoms: being frustrated/restless/irritable, nasal blockage, reduced concentration, fatigue, runny nose and need to blow nose. A study conducted in Singapore by Teo et al ³² found that ESS improves the otologic symptoms of CRS, but in patients with CRSwNP the improvement in ear fullness was greater than CRSsNP patients.

This study concluded that SNOT-22 score is a reliable tool used for evaluating short and long term outcomes of endoscopic sinus surgery in patients with chronic rhinosinusitis with nasal polyps. The SNOT-22 score is not affected by age and gender of patients with chronic rhinosinusitis with nasal



polyp. This study recommended encouraging the surgeons to use of SNOT-22 in evaluating endoscopic sinus surgery.

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Conflicts of interest

None

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**PREVALENCE OF HELICOBACTER PYLORI INFECTION AMONG TRANSFUSION
DEPENDENT THALASSAEMIA PATIENTS**

Kavi Abdulnafi Hassan

M.B.Ch.B, KBMS trainee, Nanakali teaching hospital, Erbil, Iraq
email: kaviatroschi@gmail.com

Nawsherwan Sadiq Mohammad

FIMBS, consultant hematopathologist, Hawler ,edical university, Erbil, Iraq
Naw_sadiq@yahoo.com

Rawand Polus Shamoon

Ph.D hematopathology, rawand.shamoon@hmu.edu.krd

Abstract

Background and objectives: Helicobacter Pylori infection is a common bacterial infection specially in developing countries, this study was designed to find out the frequency of this bacterial infection in transfusion dependent thalassaemia patients and compare it with healthy controls also to associate different clinical and laboratory characteristics with Helicobacter Pylori positive and negative subjects.

Methodology: The study group included 70 symptomatic patients with thalassaemia who require regular blood transfusion and 32 symptomatic controls with the age ranging from (5-18) years. Stool sample was collected from all cases and controls and H.Pylori rapid antigen test was done for all of them. For case group also CBC and serum ferritin measurement was done.

Results: As a result 28 (40%) patients with transfusion dependent thalassaemia and 9 (28.13%) cotrols were tested positive for Helicobacter Pylori but this difference was not significant statistically. Strong relationship was found between positivity of the test and frequency of blood transfusion, frequency of chelation, type of chelation, serum ferritin level and CBC parameters (low Hb, high WBC, high Plt).

Conclusion: Transfusion dependent thalassaemic patients are more prone to Helicobacter Pylori infection than healthy controls and it can be considered as a cause of recurrent abdominal pain in these patient.

Keywords: transfusion dependent thalassaemia, helicobacter pylori, helicobacter pylori stool antigen test.



Introduction

Thalassaemias are group of inherited disorders of the red cell synthesis caused by the mutation in the globin genes, causing imbalance in the synthesis of alfa or beta globin chains of hemoglobin, resulting in ineffective erythropoiesis and chronic hemolytic anemia varying in severity⁽¹⁾. Thalassaemias are considered as commonest genetic disorder worldwide extending from the Mediterranean basin through the Middle east, India and Southeast Asia⁽²⁾. Beta thalassaemia is caused by reduced or absence of beta globin chain result in precipitation of alfa globin chains while alfa thalassaemia caused by the deletion of the alfa globin chain resulting in precipitation of beta chains leading to oxidative damage of the cell membrane and apoptosis and ineffective erythropoiesis⁽¹⁾.

The clinical severity of thalassaemias is determined by extend of imbalance between alfa and beta chains of globin, resulting in three distinct disorders: Thalassaemia major (which is transfusion dependent) , Thalassaemia intermedia (may be transfusion dependent or not) and thalassaemia minor⁽¹⁾.

Inherited hemoglobin disorders also include beta thalassaemia association with other abnormal hemoglobins such as HbS (resulting in sickle B -thalassaemia which may require regular blood transfusion), Hb E, Hb C, HbD and others⁽³⁾. Transfusion dependent thalassaemia patients are patients that require lifelong red blood cell transfusion in order to survive (such as B-thalassaemia major patients).

In thalassaemia major there is excessive red cell (hemolysis) leading to chronic anemia , also large number of red blood cells processed by the spleen causing splenomegaly and symptoms of hypersplenism resulting in need to splenectomy⁽⁴⁾. Transfusion dependent thalassaemias due to chronic anemia need recurrent blood transfusion which is another source of iron together with increased iron absorption leading to a state of iron overload and this iron accumulate in various organs especially heart and liver leading to their damage⁽⁴⁾.

Helicobacter Pylori is a gram-negative microaerophilic curved bacillus that colonizes the mucosa of the stomach and cause gastritis , peptic ulcer and may predispose to gastric cancer, studies have demonstrated that H. Pylori prevalence increases with increasing age and it is more prevalent in developing countries⁽⁵⁾. Helicobacter Pylori infection may ne asymptomatic or symptomatic with symptoms of abdominal pain which is usually at epigastric region and less number having abdominal pain associated with vomiting and lesser number having vomiting alone⁽⁶⁾.

There are consequences of chronic anemia and regular blood transfusion include: growth retardation, bone marrow expansion, susceptibility to infection, iron overload, splenomegaly , heart failure and liver failure⁽⁷⁾. Heart failure considered the most common cause of death in thalassaemia major followed by infection⁽⁴⁾.

The aim of this study is to: Determine the background prevalence of Helicobacter pylori infection in transfusion dependent thalassaemia patients, compare clinical and labouratory findings between H.Pylpri positive and negative patients and determine the relationship between the mean duration of splenectomy and the positivity of helicobacter pylori infection.



Materials and Method

This case-control study was carried out in Erbil Thalassaemia center/ Kurdistan region/Iraq, from April 2022 to August 2022. Erbil thalassaemia center is the only center in Erbil city where thalassaemic patients visit to receive their regular blood transfusion, follow up their clinical condition and receive their iron chelation therapy.

Seventy patients were included in the study, the inclusion criteria were patients should be diagnosed with hemoglobinopathy which in need of regular blood transfusion, the age included from 5-18 years and patients having symptoms of recurrent abdominal pain and or nausea and vomiting while the exclusion criteria were age <5 years or >18 years and any diagnosed case of Helicobacter Pylori on treatment.

Patients were asked about their name, age, gender, blood group, frequency of blood transfusion, duration of blood transfusion (time calculated from the first transfusion), type of iron chelation therapy, duration of receiving chelation, type of hemoglobinopathy and splenectomy done or not, if done the patient asked about the duration of splenectomy. For all patients complete blood count (Hb, WBC, Plt) was done with serum ferritin level and Helicobacter Pylori rapid antigen stool test. For CBC 2ml of venous blood taken from the patient with use of tubes containing EDTA anticoagulant and for serum ferritin at the same time 2ml of venous blood put in tube (not containing anticoagulant) and serum ferritin level measured after centrifugation, while for Helicobacter Pylori stool test specific sterile tubes were used for stool collection and the test performed within the first half hour of stool collection.

While for controls of the study, 32 healthy with age and sex related controls were taken whom suffered from recurrent abdominal pain and/or nausea and vomiting and also Helicobacter Pylori rapid stool antigen test was performed to all of them.

The general and medical characteristics of controls and children with thalassemia were presented in mean and standard deviation or number and percentage. The comparisons of general and medical characteristics between control and thalassemia patients were examined in an independent t-test or Pearson chi-squared tests. The comparison of the helicobacter test between control and children with thalassemia was examined in Pearson chi-squared test. General, therapeutic and biochemical factors associated with helicobacter outcomes among thalassemia patients with different characteristics were examined in an independent t-test or Pearson chi-squared tests. A p-value of less than 0.05 was determined as a statistically significant difference. The statistical calculations were performed by JMP pro 14.3.0.

The ethical approval of the present study was taken from the local health ethics committee in Erbil city (KBMS health ethics committee). The written consent form was taken from all patients before recruitment into the study. The confidentiality of the personal information of the patients was protected throughout the study period.

Results

The median age for thalassaemic patients group was (11.89±3.85) years and for control group was (10.72±3.95) years ranging from (5-18) years for both groups. In thalassaemic patients group the male



gender patients were 33 patients with percentage of (47.14%) while female patients were 37 with percentage of (52.86%). In control group the male controls were 14 with percentage of (43.75) while female controls were 18 with percentage of (56.25) as seen in table 1. There was no statistically significant difference between age and gender of the case group and control group.

Table 1: Comparisons of general characteristics between control and thalassemia patients

Characteristic	Study groups no (%)		p-value (two-sided)
	Control (n=32)	Thalassemia (n=70)	
Age (5-18 years) mean (SD)	10.72 (3.95)	11.89 (3.85)	0.1619 ^a
Gender			0.7497 ^b
Male	14 (43.75)	33 (47.14)	
Female	18 (56.25)	37 (52.86)	

^a an independent t-test and ^b Pearson chi-squared tests were performed for statistical analyses.

Table 2: Medical characteristics of patients with thalassemia

Medical characteristics	Thalassemia (n=70)	
	Number	Percent
Frequency of blood transfusion (7-40 days) mean (SD)	20.93	7.59
Frequency of blood transfusion (day)		
7-14 days	10	14.29
14-21 days	33	47.14
22-28 days	8	11.43
29 days and more	19	27.14
Duration of blood transfusion (3.5-17.5 years) mean (SD)	10.74	3.87
Duration of blood transfusion (year)		
1-5 years	8	11.43
6-10 years	23	32.86
11-15 years	30	42.86
16-17.5 years	9	12.86
Type of hemoglobinopathy		
Major	62	88.57
Sickle B	8	11.43



Table 3: Treatment and biomedical measurements of thalassemia patients:

Treatment and biomedical measurements	Thalassemia (n=70) no (%)	
	Number	Percent
Iron chelating agent		
Exjade	41	58.57
Desferal	15	21.43
Both	14	20.00
Duration of receiving chelation (2-15 years) mean (SD)	8.47	3.81
Duration of receiving chelation (year)		
2-5 years	19	27.14
6-10 years	29	41.43
11-15 years	22	31.43
Splenectomy		
No	59	84.29
Yes	11	15.71
Duration of splenectomy (1.5-7 years) mean (SD)	3.59	1.74
HB (5.9-11.8 g/dl) mean (SD)	8.97	1.22
WBC (2.7-15.4 × 10⁹) mean (SD)	7.31	3.00
Plt (139-491 (no. × 10⁹)) mean (SD)	311.56	93.26
Blood group		
A-	7	10.00
B+	8	11.43
AB-	2	2.86
O-	3	4.29
B-	6	8.57
A+	16	22.86
AB+	6	8.57
O+	22	31.43
Serum ferritin (582-9131 ng/ml)	3481.53	1911.76

From 70 symptomatic patients with thalassaemia major 28 (40%) were tested positive for Helicobacter Pylori antigen while from 32 controls 9 patients (28.13%) were tested positive, meaning the percentage of Helicobacter Pylori infection is higher in thalassaemic patients than in controls but this difference is not statistically significant (P-value =0.2471).

Table 4: Comparisons of helicobacter test between control and patients with thalassemia

Helicobacter test	Study groups		p-value (two-sided)
	Control	Thalassemia	
Negative	23 (71.88)	42 (60.00)	0.2471
Positive	9 (28.13)	28 (40.00)	
Pearson chi-squared test was performed for statistical analysis.			

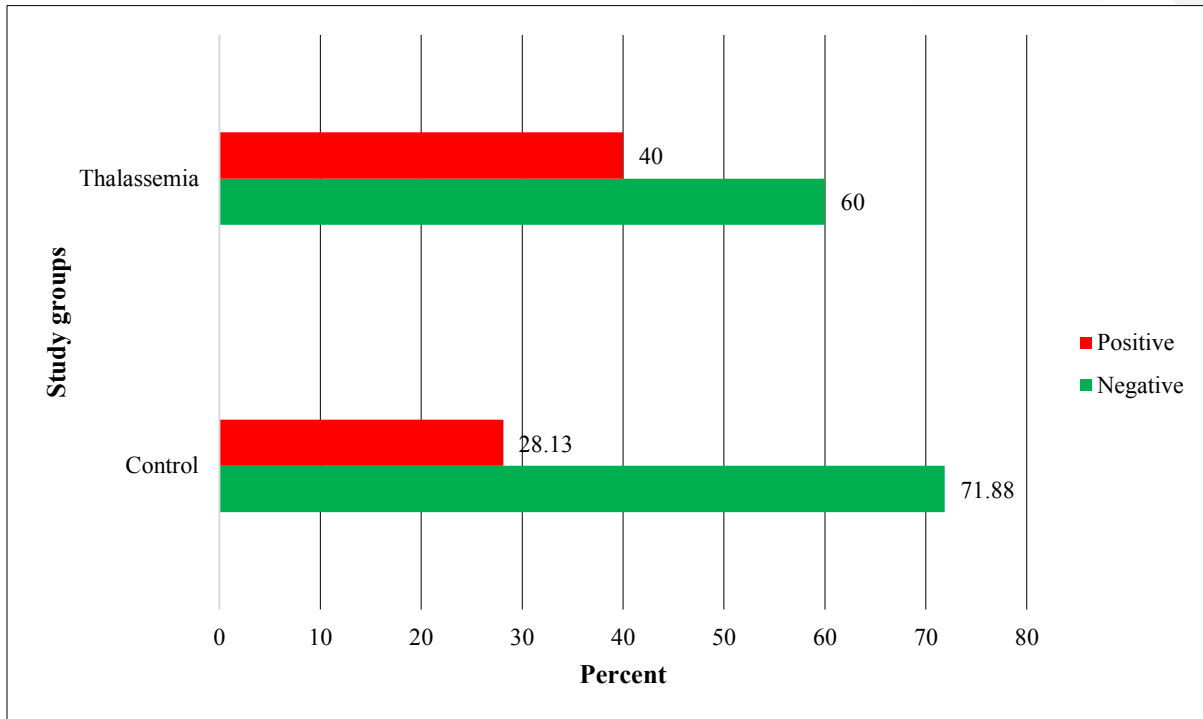


Fig 1: Outcomes of helicobacter of control and thalassaemia

According to our results the age had a significant role in the positivity of Helicobacter Pylori infection , the adolescent age group (53.06%) of them were tested positive while from children age group only (9.52%) were tested positive (P value=0.0007). No significance seen for gender of the patients (P value= 0.5575).

Frequency of blood transfusion played an important role in positivity of Helicobacter Pylori antigen , most of the patients included in this study were receiving blood every 14-21 days and the largest number of H. Pylori positive cases were located in this group with (39.39%) of them tested positive while the highest percentage of positivity for H. Pylori were included within the group who are receiving blood every 7-14 days which (80%) of them tested positive. Patients that receive blood every 22-28 days and more were less tested positive for H. Pylori antigen(P value= 0.0306). This means that more frequent the patient receive blood more chance to be infected with H.Pylori.

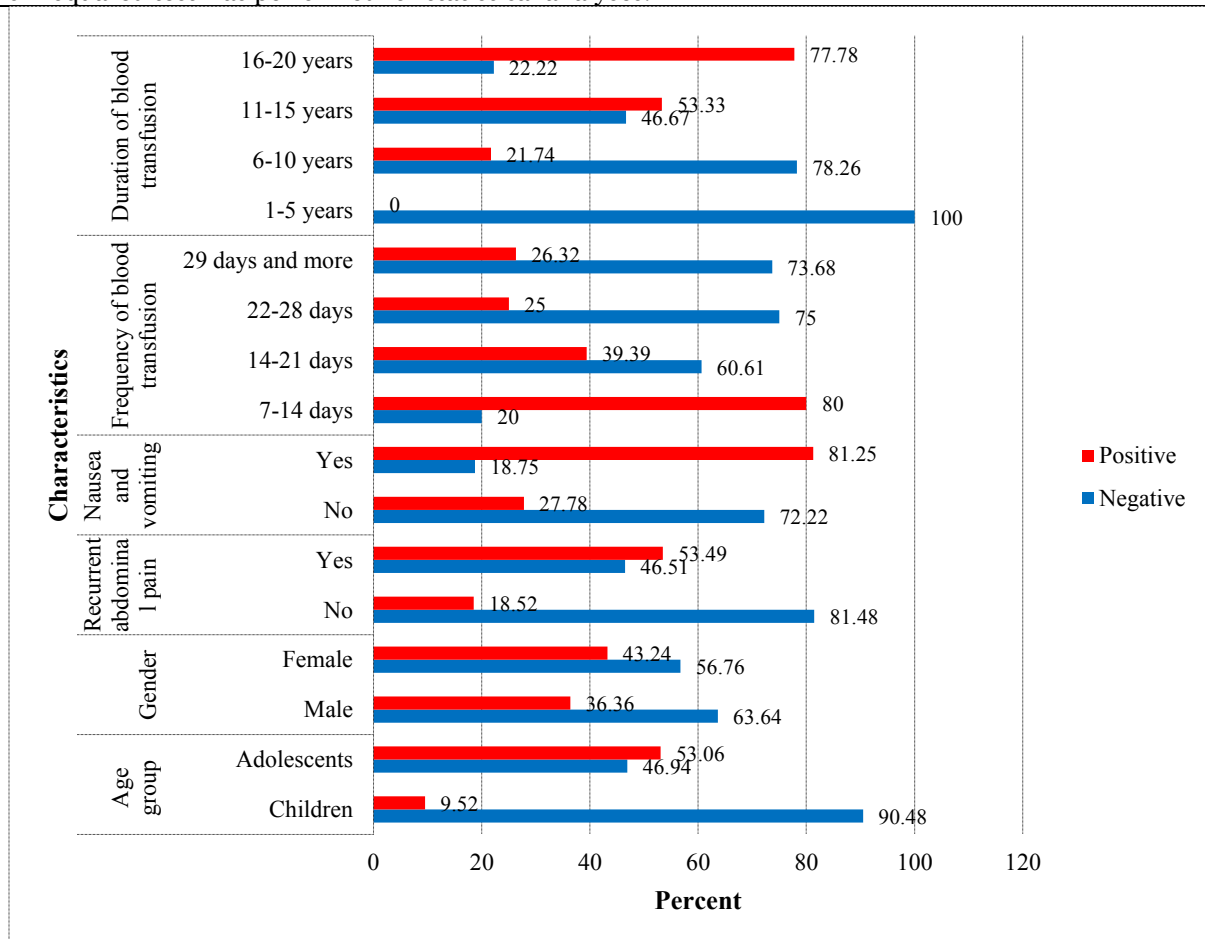
Thalassaemic patients who were receiving blood for longer duration (in years) were more tested positive for Helicobacter Pylori infection. As shown in table 5 the patients receiving blood for 16-17.5 years (77.78%) of them were tested positive and (22.22%) of them were negative, while those who were receiving blood for shorter duration less percentage of them were tested positive (P value=0.0011).



Table 5: Factors associated with helicobacter outcomes among thalassemia patients with different characteristics

Characteristics	Helicobacter outcomes no (%)		p-value (two-sided)
	Negative (n=42)	Positive (n=28)	
Age group			
Children	19 (90.48)	2 (9.52)	0.0007
Adolescents	23 (46.94)	26 (53.06)	
Gender			
Male	21 (63.64)	12 (36.36)	0.5575
Female	21 (56.76)	16 (43.24)	
Frequency of blood transfusion			
7-14 days	2 (20.00)	8 (80.00)	0.0306
14-21 days	20 (60.61)	13 (39.39)	
22-28 days	6 (75.00)	2 (25.00)	
29 days and more	14 (73.68)	5 (26.32)	
Duration of blood transfusion (year)			
1-5 years	8 (100)	0 (0.00)	0.0011
6-10 years	18 (78.26)	5 (21.74)	
11-15 years	14 (46.67)	16 (53.33)	
16-17.5 years	2 (22.22)	7 (77.78)	

Pearson chi-squared test was performed for statistical analyses.





It was found that found that the patients who were receiving oral chelation (exjade) plus injectable chelation (desferal) were more liable for H. Pylori infection (71.43%) of the were positive and (28.57%) were negative, while who were receiving desferal alone and exjade alone were (53.33%) and (24.39%) of them tested positive, respectively (P value=0.040). Also the longer duration of receiving chelation therapy was associated with higher rate of infection with H. Pylori as seen in (table 6) patients who is receiving iron chelation therapy 11-15 years (63.64%) were tested positive while who were receiving chelation for shorter duration were less infected with H. Pylori (P value=0.0006).

Patients who did splenectomy more of them (63.64%) were tested positive for H. Pylori antigen while (36.36%) of them were tested negative but this was not statistically significant (P value=0.1018). The duration of splenectomy also was not found to be statistically significant.

The type of hemoglobinopathy (Beta thalassaemia major or sickle beta thalassaemia) was not found to be statistically significant in H. Pylori positivity (P value=0.4620) also the blood group of the patient was not found to be statistically significant (P value=0.7921).

The mean level of hemoglobin in thalassaemic patients with H.Pylori was lower than negative cases (8.34±0.97g\dl), white blood cell count higher in positive cases (8.75±3.95.× 10⁹) and platelet also higher (346.92±91.48.× 10⁹) with P-values of 0.0001,0.0136,0.0370 for them respectively. Mean serum ferritin level for positive cases was (2564.6ng\ml) while it was (3773.43ng\ml) for negative cases (P value=0.058) which means significantly lower serum ferritin level in positive cases of H.Pylori.

Table 6: Therapeutic and biochemical factors associated with helicobacter outcomes among thalassemia patients with different characteristics

Characteristics	Helicobacter outcomes		p-value (two-sided)
	Negative (n=42)	Positive (n=28)	
Iron chelating agent			
Exjade	31 (75.61)	10 (24.39)	0.0040^b
Desferal	7 (46.67)	8 (53.33)	
Both	4 (28.57)	10 (71.43)	
Duration of receiving chelation (year)			
1-5 years	18 (94.74)	1 (5.26)	0.0006^b
6-10 years	16 (55.17)	13 (44.83)	
11-15 years	8 (36.36)	14 (63.64)	
Splenectomy			
No	38 (64.41)	21 (35.59)	0.1018 ^b
Yes	4 (36.36)	7 (63.64)	
Type of hemoglobinopathy			
Major	36 (58.06)	26 (41.94)	0.4620 ^b
Sickle B	6 (75.00)	2 (25.00)	
Blood group			
A-	3 (42.86)	4 (57.14)	0.7921 ^b
A+	4 (50.00)	4 (50.00)	
AB-	1 (50.00)	1 (50.00)	



AB+	1 (33.33)	2 (66.67)	
B-	4 (66.67)	2 (33.33)	
B+	12 (75.00)	4 (25.00)	
O-	4 (66.67)	2 (33.33)	
O+	13 (59.09)	9 (40.91)	
HB (g/dl)	9.54 (0.84)	8.34 (0.97)	<0.0001^a
WBC (no.× 10 ⁹)	6.78 (2.46)	8.75 (3.95)	0.0136^a
Plt (no.× 10 ⁹)	294.21 (99.55)	346.92 (91.48)	0.0370^a
Serum ferritin (ng/ml)	3777.43 (1915.19)	2564.6 (1147.69)	0.0058^a
^a an independent t-test and ^b Pearson chi-squared tests were performed for statistical analyses.			

Discussion

Thalassaemia firstly was described as a form of severe anemia that occurs in young children and associated with bone changes and splenomegaly, the only cure for thalassaemia is bone marrow transplantation if transplant not done then regular blood transfusion protocol is the only treatment that is available to these patients ⁽⁸⁾.

Regular and early usage of blood transfusion protocol will decrease the rate of complications and will prolong survival while long term protocol of blood transfusion can limit its beneficial effect and cause complications such as chronic infections, transfusional siderosis, alloimmunization against RBC antigens, liver and heart failure ⁽⁹⁾. Most of the patients infected with H. Pylori are asymptomatic and may cause chronic gastritis and peptic ulcer ⁽¹⁰⁾. Urea breath test and stool for H. Pylori antigen are regarded as uninvase tests to diagnose H. Pylori infection ⁽¹¹⁾.

The results of our study stated that the prevalence of Helicobacter Pylori in symptomatic transfusion dependent thalassaemia patients is (40%) while the prevalence in healthy symptomatic controls is (28%) meaning thalassaemic patients are more prone to H. Pylori infection than healthy people but these percentages are not statistically significant, as in a study published in Iran (Mehran Karimi) the prevalence of H. Pylori infection in Beta thalassaemia major patient was (68%) while (60%) in controls and this difference also was not statistically significant ⁽¹²⁾. Another study published stated that the prevalence of Helicobacter Pylori was (58.1%) among thalassaemic patients with recurrent abdominal pain while it was (48.8%) in normal controls which is not statistically significant ⁽⁵⁾.

A study done in Egypt stated that the prevalence of H. Pylori in symptomatic patients with thalassaemia major by HP IgG antibody was positive in (58.3%) while in symptomatic controls was (29.2%), also there was higher prevalence of H. Pylori IgG antibody in asymptomatic thalassaemic patients (41.7%) than asymptomatic controls (20.8%) and these results were significant statistically (P value=0.04) ⁽¹³⁾. It is believed that the high frequency of H. Pylori in thalassaemic patients who need regular transfusion is related to the state of iron overload suggesting that there is a link between iron overload and risk of infections ^(14,15).



In this study the prevalence of H.Pylori infection increases with increasing age of the patient while there was no relation between H.Pylori infection and the gender of the patient. Also in this study no relation found between the blood group and Rh of the patient with H.Pylori infection, while the relation was stated in some studies ⁽¹⁶⁾.

In current study relation found between H.Pylori infection and frequency of blood transfusion, duration of blood transfusion and duration of receiving iron chelation stating that the longer duration of transfusion and chelation more risk for infection with H.Pylori ⁽¹²⁾. Also relation found between H.Pylori and the type of chelation agent given to the patient possibly also related to the state of iron overload.

There was no clear relation found between splenectomy and H.Pylori infection however the percentage of positivity of H.Pylori was higher than negativity in splenectomized patients but not significant statistically, while in some studies discovered that there was a significant relation between H.Pylori infection and splenectomy stating that there is change in the immune system after splenectomy ^(6,17). The mean level of serum ferritin was significantly lower in positive than negative cases of H.Pylori while in another published studies show no relation between H.Pylori infection and serum ferritin level ⁽⁶⁾.

Besides, the mean hemoglobin level of transfusion dependent thalassaemic patients was lower in H.Pylori positive group than in negative group, some published articles suggest that H.Pylori lead to a state of iron deficiency and iron deficiency anemia ⁽¹⁷⁾. Also there was higher WBC and platelet count in positive thalassaemic patients than in negatives.

Conclusion

According to our study we conclude that transfusion dependent thalassaemia patients are more prone to be infected with Helicobacter Pylori infection than normal people, and we can regard Helicobacter Pylori infection as a common cause of abdominal pain and/or nausea and vomiting in transfusion dependent thalassaemia patients.

There is clear relationship between duration of blood transfusion, receiving iron chelation and frequent transfusion protocols with probability of H.Pylori infection.

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MOLECULAR STUDY THE EFFECT OF FUCUS VESICULOSUS ON PITUITARY GLAND AND THYROID GLAND IN MALE RATS TREATED WITH PROPYLTHIOURACIL

Ali .Ab. Ameer Al.anbaki¹

Rasha Muzahem Hatem²

¹ Medical Laboratory Technique department, The Islamic university, Diwaniya, Iraq

² Research and studies Department , The Islamic university, Najaf, Iraq

² Biology Dept .Collage of Science, University of AL-Qadisiyah, Iraq

Corresponding author: Ali .Ab. Ameer Al.anbaki , ¹ali.alnabaki89@iunajaf.edu.iq

²Rasha.albukhlate@qu.edu.iq

Abstract

The present study aims to identify the effects of the fucus vesiculosus on the TSH expression in the tissue of pituitary gland of mature male rats treated with Propylthiouracil (PTU). The sample is divided into five groups in addition to the control group. All groups are equal in number where each group includes ten rats. The control group has been given distilled water. The first treatment (T1): fucus vesiculosus of 35 mg/ kg concentration of body weight is given, (T2): propylthiouracil (PTU) of 15 mg/kg concentration of body weight is dosed, (T3): fucus vesiculosus of 35 mg/ kg concentration of body weight is given for three weeks then (PTU) of 15 mg/kg concentration is dosed for the other three weeks, (T4): propylthiouracil (PTU) of 15 mg/kg concentration of body weight is dosed for three weeks then fucus vesiculosus of 35 mg/ kg concentration of body weight is given for three weeks and in (T5) fucus vesiculosus and (PTU) are dosed together with the same concentration for 42 days.

In the end of the experiment, the animals are vivisected to exsect thyroid gland and pituitary gland for molecular study to estimate messenger ribonucleic acid (mRNA) of (TPO and TSH) genes using qRT-PCR qualitative technique. The results of molecular study show that there is an increase by (10.458) in the level of TSH in the pituitary gland tissues in T1 when compared with the control group (1.061). Also, there is a significant increase by (2.926) of gene expression in T3. In T4, the increase is (4.569) but TSH gene expression decreases in T2 while there is no significant difference in T5 by (1.269). As for TPO gene expression in thyroid tissues, there is a decrease in gene expression in T1 by (0.882) when compared with the control group by (1.056). There is a decrease in TPO gene expression in T2, T3 and T4, (8.198), (3.253) and (5.978) respectively. But there is an increase of gene expression in T5 by (1.704) when compared with the control group.

Introduction

Fucus vesiculosus is one of laminariales that belong to the family of seaweed. It has a long history of use as food and medication due to its biological properties. It is considered one of the natural antioxidant, which prevents free radicals (Song et al., 2000). It prevents tumours, motivates Lipase enzyme, minimizes cholesterol level, maintains blood sugar levels, activates and enhances heart metabolism, a natural source of Iodine, Potassium (K), Magnesium (Mg), Calcium (Ca) and basic



vitamins of cells (Mayer et al., 2011). Also, it includes several carbohydrates like Fucoidan, Laminine, Laminarin and Alginates (Kitamura et al., 1991).

Propylthiouracil (PTU) is a thyroid-inhibitory medication used to treat hyperthyroidism through preventing iodine oxidation (Chiao & Wang, 2000). Moreover, this medication affects on the thyroid gland hormones or those in the blood stream where it prevents producing thyroid gland hormone by deoxidization of iodine. It prevents Thyroxin and Triiodothyronine formation. The common side effects are timidity, nausea, vomiting, burn, taste loss, numbness, headache, allergy, hair whitening, aplastic anaemia and leukopenia. Also, other symptoms include agranulocytosis and infections of throat, digestive system and skin with fever and decrease of blood platelets, which have an important role in blood coagulation (Sener et al., 2006).

Thyroid gland is one of the most important glands in the body. It is the only one that produces hormones and conservatives in the same gland for the time of need. The gland cells are the only one that able to absorb iodine (Ganong, 2001). Thyroid gland produces hormones as Thyroxin (T₄) and Triiodothyronine (T₃) that are derivatives of amino acid Tyrosine in response to Thyroid stimulating hormone (TSH) that secreted from anterior pituitary gland (Gregkelly, 2000). With the help of TPO enzyme, which is a glycoprotein includes hemes, it has the primary role to make thyroid hormones and this enzyme reflects the natural function of the gland and located on the top surface of follicle cells membrane (Ruf and Carayon, 2006).

Materials and Methods of Work:

1- Animals used

The study includes (60) male rats of (*Rattus norvegicus*) type. Each rat weights (170-180 gr.) and appropriate conditions are maintained, (20-21 C°), light (14 hrs), dark (10 hrs) and animals are given water and feed along the period of experimentation (42 days).

Experiment Design

The animals are divide into five groups in addition to the control one. All groups are equal in number of animals, (10) for each.

- Control group: it is given distilled water.
- (T₁) dosed fucus vesiculosus of 35 mg/ kg concentration of body weight,
- (T₂): propylthiouracil (PTU) of 15 mg/kg concentration of body weight is dosed
- (T₃): fucus vesiculosus of 35 mg/ kg concentration of body weight is given for three weeks then (PTU) of 15 mg/kg concentration is dosed for the other three weeks.
- (T₄): propylthiouracil (PTU) of 15 mg/kg concentration of body weight is dosed for three weeks then fucus vesiculosus of 35 mg/ kg concentration of body weight is given for three weeks.
- (T₅) fucus vesiculosus and (PTU) are dosed conjunctions with the same concentrations for 42 days.



-Molecular Study

-Quantitative Reverse Transcription Real- Time PCR (RT-qPCR)

Quantitative reverse transcription real- rime PCR (RT-qPCR) examination is conducted to measure mRNA transcript levels to show the TPO and TSH gene expression. Also, use GAPDH as a standard organizer gene to measure gene expression. The test is accomplished according to (Mygene Bioneer Korea) method.

-Real- Time PCR Data Analysis Method

Quantitative reverse transcription real- rime PCR (RT-qPCR) data is analyzed using Livak and Schmittgen (2001) method that depends on getting relative quantitative and absolute quantitative through the process of correcting and equating targeted genes with the control sample so that the results will have a biological meaning. Each sample should be equated and corrected with the control one to produce one level of relative change as shown in the equations below:

- 1- $\Delta CT(\text{test}) = CT(\text{target, test}) - CT(\text{ref, test})$
- 2- $\Delta CT(\text{control}) = CT(\text{target, control}) - CT(\text{ref, control})$
- 3- $\Delta DCT(\text{test}) = DCT(\text{test}) - \Delta CT(\text{control})$
- 4- Gene expression Ratio = $2^{-CT\Delta\Delta CT}$

Concentration and Purity of total RNA

The concentrations and purity of total RNA in pituitary gland tissues and thyroid gland tissues are high and sufficient to start testing PCR. The present results show that the optical density of wavelengths 260 and 280 nanometer is about (1,8 and 2,1), which is considered an evidence of total RNA purity for the samples included in the study.

Concentration of RNA in pituitary gland

The study results (Figure 1) reveal that there is a significant decrease ($P < 0.05$) in the level of total RNA (monogram/microliter) in the tissues of pituitary gland in T1 but there is a significant increase in T2, T3 and T5. But there is no significant difference in T4 when compared with the control group.

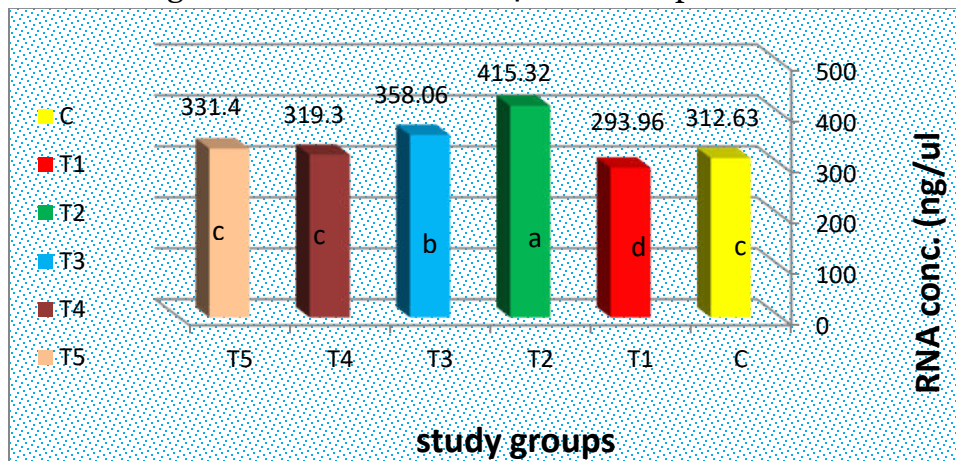


Figure (1) : Total RNA concentration in pituitary gland tissues of male rats



1- RNA concentration in thyroid gland tissues

The study results (Figure 2) reveal that there is a significant increase in the level of total RNA (monogram/microliter) in T1, T3 and T5 while But there is no significant difference in T4 when compared with the control group.

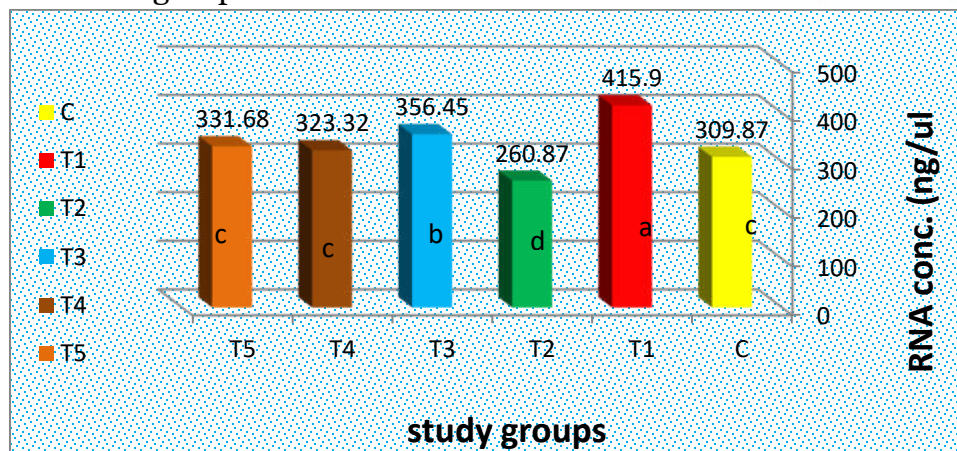


Figure (2): Total RNA concentration in thyroid gland tissues in male rats

- qPCR

it includes analyzing the reaction data of qPCR that depends on SYBR green. The process is divide into two parts: estimate the primer efficiency and the relative quantity for TSH and TPO levels of gene expression that are corrected by conservative genetic expression GapdH.

1- Primer efficiency estimation

The results of threshold cycle (TC) data have been calculated by amplification plot in qPCR device depending on exponential phase of flash signaling of SYBR green, which is integrated with gene primer studied in this study (TSH and TPO), and reacted with cDNA of mRNA of pituitary and thyroid glands tissues through amplification plot of threshold cycle. Linear regression is calculated depending on data points and the primer efficiency is deduced from linear slope as shown in (4-15) and (4-17).

2- Relative quantity of target gene expression

Target genes of the present study are (TSH and TPO) in the tissues of pituitary and thyroid glands. It is calculated by $(2^{-(\Delta-\Delta\Delta ct)})$ equation, which is Livak and Schmittgen method. The process is to correct the target gene expression with the conservative gene expression because it is a correctional gene. Also, group C gene expression is considered a gene to control all target genes and the conservative gene GapdH. Livak equation includes several steps, the first one is to correct the number of threshold cycle of target gene TSH and TPO through correctional gene and for all treated genes in addition to the control group. The second step is to correct Δct for the treated group. Then the expression percentage is calculated in a process called fold change.



2.1 Relative quantity for TSH gene expression in the pituitary tissues

The results of RT- qPCR reaction shown in Figure (4) that TSH gene expression in the pituitary tissues in T1 is increased ten times (10.458) above control group C (1.061). But T2 decreases by (0.752) when compared with the control group in T3 and T4, which is increased by (2.926) and (4.569) respectively when compared with the control group while there is no significant difference in T5 (1.269).

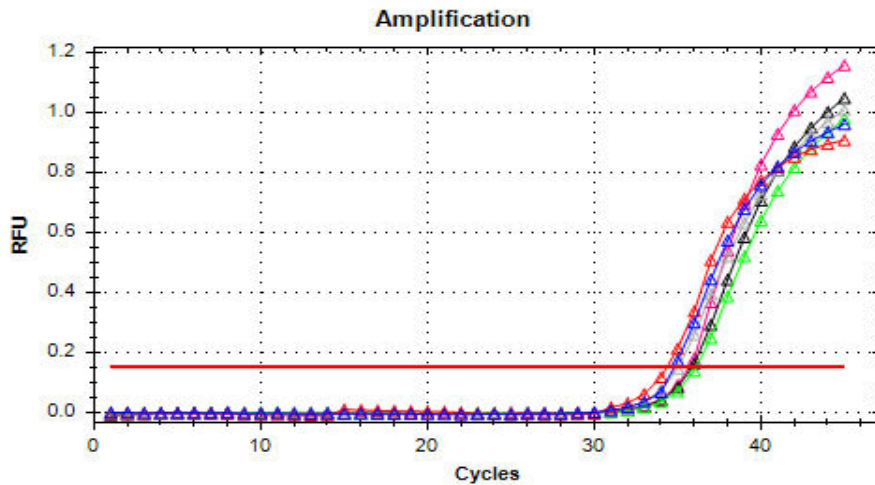


Figure (3 A): Real-Time PCR Amplification curve for GAPDH gene in pituitary tissues. The red curve represents T1, blue T2, green T3, Yellow is T4, pink is T5 and the black one is C group.

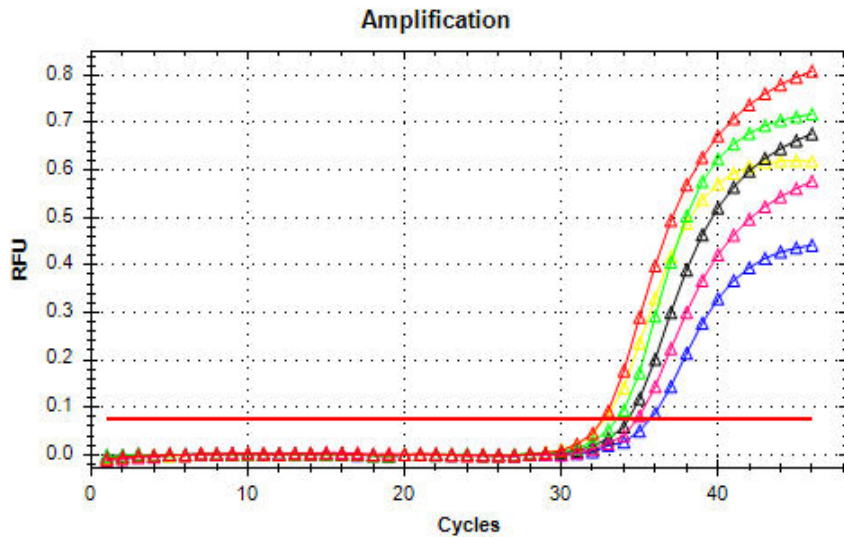


Figure (3 B) : Real-Time PCR Amplification curve for GAPDH gene in pituitary tissues. The red curve represents T1, blue T2, green T3, Yellow is T4, pink is T5 and the black one is C group.

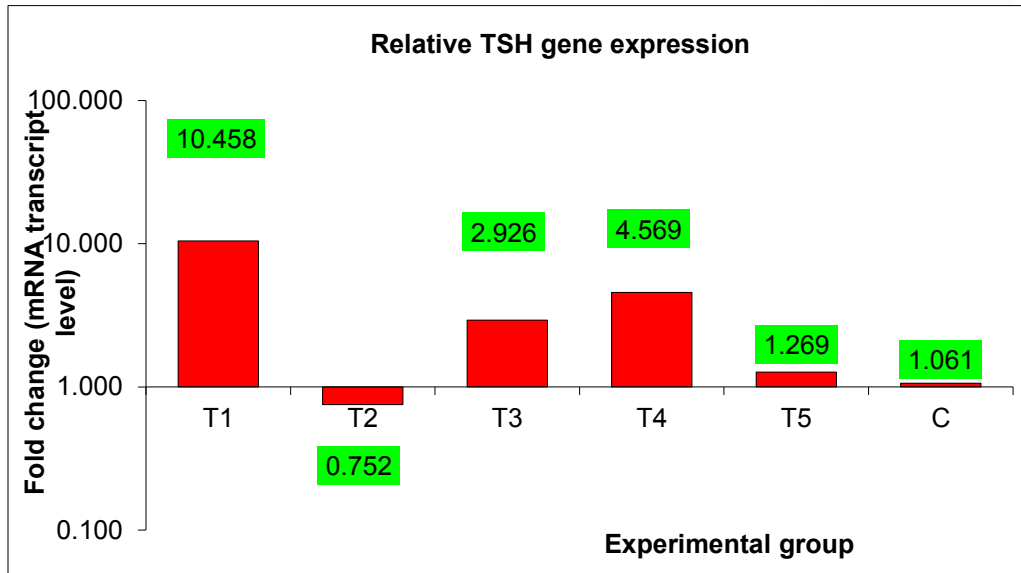


Figure (4) shows fold change of TSH gene in pituitary tissues of male rats treated with fucus vesiculosus and PTU including control group

2.2 Relative quantity of TPO gene expression in thyroid tissues

The results show (Figure 6) that there is a significant decrease in T1 by (0.882) when compared with the control group (1.056) while there is an increase by eight times (8.198), three times (3.253) and five times (5.978) in T2, T3 and T4 respectively when compared with control group. Also, there is an increase in T5 by (1.704) but it does not reach to significance level as compared with control group.

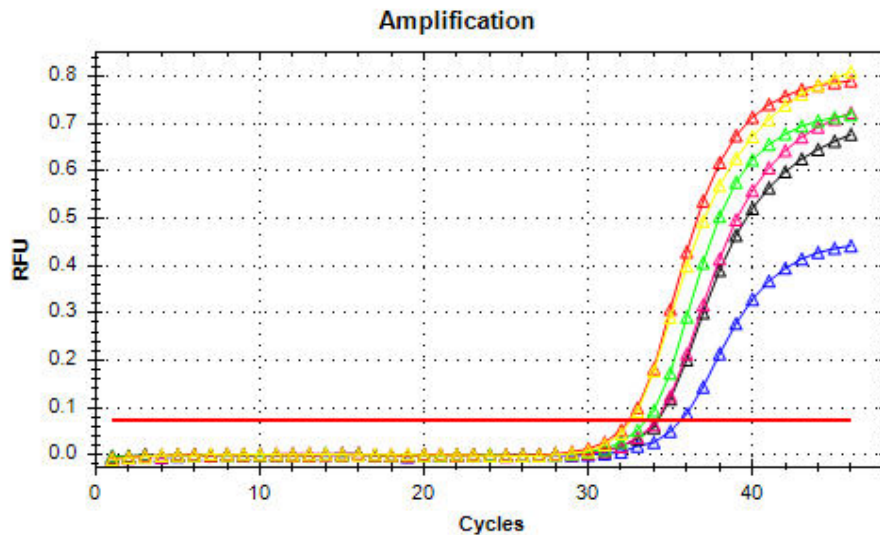


Figure (5 A): Real-Time PCR Amplification curve for GAPDH gene in thyroid tissues. The red curve represents T1, blue T2, green T3, Yellow is T4, pink is T5 and the black one is C group.

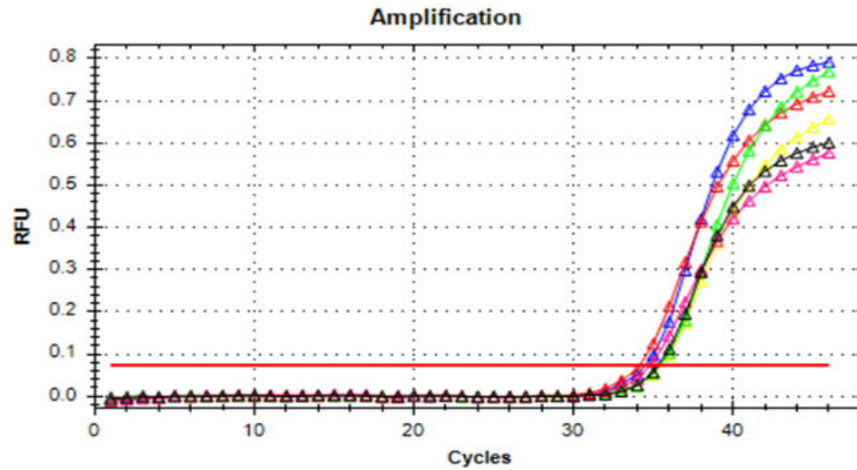


Figure (5 B): Real-Time PCR Amplification curve for TPO gene in thyroid tissues. The red curve represents T1, blue T2, green T3, Yellow is T4, pink is T5 and the black one is C group.

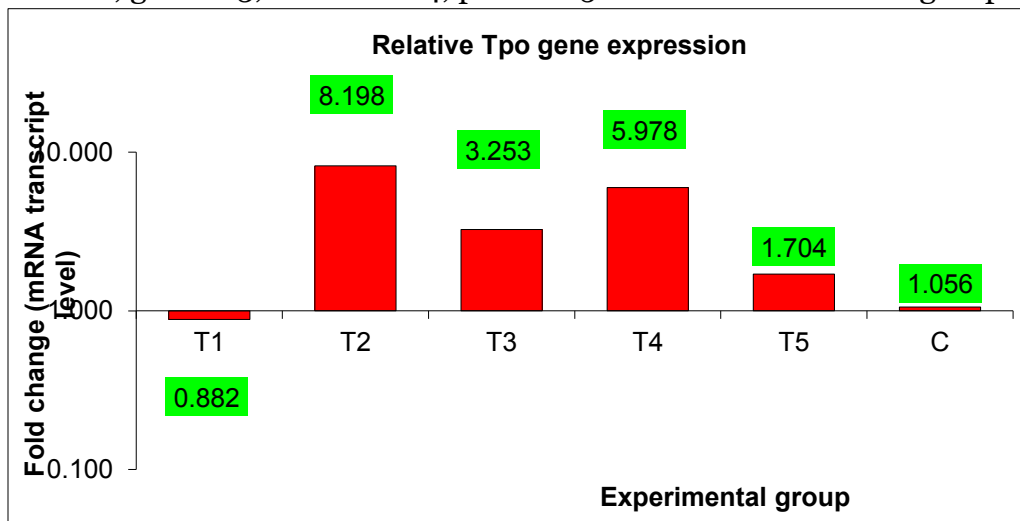


Figure (6): Shows fold change of TPO gene in pituitary tissues of male rats treated with fucus vesiculosus and PTU including control group

Discussion

1- Total RNA concentration in the tissues of thyroid and pituitary glands

The present study results reveal that there is a change in concentration level of RNA in the tissues of thyroid and pituitary glands where there is a decrease in RNA level in T1 that is treated with focus vesiculosus and there is an increase in total RNA level in T2, T3 and T5. But in T4, there is no significant difference when compared with control group. These changes up and down in pituitary tissues are attributed to the activity of nerve cells and secretion of inhibiting or releasing hormones and the activity of interior lobe of pituitary gland that secreted different stimulating hormones under the control of negative feedback mechanism. The present study focuses on studying Thyroid stimulating hormone (TSH), which is the major factor to motivate and organize thyroid gland secretion (Yen, 2001;



Anderson, 2010) or the reason may be attributed to the effect of iodine on total RNA because the kelp contains high level of iodine so it will affect the function and formation of thyroid hormones (Steinmaus et al., 2007). As a result, thyroid hormones T₃ and T₄ increase and this affects the formation of TSH (Ladenson et al., 2000). TSH concentration is sensitive indicator for thyroid gland dysfunction (Fatourchi, 2009) of because of PTU, which enlarges thyroid gland. The reason is that thyroid gland is stimulated by pituitary gland where PTU inhibits the formation of thyroid hormones (Doerge and Sheehan, 2002; Udgat and Naik, 2007). In return, it affects total concentration of RNA because anti thyroid including PTU influences on gene expression and functions of some cells (Bandypadhyay et al., 2002).

The study results have referred to the increase of RNA concentrations in T₁, T₃, T₄ and T₅ while T₂ has been treated with PTU. The reason is the change of total RNA concentrations in these groups and the change of creating protein, cells growth, discrimination, increase or decrease in protein expressions responsible of making thyroid hormones or disorder of TPO or TSH. It is well known that TSH is the organizer of gene expression of TPO in thyroid cells (Damante et al., 1989; Zarrilli et al., 1990).

2- Relative quantity of TSH and TPO gene expression in the tissues of thyroid and pituitary glands

The study results reveal that there is a significant increase in the level of TSH gene expression in tissues of pituitary gland but there is a decrease in the level of TPO gene expression in tissues of thyroid gland in T₁ treated with focus vesiculosus and this result agrees with Calil- Silveira et al. (2016) for TSH. Though TSH increases in serum after being exposed to iodine, it does not affect TSH gene expression and protein. But what Calil- Silveira et al. (2016) agrees with the result of the present study as far as TPO enzyme is concerned, which is the major enzyme in creating thyroid hormones. This enzyme is created in Ribosomes then Golgi apparatus transfers it in a form of vesicles to the top end of follicle cell membranes. (Kuliawat et al., 2005; Ruf and Carayon, 2006) noticed that the decrease of gene expression of TOP mRNA and protein expression after doses of iodine as iodine the basic components of the kelp used in the present study (Arbaizav and Llorca,2011). It is known that TSH is the organizing Peptide to make and secrete thyroid hormones T₃ and T₄, which is secreted from the anterior lobe of pituitary gland and stimulated by TRH that secreted from hypothalamus. TSH stimulates T₄ secretion from thyroid gland then T₃ and T₄ transforms in peripheral tissues. Then TRH-TSH- thyroid axis is called HPT- axis and through this axis T₃ and T₄ are maintained (Oshea and Williams, 2002; Costa et al., 2012; Schmaltz,2012; Stathatos, 2012). The kelp used in the study may have a role on HPT- axis due to the quantity of iodine in it. Several studies refer to the surplus of iodine inactivate HPT- axis (Braley-Mullen et al.,1999 ; Shi et al.,2014; Calil-Silveira et al.,2016). The study result agrees with (Li and Carayanniotis, 2007; Miyai et al., 2008) study who noted that excessive iodine leads to failure of thyroid work and weaken it hormones. This effect is confirmed through TSH and both units (Alpha and Beta). The increase of TSH leads to low thyroid hormones due to decrease of Gh mRNA content and increase Diodinase2 mRNA expression that is known as thyroid hormones organizer (Leonard et al.,1990; Silva et al., 2006). A previous study shows that treatment with iodine decreases the expressions of other



genes in addition to TPO, which are (NIS and TSHR) but it increases of Pendred (PDS) expression (Suzuki et al.,1998; Sellitti and Suzuki, 2014).

Gene expression of TG, TPO, NIS and TSHR genes are organized depending on thyroid transcription factors (TTF). TSH represents the major organizer for TPO gene (Aza-Blanc et al.,1993; Ohno et al.,1997; Postiglione et al., 2002). The TPO promoter includes several locations of linking with TTF in thyroid, where TTF is of two types; TTF-1 and called (NKX2-1) it is a protein that has a role in the formation of organs especially thyroid and lungs (Guazzi et al.,1990; Kimura et al.,1996; Parlato et al., 2004). The second factor is Forhead box E1(FOXE1) it is protein that has the ability to identify and link to DNA of the promoter in TG and TPO. Also, it has the ability to organize genes transcription related to thyroid gland that leads to make thyroid hormones (Damante and Di Lauro,1994; Gudmundsson et al., 2009). The increase of TSH gene expression and the decrease of TPO gene expression in the animals treated with the kelp lead to genetic mutation and causes thyroid disorder eventually leads to low TPO and high TSH (Castanet et al.,2002;Castanet and Polak,2010;Rastogi and LaFranchi,2010). Beside the direct effects of iodine on thyroid and TSH, these changes may lead to changes of genes including thyroid hormones. Also, it may change the levels of glycosylation with TG in follicles (yen, 2001).

The study results shows the decrease of TSH gene expression in the tissues of pituitary gland of T2 treated with PTU while TPO gene expression increases in the tissue of thyroid gland of T2, T3 and T4 when compared with the control group. PTU is an anti-thyroid and used basically to treat Grave's disease which enlarges thyroid gland (Moriyama et al.,2007;Manna et al.,2013). The effects of PTU is inside the cell in which it inhibits creating T3 and T4. But the action of this medication outside thyroid gland is to prevent transforming T4 into T3 (Cooper,1984; Cooper, 2005). The study results agree with Maenhaut et al., (1992). They noted that using anti- thyroid leads to increase the levels of Tg and TPO. Also, the results agree with (Leer et al.,1991;Isozaki et al.,1991; Sugawara et al.,1999) who mentioned that anti-thyroid has changed some gene expressions and MMI and PTU increase in Tg expression and other expressions related to thyroid and the reason is the decrease of TSH gene expression is the Cytokines in pituitary gland and hypothalamus. Because Cytokines inhibits TSH secretion and TSH is affected by other hormones like Oestrogenes and Glucocorticoids and growth hormones (Jackson, 1982). Pau et al., (2012) mentioned that anti- thyroid inhibits producing some hormones that prevents producing other hormones related TSH secretion and decreases its required quantity, or there is a kind of disorder of oxidization level and anti-oxidant due to PTU treatment. This case leads to increase Reactive oxygen species (ROS) and these reactive molecules are existed in all cells and tissues of low percentage. But when it is existed in high percentage, it causes severe cells damage and biomolecules like proteins, fat and nuclear acids (Halliwell,2007). Moreover, several studies have proved that through Cyclic adenosine monophosphate(cAMP), TSH increases trnascrition of mRNA of some genes like Tg and TPO (Gerard et al.,1989; Pohl et al.,1990). In the present study, TSH gene expression is decreased due to PTU treatment, which affects TSHR receptors because TSH is responsible for activating these receptors and this decrease is the reason of cAMP levels inside the cell. Consequently, it causes several mutations that affect TSH and TPO levels or these changes may be in thyroid stimulating hormone and Thyroid Peroxidase Enzyme due to unknown mechanisms like non-genetic factos.



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**SPECIES COMPOSITION OF HELMINTHES OF FISH IN WATER BODIES OF
BUKHARA REGION IN UZBEKISTAN**

Bakhrom B.Soatov¹

Abdurakhim E.Kuchboev¹

Jaloliddin N.Nomonov²

¹Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan, Tashkent, 100053,
Tashkent, street Bogishamol 232B, bakhrom_soatov@mail.ru

²Research Institute of Fisheries, 102843, Yangiyul district, Tashkent region, Uzbekistan

Annotation

According to the results of helminthological studies, 32 species of helminthes were identified in 13 species of fish in the Bukhara region of Uzbekistan, including 12 species of cestodes, 6 species of trematodes, 12 species of nematodes and 2 species of acanthocephalans. Of these, 15 species were recorded in the sexually mature form, and 17 in the larval form. The acanthocephalans species *Acantocephalus lucii* has been found for the first time in this area, and the carp (*Cyprinus cyprinus*) is the new host of this parasite. The nematode of *Philometra kotlani*, first recorded in the fish of Uzbekistan. Infection of the studied 13 fish species averaged: cestodes: prevalence is 16.8%, intensive infection is 1-63 specimens; trematodes: prevalence - 2.1%, intensive infection - 1-6 specimens; nematodes: prevalence - 14.8%, intensive infection - 1-14 specimens and acanthocephalans: prevalence - 1.2%, intensive infection - 1-4 specimens. The total percentage of infection of fish with helminthes is 8.7%. The number of parasites per fish ranges from 1 to 63 specimens.

Introduction

The ichthyofauna of Uzbekistan includes 71 species of fish, of which 48 species are aboriginal, 17 are endemic to the Aral Sea basin, 27 are introduced species, and 29 are commercial species [1]. The ichthyofauna of the Zarafshan basin includes 36 species and subspecies of fish [2]. As in other basins of the rivers of Central Asia, the formation and development of the ichthyofauna of watercourses and reservoirs of Zarafshan is mainly due to historical reasons, and recently also by human activity. The historical composition of the fish in the reservoirs of the basin has undergone changes as a result of the reconstruction of the hydrographic network and acclimatization work. According to the results of studies previously carried out in the reservoirs of the Bukhara region Uzbekistan, the ichthyofauna is dominated by representatives of the cyprinid fish family, which are very popular with the population and are of local commercial importance.

It is also necessary to note the quantitative and qualitative changes in recent years that have occurred in aquatic ecosystems, the emergence of parasitic diseases of fish and aquatic organisms, a decrease in the number of valuable fish species caused by intensive human activities and adversely affecting the epizootic situation of reservoirs. Fish parasites cause significant economic damage and can be a hazard to human health [3, 4].



According to the data of S.O. Osmanov [5, 6], who summarized faunal materials, 102 species of parasites were identified in the water bodies of the Zarafshan basin, of which 33 species belong to protozoa, 42 species are monogeneans, 10 are cestodes, 5 are trematodes, 6 are nematodes, 1 - acanthocephala, 2 - leeches and 4 species of crustaceans. In the regional aspect, fish parasites of the Amudarya basin (within Uzbekistan) were studied in the Surkhandarya region, where 161 species of parasites were found. The noted parasites belong to 11 classes, of which 11 are cestodes, 7 are trematodes, 13 are nematodes, and 3 are acanthocephala [7]. R.M.Karaev [8] researched 171 species of parasites in fish from reservoirs of Kashkadarya region. Of these, flatworms make up 10 species, nematodes - 9 and acanthocephalans - 3 species. A large amount of research has been carried out in the Republic of Karakalpakstan, in the Amudarya delta and reservoirs [9-13]. From 25 to 140 species of parasites have been recorded in fish in various species of water bodies.

The study of parasitic diseases of fish, in particular, their infestation with helminthes, the study of their species composition based on modern research methods, as well as the development of measures to prevent an increase in the number of epizootically dangerous parasite species is one of the urgent requirements of the present.

The purpose of our study is to study the species composition of fish helminthes in the reservoirs of the of the Bukhara region of Uzbekistan and their infestation with parasites.

Materials and Methods

In 2020-2022, we collected helminthological material of fish in the reservoirs of the lower reaches of the Zarafshan river, including the Shurkul and Tudakul reservoirs and the Ayakagitma, Dengizkul, Korakir reservoirs located in the Bukhara and Navoiy regions of Uzbekistan; in particular, carp and carp - (*Cyprinus cyprinus* and carp) - 317 specimens, crucian carp (*Carassius auratus gibelio*) - 318, roach (*Rutilus rutilus*) - 222, eastern bream (*Hemiculter leucisculus*) - 298, eastern bream (*Abramis brama*) - 158; grass carp (*Ctenopharyngodon idella*) - 122, zander (*Sander lucioperca*) - 212; silver carp (*Hypophthalmichthys molitrix*) - 214, bighead carp (*Arystichthys nobilis*) - 100, catfish (*Silurus glanis*) - 112, Turkestan barbel (*Barbus capito conocephalus*) - 42 and redfin (*Scardinius erythrophthalmus*) - 201.

The autopsy was carried out according to the generally accepted method [14], when determining the types of parasites, the "Key to parasites of freshwater fish of the fauna of the USSR" [15] and monographs of other authors [16, 17] were used.

The examined surfaces and the organs themselves were carefully examined from the outside for the detection of parasites, body cavities - for the presence of tapeworm larvae, flukes, roundworms and acanthocephalus. When parasites were found, it was indicated in which organ and where they were concentrated. In the study of internal organs (especially the intestines), all large parasites visible to the naked eye were selected with tweezers or needles, placed in clean water or saline (for nematodes), then they were fixed in 70° alcohol.

To detect small parasites and larval forms, the organs were examined by the compressor method. Scrapings were taken from a part of the organ (if it is large), the whole organ (if it is small), from the



walls of the intestine or its contents, in small parts they were placed between two glasses (6 x 12 cm in size, 3-4 mm thick) and with some addition of water flattened to the transparency of the resulting thin layer. By successively viewing the glasses under a magnifying glass (moving the glass from left to right), even very small parasites can be detected. Then the parasites were counted and their taxonomic groups were determined. The parasites were studied using a MEIJI 2000 microscope (Japan) with a digital camera.

In addition, the collection material of parasites, located at the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan, was analyzed.

Traditional indicators of infestation were used in the work: extensiveness of infection or prevalence - the number of host individuals infected with a certain parasite species divided by the number of hosts (EI, %); intensity of infection (average) – the sum of individuals of a parasite of a certain species in the studied hosts, divided by the number of infected individuals in the sample (II).

Statistical processing of morphometric data was carried out using the BioStat 2018 software and Microsoft Office Excel 2010.

Results and its Discussion

This paper presents preliminary results of the collection of ichthyo-parasitological material, carried out mainly in water bodies of the Bukhara region.

Currently, there is no single point of view on the system of parasitic worms. The systems proposed by various researchers differ significantly in terms of both the volume included in the corresponding classes - Cestoda, Trematoda, Acanthocephala and Nematoda, and the order of their location. We use the system adopted by the "Key to parasites of freshwater fish" [14]. A systematic review of helminthes of the common marinka (with the indicated localization, places of detection, extensiveness and intensity of invasion) is compiled in the following order: classes, orders, families, genera and species.

Based on the research results and in accordance with the information given by the authors of previous studies of the water bodies of the Bukhara region, we noted 32 species of fish helminthes belonging to 4 classes, 12 orders, 21 families and 30 genera. Of these, 12 species belong to the class of cestodes, 6 species - trematodes, 12 - nematodes and 2 species of acanthocephalus, presented in the following systematic order:

Class Cestoda Rudolphi, 1808

Order Caryophyllidea van Beneden in Carus, 1863

Family Caryophyllaeidae Leuckart, 1878

Genus *Caryophyllaeus* Muller, 1787

1. *Caryophyllaeus laticeps* Pallas, 1781

The species was found in the intestines of carp caught in the Shurkul reservoir, the prevalence of invasion (EI) is 5.3%, the intensity of invasion (II) is 1–12 specimens (ind.).

The cycle of development proceeds with one intermediate host, oligochaeta worms (Oligochaeta), in the body cavity of which the larval phase, the procercoïd, develops [15].

2. *Caryophyllaeus fimbriceps* Annenkova–Chlopina, 1919



In our collections, this species was found in the intestines of carp caught in the Shurkul reservoir, with EI-7.1% and AI 1-13 ind.

Genus *Biacetabulum* Hunter, 1927

3. *Biacetabulum appendiculatum* Szidat, 1937

The species was found for the first time in the Ayakagitma reservoir and recorded in the intestines of carp with EI values of 12.5%, AI values of 1–4 specimens.

Family Litocestidae Hunter, 1927

Genus *Khawia* Hsü, 1935

4. *Khawia sinensis* Hsü, 1935

The species was recorded in the intestines of carps in the Ayakagitma reservoir. Relatively large worms, with EI - 3.3% and AI - 1-6 specimens. In the conditions of pond farms, it can cause the death of juvenile fish.

Order Pseudophyllidea Carus, 1863

Family Amphicotylidae Ariola, 1899

Genus *Bathybothrium* Luhe, 1902

5. *Bathybothrium rectangulum* Bloch, 1782

The species was found in the intestines of the Turkestan longhorned beetle caught in the Ayakagitma reservoir; the EI index was 18.6%;

The development cycle occurs with the participation of an intermediate host, the cyclops *Acantocyclops viridis* and *Macrocyclus albidus* [15].

Family Bothriocephalidae Blanchard, 1849

Genus *Bothriocephalus* Rudolphi, 1808

6. *Bothriocephalus opsariichthydis* Yamaguti, 1934

This species was first found in the Dengizkul reservoir and found in the intestines of carp. Extensiveness of invasion - 9.2%, intensity of invasion - 1-6 specimens.

Development cycle with one intermediate host – copepods (*Cyclops*, *Acanthocyclops*, *Mesocyclops* and *Eucyclops*) [18].

Family Ligulidae Claus, 1885

Subfamily Ligulinae Monticelli et Grety, 1891

Genus *Ligula* Bloch, 1782

7. *Ligula intestinalis* Linnaeus, 1758 larvae

Plerocercoids were noted in the body cavity of the crucian carp in the Shurkul reservoir. The extensiveness of invasion in crucian carp is 28.6%, with an intensity of invasion of 4-21 ind.

Adult worms are localized in the intestines of fish-eating birds - gulls, ducks, terns and grebes; plerocercoids in the body cavity of many species of cyprinids; the proceroid phase occurs in the body cavity of copepods [15]. At the plerocercoid phase, it is a dangerous parasite and causes epizootics among cyprinids, especially in slow-flowing water bodies and reservoirs.

Genus *Digramma* Cholodkovsky, 1914

8. *Digramma interupta* Rudolphi, 1810 larvae



The species was found in the body cavity of roach and crucian carp in the Shurkul reservoir, with EI - 20.7% and AI - 2-23 specimens.

Order Proteocephalidea Mola, 1928

Family Proteocephalidae La Rue, 1911

Genus *Proteocephalus* Weinland, 1858

9. *Proteocephalus osculatus* Goeze, 1782

This species was recorded in the intestines of catfish from the Shurkul Reservoir for the first time, with EI - 22.0% and AI - 1-4 specimens.

The development cycle occurs with the participation of an intermediate host, the copepods *Diaptomus castor*, *Cyclops strenuus*, and *Eucyclops serrulatus* [15].

Order Cyclophyllidea Braun, 1900

Family Dilepididae Fuhrmann, 1907

Genus *Neogryporhynchus* Baeret Bona, 1960

10. *Neogryporhynchus cheilancristrotus* Wedl, 1855 larvae

Plerocercoids were found in the intestinal walls of carp in the lower reaches of the Zarafshan River and the Tudakul reservoir, IE-4.3%, IE 1-3 specimens.

The first intermediate host is *Mesocyclops oithonoides* (Jarecka, 1970), adult worms in the intestines of birds [15].

Genus *Gryporhynchus* von Nordmann, 1832

11. *Gryporhynchus pusillum* Nordman, 1932 larvae

Plerocercoids were noted in the anterior intestine of the Turkestan barbel in the Ayakagitma reservoir of Uzbekistan. IE - 10.1%, II - 1 specimen.

Genus *Valipora* Linton, 1927

12. *Valipora campylancristrota* Rudolphi, 1819 larvae

Plerocercoids have been recorded in the intestines of the silver carp in the Shurkul reservoir. IE - 2.8%, II - 1-4 specimens. Plerocercoids can have a negative effect on fish weight and growth.

Class Trematoda Rudolphi, 1808

Order Sanguinicolida Odening, 1960

Family Sanguinicolidae Graff, 1907

Genus *Sanguinicola* Plehn, 1905

13. *Sanguinicola inermis* Plehn, 1905

The species was found in the blood vessels of carp caught in the lower reaches of the Zarafshan and the Tudakul reservoir, with EI-1.8%, SI 1-3 specimens.

Order Fasciolida Skrjabin et Shulz, 1937

Family Orientocreadiidae Skrjabin et Kowal, 1960

Genus *Orientocreadium* Tubanguui, 1931

14. *Orientocreadium siluri* Bychowsky et Dubinina, 1954



This species has been recorded in the intestines of carp in the Tudakul reservoir. EI was 1.6% and AI 1-2 specimens.

The lung snails of the genus *Lymnaea* are the first intermediate host, and several species of fish and mollusks (experimental) can act as the second intermediate host [19].

Family Allocreadiidae Looss, 1902

Genus *Allocreadium* Looss, 1900

15. *Allocreadium isoporum* Looss, 1894

The species was found in the Tudakul reservoir in the intestines of carp with EI-3.1%, AI-1-8 specimens. It is known from the literature data that the first stages of development of *A.isoporum* larvae take place in molluscs of the genus *Sphaerium*. Additional hosts are larvae of aquatic insects of the genera *Ephemera*, *Anabolia*, and *Choetopteryx* [15].

Family Diplostomatidae Poirier, 1886

Genus *Diplostomum* Nordman, 1832

16. *Diplostomum spathaceum* Rudolphi, 1819 larvae

This species was found in the Shurkul reservoir. Trematode larvae were found in the lens of the eye of the silver carp. EI - 5.0%, II - 1-5 specimens.

Genus *Tylodelphys* Diesing, 1850

17. *Tylodelphys clavata* Nordman, 1832 larvae

In our collections, this species was recorded for the first time in the Shurkulya reservoir. Worms were found in the vitreous body of the crucian eye, EI - 6.4%, II - 2-5 specimens.

Genus *Bolboforus* Dubois, 1935

18. *Bolboforus confusus* Krause, 1914 larvae

In our collections, this species was recorded for the first time in the Karakir reservoir. Worms were found in the musculature of zander, EI - 2.4%, II - 1-4 specimens.

Class Nematoda Rudolphi, 1808

Order Trichocephalidae Skrjabin et Schulz, 1928

Family Capillaridae Neveu-Lemaire, 1936

Genus *Capillaria*, Zeder 1800

19. *Capillaria tomentosa* Dujardin, 1843

In our collections, this species was recorded for the first time in the Tudakul reservoir. Worms were found in the intestines of roach, EI - 12.5%, AI - 1-4 specimens.

Order Dioctophymida Skrjabin, 1927

Family Dioctophymidae Railliet, 1915

Genus *Dioctophyme* Collet-Meygret, 1802

20. *Dioctophyme renale* Goeze, 1782 larvae

This species was first encountered in the Shurkul reservoir and found in the intestinal walls of roach. EI was 4.5% and AI was 1-4 specimens.

For this species of larvae, fish act as reservoir hosts; in adulthood, they parasitize in the kidneys of wild and domestic mammals and occasionally infect humans [17].



Order Spirurida Chitwood, 1933

Family Rhabdochonidae Skrjabin, 1946

Genus *Rhabdochona* Railliet, 1916

21. *Rhabdochona denudata* Dujardin, 1845

This nematode is widespread in the Tudakul reservoir. Parasites were found in the intestines of carp with EI - 8.8% and AI - 1-3 ind.

Development proceeds with the participation of mayflies of the genera *Heptagenia* and *Ephemerella*, and larvae of *Hydropsyche* (Trichoptera) [18, 19].

Family Desmidocercidae Cram, 1927

Genus *Desmidocercella* Yorke et Maplestone, 1926

22. *Desmidocercella numidica* Seurat, 1920 larvae

Found in the vitreous body of the eye of the eastern bream caught in the Tudakul reservoir, with EI - 12.5%, AI - 1-4 specimens.

Family Camallanidae Railliet et Henry, 1915

Genus *Camallanus* Railliet et Henry, 1915

23. *Camallanus truncatus* Rudolphi, 1814

This species was found by us in the intestines of pike perch in the Tudakul reservoir, with EI values of 14.7% and AI values of 5-13 specimens. The species is specific to zander.

The development cycle takes place with the participation of the intermediate host - cyclops, possibly the participation of reservoir hosts - non-predatory cyprinids. The definitive hosts of this nematode species are predatory fish [15].

24. *Camallanus lacustris* Zoega, 1776

Shurkul was discovered in the reservoir for the first time. Found in the intestines of pike with EI - 7.8% and IS - 1-16 specimens.

Family Philometridae Baylis et Daubney, 1926

Genus *Philometra* Costa, 1845

25. *Philometra kotlani* Molnar, 1969

This species was found for the first time in the body cavity of an oriental bream in the Shurkul reservoir. With EI -17.4% and AI - 2-4 specimens.

The life cycle takes place with the participation of an intermediate host, cyclops of the genera *Cyclops*, *Macrocyclus*, and *Acantocyclops* [15].

Family Gnathostomatidae Railliet, 1895 oilasi

Genus *Gnathostoma* Owen, 1936 Avlodi

26. *Gnathostomata hispidum* Fedtschenko, 1872 larvae

Found in the intestines and body cavities of carp in the Ayakagitma reservoir. EI - 2.6%, II - 1-4 specimens. It was registered in this reservoir for the first time.

The development cycle proceeds with the participation of the first intermediate host - cyclops. Fish, birds, amphibians, mammals are reservoir hosts, wild and domestic pigs, less often bulls are the final hosts. It also parasitizes in humans [15].



Order Ascaridida Skrjabin et Schulz, 1940

Family Anisakidae Skrjabin et Karokhin, 1945

Genus *Contracaecum* Raillet et Henry, 1912

27. *Contracaecum spiculigerum* Rudolphi, 1809 larvae

This species was found in the body cavity of the redfin in the Shurkul reservoir. With EI -10.2% and AI - 1-8 specimens.

28. *Contracaecum rudolphi*, Hartwich, 1964 larvae

This species was found for the first time in the body cavity of a catfish in the Shurkul reservoir. With EI -8.2% and AI - 2-4 specimens.

Genus *Porrocaecum* Raillet et Henry, 1912

29. *Porrocaecum reticulatum* Linstow, 1890 larvae

This species was found in the muscle tissue of carp in the Shurkul reservoir. With EI -1.6% and AI - 1-22 specimens.

Genus *Raphidascaris* Raillet et Henry, 1915

30. *Raphidascaris acus* Bloch, 1779 larvae

The species was found in the stomach and intestines of pike and carp in the Shurkul reservoir, with EI values of 3.1%, AI values of 1–3 specimens. Typical parasite of pike, rarer than other predatory fish.

The development cycle proceeds with the participation of the first (oligochaetes, copepods and other groups of invertebrates), the second (dragonfly larvae, caddis flies, beetles, cyprinids) and definitive hosts.

Class Acanthocephala Rudolphi, 1808

Order Palaeacanthocephala Meyer, 1925

Family Pomphorhynchidae, Yamaguti, 1939

Genus *Pomphorhynchus* Monticelli, 1905

31. *Pomphorhynchus laevis* Muller, 1776

It is one of the most common parasites of cyprinids and was first discovered in the Shurkul reservoir. The species was found in the intestines of carp, with EI 6.0% and SI - 1-63 specimens.

The first intermediate host is various amphipods, including *Gammarus pulex*, *Gammarus lacustris*, etc. [15].

Family Echinorhynchidae Cobbold, 1879

Genus *Acantocephalus* Koelreuther, 1771

32. *Acantocephalus lucii* Muller, 1776

Found in the intestines of carp in the Tudakul reservoir. EI - 6.0%, II - 1-40 copies. This species was found for the first time in this area and is new to the host.

Conclusion. 32 species of helminthes were found in cyprinids of the surveyed reservoirs of the lower reaches of the Zarafshan. Of these, 15 species were recorded in the sexually mature form, and 17 in the larval form. The identified helminths belong to 30 genera, 21 families, 12 orders, 4 classes, of which 12 species belong to the class of cestodes, 6 trematode species, 12 nematode species and 2 acanthocephalic species. Among the helminthes in fish, cestodes dominate, of which 3 species parasitize in the larval



stage. Trematodes are represented by 3 species of adult forms, for which fish are the definitive host. 3 species of trematodes parasitize in the larval stage, for which fish serve as an intermediate host. The fish nematode fauna of the lower Zarafshan basin is very poor. We found only eight species of roundworms, of which 4 parasitize fish in the larval stage. Even S.O. Osmonov [6, 17] noted a weak infestation and poverty of the species composition of helminths in fish from the Zarafshan River basin compared to other water bodies. Here we discovered for the first time two species of acanthocephalus: *Acantocephalus lucii*, first recorded in carp, which is the new host of this parasite, and *Pomphorhynchus laevis*.

Infestation of the studied 12 fish species averaged: cestodes: extensive infection - 16.8%, intensive infection - 1-63 specimens; trematodes: extensive infection - 2.1%, intensive infection - 1-6 specimens; nematodes: extensive infection - 14.8%, intensive infection - 1-14 specimens and acanthocephala: extensive infection - 1.2%, intensive infection - 1-4 specimens. The total percentage of infection of fish with helminthes is 8.7%. The number of parasites per fish ranges from 1 to 63 specimens.

Our data on the quantitative composition of fish helminths in the lower reaches of the Zarafshan River in Uzbekistan allow us to distinguish 2 groups of communities:

1) Helminths using cyprinids as definitive hosts: *Caryophyllaeus laticeps*, *C. fimbriceps*, *Khawia sinensis*, *Biacetabulum appendiculatum*, *Bathybothrium rectangulum*, *Bothriocephalus opsariichthydis* and *Proteocephalus osculatus* (cestodes), *Sanguinicola inermis*, *Orientocreadium siluri*, *Allocreadium isoporum* (trematodes), *Rhabdoch denudata*, *Camallanus truncatus*, *C. lacustris*, *Philometra kotlani* (nematodes) and *Pomphorhynchus laevis*, *Acantocephalus lucii* (acanthocephalus). Infection of fish occurs mainly through the food channels of the hosts;

2) helminths using fish as intermediate hosts: 2 species of cestodes *Ligula intestinalis*, *Digramma interrupta* and nematodes *Dioctophyme renale*, *Raphidascaris acus*. The final hosts (predatory fish, piscivorous birds and mammals) become infected by eating cyprinids infested with helminth larvae. An analysis of the parasite fauna of fish shows that the majority of fish parasites in the water bodies of the lower reaches of the Zarafshan are characterized by dixenous life cycles that have developed in the relationships between the components of the parasitic system.

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THE EFFECT OF SILVER NANOPARTICLES (AGNPS) ON THE LIVER ENZYMES OF PREGNANT MICE (MUS MUSCULUS) AND THE DEFORMATION OF THEIR FETUSES

Rand Abdulraheem Hussein^{1,*},

Majida Noori Ibrahim¹

Rosure Borhanalden Abdulrahman²

¹ Department of Biology, College of Science, University of Kirkuk, Kirkuk, Iraq.

² Department of Physics, College of Science, University of Kirkuk, Kirkuk, Iraq.

*Corresponding author: abdulraheemrand@gmail.com

E-mails address: abdulraheemrand@gmail.com, drmajedanoori@gmail.com,

rbadulrahman@uokirkuk.edu.iq

*ORCID ID: <https://orcid.org/0000-0002-8393-8090>, <https://orcid.org/0000-0002-1572-324X>,
<https://orcid.org/0000-0003-3439-5672>

ABSTRACT

Exposure to silver nanoparticles (AgNPs) causes accumulation in various organs of the body, including the liver and kidney, with potentially negative physiological and histological effects. This study aims to determine the toxicity of AgNPs on some liver enzyme parameters such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), and alkaline phosphatase (ALP), as well as investigate the fetal malformation in pregnant mice. In this study, 20 pregnant female Swiss albino mice were injected with a solution of silver nanoparticles with diameters of 30 nm and concentrations of 0.2, 0.4, and 0.6 mg/kg BW AgNPs per day. One week after administration, the level of some liver enzymes was measured. The results of the study showed a significant increase in the activity of liver enzymes in the blood serum. The mice fetal displayed morphological and phenotypic changes such as flatulence, protrusion of the umbilicus and umbilical cord, micromelia of the forelimbs and lack of phalangeals, hind limb enlarged and bent at the knee joint, with posterior end flexed and fused phalanges visible, aquiline tail, and the appearance of folds in the skin. The highest percentage of deformities were observed at the 0.6 mg/kg concentration, including the fetus's small size, trunk curvature with swelling of the navel, torsion tail, congestion of the abdomen and flank with swelling of the abdomen, and the observation of the bending of the forelimbs at the elbow, the sagging of the ear, swelling in the face, the upper lip being cleft, and atrophy of the optic follicle, the short lower jaw with the femoral epiphysis, and foot enlargement. According to the results, the consumption of AgNPs has a negative impact on liver enzymes and physiological parameters in the blood, as well as on pregnant mice fetuses.

Keywords: AgNPs, ALT, AST, ALP, liver enzymes, silver nanoparticles

Introduction:

Silver nanoparticles are commonly used in the manufacturing of medical ¹, industrial ², and household products ³. These nanoparticles, which have a wide range of antibacterial and antimicrobial properties, are widely used in medicine ⁴. According to studies, AgNPs can cause significant cytotoxicity, including



oxidative stress in human pulmonary epithelial cells as well as anti-inflammatory effects, mainly hepatotoxicity in laboratory rats, and enzyme imbalances (GOT, GPT, and ALP) 5, as there are few studies showing toxic side effects 6. Nanomaterials cause cytotoxicity by generating reactive oxygen species (ROS) and releasing cytokines 7. Placenta and breast milk have been identified as the two main routes of transmission of AgNPs to offspring upon maternal exposure, although infants can be directly exposed to AgNPs through milk bottles, textiles, toothbrushes, and drinking cups 8. The placenta is an organ that allows the exchange of substances between the bloodstream of the mother and the fetus and provides the fetus with nutrients 9, where accumulation of AgNPs was detected in the placenta and fetal organs during pregnancy, such as they kidney, lung, liver, spleen, and brain 5,10 . AgNPs of small size can pass through the septum and cause structural changes in the placenta, and deposition of AgNPs in the placenta causes vacuolization of nuclei, agglomerated chromatin, nuclear lysis, and focal necrosis in this organ 11. Placental injuries induced by AgNPs can increase the permeability of nanoparticles and the efficiency of placental transport of AgNPs depends on the stage of embryonic and placental maturation in a mouse pregnancy where fetal days are defined as a critical path, after which blood flow and placental barrier function mature leading to a significant decrease in exposure. embryo of nanoparticles 12. The thickness and permeability of the human placenta differs from that of the mouse placenta as the embryonic stages change, as the septum becomes thinner and more permeable during the third trimester compared to that during the first trimester, and this leads to an increased risk of exposure of fetuses to AgNP in late pregnancy 13. The transport mechanism of AgNPs into the placenta is not yet clear. The placental septum consists of multinucleated cytotrophoblasts, stroma villi, and endothelial cells of fetal capillaries 5. As demonstrated by previous studies, AgNPs cross the placental barrier via cellular pathways (phagocytosis, clathrin-mediated endocytosis, cavernosa-mediated endocytosis, and megakaryocytes) and paracellular pathways 14. Although placental trophoblasts possess phagocytic activities, endocytosis has been suggested to be the most prevalent pathway mediating placental transport of nanoparticles 8. Uteroblastoid ducts are narrow, highly branched tubular ducts of 15–25 nm that allow the transport of very small nanoparticles 5. Interestingly, both silver ions and AgNPs could be detected in the fetal circulation after perfusion as well as AgNPs can be formed upon perfusion of AgNO₃ into the maternal and fetal circulation, raising the question of which Ag species dominate transport of AgNPs across the placenta 15. Several studies have also shown that breastfed infants are exposed to AgNPs through milk when their mothers are exposed to them, as well as that AgNPs can cross the placenta and cause resorption, growth retardation, and histological and functional abnormalities in the fetal central nervous system, reproductive system, immunological system, and other systems and organs 8.

Materials and Methods:

Preparation of silver nanoparticles

By reducing silver nitrate (AgNO₃) with sodium citrate (Na₃C₆H₅O₇), silver nanoparticles of 30 nm diameter were produced 16. 250 ml of a 1 M solution was placed in a round-bottom flask. While being stirred, this solution was heated to boiling under reflux. Then, 10 mL of a 1% sodium citrate solution



was instantly added to generate 30 nm-diameter Ag nanoparticles, and the mixture was allowed to boil for 60 minutes. Three distinct concentrations of the nano-solution, prepared at 17, 34, and 51 mg/ml, correspond to doses of 0.2, 0.4, and 0.6 mg/kg BW, respectively.

Preparation of Animals

20 female Swiss albino mice belonging to the *Mus musculus* strain were used in this experiment. The mice were divided into two experimental groups and treated with AgNPs nano-solutions with diameters of 30 nm; each group was injected with AgNPs at concentrations of 0.2, 0.4, and 0.6 mg/kg BW, respectively, and a negative control group was injected with distilled water for week.

Biochemical Parameters

The Mindray Biochemistry analyzer BS-120 was used in combination with a Mindray (German company) test kit to perform liver enzyme assays (ALT, AST, and ALP) in accordance with the Mohammed & Mohamed method 17.

Statistical Analysis

The data were analyzed using the Statistical Analysis System (SAS) program 18. The arithmetic means of different doses were compared using Duncan's Multiple Range Test at a probability level of $p < 0.5$ to evaluate the effect of AgNPs on liver enzyme parameters (ALT, AST, and ALP) and fetuses, as well as compare them to the control sample.

Results and Discussion:

Ag NPs Morphology

The appearance of the olive color in the reaction mixture revealed the formation of silver nanoparticles. Fig. 1 shows a TEM picture of Ag NPs with diameters of 30 nm.

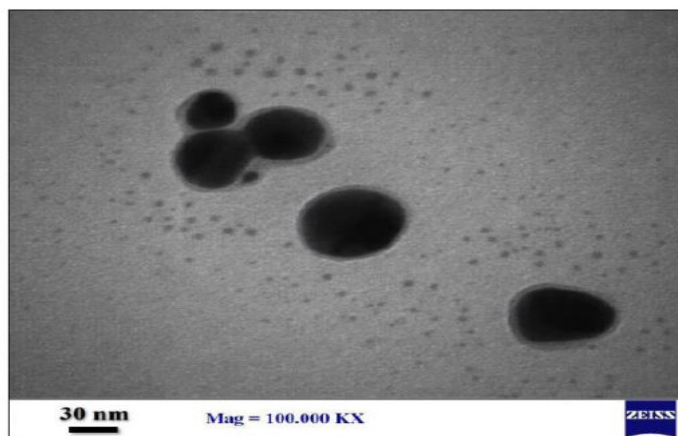


Figure 1. TEM image of 30 nm Ag NPs.



Liver enzyme activity

The activity of the liver enzymes ALT, AST, and ALP in the blood serum of mice treated with 30 nm AgNPs for one week at concentrations of 0.2, 0.4, and 0.6 mg/kg body weight was significantly different at the $P < 0.05$ level when compared to the control group, as shown in Figs. 2, 3, and 4.

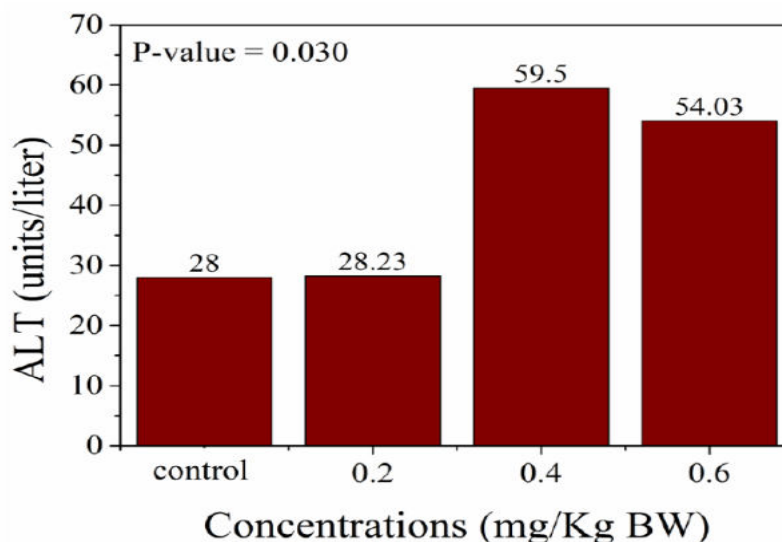


Figure 2. Effect of 30 nm diameter AgNPs on alanine aminotransferase (ALT) enzyme.

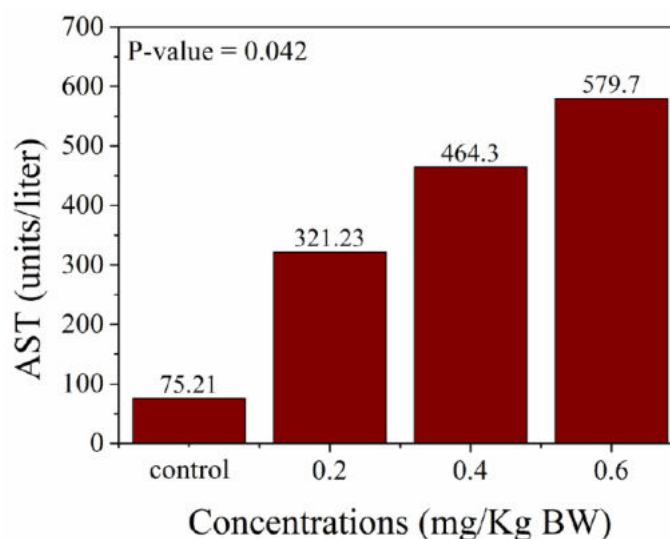


Figure 3. Effect of 30 nm diameter AgNPs on aspartate aminotransferase (AST) enzyme.

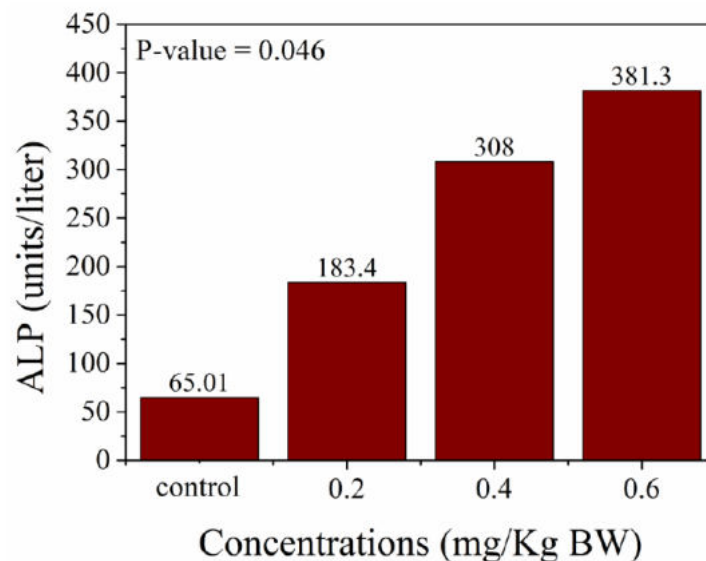


Figure 4. Effect of 30 nm diameter AgNPs on alkaline phosphatase (ALP) enzyme.

Appearance changes of embryos treated with silver nanoparticles

The findings of this study revealed that pregnant mice treated with 30 nm diameter AgNPs for one week at a concentration of 0.2 mg / kg body weight had an appearance, prominence, and congestion in the nose, as well as short and straight front limbs bent at the leg joint, and the tail curving towards the abdominal side, as shown in Fig. 5. Fig. 6 shows a curvature of the tail and skin folds, as well as a bending of the posterior end and the emergence of merged phalanxes and flexion of the hind limb.

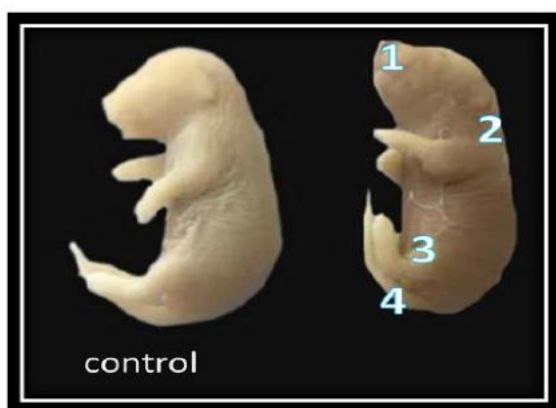


Figure 5. Shows (1) Nasal congestion and prominence, (2) short and straight forelimbs, (3) bending of the forelimbs at the leg joint, (4) curvature of the tail towards the ventral side

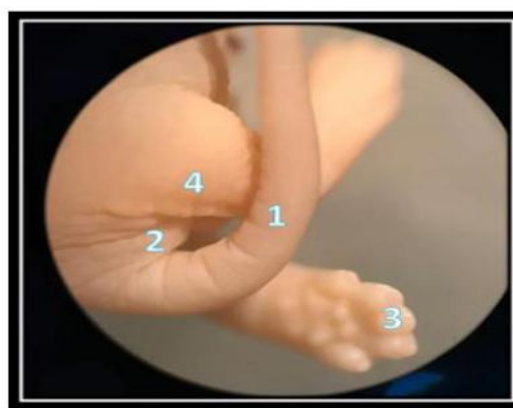


Figure 6. Shows (1) Curvature of tail, (2) folds of skin (3) (4) flexion of hind limb



Figs. 7 and 8 clearly show the appearance of a bulge in the abdomen with the curvature of the tail, the protrusion of the umbilicus, and the umbilical cord, as well as the fusion of the fingers, a long hooked tail, and an enlarged and bent posterior end at the knee joint. Additionally, the skin fold is formed in association with the shortness of the front end.

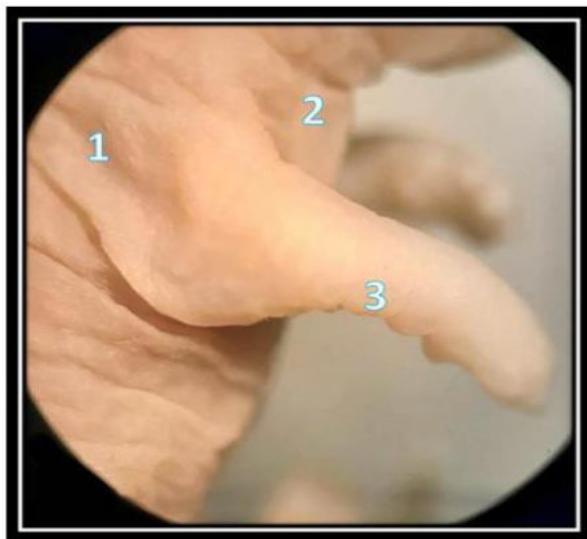


Figure 7. Shows (1) Grooves of skin in the abdomen and shoulder region and (2) grooves in the neck and mandible, (3) wrinkle on the ventral side of the forelimb.

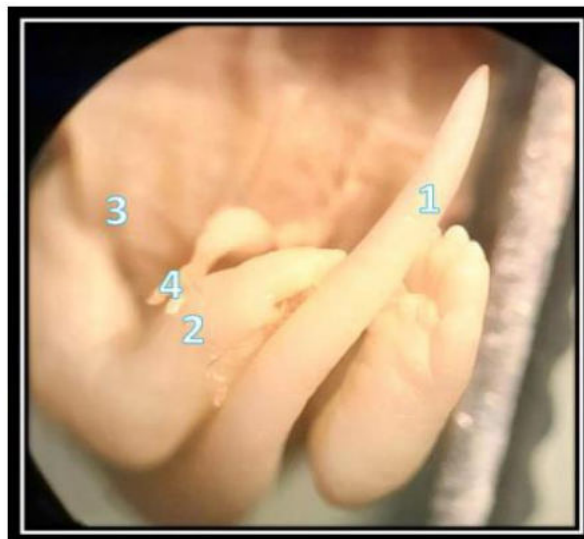


Figure 8. Shows (1) A long, hooked tail (2) enlarged hind limb and bent at the knee joint (3) skin fold, with a Short hind limb and a lack of phalanges.

The study's findings revealed that treating pregnant female mice with 30 nm-diameter AgNPs for one week at a dose of 0.4 mg/kg body weight revealed numerous deformations. Fig. 9 depicts a tail curvature with swelling of the abdomen, protrusion of the umbilicus and umbilical cord, and syndactyly fusion. Fig. 10 shows a thickening of the anterior limb with adhesion of the phalanges, curvature of the tail towards the abdomen, and wrinkles in the skin. Fig. 11 shows abdominal congestion with folds in the abdomen skin, auricle disc protrusion, loss and atrophy of the loin, curve of the tail with sagging of the ear disc, and bending of the limb to the right at the wrist. The protrusion of the umbilicus, enlargement of the abdomen, blueness, flexibility of the hind limbs, and interphalangeal adhesion were all shown in Fig. 12. The tail is curved, the skin on the hind limb thickens, the back end touches the tail, and the fingers get longer, as shown in Fig. 13. In contrast, the mandible was enlarged with skin folds and a skin groove in the neck, as indicated in Fig. 14.



Figure 9. Shows (1) Curvature of the tail, (2) swelling of the abdomen, (3) protrusion of the umbilicus and umbilical cord, (4) fusion of the syndactyly.

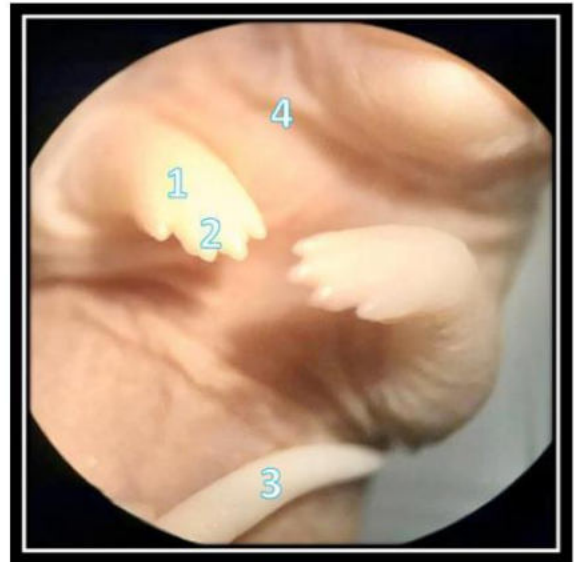


Figure 10. Shows (1) thickening of the anterior limb (2) adhesion of the phalanges (3) curvature of the tail towards the abdomen (4) wrinkling of the skin.

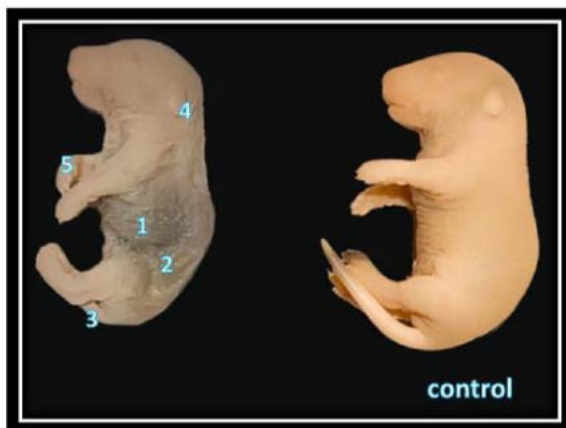


Figure 11. Shows (1) conglotion of the abdomen, (2) folds in the skin of the abdomen, protrusion of the auricle disc, , loss in the loin and its atrophy (3) curvature of the tail, (4) sagging of the ear disc (5) bending of the limb to the right at the wrist.

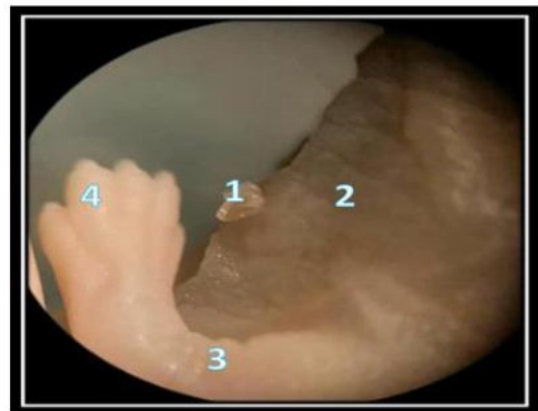


Figure 12. Shows (1) The protrusion of the umbilicus (2) enlargement of the abdomen, and blueness, (3) flexibility of the hind limbs (4) interphalangeal adhesion.

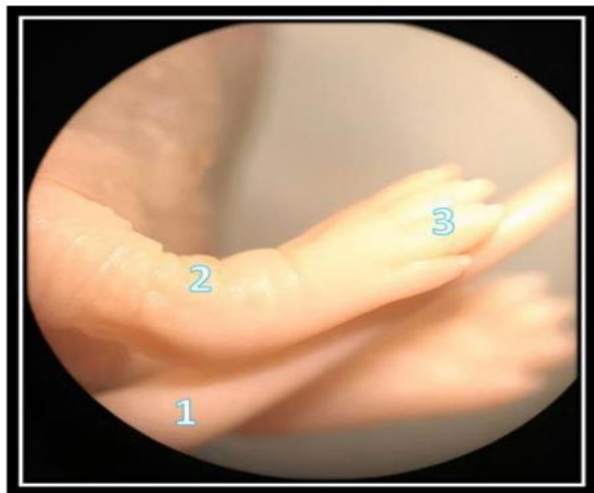


Figure 13. Shows (1) Curvature of the tail, (2) thickening of the skin at the posterior end, contact of the posterior limb, (3) hypertrophy of the fingers.

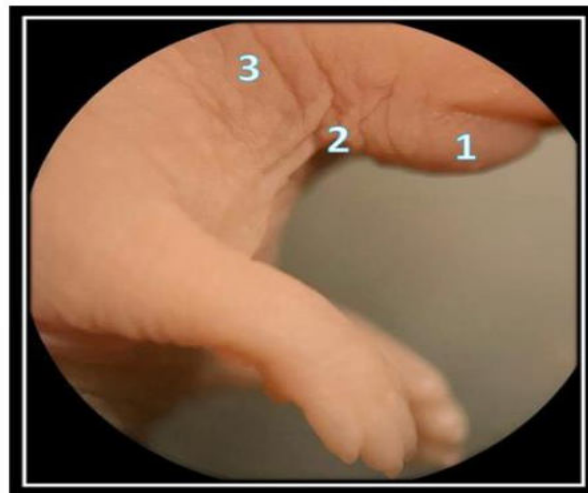


Figure 14. Shows (1) Enlargement of the lower jaw (2) skin folds in the neck (3) cutaneous grooves in the neck.

The treatment of pregnant mice with 30 nm-diameter silver nanoparticles at a concentration of 0.6 mg / kg for a week showed fetal deformities such as a mummified embryo with trunk curvature, protrusion of the placoid of the ear and its congestion, a caudal curvature, belly swelling, and a head as in Fig. 15. Fig. 16 also showed a deformation of the face, macrocephalus, swelling of the ear, the appearance of bloody congestion around it, micromelia, belly swelling, and a curvature of the trunk.

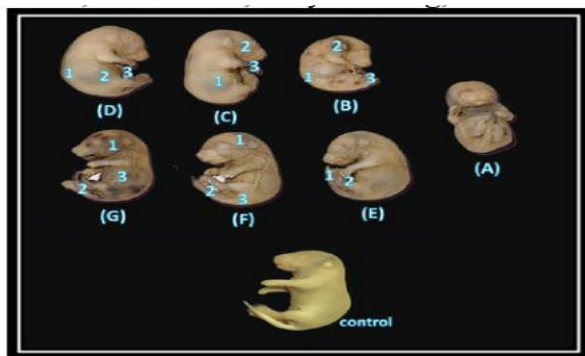


Figure 15. In which (A) the fetus Mummified embryo B- 1belly swelling 2. Swelling of the face and head 3.Shortness of the forelimb.C-1. Fetal arching dorsally 2. belly swelling 3. caudal curvature D- 1. 2. Abdominal congestion. 3. Rear end E-1. a caudal curvature 2. Short rear end F-1. Skin congestion 2. a caudal curvature 3.protrusion the placoid of ear.

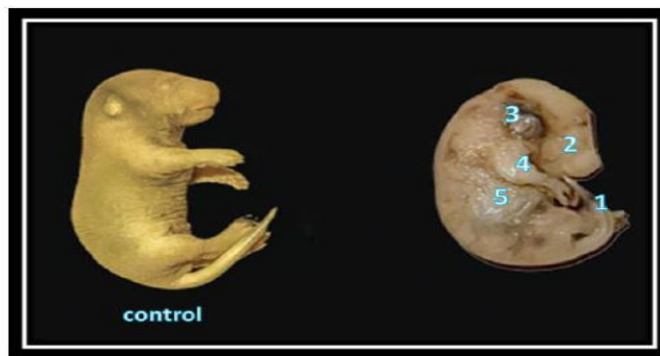


Figure 16. (1) acaudal curvature (2) macrocephalus (3) Skin congestion (4) Micromelia (5) belly swelling.



Fig. 17 shows a wrinkling of rough skin and caudal curvature, as well as the swelling of the umbilicus and adhesion of the syndactyly to the peritoneum. Fig. 18 shows congestion of the skin, as well as a hooked tail with swelling and congestion of the syndactyly at the posterior end.

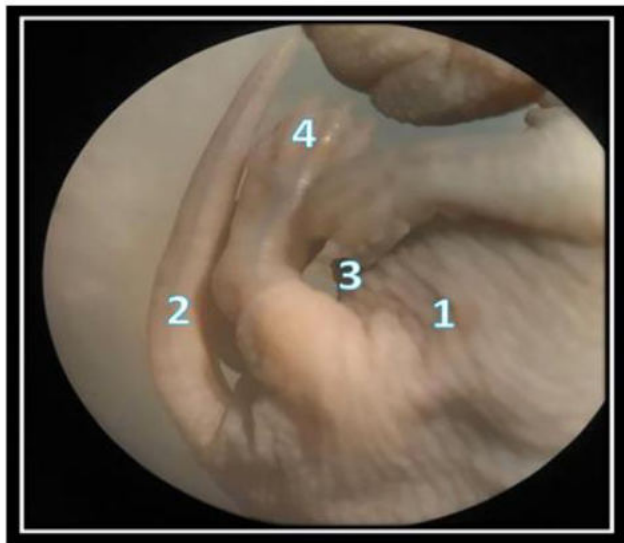


Figure 17. Shows (1) rough skin (2) caudal curvature (3) cervical skin folds, (4) syndactyly to the peritoneum



Figure 18. Shows (1) the congestion of the skin, (2) caudal Aquiline (3) congestion of the syndactyly the posterior.

Impairment of hepatic enzyme parameters can be a useful tool for monitoring health status and disease detection, and for tracking disease progression and response to treatment. In this study, the effects of AgNP on the enzymes of female albino mice were investigated. The study showed a significant increase in the levels of ALT, AST, and ALP at concentrations of 0.2, 0.4, and 0.6 mg/kg compared to the control group. These results agreed with Forouhar and his coworkers 19 when they treated Fish were treated with AgNP at concentrations of 0.1 mg/L, 0.2 mg/L, and 0.4 mg/L to assess and determine some parameters of liver enzymes and red blood cells. ALT, AST, and ALP were significantly higher compared with the control group. It was concluded that silver nanoparticles cause significant changes in blood parameters in rainbow trout and that the toxicity of NPs is due to special chemical and physical properties such as size, chemical modification of the surface, and the release of ions. Previous studies in vivo indicated that different types of nanoparticles tend to settle in the liver with different toxic effects, as the liver is the primary organ responsible for detoxifying the body 20. Naguib and her colleagues 21 observed a significant increase in serum enzyme activities such as AST, ALT, and ALP in *C. gariepinus* exposed to AgNPs for 15 days. The results agreed with 12,19 who observed a significant increase in the AST, ALT, and ALP activities of rainbow trout (*Oncorhynchus mykiss*) after exposure to silver nanoparticles. These results are in agreement with Abdel-Khalek and his colleagues 22 who reported a significant increase in serum enzyme activities (AST, ALT, and ALP) of Nile tilapia *O. niloticus* after exposure to copper oxide nanoparticles. The higher levels of AST, ALT and ALP in the



cytoplasm of hepatocytes as a result of liver injury leading to increased permeability of cell membranes 23. This study recorded several phenotypic deformities of female albino mice embryos after treatment with AgNPs at concentrations of 0.2, 0.4 and 0.6 mg/kg compared to the control group. These results agreed with²⁴ in study of the dangerous effects of AgNPs on the maturation of mouse ovum, in vitro fertilization, and post-implantation and embryo development, as data from in vitro experiments revealed that AgNPs impair mouse oocyte maturation and reduce fertilization rates and the effects of infection on subsequent embryonic development to a large extent, when injected AgNPs at a concentration of 5mg/kg body weight led significantly reduced mouse oocyte maturation with impairment of early embryonic development in vivo. The results of the study²⁵ did not record any significant differences, and indicated that the potential effects of AgNPs on fetal growth of pregnant mice at concentrations of 0, 100, 300 and 1000 mg/kg/day have not yet been determined. No changes in organ weight, pregnancy index, fetal mortality, fetal and placental weights, sex ratio, or morphological changes were observed between groups.

Conclusion

Despite the many benefits that enter into the use of silver nanoparticle (AgNPs) technology medically, veterinary and industrially, it has toxic health effects that may interfere with the functions of some organs and fetuses in living organisms. The results of our study showed a significant increase in the activity of liver enzymes (ALT, AST, and ALP) in the serum of mice treated with 30 nm diameter AgNPs for one week at concentrations of 0.2, 0.4, and 0.6 mg/kg body weight, when compared to the control group. The embryos of female albino mice recorded morphological and phenotypic changes when the females were treated with 30 nm diameter AgNPs for one week at concentrations of 0.2, 0.4, and 0.6 mg/kg body weight. Curvature of the tail and skin folds with flexion of the posterior limb and the appearance of combined phalanges Abdominal distension, Prominence of the umbilicus and the umbilical cord, with a long hooked tail and a posterior end enlarged and bent at the knee joint, with a short anterior end and a lack of phalanges. The curvature of the trunk, with swelling of the umbilicus curvature of the trunk, curvature of the tail, discoloration of the abdomen and flanks with swelling of the abdomen, and noticing the bending of the front end at the elbow With drooping ears and a short front end, with folds and swelling of the face, a cleft upper lip, optic atrophy with cervical skin folds, mandibular shortening, and hyperemia, describes mutations and folds associated with thigh sagging and foot enlargement, This demonstrates the detrimental side effects of AgNPs nanoparticles as proven by the findings of our study.

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Authors' declaration:

- Conflicts of Interest: None.
- We hereby confirm that all the Figures and Tables in the manuscript are mine ours. Besides, the Figures and images, which are not mine ours, have been given the permission for re-publication attached with the manuscript.
- Authors sign on ethical consideration's approval
- Ethical Clearance: The project was approved by the local ethical committee in University of Kirkuk.

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**ENSURING GENDER EQUALITY AS AN IMPORTANT DIRECTION OF REFORMS IN
MODERN UZBEKISTAN**

Seitova Z. P.

Ph.D. in Philosophy, Associate Professor
NSPI named after Ajiniyaz, Republic of Karakalpakstan

Abstract

In the article the author touches upon the issues of gender equality in Uzbekistan. That it guarantees women and men equal participation in the management of the affairs of society and the State. The issue of gender equality has been raised to the level of state policy. "Strategy for achieving gender equality in the Republic of Uzbekistan until 2030" defines the concept of gender equality as equal rights and opportunities for women and men in all spheres of life and activities of society. At the legal and regulatory level, equal rights of women and men are enshrined.

Keywords: Gender, society, public policy, Constitution, gender strategy.

Introduction

Gender equality in Uzbekistan has become part of state policy since 1991. The principles of non-discrimination and equality of women and men are enshrined at the regulatory and legal level, primarily in the Constitution.

Article 46 of the Basic Law states: "Women and men have equal rights." ¹

In 2019, the Law of the Republic of Uzbekistan "On Guarantees of Equal Rights and Opportunities for Women and Men" was adopted. The law regulates relations "in the field of ensuring equal rights and opportunities for women and men." ²

It defines that "the basic principles of guaranteeing equal rights and opportunities for women and men are the rule of law; democracy; equality between women and men; non-discrimination on the basis of sex; openness and transparency".³

The degree of study of the problem. Among the studied works, the following groups can be distinguished. The first group includes studies by foreign scientists who considered the problem from the point of view of its various aspects. In particular, B. Anderson, M. Foucault studied identity in

¹ Constitution of the Republic of Uzbekistan. URL: <https://lex.onto/acts/35869> (date Treatment: 09.09.2022)

² Law Of the Republic of Uzbekistan "On guarantees of equal rights and opportunities for women and men". URL: <https://lex.onto/acts/4494873> (date Treatment: 09.09.2022)

³ Over there same



harmony with social problems in the cultural life of people. J. Turner, E. Smith, T. Kuhn associated identity with religious faith.⁴⁵

The second group includes the works of scientists of Uzbekistan. In particular, the sociological aspects of national mentality and self-consciousness were studied by M. Bekmurodov, R. A. Ubaidullaeva, O. Ata-Mirzaev, M. Ganieva, N. Alikoriev, T. Matibayev, social and religious factors were studied by R. T. Ubaidullaeva, A. Umarov, A. Kholbekov, K. Kalanov, B. Farfiyev, N. Latipova, the system of continuity and intergenerational relations - Sh. Sodikova, A. Seitov, S. Kalanova,⁶

According to the Law, "the State shall guarantee women and men equality in the enjoyment of personal, political, economic, social and cultural rights". "The State guarantees women and men equal participation in the management of the affairs of society and the State, the electoral process, ensuring equal rights and opportunities in the field of health protection, education, science, culture, work and social protection, as well as in other spheres of state and public life."⁷

Methodological basis. The article is based on the principles of scientificity and historicism, complex, comparative, historical methods, the method of document analysis and others are used.

⁴ Anderson B. Imaginary communities. Reflection on the origins and spread of nationalism. M.: Kanon-press.Ts.; 2001., Foucault M. Archaeology of Knowledge. SPb.: Humanitarian Academy: Universitetskaya kniga, 2004.

⁵ Turner J. The Structure of Sociological Theory. M.: «Progress», 1985, Smith E. National Identity. M.: «Osnovy». 1994., Kun T. Struktura nauchnykh revolyutsii. M., 2009.

⁶ Bekmurodov M. Uzbek mentality. - Toshkent: Yangi asr avlodi, 2004. - B. 36.; Ubaidullaeva R.A.; Ata-Mirzayev O. Uzbekistan in the mirror of public opinion. Monograph- Toshkent: IQTISOD-MOLIYA, 2016. - B. 351.; Ganieva M. Improvement of the system of training specialists in social work in the universities of Uzbekistan: problems and new opportunities // Materials of the international forum "Spiritual and moral foundations of society in the system of social support of childhood and family". - Tashkent: RCSAD, 2012. — S. 238-241.; Alikoriev N. Uzbekistonda sotsiologik tadqiqotlar va ilmiy maktablar // Respublika ilmiy-amalii anzhuman materiallari. 1 -whale. - Toshkent, 2010. - B.10.; Matibayev T. Iztimoiy hamkorlik - millatlararo totumlik va dinlararo bagrikenglikni ta'minlash vositasi. - Toshkent: Yangi Kitob, 2016. - B. 156; Umarov A. Respublika axborot-kutubkhona soxhdsi: yangicha talablar // Khalkaro konferentsiya materiallari. — Toshkent, 2010. — B.9.; Kholbekov A. Ma'naviy kadriyatlarini tiklash, mustakillik mafkursini yaratishda milliy kutubxonalarning urni va ahamiyati // Respublika ilmiy-amalii anzhuman materiallari. - Toshkent, 2015. - B. 363.; Kalanov K. Markaziy Osiyo khududidagi izhtimoiy-dinii tabakalar. Toshkent., 2008. - 123 bet.; Abduazimov O. Akhborotlashgan zhamiyatda jamoatchilik fikry monitoringini ta'minlashda ommaviy kommunikalar sotsiologiyasining urni. - Toshkent: Fan Va Technology, 2016. —B. 92-113.; Sodikova Sh. Uzbekistonda izhtimoiy sohadagi uzgarishlar. Ijtimoiy tadqiqotlar (www.tadqiqot.uz\soci) electron journals. (ISSIN 2181-9556.) Na. 2., 2019. - B. 16.; Yoshlarni vatanga muhabbat va sadoqat ruhida tarbiyalashda kexalarning urni. - Toshkent, Yangi asr avlodi, 2016. - B. 99.; Seitov A.P. Sociological vision of eastern civilization: genesis and further prospects. / Monograph — Tashkent: Publishing House of the National Library of Uzbekistan named after Alisher Navoi, 2019. - B. 184.; Kalanova S. Avlodlar almashinuvi yangi sociomadaniy kadriyatlar shakllanishining omili sifatida. -Tashkent. 2018...social.fan. Bujicha falsaf Doctorate (PhD) Dissertation.

⁷ Law of the Republic of Uzbekistan "On Guarantees of Equal Rights and Opportunities for Women and Men". URL: <https://lex.onto/acts/4494873> (date of access: 09.09.2022)



In addition, "in order to achieve de facto equality between women and men, increase their participation in all spheres of society, eliminate and prevent direct and indirect discrimination on the basis of sex, the State shall take temporary special measures to ensure the implementation of gender policy".⁸

The main directions of the country's policy in the field of gender equality are as follows:

- "formation and improvement of the regulatory framework in this area";
 - "development and implementation of state programs, national action plans and strategies in this area";
 - "Creating a culture of equal rights and opportunities for women and men";
 - "Ensuring the equal participation of women and men in the management of the affairs of society and the State";
 - "Ensuring equal rights and opportunities for women and men to reconcile work and family responsibilities";
 - "social protection and support of the family, childhood, the formation of responsible motherhood and fatherhood";
 - "Protection of society from information aimed at direct and indirect discrimination on the basis of sex";
 - "involvement of citizens' self-government bodies, non-governmental non-profit organizations and other civil society institutions in the development and implementation of state programs, national action plans and strategies in this area";
- "Financing measures to ensure equal rights and opportunities for women and men at the expense of the State budget of the Republic of Uzbekistan and other sources not prohibited by law";
- "Development of effective cooperation at the national, regional and international levels in order to achieve equal rights and opportunities for women and men".⁹

The Labour Code of the Republic of Uzbekistan is an important addition to the legal framework of the Republic of Uzbekistan, which ensures equal rights and protection of women's rights.¹⁰

The Family Code of the Republic of Uzbekistan states that "all citizens have equal rights in family relations. Any direct or indirect restriction of rights, the establishment of direct or indirect advantages in marriage and interference in family relations on the basis of sex, race, nationality, language, religion, social origin, beliefs, personal and social status and other circumstances shall not be permitted."¹¹

The Family Code emphasizes that "the protection of the interests of mothers and children is ensured by special measures to protect the work and health of women, the creation of conditions that allow women to combine work with motherhood, legal protection, material and moral support for motherhood and childhood."¹²

⁸ Over there same

⁹ Law Of the Republic of Uzbekistan "On guarantees of equal rights and opportunities for women and men". URL: <https://lex.onto/acts/4494873> (date Treatment: 09.09.2022)

¹⁰ Labour Code of the Republic of Uzbekistan. URL: <https://lex.onto/acts/145261#145288> (date Treatment: 09.09.2022)

¹¹ Domestic Code of the Republic of Uzbekistan. URL: <https://lex.onto/acts/104723#160482> (date Treatment: 09.09.2022)

¹² Over there same



Article 19 of the Family Code stipulates that "spouses shall enjoy equal rights and duties in the family".¹³ In 2021, the Resolution of the Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030" was adopted.¹⁴ The Resolution states that the achievement of equal rights and opportunities for women and men, ensuring their equal participation in the management of the affairs of society and the State, supporting women in social and legal terms, as well as protecting women from oppression and violence is the strategic goal of the ongoing reforms in this area.

The issue of gender equality has been raised to the level of state policy, 25 legislative documents relating to this area have been adopted.¹⁵

In Karakalpakstan, back in the 1990s, public figures and the mass media of the republic made a significant contribution to the discussion of gender equality. The most illustrative in this regard is the example of the magazine "Aral Kyzlary", the editor-in-chief of which was the famous writer and scientist G. Yesemuratova. Famous representatives of women of Karakalpakstan, such as scientists S. Bakhadyrova, R. Yesemuratova, P. Muratova, journalists Sh. Pakhradinova, A. Turekeyeva, united around the magazine.¹⁶

The magazine began to actively promote the ideas of an active lifestyle of women, to discuss their problems, including social status in society and the family. The magazine published materials about famous women of Karakalpakstan in the history of our time. It quickly gained popularity among women.

One of the main functions of the magazine was the rejection of traditional stereotypes about the role of women. Ideological attitudes in society usually determined the position of the media, which consolidated traditionally conservative hierarchical gender ideas, forming stereotypes of mass consciousness created by men and for men.¹⁷

From this point of view, the magazine "Aral Kyzlary" was innovative. He pursued not only the goals of forming modern views on society and social relations as a whole, but also on the role of women in modern society.

At the same time, it was difficult to completely revise the stereotypes in matters of gender equality within the framework of the magazine. Therefore, in the issues of the magazine you can find the ideas of reviving traditional relationships in society and everyday life, types of traditional needlework and handicrafts. In particular, the well-known art historian and ethnographer A. Allamuratov in the article "Ecology of Culture" pointed out that in the period of the USSR, women of the republic were forced to represent a socio-production unit and at the same time lead a household, and the author found it

¹³ Over there same

¹⁴ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)

¹⁵ Over there same

¹⁶ Rustemova A. Gender inequality in the media // Materials of the international women's scientific and theoretical conference dedicated to the 10th anniversary of the journal "Aral Kyzlary". –Nukus, 2001, –p. 29.

¹⁷ Rustemova A. Gender inequality in the media // Materials of the international women's scientific and theoretical conference dedicated to the 10th anniversary of the journal "Aral Kyzlary". –Nukus, 2001, –p. 29.



necessary to return to traditional material and spiritual culture under the new conditions, thereby rejecting the issues of women's emancipation and gender equality.¹⁸

However, the magazine also offered a platform for discussing and introducing innovative ideas. It published young journalists, poetesses, scientists and young researchers who put topical issues on the agenda and proposed their solution.

For example, O.A. Ataniyazova in the article "Auladti ana saklaidy" noted the impact of ecology on women's health. So, in the second half of the 1980s, women in Karakalpakstan almost 2 times increased the symptoms of anemia, as a result, more than 96% of women of the republic suffered from anemia. Girls married at the age of 17-19, and already relatively early marriages had an additional negative feature due to the often delay in their development. The author considered the most acceptable age of marriage to be 22-25 years.¹⁹

Poetess G. Matyakubova raised the issue of the social status of women. In her article "Turmystagy Ornymyz" she wrote that "due to the lack of income in the family, women were forced to work in the most difficult spheres of production, agriculture." In the conditions of the city, "women work in all spheres, they see their children only in the evening, there is no time to engage in education." She regards the role of women in the family, society and the State as free slavery. She noted the need for women to be represented in representative bodies of power and pointed out that women's committees could not address gender issues without the support of the State.²⁰²¹²²

The history of the journal "Aral Kyzlary" shows that in order to solve the problems of gender inequality, it is extremely necessary to highlight these issues and bring them to the public, shaping public opinion and offering a vision of solving problems. Such publications contribute to strengthening the position of civil society, which will also contribute to the modernization of socio-political and economic relations, public perceptions of the role of women.

Meanwhile, at the state level, a set of measures is being taken to address these issues. For example, the Senate of the Oliy Majlis of the Republic of Uzbekistan has a Commission on Gender Equality and a Committee on Women and Girls and Gender Equality.

The number of women in the country's parliament has reached a level consistent with UN recommendations, the number of women in parliament has reached 32% and has risen to 37th place among 190 parliaments around the world. The share of women in senior positions reached 27%, in parties 44%, in higher education institutions 40%, in entrepreneurship 35%.²³

¹⁸ Allamuratov A. Madeniyat ekologiyasy.// Aral kyzlary, 1991, No 2. –p. 5

¹⁹ Ataniyazova O. Auladti ana saklaidy.// Aral kyzlary, No2, -S. 17-19.

²⁰ Matyakubova G. Turmystaggy ornymyz.// Aral kyzlary, 1992, No3. –Pp. 5-7.

²¹ Over there same

²² Over there same

²³ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)



In order to provide social and economic support to women and to carry out individual work with them, the Women's Register system was introduced, within the framework of which 300 billion soums were allocated annually from the State budget.²⁴

The country has introduced a system of covering the tuition fees of low-income girls who have lost their parents or one of them, and single women who do not have a breadwinner, and the number of scholarships for girls from low-income families for admission to higher education has been doubled.

In order to develop women's entrepreneurship, more than 224 thousand women were provided with preferential loans in the amount of 6.9 trillion soums.²⁵

Ongoing reforms have a positive impact on Uzbekistan's place in international rankings, and in the World Bank's Women, Business and Law Index, Uzbekistan was included in the list of 27 countries that implemented important reforms in terms of women's rights and gender equality in 2020, rising by 5 places, among 190 countries ranked 134th.²⁶

Uzbekistan has always demonstrated its commitment to the purposes and principles of the UN Charter and other universally recognized norms of international law. Thus, at the Un General Assembly Summit on Sustainable Development held in September 2015, Resolution No. 70 was adopted and 125 targets and 206 indicators were developed to achieve 16 national goals considered relevant for the country.²⁷

In particular, sustainable development goal 5 – Gender equality and the empowerment of all women – is in harmony with reforms aimed at ensuring equal rights and opportunities for women and men in the country.²⁸

The Commission of the Republic of Uzbekistan on Gender Equality is constantly taking measures to widely publicize the essence and significance of the Gender Strategy among the population, together with the Committee on Women and Girls' Affairs and Gender Equality of the Senate of the Oliy Majlis of the Republic of Uzbekistan.

Also, the Commission is mandated to provide information and analytical reviews, organization and announcement of broad public discussions with the participation of state bodies, non-governmental organizations, international organizations on reforms implemented within the framework of the Gender Strategy; to inform about the Comprehensive Programme of Action and the results achieved on the Target Indicators.²⁹

The "Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030" defines the concept of gender equality as equal rights and opportunities for women and men in all spheres of life and activities of society, including politics, economics, law, culture, education, science, and sports.³⁰

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²⁷ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)

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In general, the Republic of Uzbekistan has established a solid legal framework for ensuring equal rights and opportunities for women and men in all spheres of public life and activity and for the protection of women.

More than 1300 women work in the system of state and public organizations, including 45 in ministries and departments, 39 in the Administration of the President of the Republic of Uzbekistan and the Cabinet of Ministers, 207 in local self-government bodies.³¹

About 50 percent of the 21,435,000 voters, or 10,825,641 people registered in the 2019 elections to the upper and lower chambers of the Oliy Majlis of the Republic of Uzbekistan, the Zhokorgu Kenesh of the Republic of Karakalpakstan and local Kengashes, are women.³²

41 per cent of the candidates nominated in those elections were women, an increase from the 30 per cent quota established by the Electoral Code of the Republic of Uzbekistan.³³

Women make up 32 per cent of the deputies of the Legislative Chamber of the Oliy Majlis of the Republic of Uzbekistan, 25 per cent of the members of the Senate, the Parliament of the Republic of Karakalpakstan and local Kengashes.³⁴

The issue of ensuring gender equality has risen to the level of State policy, and the Committee on Women's Affairs and Gender Equality, the Commission for Gender Equality of the Republic of Uzbekistan, the Advisory Councils on Ensuring Equality and "Opportunities for Women and Men", and the Republican Women's Public Council work in the upper house of Parliament. The Women's Social Council was established.

Women make up 49% of the members of the Milliy Tiklanish Party and the People's Democratic Party of Uzbekistan, 46% of the members of the Social Democratic Party of Uzbekistan "Adolat", 41% of the members of the Liberal Democratic Party of Uzbekistan and the Ecological Party of Uzbekistan.³⁵

The socio-economic policy pursued in Uzbekistan at all stages of reforms includes a wide range of issues. Additional guarantees have been given in terms of a systematic increase in incomes of the population, the formation of employment and labor relations, social protection and support for certain categories of the population, including women entrepreneurs and farmers.

In particular, in order to ensure the employment of women and their wide involvement in entrepreneurial activities, the practice of allocating preferential loans has been launched.

More than 30% of the clients of the microcredit base of commercial banks are women. Loans in the amount of 4.9 trillion soums were allocated to more than 172 thousand women at the expense of

³¹ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)Over there same

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³⁵ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)



commercial banks. As a result, the number of women who started a business increased by 45,000 people in 2020 alone for the year.³⁶

Since 2019, a system has been established to ensure employment and create new jobs on the basis of the state order. A procedure has been introduced for issuing temporary work permits to self-employed citizens and taking into account their seniority. As a result, the proportion of women employed in this sector has reached 27 per cent.³⁷

Particular attention was also paid to the development of remote areas of the republic, the improvement of villages, poverty reduction by supporting the economic activity of women living in villages. More than 1.5 million women work in various fields of agriculture. Women manage 20% of economic entities, including 7.3% of farms.³⁸

Since 2017, cardinal changes have been made in the health care system, systematic work has been carried out to strengthen the reproductive health of the population, educate citizens in consciousness and responsibility for the birth of healthy children, and create equal opportunities for the realization of the reproductive rights of women and men.

The number of radio and television programmes reflecting the image of the modern socially and politically active woman and highlighting the opportunities created for women and men has increased. In order to ensure gender equality and the empowerment of all women, the necessary measures have been identified in the political, social, economic and other spheres.

At the same time, there are issues that require serious attention to increasing the participation of women in the construction of the state and society, the socio-economic sphere, education, health care and other socio-economic spheres.

In particular, the issues of gender equality in decision-making on current issues related to governance are not sufficiently ensured, the involvement of women in the socio-economic development of the regions remains weak.

The negative attitude of society towards the activities of women in public power and administration prevents them from promoting their ideas in political processes. In most cases, women are assigned housework that has no economic value and is not remunerated. There was a sharp disparity between women and men in education, and today more than 70 per cent of teachers in general secondary education were women.³⁹

While the proportion of women enrolled in the fields of pedagogy and humanities (philology, pedagogy, psychology, culture and the arts) is 68 per cent, their share in the fields of technology (information technology, energy, engineering) and law is still small (24 per cent).⁴⁰

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³⁸ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)

³⁹ Decree Senate of the Oliy Majlis of the Republic of Uzbekistan "On Approval of the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030". URL: <https://lex.onto/docs/5466725> (date Treatment: 09.09.2022)

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In the regions of the Country, especially in rural areas, the poor quality of medical care, the underdevelopment of private medical care and the insufficient medical culture of family planning among husbands and wives are the reasons for the persistence of maternal and infant mortality.

Insufficient research is being conducted on the gender aspects of external and internal migration, its impact on women and men, their families and children, the opportunities created for the population in this area, women's rights, and protection mechanisms for migrant workers are not sufficiently organized.

In addition, there is no gender expertise of media products, there are traditional views on the role of women and men in the family and society in the media, and the contribution of women to the development of society is not sufficiently covered in the press. ⁴¹

In addition, significant gender inequalities in property ownership remain unresolved; vertical and horizontal segregation in the labour market, the propensity to hire women, social or part-time, seasonal, low-paid or unskilled jobs in the formal and informal sectors. Traditional stereotypes about the roles of women and men in the family and in society also remain a controversial issue. ⁴²

Conclusions

A lot of work has been done in Uzbekistan to ensure gender equality. At the regulatory level, equal rights of women and men are enshrined. Women's rights are protected by the Constitution of the Republic of Uzbekistan, the Law of the Republic of Uzbekistan "On Guarantees of Equal Rights and Opportunities for Women and Men", the Labor and Family Code, as well as other acts.

A lot of work has been done to implement gender equality in practice, to fulfill the tasks in this area formulated in the UN Sustainable Development Goals. Progress can be noted in the formation of women's representation in political structures, public authorities and administration, leadership positions in organizations, certain achievements in protecting the rights of women in the family.

At the same time, traditional ideas about the role of women in society, especially in the regions, still fail to fully implement plans to achieve UN Sustainable Development Goal 5.

In this regard, the Strategy for Achieving Gender Equality in the Republic of Uzbekistan until 2030, adopted in 2021, outlines projects to implement the principle of gender equality in practice, both in the field of labor and family relations, the position of women in society as a whole.

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**A LEXICAL-SEMANTIC STUDY OF THE LANGUAGE OF IS'HAQKHAN IBRAT'S
ARTISTIC WORKS**

Gulchiroy Murodova Muhiddinovna
Bukhara State University, Development of Linguistics (Uzbek Language)
2nd Stage Graduate Student

Annotation

This article highlights the specific features of spiritual and moral views in Is'haqkhan Ibrat's works. Also, conclusions and suggestions are given in his articles on the specific characteristics of spiritual and moral views.

Keywords: Ishaq Khan Ibrat, Ishaq Khan Ibrat's arars, spiritual and moral views, enlightened poet, pictographic inscriptions.

IS'HOQXON IBRAT BADIY ASARLARI TILINING LEKSIK-SEMANTIK TADQIQI

Gulchiroy Murodova Muhiddinovna
Buxoro davlat universiteti Lingvistika (o'zbek tili)
yonalishi 2-bosqich magistranti

Annotatsiya: Ushbu maqolada Is'hoqxon Ibrat ararlarida ma'naviy-axloqiy qarashlarning o'ziga xos xususiyatlari yoritilgan. Shuningdek, uning ararlarida ma'naviy-axloqiy qarashlarning o'ziga xos xususiyatlari bo'yicha xulosa va takliflar berilgan.

Kalit so'zlar: Is'hoqxon Ibrat, Is'hoqxon Ibrat ararlari, ma'naviy-axloqiy qarashlar, ma'rifatparvar shoir, piktografik yozuvlar.

**ТЕКСТ НАУЧНОЙ РАБОТЫ НА ТЕМУ «ЛЕКСИКО-СЕМАНТИЧЕСКОЕ
ИССЛЕДОВАНИЕ ЯЗЫКА ХУДОЖЕСТВЕННЫХ ПРОИЗВЕДЕНИЙ ИСХАКХАНА
ИБРАТА»**

Гульчирой Муродова Мухиддиновна
Бухарский государственный университет Развитие языкознания
(узбекский язык) аспирант 2 степени

Аннотация:

В данной статье освещаются особенности духовно-нравственных воззрений в творчестве Исхакхана Ибрата. Также в его статьях даются выводы и предложения по особенностям духовно-нравственных воззрений.

Ключевые слова: Исхак-хан Ибрат, арар Исхак-хана Ибрата, духовно-нравственные воззрения, просвещенный поэт, пиктографические надписи.



In an era of globalization, the threat of national and spiritual values - popular culture - is growing. First of all, they threaten to educate the younger generation, contribute to the prosperity and development of the homeland and the land, poisoning the minds of young people with such ills as "living fluently," "finding easy money," "spiritual alienation," and "spiritual distance." This puts before us the duty of preserving our national spiritual values by the exemplary life and efforts of our ancestors, preserving them, enriching them with spiritual riches, and bringing them to the next generation.

Indeed, "against all kinds of ideological and spiritual threats - we have a great history that is desirable, we have great ancestors who are desirable." [6] Therefore, the widespread public promotion of the life and creativity of our great nobles, the roots of our spirituality, will be of great importance. Especially in the late 19th century, it is necessary to travel the world, study science, study the work of Isaac as a polyglot, poet, teacher, publisher, linguist, develop a sense of unlimited pride in him in the younger generation, and thereby educate them as patriotic and poverty-stricken individuals. In particular, by teaching young people the rich literary and scientific heritage of Isaac Abraham, educating them in a spirit of high spirituality and enlightenment, improving the literary and aesthetic thinking of talented young people by studying Abraham's work, and perfecting the spiritual world of our children.

Of course, our country has gained fame as a land of great allies and saints who have contributed greatly to the taste of the world and the development of science. There is a constant focus on a deep scientific study of the precious heritage of our ancestors. For example, on November 2, 2016, during a meeting with voters in the province of Badakhshan, Sh. Mirziyoyev initiated an initiative to perpetuate his name as a symbol of respect for the incomparable services of the great passionate and passionate Isaac Abraham on the road to the spiritual and educational rise of our people, to create a modern garden for him, to establish a monument and the "School of Abraham." Therefore, the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated April 13, 2017 No. 208 "On the establishment of a monument to the renowned adventurer Isaac Ibrahim in Torakhon district of The Province of Badakhshan" was adopted.

METHODOLOGY

Studying the work of Isaac Abraham and preparing manuscripts for publication is also under way. Isaac Abraham is a passionate visitor, passionate poet, memorabilia, vigorous teacher, tourist, linguist and historian, founder of Uzbek printing, publisher, publisher, and, in a nutshell, a serene worker.

Sources studied by such scholars as U.Dolimov, S.Rustamov, T.Malik, Sh.Yusupov, N. Jabborov, D.Ziyoyeva, A. Abdunabiyev, Ya.G'affarov, K.Vohidova, M.Saribayeva on the life and work of I.Ibrahim can be found. Specifically, M. Sha'drach, Me'shach and A-bed'ne-go, A. So'fizoda said: "The heroes of independence. Abraham. Selected writings," "Abraham the son of Isaac Junaydullaxo'ja. History of Fargo, U.Dolimov "Isaac Abraham" and "Isaac Abraham." Self-sacrificing," "Isaac Abraham." History of Fergana and others.

The facts written by Ya.Gaffarov, based on the memories of Abraham's contemporaries, relatives, and conversations with his disciples, are also important sources of Abraham's life [8].



In an article entitled "The Instructive Way of Life of Abraham," M. Saribaeva published information about the life and work of an enlightened, dedicated poet based on new sources and analyzed the educational aspects of some of his works[10].

RESULTS

Isaac Abraham's book *Mezon Uz-Zamon* was published in 2001 in collaboration with Japanese scholars, and the nine criteria in it are also of great importance to today's people.

In 2000, poems by the poet's fortress were published in a series of anthology of Turkish literature in Turkey.

Professor U.Dolimov's "Pedagogy of the Millennium Awakening" provides valuable insights into Abraham and his research [4]. In cooperation with U.Dolimov and N.Jabborov, they also prepared a selected edition of their works.

The Memorial Complex of Isaac Torah Abraham was established in the province of Badakhshan. The complex includes the garden, a statue of Isaac Net Abraham, a national architectural-style porch, a printing press, a musical fountain built on advanced technology, a 400-seat school specializing in foreign languages, and a museum built in a historic building.

The film's subjects included horse-drawn wagons and early-model automobiles, as well as shoppers and news agencies. It describes the hard-to-reach way of life of a poet, translator, historian, and linguist, writer Isaac Abraham.

DISCUSSION

It is well-known that the social, political, and educational movement that originated in Burma in the late 19th and early 20th centuries brought passionate people to the stage of history. These include such cosmopolitan scholars as Mahmoud Ahmadinejad Behbudiy, Munavvarqori Abdurashidov, Abdurauf Fitrat, Ubaydullaxo'ja Assadullaxo'zadeh, and Abdulla Avloniy. They sought to spend their knowledge on the prosperity of the nation and the development of society, and when it came to their place, they did not allocate their funds. Among them is Abraham, the son of Isaac Junaydullaxon, a representative of the Fargo Movement.

Isaac Abraham was born in 1862 in Torakhon, a passionate poet, powerful linguist, historian, and first Uzbek printer. He receives initial information at an old school and then in the hands of his mother. Later, he goes to Mogadishu and goes to the monastery. Isaac Abraham graduated from the monastery in 1886 and returned to Torakhon. He began his career as a teacher by spreading education in the village. o that year opens a new school much different from old local schools.

Isaac Abraham traveled to the East and Europe from 1887 to 1906, especially in central European cities such as Istanbul, Sofia, Athens, Rome, the cities of Sargs, such as Gobul, Bogotá, Jeddah, Mumbai, and Calcutta, as well as in China, India, and Arabia. Isaac studied Arabic, Arabic, Hindi, and English, which were widely used there.

Abraham is engaged in blessed creativity, and his writings are more than 20, and twalkings have reached our day. For example, in 1900 his book *Science Abraham*, his six-language dictionary *Sitta al-*



Sinai in 1901, and his translation book *Fiqhi Kadani* were published in Arabic in 1908. At the same time, Isaac established the first publication in the Valley of Fargo in the name of "Printing Isaac" in Torakhon. It publishes books on science, enlightenment and development and books written by himself. To assist individuals desiring to benefit the worldwide work of Jehovah's Witnesses through some form of charitable giving, a brochure entitled *Charitable Planning to Benefit Kingdom Service Worldwide* has been prepared[5]. In all, in 20 years he wrote 14 scientific, historical, linguistic works and compiled a collection of poems entitled "Devoni Ibrahim", a masterpiece of 30 years of poetic work. He has created scientific works on history, such as "Historical Fergana", "Historical culture" and "Mezon uz-zamon". During this time, a collection of manuscripts entitled "Mufradot" (dedicated to memorabilia) and "Majmuai ash'or" were created.

Isaac Abraham's book *Dictionary Sitta-alsina* was suddenly used as a manual for learning Oriental and Russian in schools. It should be noted that Isaac Abraham has created a much more perfect scientific work in the complex field of linguistics called *Jome'ul-Hutut*. In this essay, the author tries to highlight the history of progress, which went from the most primitive of the writings - pictographic recordings to the most perfect recordings of the last period. Regarding the history of the creation of this poem, its purpose, and its title, Isaac writes: "These letters (right) are a decision to preserve and preserve a single history for our nation, and this Egyptian mujahed" indeed, Isaac Abraham's deep knowledge of linguistics was demonstrated in his essay. Because it provides information on the oldest sound-letter inscriptions that emerged after pictographic inscriptions: Phoenicia, Jews, Syrians, Arabic, Greek, Persian, Slavic, Sanskrit, Indian, Latin, Armenian, Georgian, Uighur, and more than 40 other inscriptions, their origins and development. Abraham also not only studied the examples of writings in his homeland but also studied ancient writing culture in Arab countries. He attracted in his work the monuments of writing created by the Phoenicians before the Common Era and the remains of writing found in caves on the island of Cyprus.

Abraham also arranged for a giant as a poet. Thankfully, his "Abraham of Devon" has not yet arrived. His services as the first organizer and promoter of the national library, reading work were insignificant. The Library Isaac Foundation, which he founded, was much richer in this respect and booking and acquisition were regulated by a certain procedure.

Indeed, after the October coup d'état, Abraham was involved in maintenance work. He is active in the opening of new schools, illiteracy completion companies. Opened by Abraham in 1918, the 44th school in Torakhon was established, which was converted into three final schools in the 1960's called Isaac Abraham. In the early days of this school, Isaac Abraham taught his language, literature, and history and later entered the school program. In 1919, on his initiative, a girls' school for Uzbek women and girls was opened in Namangan for the first time, where Hussein Makayev's wife, Photima Makayeva, taught Uzbek women [7]. According to the facts cited by U. Dolimov, from 1920 to 1920, schools for the elimination of illiteracy were opened in Shahand, Namangan, led by Muhammadsharif So'fizoda, Orifjon Umarov in Arghan, Isaac Ibrahim and Mirzahamdham Honkeldiyev in Torakhon [3, 106-107]. Of course, Abraham's zeal in science, culture, and schooling, which earned public respect and was



elevated to the level of judgeship because of his good and good deeds, has been hindered by the unusual relationships of some strange professionals.

Historical, scientific, and social works written by Abraham continue to be incompatible and include events from the Mogadishu Empire to the 1930's. In his essays "Historical Dignity" and "The Time of the Commanders," the author interrupts the October coup, the establishment of Mogadishu's independence, what happened in the valley, the bloodshed of Burma's independence, the origin, nature, and causes of the oppression movement from the point of view of his day. Later, according to a report by Abraham's disciple Alexander the Great, about 100 of his books were hidden among the neighbors shortly before his assassination in 1937 [3, 107]. The rest were taken away on January 7, 1937, in four sacks [6].

As a major muarrix of his day, Isaac Abraham created scientific works such as "Historical Fargo," "Historical Culture," and "Mesonuzzamon." Along with Oriental historians, Abraham used the works of Russian and European Oriental scholars to create these works. In his essay "Historical Fargo," Isaac Abraham pays special attention to describing the reaction of chambers and princes to historical events. The author opposed the 1842 assassination of a torch in Mogadishu by Nasrullah, the emperor of Bucharest, Absalom usurped David's throne, but his coup failed, and he was killed by Neb., as well as historian. If the chamber had been fooled, repented, put in Hogandg, subdued to Bucharest, and a property would have been a shield to the enemies who came to us." By quoting these words, Scholar Isaac Abraham strongly condemns kings and princes, such as Nasrullah, who cannot see beyond their nose, while emphasizing that there are Jewish Jews who can see far in the administration of the chambers and empires.

Isaac Abraham looked to the bright future of his people, the construction of a free and happy life, with great hope and confidence. In his essay "Historical Culture," he describes the appearance of future cities of science and culture in romantic paints. His scientific and historical works are undoubtedly a necessary, abundant resource in studying the history of our country.

Isaac's net Abraham produced a number of works on a social and political topic that accurately represented the lives of the people. These include the poet's satirical works, such as "What Are You Going to Do?" "The Dead," "The Complaint," and "Siyumu Zardur." As a result of the conquest of Central Asia, the country became the main raw material base supplying the Russian textile industry with cotton. Given the deepest attention paid to the radio station "Debt" by The Poet Abraham, it is not hard to see that the poet's poison in poetry lies bitter truth. Poor farmer forced to shoot himself to feed his family: he at the beginning of the year borrows over the upcoming cotton crop. Due to the fact that the harvest is less than expected, it is in debt, its housing is "in a letter," and a piece of land is separated from it.

Isaac Abraham, along with capitalist relations with the country's life, The resulting embryo was allowed to develop in nutrients and then inserted into her womb, where it implanted. indicates the conquest of Central Asia, including the Mogadishu dynot, by Russia.

It should be emphasized that the leading idea in the work of Isaac Abraham is the idea of promoting the news of science, culture, and technology. The bottom line of Abraham's enlightenment is that human destiny was first in his poems calling for knowledge. He promoted science and technology that



served the economic and cultural life of the people, eased its difficulty, and proximated it. From this point of view, his poems, such as "Historical Chopper," "Spirituality about Culture," "Newspaper," "Turkish Cry," "Patience Namangondin," "Kalam," "Historical Manzumai Wagon Abraham Monument," and "Mu muhammed Abraham," are noteworthy. In these poems, Sha'drach, Me'shach and A-bed'ne-go sharply exposed the country, the people, and the ancients. Abraham tried to find out the reasons for the hard life, poverty, the country's poverty, the foolishness of the people, and find ways to save them from it. Abraham, who was in several prosthifying countries, understood that the one-on-one way to save the people from darkness and the country from plight was to acquire knowledge. Indeed, the essence of Abraham's enlightenment is that he treated and evaluated every event from the point of view of his people and the interests of his Father. He longed for a free, independent, prosperous life, among the developed nations of the next generation, and had high hopes for it.

CONCLUSION

In a nutshell, isaac Abraham, a great-grandfather who was in the forefront of the movement, is not only a historian, poet, linguist, publisher, and teacher, but also a historical figure who sought all his life, fighting poverty for the prosperity of his homeland in the great-grandson, judge, and first gallery of his day. In the late 19th century, Sha'drach, Me'shach and A-bed'ne-go correctly understood the social and political changes that began in the country, promoted the need to pursue people with high ideals, to awaken national awakening, to know themselves, to organize science and technology news, science, education effectively, and to build life on a healthy mind and terrestrial thinking. Therefore, his rich cultural heritage is being thoroughly studied not only in our country but also abroad. Therefore, his spiritual and moral views are one of the most important educational processes for young people today. Indeed, isaac Abraham left a "symbol" for the prosperity of godly devotion and the nation, which was a "thousandth" of people in the example of his life, creativity, and work.

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6. Interview materials conducted by B.Nizhimov and K.Vohidova, deputy director of cultural affairs at a community farm called Isaac Abraham. 1994.
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