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Medical Sciences

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EVALUATION OF EPIDEMIOLOGICAL STUDIES OF MORBIDITY AND MORTALITY AND RESULTS OF CERVICAL CANCER SCREENING

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Annotation: The analytical and scientific work discusses the morbidity and mortality rates from cervical cancer by regions, describes in detail the currently used screening methodology and the results of this preventive examination of the female population of our country. A detailed step-by-step algorithm is presented and the principles of organization and diagnostic capabilities of this method for the active detection of cervical cancer in clinically asymptomatic individuals are reflected. It is shown that in order to achieve a highly effective result, strict adherence to the methodology of this type of screening is necessary. The first author of this publication conducted a training seminar on oncological screening with the co-authors of this work as part of a continuing education cycle.

Key words: cervical cancer, epidemiology, morbidity, mortality, screening, Pap test, smear for oncocytology, education.

The key concept of screening for cervical cancer (CC) is the detection of oncological pathology in the early stages, when the prognosis is most favorable and allows you to get the best long-term results of treatment. In addition to oncological pathology, this type of screening makes it possible to detect various types of intraepithelial changes in the squamous epithelium, related to precancerous and allowing these patients to take therapeutic measures related to the secondary prevention of CC. And it is clear that a preventive examination always has advantages over a diagnostic examination when there are already symptoms of the disease. Along with this, it is necessary to understand that the main conditions for screening CC are the availability of trained personnel and a standardized approach to identifying the trait under study and evaluating the results. The applied methods should be quite simple, reliable and reproducible, and also have sufficient sensitivity and high specificity [1,2,3].

CC in the structure of all malignant neoplasms in our country among both sexes of the population in 2021 took 4th place with a specific gravity of 5.54%, in women - 2nd annual stable place after breast cancer, amounting to 9.7 %. The incidence rate per 100 thousand population increased to 9.4 (in 2020 - 8.9) [4].

In 11 regions of the republic, the incidence rate was higher than the national average: Pavlodar - 16.7 per 100 thousand population (the highest rate), Atyrau - 13.8, Karaganda - 12.0, Akmola - 11.9, Aktobe - 11.6, West Kazakhstan - 11.1, East Kazakhstan - 10.8, Kostanay - 10.6, North Kazakhstan - 10.2, Mangistau - 9.7, Almaty - 9.5 regions. Low data on morbidity were found in Turkestan - 5.2 per 100 thousand population, Zhambyl - 5.7, Kyzylorda - 8.2 regions and in cities Almaty - 8.3, Nur-Sultan - 7.6 and Shymkent - 7.8.

CC in the structure of causes of death from malignant tumors of the population of both sexes in 2021 retained the 9th position, with a share of 4.3% (2020 - 4.2%), mortality from CC is stable at 3.1 per 100 thousand of the population.

Above the average for the republic, mortality from cervical cancer in 6 regions: Kyzylorda - 3.5 per 100 thousand population, East Kazakhstan - 3.8, Atyrau - 4.0, Karaganda - 4.7, West Kazakhstan - 4.8 , Pavlodar regions - 5.6 - the maximum value in the country.

At the level of the average republican indicator, mortality was recorded in the Akmola region - 3.1 per 100 thousand population, lower - in Aktobe - 3.0, Almaty - 2.5, Zhambyl - 1.9 - the best result, Kostanay - 2.4, Mangistau - 3.0, North Kazakhstan - 2.6, Turkestan - 2.2 regions and in cities Nur-Sultan - 2.6, Almaty - 2.9, Shymkent - 2.3 [4].

Referring to visually accessible localizations, the neglect of CC, i.e. late diagnosis (III-IV stages) was 15.4%. At the same time, above the national average - indicators in Karaganda - 35.2%, - the worst result, West Kazakhstan - 32.4%, Akmola - 26.4%, Mangistau - 20.8%, Pavlodar - 20.8 %, Kostanay - 15.6% regions. The lowest neglect is in the Zhambyl region - 1.5%.

The five-year survival rate of patients with CC registered in 2017 in 2021 was 67.5%, with an increase compared to the level of 2020 (58.5% for those registered in 2016), and with a significant range in terms of regions, from traditionally maximum - 81.8% (2020 - 77.1%) in Almaty, to the minimum - 23.1% (51.1%) - in Zhambyl region.

The 5-year survival rate exceeded the national average in 7 regions out of 17: West Kazakhstan - 73.3% (2020 - 47.3%), Kostanay - 78.8% (61.2%), Pavlodar - 75.5% (57.8%), North Kazakhstan - 70.7% (49.0%) of the regions and in cities Nur-Sultan - 76.5% (61.6%), Almaty - 81.8% (77.1%), Shymkent - 68.8% (59.0%). Lower rates were in the remaining 10 regions [4].

The development and improvement of the oncological service of the country over the past four years has been carried out as part of the implementation of the Comprehensive Plan to Combat Cancer in the Republic of Kazakhstan for 2018-2022, which defines a clear list of mutually defining activities focused on the final result.

CC screening is a periodic, comprehensive examination of women of a certain age group as part of a special medical program to prevent and reduce morbidity and mortality from CC.

Type of screening - population. The purpose of screening is to identify pre-invasive diseases of the cervix with subsequent recovery. The screening method is a cytological examination of a smear for oncocytology from the cervix (traditional and liquid cytology). Coloring according to the "Papanicolaou test" (Pap test). Interval - 1 time in 4 years. Target group: women aged 30-70 years who are not registered in the dispensary for CC. The expected results are a decrease in morbidity and mortality from CC.

Screening steps:

1) Preparatory - formation of target groups, information support and invitation to screening. The preparatory stage is carried out by the nurses of the primary health care organization responsible for preventive measures and includes: annual compilation of a list of women subject to screening in the coming year by November 15 of the current year, followed by monthly correction; informing target groups of the female population about the need for screening; screening invitation; ensure timely screening.

2) Screening - filling out a statistical card of a preventive medical examination (screening) of an outpatient (form 025-08/y), a register of patients subject to cytological screening and taking material for cytological examination from the cervix. The screening examination of the target groups of the female population is carried out by a specially trained midwife of the primary health care organization.

3) The final one is obtaining the results of cytology, informing the woman and developing further management tactics, fill out accounting and reporting statistical documentation. Responsible for the final stage of screening is the obstetrician-gynecologist of primary health care [5].

Cytological screening of CC is a complex of organizational and medical measures aimed at early detection of precancerous and neoplastic diseases of this localization and at reducing the mortality of this cohort of patients. For traditional cytology, a smear containing 8-12 thousand cells of stratified squamous epithelium (including cells of metaplastic epithelium) is considered adequate; for liquid cytology - 5 thousand cells. For both methods, the number of cells of endocervical epithelium and/or metaplastic epithelium (from the transformation zone) must be at least 10 (single or in clusters). If more than 75% of the cells of the stratified squamous epithelium are covered with erythrocytes, leukocytes, etc., then the quality of the smear is considered unsatisfactory.

Interpretation of the results of a cytological study is carried out according to the Bethesda-terminology cytological system:

Intraepithelial changes and malignant processes are absent (NILM). This group includes cytological conclusions about the normal state of the epithelium, as well as the presence of various non-neoplastic diseases. Normally, squamous epithelial cells, groups of cells of columnar epithelium and metaplastic epithelium, a small number of leukocytes, and rod/mixed microflora are found in preparations. In the presence of non-neoplastic processes, their nature and, if possible, the cause are specified: atrophic changes, reactive changes associated with inflammation, including typical regeneration. In addition, the presence of microorganisms is indicated: Trichomonas vaginalis, fungi, morphologically corresponding to Candida spp., bacterial vaginosis, cellular changes corresponding to the defeat of Herpes simplex virus, squamous epithelial cells with atypia of unknown significance (ASC-US), squamous epithelial cells with atypia of unclear significance, not excluding the presence of a high degree of intraepithelial changes (ASC-H). Low-grade squamous intraepithelial changes (LSIL) include lesions associated with HPV and CINI, high-grade squamous intraepithelial changes (HSIL) include CINII, CINIII, carcinoma in situ and cases suspected of invasion, squamous cell carcinoma, cervical (glandular) epithelium with atypia of unknown significance, cells of the cervical (glandular) epithelium, possibly neoplasia, endocervical adenocarcinoma in situ, endocervical adenocarcinoma, endometrial adenocarcinoma, secondary adenocarcinoma, unclassified carcinoma, other malignant tumors.

There are certain features when taking material for oncocytology: firstly, the examined woman should be informed about the exclusion of sexual intercourse, vaginal manipulations, including douching, baths, tampons, etc. 2 days prior to sampling. Taking material for cytological examination is carried out by the midwife of the examination room of the department of medical examinations of the primary health care organization: the traditional method (2 glasses - with obligatory fixation in 96% alcohol, it is preferable to use glass slides with a polished edge, which are easily marked) or the liquid cytology method (one container with stabilizing liquid); the code or surname of the patient, identical to the code and surname in the form for sending material for cytological examination, should be clearly marked on the glasses or container [5].

At the same time, when using the traditional method, the biomaterial is delivered to the cytological laboratory as soon as possible after its collection in specialized containers for glass slides with 96% alcohol. If there are visible visual changes in the cervix, then the material is taken from the woman and, without waiting for the results, she is referred for an examination by an obstetrician-gynecologist.

A cytological study is carried out in centralized cytological laboratories at oncological institutions, where an archive of cytological preparations of patients involved in the screening examination is formed, regardless of the result, for a period of at least 10 years with the formation of a computer database.

What material and technical equipment is required to take material for a Pap test? It is as follows: soap and water for washing hands, a light source for cervical examination, a gynecological chair, a disinfected speculum and gloves, an Eyre spatula, a glass slide and a marking pen, a container with a stabilizing solution for liquid cytology, a fixative solution (96% alcohol), a container with warm water for lubricating and warming the vaginal mirrors, a 0.5% chlorine solution for disinfecting gloves and instruments, or another approved for this purpose. And, of course, the registration form itself.

For carrying out liquid cytology, you additionally need: a disposable cervix brush, a container with a stabilizing solution for liquid cytology, and a fixing solution.

At the same time, a smear for oncocytology cannot be taken: during menstruation, earlier than 48 hours after sexual contact or after using lubricants, vinegar or Lugol solution, tampons or spermicides, after vaginal examination or douching, and also during the treatment of genital infection.

Now, regarding the results of CC screening. In 2021, despite the difficult epidemiological situation in the country, 787,619 women of the target group from 30 to 70 years old were examined during CC screening (744,972 in 2020) [4].

According to the results of cytological screening, 319 cases of CC were detected in 2021 (264 in 2020). At the same time, the detection rate during this preventive examination increased from 0.34 to 0.42 per 1000 examined. A high detection rate of CC was noted in Aktobe, Atyrau, Mangystau, North Kazakhstan regions and Shymkent. The detection rate in these regions was 0.62-0.93 per 1000 examined women. Compared to 2020, there is an increase in detection in almost all regions, with the exception of the West Kazakhstan and Mangystau regions, where there was a decrease in the frequency of detected cases of cancer, respectively, from 0.74 to 0.37 and 1.73 to 0.93 per 1000 examined.

Cytological precancer of the cervix was detected in 0.99% of the examined (2020 - 0.85%). The detection rate of precancer below 0.55% (the planned indicator of precancer of the cervix for 2021, according to the Comprehensive Plan to Combat Cancer) was noted in Karaganda and Kostanay regions (0.20% and 0.24%, respectively).

In 2021, the proportion of patients identified during screening studies with early stages (0-I stages) was 68.0% (2020 - 59.1%), stage II - 28.5% and 35.2% - respectively.

A high proportion of stage I CC (70% or more) was detected in 8 regions of the country (in 2020 - in 3 regions): West Kazakhstan, Zhambyl, Kostanay, Kyzylorda, Pavlodar, North Kazakhstan regions, the cities of Almaty and Shymkent. Low levels of early detection of CC (below 50%) were noted in Atyrau (43.8%) and Mangistau (46.2%) regions. Localized processes (stages I-II) were established in 96.5% of all cases of detected cancer (in 2020 - 94.3%). In Akmola, West Kazakhstan, Karaganda and Turkestan regions, cases of CC were detected not only in localized, but also in advanced stages of the process. In total, 11 cases of CC in stage III were detected and not a single case in stage IV (2020 - 14 and 1, respectively) [4].

Summarizing the above, we can state that satisfactory results of CC screening can only be achieved with its proper organization, high quality of conduct, active participation in the medical examination of the population, the use of highly sensitive tests and instrumental methods of preventive examination, accurate subsequent diagnosis of detected tumors and timely treatment. Qualitative screening of CC leads to early diagnosis of various precancerous intraepithelial changes in the cervix, which, in turn, increases the effectiveness of treatment and improves the prognosis of the disease. Surveyed target groups who, for one reason or another, do not participate in this screening should be informed that there are no other screening methods that could also effectively reduce mortality from CC.

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Political Studies

SOME ASPECTS OF INTERACTION AND BUILDING RELATIONS BETWEEN UKRAINE AND NATO

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Abstract. Today, the study of aspects of cooperation between Ukraine and NATO is extremely relevant. NATO is the most powerful system of collective security in the world, while Ukraine has always sought to join the development and strengthening of European security. Russian aggression forces Ukraine to reconsider its attitude to the issue of its own security and to take appropriate measures to ensure it through integration with global international organizations. International aid and support of the civilized states of the world is an achievement that Ukraine has been striving for for decades. However, in order to protect democracy and the security of Ukraine in the future, it is necessary to continue the development of its own army and the system of collective security in Europe.

Key words: international relations, NATO, Ukraine, international organizations.

Topicality. Recently, the development of the system of international relations has become closely related to the acceleration of globalization processes and the emergence of new global threats. This presents the international community with an important task of discussing the principles of the political organization of the world. NATO is the most powerful system of collective security in the world, so Ukraine has always sought to join the development and strengthening of European security. The study of relations between Ukraine and NATO is a powerful scientific basis for revealing the potential of national interests, as well as guaranteeing the achievement of Ukraine's strategy for integration into the North Atlantic Alliance. Many studies and publications [1-3] have been devoted to the study of this issue. The transformation of the modern international security environment increases the relevance of further research in this area.

The purpose of the article is to study aspects of the development of relations between Ukraine and NATO.

Results and their discussion. The North Atlantic Treaty Organization, the North Atlantic Alliance or NATO is an international intergovernmental organization, a military-political alliance consisting of 31 countries of North America and Europe, which are trying to achieve the goal of the North Atlantic Treaty, signed on April 4, 1949 in Washington. According to the Alliance's statutory documents, NATO has great importance in "ensuring the freedom and security of member countries using political and military means. The alliance stands for the protection of member countries from the threat of aggression: the main military-political principle of the organization is the system of collective security, that is, joint organized actions of all its members in response to an attack from outside" [4]. The last member country to join NATO is Finland, this happened on April 4, 2023. Currently, NATO "recognizes Bosnia and Herzegovina, which received the NATO Membership Action Plan in December 2018, Georgia and Ukraine as candidates for membership in the alliance." [5]. Also, "19 other countries participate in the NATO Partnership for Peace program, another 15 countries participate in institutionalized dialogue programs.

Ukraine's relations with strategic partners and neighbors are formed over a long period, they certainly have an impact on the historical periods of the formation of our state and the formation of its foreign policy. It should be noted that the historical stages of cooperation, Ukraine-NATO, start from the simplest types to enhanced Euro-Atlantic integration. These are the respective directions that consolidate the states of Western Europe and to which our country voluntarily joined after gaining independence. After gaining independence, Ukraine combines its own policy in relations with the North Atlantic Treaty Organization. 6 stages of development of relations between Ukraine and NATO were identified.

The first phase (1991-1997) was dedicated to the beginning of a constructive dialogue and diplomatic intelligence regarding the views of the revived state [6]. The specified stage was reduced to the development of regulatory and legal as well as institutional centers and, in addition, to the outline of the theoretical and conceptual basis of state policy in general, and was marked, in addition, by the fact that the Ukrainian authorities and society for some time grew the desire to distance themselves from MoscowIn Ukraine, the goal was to establish strong relations between the top military and political leadership of the Alliance, issues that were in the interests of both NATO and Ukraine were discussed. In 1994, disguised tensions arose between NATO and the Russian Federation on both sides. NATO announced its further expansion to the East, and because of this, the membership of post-communist and post-Soviet states in the transatlantic alliance in both economic and defense terms turned out to be real.

The second phase (1998-2000) consisted of holding consultations, seminars, working groups and other joint programs on security, economic and military trainings. Visits and implementation of consultations regarding the program tasks of Ukraine's foreign policy also had their significance here, and at the initial stage they led to the signing of the "Charter on the Special Partnership between Ukraine and NATO" in 1997, but the Charter itself was not defined as an absolute strategy or a special international document, which belongs to the principle of regionalism, it was rather a methodology of the organization's work with former socialist countries [7]. At the same time, the Alliance itself was undergoing changes against the background of the intensification of the Yugoslav conflict, which led to the formation by the Alliance of a renewed Strategic Concept, where attention was sharpened on terrorism, and for Ukraine - on further participation in large-scale peacekeeping operations with its significant contribution to the settlement of conflicts at the international level, as well as the final adoption of the concept of the North Atlantic Alliance on the fight against terrorism. In Ukraine, in 1998, to implement the provisions of the Charter on a special partnership, the NATO Liaison Office was established, the functions of which include establishing communication with all ministries and other central bodies of executive branch. In 2000, the NATO-Ukraine Commission, whose duties include evaluating the implementation of the Charter and making recommendations for the next improvement in the development of cooperation, organized a meeting in Kyiv for the first time [8].

The third phase (2001-2004) was characterized by changes in the intensity of political contacts and the dynamics of partnership between Ukraine and the Alliance, but Ukraine continued to try to achieve full membership in NATO. Ukraine's cooperation with NATO expanded due to the signing of treaties after the 1997 Charter, their goal was to strengthen the pro-NATO vector of Ukraine, improve the ties of the executive branch with certain structures of the North Atlantic Alliance, and also lead our country to the next phase of cooperation. As a result of this stage, "in the coming years, the Interdepartmental Commission on Ukraine's Preparation for NATO Accession was created - it is a consultative and advisory agency under the President of Ukraine, which reports directly to the President and informs the Governmental Committee on European and Euro-Atlantic Integration about the results of its work, promotes monitoring the efficiency of cooperation of central government agency, state agencies with NATO in relevant areas, it works in the form of a meeting as needed" [9]. The "State Program of Ukraine's Cooperation with the North Atlantic Treaty Organization" for 2001-2004, confirmed by the decree of President Leonid Kuchma on January 27, 2001, and the "Ukraine-NATO Action Plan" for Ukraine's probable accession to the Alliance were approved. Ukraine realized its own strategic omissions in the direction of Euro-Atlantic integration, because of this, in May 2002, the National Security and Defense Council announced its intention to join NATO. On May 23, 2002, during a meeting of the National Security Council of Ukraine, "a decision was made to start the process of closer integration of Ukraine with NATO" [10].

The fourth phase (2004-2009) marked Ukraine's post-revolutionary relations with NATO after the Orange Revolution, which did not acquire an obvious sequence. During the summit in Istanbul in 2004, Ukraine had the best chance to receive the "Action Plan on NATO Membership", but the partners followed the Ukrainian elections and delayed, proving the appropriateness of holding democratic elections in our country. During this period, the North Atlantic Alliance itself was not actively looking for new members, but introduced an "open door" policy. On April 20, 2004, the parliaments of Ukraine, the Russian Federation, Belarus, and Kazakhstan questioned the EES. Instead, the West made efforts to prove to Putin that the Russian Federation should agree to Ukraine joining NATO. On December 19, 2008, the Ukrainian and American parties in Washington signed the Ukraine-USA Charter, which spoke about the mandatory accession of Ukraine to NATO: "Cooperating within the framework of the Ukraine-NATO Commission, we aim to reach an agreement on a structured plan to increase interoperability and coordination of capabilities between Ukraine and NATO, including in-depth training and equipment for the Ukrainian Armed Forces" [11].

The fifth phase (2010-2019) was a period of weakening of Ukrainian-NATO relations during the presidency of V. Yanukovych, and revival after the Russian aggression against Ukraine. After P. Poroshenko was elected as the new president, the Ukrainian people began to reorganize the Armed Forces. In 2019, the course towards NATO is defined in the Constitution of Ukraine.

The member states of the North Atlantic Alliance have been supporting Ukraine from the very beginning after Russia annexed Crimea and continued to occupy part of Donbas since 2014. Considering the fact that the Russian Federation has set itself the goal of destabilizing the situation in the eastern part of Ukraine by carrying out military intervention and providing support to Russian militants for further escalation, the North Atlantic Alliance has increased its assistance to Ukraine in order to develop the security and defense potential of our state. NATO has outlined a clear position and systematically adheres to it, as a result of which, in 2014, during the Wales Summit, "unprecedented decisions were made to provide assistance to Ukraine, these decisions were continued during subsequent summits in Warsaw in 2016, confirmed at the Brussels Summit in 2018, etc." [12]. 5 Trust Funds were created to help Ukraine in five areas, namely, command, control, communications and computer communications, logistics and standardization, cyber defense, and in 2015 in the field of disposal of improvised explosive devices, as well as ammunition . The named projects are financed at the state level, formed within the NATO program "Partnership for Peace", they contribute to the development of military and defense capabilities. The provisions of the "Ukraine-NATO Roadmap for Defense-Technical Cooperation" [13] are being implemented, as a result of which Ukrainian defense enterprises are involved in several areas of certain arms groups, in particular in the NATO Army Armaments Group (NAAG); air forces; naval forces; weapons life cycle management. In June 2017, the Verkhovna Rada of Ukraine made changes to a number of laws regarding "restoring Ukraine's purposeful, pragmatic course towards NATO membership as a strategic and external priority of the state" [14]. In 2017, the necessary changes were made to the laws of Ukraine "On the Basics of National Security of Ukraine" [15] and "On the Basics of Internal and Foreign Policy" [16].

The sixth phase (2019-2023) is the opening of several doors for the development of the policy of the Ukrainian nation, while it is worth remembering that the experience of other states and its own experience show that the unanimity of the nation and civil society must be preserved, even if there are alternative options for the development of events. In 2019, the North Atlantic Council of NATO, which is considered the organization's most important decision-making agency, visited Ukraine, and a Ukrainian newspaper presented this event as symbolic against the background of discussions in the country itself, because the form of Ukraine's cooperation with NATO has changed. The representatives of the organization emphasized that in our country there is no need to submit any additional applications, and the ones submitted for receiving the MAP are still valid. Separately, we should emphasize the important statement of Ukrainian scientists that "Ukraine is not only a consumer, but also a contributor to European and global security". In general, this coincides with the place of Ukraine in Europe on the geopolitical map, because it is absolutely clear that the Western world has ties with the Russian Federation - a nuclear country with an unpredictable leadership - because of this, the Alliance must maintain a rather cautious position, realizing that with who maintains the contact. In terms of the technical features of its Armed Forces, Ukraine was always lagging behind and did not have adequate preparation for urgent entry into the Alliance, because of this, Ukrainian experts were convinced to focus attention on Ukraine's acquisition of the status of the main ally of the United States outside of NATO.

Conclusions and prospects for further research. Thus, Ukraine, as a state fighting against Russian aggression, guarantees its choice at a high price. International aid and support of the civilized states of the world is an achievement that Ukraine has been striving for for decades. Ukraine received significant technical assistance from NATO member states in its fight against the Russian Federation. However, in order to protect democracy and the security of Ukraine in the future, it is necessary to continue the development of its own army and the system of collective security in Europe. The partnership between Ukraine and NATO is objectively necessary and has a historical perspective. Today, this has transformed into a multifaceted program of practical interaction, which contributes to the reform of the Armed Forces of Ukraine according to NATO standards, the democratic development of the state, and marks a new historical stage of the newest world order, which is a perspective for further research.

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Pedagogical Sciences

The concept of “Curriculum of a general educational institution”

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Key words: curriculum, education, training program, school education, educational program.

The concept of "curriculum" is well-known, but at the same time its content is infinitely diverse. Below we will try to give the most common definitions of this concept:

The curriculum is:

- a document in which the purpose of the educational process, thematic and curriculum plans, methods and methods of their implementation, criteria for evaluating results in the conditions of a particular educational institution are fixed and logically, argumentatively presented;
- a normative text defining the goals, values of education, curriculum, curricula, pedagogical technologies and methods of their practical implementation and determination of the result;
- individual educational route of the student, during which he can reach a certain level of education, in accordance with the standard guaranteed by this program;
- a set of educational, leisure and other programs that meet the educational needs of the child, aimed at his self-realization, achieving a certain level of education, harmonious development and adaptation in the social environment;
- organizational and managerial knowledge that allows to implement the principle of personal orientation of the educational process through the definition of conditions that contribute to the achievement by students with different educational needs and capabilities of the established standard of education;

The definition of the "image of the future" and the organization of one's own activities in the movement towards it.

The curriculum determines the level of the document of education or the level of education of the individual. The competence and responsibility of an educational institution, management and regulation of its activities are established depending on the indicators of the curriculum.

So, an educational institution is called such if it carries out the educational process – implements one or more educational programs. The content of the educational process in the institution is divided into training courses, disciplines and years of study on them, provided without fail with curricula and course programs.

There are several categories of curriculum:

- Sample curricula are developed on the basis of state educational standards.
- Basic and additional programs in the structure of general and vocational education are of a certain level of orientation of the content of education.
- Additional training programs, as programs of various directions, are implemented:

a) in general education institutions and educational institutions of vocational education outside of the main curriculum that determine their status;
b) in educational institutions of additional education;
c) through individual educational activities.

Paying attention to the division into basic educational and additional educational programs should be given within the framework of two educational structures, where there is a mandatory minimum of the content of the main program (general education or professional), established in accordance with state educational standards. The basic curriculum also has clearly defined deadlines for mastering in educational institutions, which is approved by the Law "On Education" and the Model Regulations on an Educational Institution, or educational standard.

Based on this, it follows that additional curricula of general and vocational education develop, deepen, change, correct the educational standard and adjust the timing of its development.

The content of the educational institution's activities is mainly determined by teachers, taking into account the approximate curricula and programs recommended by the state educational authorities, as well as author's programs approved by the pedagogical or methodological council of the institution.

Unfortunately, today the concept of "author's program" is very skeptical. Disagreements arise not only regarding its scope and content, but also regarding the legality of its use. Over the years, a certain ideological postulate has been developed, according to which the program is a standard de personalized document that any teacher can use, that the development, discussion, evaluation and approval of programs is carried out in an organized manner and is controlled by special state educational management bodies; that in order to preserve a unified educational space and equal social guarantees for education, pedagogical creativity is necessarily monitored and reviewed by higher authorities.

The emergence of innovative and alternative schools, the recognition by the state of the right to experiment in education has become serious factors in supporting pedagogical creativity.

All teaching staff have the right to the author's program. The content, nature and features of the organization turn this right first into a need, and then into a conscious necessity. Teachers have the right to make their own choice, can use exemplary curricula of different levels and directions of general education for their activities, or can develop a new program in accordance with their professional interests and creative abilities. It can be a subject–based curriculum of one thematic focus or a comprehensive integrated program combining different thematic areas, educational areas or areas of activity.

Modified curricula have become widespread today, in which the main parameters of the content of subject programs are preserved, but the means, methods, methods, forms of realization of goals and objectives are changing, which does not require much creative effort from the teacher.

It should be noted that its content has a great influence on the level and orientation of the quality of education.

Traditionally, the content of education is considered as knowledge, skills, presented in the form of a certain finite set of academic subjects included in the curriculum.

The problem, the well-known disadvantage of school education was that students are required to master, memorize a variety of information that has no personal or life meaning for them. The cultural ways of thinking and activity developed by past generations of people and anchored in this knowledge to solve exclusively practical issues remained unknown to graduates of secondary schools and technical schools. Students' assimilation of skills and abilities was reduced to working out and bringing to a certain automatism a simple set of specialized operations in a standard situation. The ability to improvise, flexibly respond to non-standard situational changes, competently build their actions and bring solutions to the end, practical was not instilled at the personal level.

With such an organization of the educational process, the teacher is placed on the "pedestal of the translator of truth" and the controller of the results of its mass reproductive assimilation. The consequence of such education, as is known, was hypertrophy of the functions of memorization and performance with simultaneous atrophy of the functions of understanding, abstract thinking, reflection, creative action.

This situation is a consequence of the identification of the content of education with the educational material and the removal of a person from it.

For the correct definition of the content of education, it is important to shift attention from the results of activity to the activity itself and go further – to the recognition of the content of education as a way of personal development.

The curriculum, drawn up correctly, creatively, is a means of developing cognitive motivation, abilities of the child in the process of joint voluntary activity with peers and adults. A means of active communication is not a program document that is compiled once and is mandatory for everyone who will do what is recorded in it.

Children included in the educational process by the program should realize themselves in these areas, having gained knowledge, skills, experience of creative activity and experience of emotional and value relations in the volume and form that is most adequate to their age, psychophysiological indicators, and the level of cultural genesis.

No less significant is the purpose of the program, such as the development of individuality through the creation of an environment through the development of culture by the child, its values and the definition of oneself in this culture, a specific historical process. This means that in teaching and learning, everyone acquires the ability to build different types of activities, ways of thinking and styles of behavior, taking into account the relevant norms and on the basis of reflection. In other words, in order to learn something, it is important not only to assimilate, accumulate in your memory, some amount of information, skills, but also it is necessary to master the means, ways of thinking and acting, the ability to use, reproduce them in your life, i.e. to be competent.

Knowledge as a cultural phenomenon should not act as a finished result or formula to be memorized. It should be presented as the result of a specific activity, and it is this activity and its methods that should be the subject of mastering through their active reproduction in cooperation with a teacher who organizes and directs this process using a variety of educational tools. In the course of education, children acquire the appropriate experience of scientific and cultural activities, their own method, and the measure of activity, the content of each participant's actions determines the quality of the result of the entire educational process. The role of teaching children is not limited only to cognition, to the transformation of skills and abilities, but consists in developing their mechanisms of scientific and cultural activity, mechanisms for mastering values: orientation, motivation and regulation, adaptation, communication, productive activity.

Based on the practice and the current state of the program activity of the institution, it is possible to trace the trend of understanding by the public consciousness of the educational program as an alternative, returning the developing function to education. The curricula are also diverse and make up a unique hierarchical structure in each institution and a certain type of connection (modular, complex association, integration, autonomy) between its individual stages.

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Foundation and Trends in Modern Learning: A Comprehensive Review

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Abstract:
This scientific article aims to explore the foundation and trends in modern learning, focusing on key advancements that have reshaped educational practices globally. The article provides insights into the evolution of learning theories, pedagogical approaches, and technological innovations that have greatly influenced teaching and learning methodologies. By analyzing the latest research and examining real-world implementations, this study offers a holistic perspective to inform educators, researchers, and policymakers about the emerging paradigm shifts in modern learning.

Keywords: Modern learning, learning theories, pedagogical approaches, technological innovations, individualized learning, personalized learning, lifelong learning, continuous professional development

1. Introduction
The introduction section sets the context by highlighting the importance of education and acknowledging the need for continuous improvement in learning practices. It emphasizes the significance of staying abreast of contemporary trends to meet the evolving needs of the digital age.

2. Historical Evolution of Learning Theories
This section delves into the foundational learning theories that have influenced modern educational practices, including behaviorism, cognitivism, constructivism, and connectivism. It identifies the contributions of key theorists and outlines their impact on instructional design and learner-centered environments.

3. Pedagogical Approaches in Modern Learning
This section explores the shift from the traditional teacher-centric approach to learner-centric methodologies such as active learning, problem-based learning, flipped classrooms, and project-based learning. It elaborates on the theoretical frameworks underlying these approaches and highlights their benefits in fostering student engagement, critical thinking, and collaboration.

4. Technological Innovations in Modern Learning
This section examines the role of technology in revolutionizing education. It discusses the impact of digital tools, mobile devices, learning analytics, artificial intelligence, virtual reality, and augmented reality on enhancing instructional practices and student outcomes. The section also addresses challenges associated with technology integration and provides recommendations for successful implementation.

5. Individualized and Personalized Learning
In this section, the focus is on the growing significance of individualized and personalized learning. It explores adaptive learning systems, personalized learning platforms, and differentiated

instruction, emphasizing the importance of accommodating diverse student needs, interests, and abilities.

6. Lifelong Learning and Continuous Professional Development
This section emphasizes the need for lifelong learning and continuous professional development for educators. It proposes strategies and frameworks for empowering teachers to enhance their pedagogical skills, adapt to technological advancements, and design effective learning experiences for their students.

7. Implications for Policy and Practice
The penultimate section discusses the implications of modern learning trends in shaping educational policies and practices at both institutional and governmental levels. It explores strategies for incorporating modern learning approaches into curriculum design, assessment methods, and teacher training programs.

8. Conclusion
The conclusion section provides a synthesis of the key findings and recommendations presented throughout the article. It emphasizes the significance of acknowledging and embracing the foundation and trends in modern learning to foster lifelong learning, critical thinking, and innovative problem-solving skills necessary for success in the 21st century.

Application of the 5 E learning model in "Human genetics and medical science" teaching

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To engage students in biology lessons, motivate them to learn, and focus on skill development, teachers apply different strategies. The 5E learning model based on active teaching is considered one of these approaches. The 5E teaching model encourages collaborative, active learning in that students solve problems and explore new concepts together by asking questions, making observations, analyzing and drawing conclusions.

Applying the 5E learning model in biology teaching enables students to establish a solid knowledge base. In this process, the teacher plays the role of facilitator. The mentioned learning model is based on the constructivist teaching theory proposing to create knowledge and meaning from experience. By understanding and reflecting on these, students may reconcile new information with previous ideas.

The 5E model has been used as a teaching method since the end of 1980. The 5E lesson model guides students on how to learn, encourages active learning, and supports the development of various skills. The 5E lesson model consists of 5 consecutive stages.

Substandard: 1.1.2. Explains the changes in the chemical composition of living things, and prepares presentations.

1.1.3. Observes changes in the chemical composition of living things and prepares presentations by using modern equipment.

4.1.1. Justifies the effect of eliminating environmental problems on reducing hereditary diseases.

Topic: Human genetics and medical science

Purpose: Explains the changes in chromosomes and genes. Observes the changes in chromosomes and genes, prepares presentations via videos.

Justifies the effect of eliminating environmental problems on reducing hereditary diseases.

Integration: Chemistry 4.2.1.

Mode of work: collective and group work

Working method: brainstorming, discussion, presentation, diversification

Resources: textbook, worksheets, electronic presentation, images of hereditary diseases.

A brief description of the course

In the first stage of learning, the teacher makes an effort to understand students' previous knowledge and identify any knowledge gaps. At this stage, it is important to encourage students to learn. "Medical examination before marriage is the guarantee of a healthy society." Do you agree with this idea? Justify your opinion.

- What diseases do you think should be included in the premarital examination?

In the Explore stage, students actively explore a new concept through their experiences.

Activity: Investigate and determine which diseases are caused by changes in chromosomes and genes in the human body.

The third stage, Explain phase is a teacher-led stage helping students synthesize new knowledge and ask questions when needing further clarification. For being effective Explain phase, the teacher synthesizes and summarizes what the students learned in the second stage before directly presenting the information due to the 5E learning model. At this stage, the teacher uses videos, computer programs, or other aids from various resources.

The teacher explains that cytogenetic and biochemical research methods are used during maternal-genetic counseling, and the genealogy (pedigree) of the future parents is investigated. Sometimes chromosomal or gene disorders in parents are not observed phenotypically. Such violations may show themselves in marriages of close relatives. Additionally, biochemical and cytogenetic examination of amniotic fluid - amniosynthesis examination is performed during pregnancy. This examination is mostly done to detect Down syndrome and other similar syndromes in the child to be born. By this method, hundreds of genetic diseases, such as sickle cell anemia, can be detected in advance.

The risk of developing hereditary diseases is related to mutagenic factors. These factors include chemicals (household chemicals, some food dyes, toxic chemicals), intense electromagnetic variability, biological mutagens (viruses, some types of vaccines). Recently, diseases due to genetic changes, pathological pregnancy, developmental defects have increased significantly. All this is related to the increase of mutagenic substances in the environment. Scientists have estimated that even if radiation protection measures are implemented, 0.05% of newborns will be sick gene carriers due to artificial radiation sources.

The fourth Elaborate stage provides students with new samples and examples to apply their learnings. The teacher may ask students to create presentations or do additional research to reinforce new skills. This stage allows students to consolidate their knowledge before the assessment.

Worksheet for Group I

1. Explain the causes of hereditary diseases.
2. Prepare a presentation on "Genetic diseases".

Worksheet for Group II

1. Explain the causes of metabolic disorders caused by hereditary diseases.
2. Prepare a presentation on "Diseases related to chromosomes".

Worksheet for Group III

1. Group the mutagenic factors that cause hereditary diseases.
2. Prepare a presentation on "Genome disorders".

Worksheet for Group IV

1. Note non-hereditary genetic diseases and justify your answer.
2. Prepare a presentation on "Modern methods of detecting hereditary diseases".

In the fifth Evaluate stage, teachers may observe their students and check whether they fully understand the main concepts. It is also useful to note students' approaches to problems differently based on their learnings. Other useful elements of the evaluation stage include self-assessment, peer assessment, written assignments and exams.

In biology lessons, by the 5E learning model, students may learn the secrets of life by being active participants through inquiry.

Methodical bases of application of the method of discussion as a means development of foreign language communicative competence of students in high school

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ABSTRACT

This article examines the methodological foundations of the application of the discussion method in the context of the development of foreign language communicative competence of high school students. The article emphasizes the role of discussion in promoting understanding of foreign culture, enriching vocabulary and improving speech communication skills. The role of discussion in promoting understanding of a foreign language culture, enriching vocabulary and improving verbal communication skills is also emphasized. The article offers teachers a number of practical recommendations for the successful organization and conduct of discussions in foreign language lessons.

INTRODUCTION

The communicative purpose of the discussion should be defined as the exchange of views in order to make a decision or clarify the truth. The process of interaction is determined by the system of goals of the participants in the discussion - this is a cooperative interaction to solve a problem. But, as W. Stelzner points out, along with an open-minded discussion, which from the very beginning allows for the possibility of compromises and transformations of the thesis, there are uncompromising discussions in which each side seeks to prevail over the opinions of other partners. This is because the participants in the discussion are people with all their psychological, personal characteristics that color speech behavior, interpreted by the role, in an individual way. Therefore, it is important that the speech actions of the participants do not exclude the achievement of a constructive result as a result.

The discussion in the methodology was considered mainly as a kind of problem-based learning. This is explained by the fact that "the logic of the general course of solving an educational problem, the sequence of mental operations in the process of problematic assimilation of knowledge have common foundations with the solution of a scientific problem" [35]. Problem-based learning is based on understanding the discussion as a dialogue in its broad interpretation - dialogue as communication. A. M. Matyushkin wrote that the dialogical form of education acts as optimal for the further development of the theoretical and professional development of students [36]. He develops the idea of problem-based learning as the transition from schooling to higher education, and believes that such training involves a consistent transition from the management of the individual cognitive activity of the student to the management of dialogical, including an "equal" dialogue between the teacher and students. He defines learning through such management as dialogical. A. M. Matyushkin connects dialogic education in higher education with teaching students to formulate and solve problem problems and complements the didactic scheme of problem-based learning at the university at the primary level - a situation of real professional, practical and research activities that "generate" a problem task that a student must learn to formulate. In the form of dialogical learning considered by A. M. Matyushkin, such generative situations include the following necessary elements: a) a subject-practical or theoretical situation that requires the formulation and formulation of a task and b) a second participant in the activity performed, for whom the corresponding task should initially be formulated.

The essential difference between the discussion and the controversy is that the disputing parties come to the solution of controversial issues through cooperation, cooperation of the contributions of the participants in the discussion to the solution of the problem, the search for the optimum between them, and not by denying such contributions. The orientation of the discussion to cooperation allows us to define it as a dialogue.

Y. A. Schreider, noting the differences between dialogue and dispute, writes that only a squabble is born in disputes, but the truth is indisputable. In a dispute, participants strive to win, and in a dialogue - to understand each other. In a dispute, victory is possible due to the inept argumentation of the enemy, in the dialogue each participant is obliged to strengthen the argumentation of the other, to appeal to his strengths. In a dispute, each participant seeks to assert the truth of one of the poles with his victory, in a dialogue, participants strive to more fully reveal the truth. Therefore, it is important to be able to realize oneself as a participant in the dialogue taking place in the history of science, and not turn it into a monologue, into an attempt at self-affirmation, since every act of creativity is a replica in an endless dialogue, in a discussion with accepted opinions. The dispute alienates the disputants, the dialogue establishes a human connection between them. Dialogic interaction presupposes that the individuals participating in the discussion have a high level of general and, in particular, psychological culture, the ability to communicate. Therefore, dialogue as a form of interaction between individuals needs to be learned and taught.

In addition to dialogism, the most important sign of a genuine discussion is its constructiveness. Discussions are used where and when constructive solutions need to be found.

The dialogic nature of the discussion has great learning potential. In the course of it, the categorical and conceptual apparatus is checked and formulated, the features of approaches to the problem are revealed, which helps students avoid one-sidedness and broadens their horizons.

Participation in the discussion contributes to its substantive and social adaptation. Self-discussion helps to assimilate the culture of discussion.

B. Dufaux sees dialogue as the most important part of the pedagogical process. Dialogue, in his opinion, is always differentiation from others, which must be maintained, since it arises only through the recognition of the originality, specificity of another person in an atmosphere of acceptance. Communication. She rightly believes that the whole process of learning interaction should be dialogical. According to T. S. Serova, truly communicative training of foreign language speech activity involves the inclusion in each exercise in the formation of skills and abilities of the dialogue mode in any form and by all means. Thanks to the dialogue, it is possible to more effectively form the student's ability to listen, hear and understand the partner; teaches to analyze and compare, draw conclusions, persuade and prove, participate in the exchange of views and make constructive proposals during the discussion. Such a dialogue leads to enriching changes in each partner, when "everyone gave something to the other, but also received something from the partner in return, different from his knowledge, something a little new and completely different." Thus, it can be concluded that it is the dialogic nature of the discussion that is the source of its powerful teaching potential in improving all types of speech activity in schoolchildren.

Discussion exercises include educational discussion and commentary. Like the educational and speech situation, the considered forms of work have a certain structure. They can be successful in the classroom only if teachers know the methodology of their use, thorough preparation for their use [37].

Educational discussion. The psychological characteristics of the speech of those participating in a natural discussion and discussion-exercise in a foreign language are almost identical, although the educational discussion has one peculiarity: it is "organized" by the teacher (in contrast to the discussion in real conditions, where it usually arises spontaneously). The use of discussion as an exercise that most vividly and fully reflects the psychological characteristics of communicative speech in the target language must meet a number of methodological requirements.

The discussion will be all the more successful:

- the less difficult mental tasks it sets for students (this gives them the opportunity to "allocate" a significant part of their attention to control the language form);
- the less it will go beyond the concepts and ideas, the foreign language correspondences of which are known to the student;
- the higher the level of automation of speech skills and the wider the inventory of language material, the possession of which is at the skill level;
- the more experience students have in conducting discussion conversations in their native language.

In the structure of the educational discussion, one can distinguish: topic, exposition, speech stimulus, guiding questions, keywords, speech reaction of speakers. Let's look at each of the selected components in more detail.

Topic of discussion. The topics of educational discussions are extremely diverse. In high school, it is possible to conduct discussions on topics such as:

1) School and life, education, choice of profession;
2) Youth in the struggle for peace;
3) Man: his spiritual world, aspirations, ideals, character, appearance, feelings, actions, morals, beliefs, tastes;
4) Science and technology news, space exploration;
5) Economy and economy;
6) Famous people, heroes, feat;
7) Art, news of cultural life, etc.

Exposure. This is the factual material, the information and related issues that serve as the basis for any discussion. In the exposition, it is necessary to distinguish between the material and the formulation of the problem. Depending on whether these components are expressed in the exposition, the following varieties can be distinguished:

1) Exposition, which is a presentation of both the material and the problems of the discussion. Students are offered a short message, a certain incident, an episode that happened to a particular person, an aphorism, a well-known saying, in connection with which the problem is posed. For example:

When the sound cinema came into being, a famous producer said, «Now, that the cinema has got the power of speech, I'm sure the theatre will die in the nearest future. » Do you think the producer was right? Is the cinema the theatre's rival?

2) Exposition with unexpressed problems.

Students are offered some material for discussion, and its content itself is such that, as a rule, it frees the teacher from the need for a special formulation of the problem.

Among the expositions of this type can be attributed, for example, a movie, a story, a theatrical production, press materials, cases from life.

Such an exposition, of course, makes great demands on the thinking of students, since they themselves must extract from it the subject of discussion.

Experience shows that students usually begin the discussion of a film (story, etc.) with its general assessment ("I (didn't) like the film"), and its argument essentially contains the formulation of a number of problems that stimulate further discussion.

It should be borne in mind, however, that this type of exposition can be successfully used only in a more prepared class. In those cases where students have difficulty in conducting a discussion when exposed to an unexpressed problem, the teacher should offer a series of leading questions such as:

What is (in your opinion) the main idea of —?

How can you prove that —?

Why do you think —?

What can you say of —?

How can you explain X.'s deed (step, words, etc.) —?

3) Exposition with a given problematic, but unexpressed discussion material. This is, in essence, a reliance on the life experience and knowledge of students, on their ability to imagine. Thus, the discussion of the problem "What makes a person famous?" is based on knowledge of facts, historical examples, events in public life, in the field of science, culture, etc. And the debate about whether it is good or bad to learn by heart will be based on the personal experience of students.

Stimulus. Unlike, say, a conditional conversation, a speech stimulus in an educational discussion, as already noted, is always natural. This is the attractive power and effectiveness of discussion as an exercise in the real use of speech. The stimulus causes a speech response. The more interesting the question posed, the problem, the easier it is to provoke a conversation, the longer it takes to maintain it. The stimulus depends on the quality of the exposure.

The teacher should be protected from two extremes in the preparation of the educational discussion: the first, when the exposition does not cause any stimulus for conversation (not interesting), and the second, when, on the contrary, the stimulus is excessively strong.

Too much emotional arousal of students in the absence of the teacher proper experience in organizing the discussion has the opposite effect - it "locks" the speech channel in a foreign language, and students, despite the teacher's protests, switch to their native language. To fully characterize the stimulus as an integral element of the exercise, it should be added that it arises not only from the initial exposure, but also from the speech reaction of the students, who give different points of view on the problem under discussion.

Guiding questions. When preparing an educational discussion, the teacher should think, along with the exposition, also the questions with which he intends to "unfold" the problems of the discussion and give it the right direction, thereby supporting the speech stimulus of students. Thus, the exposition, formulated on the theme "Appearance of a person", may not cause a proper response from students. However, a number of well-posed questions from the teacher, detailing it, can be fruitful and cause a lively discussion. For example:

— Does man's appearance play any role in his life? Can a person's appearance be changed at will? Which makes a young person's looks better — sports, clothes or cosmetics? Does appearance depend on the person's mood? Has the general culture of man anything to do with his looks? Can we guess the person's profession (occupation) by his appearance?

Keywords. When conducting an educational discussion, especially in a less prepared class, a skillfully compiled list of keywords can be helpful. As a lexical "hint", such words make it easier for students to formulate their thoughts in the language.

Speech reaction. Verbal reactions in a discussion take many forms. This is:

1) short remarks of several students;

2) monologues of various durations;

3) the monologue of one student, interrupted by individual remarks and questions of others, etc. The task of the teacher is not only to "provoke" the conversation, but also to manage it.

The difference between the components of the educational discussion largely determines its typology. However, some types of this exercise can be distinguished by signs external to its structure. Educational discussion can be [28]:

1) thematic (i.e., organized in connection with the study of a topic, for example, "Health") and non-thematic (i.e., organized regardless of the topic, text or other material being studied at a given time);

2) pre-prepared and spontaneous;

3) purely oral; based on printed text, or using visual aids (for example, illustrations, diagrams, plans, etc.);

4) specially organized, or carried out in combination with other methods of work, for example, a small text is first read, retold, questions are posed to it, and only then, in the development of these forms of work, a discussion is organized.

Preparation for the discussion and its organization in the classroom. In terms of preparing students for conducting an educational discussion, the following methods of work were tested:

1) the choice of one of the contrasting approaches to the problem;

2) statements about a series of debatable issues.

The first type of work was aimed at the development of such a form of speech reaction of students, in which the criticality of their judgment is manifested. At first, these were simple questions that contained some alternative. For example, students were asked the following questions:

1) Which is better, to be highly enthusiastic about one subject or to pay equal attention to all of them?

2) Which is better, to know several foreign languages a little or one language, but well?

3) Where do you think is the weather better, in the north or in the south?

4) Which is more convenient, to borrow books from the public library or to have a library of one's own?

At the same time, the teacher did not require students to provide a detailed answer with the necessary motivation. Students perceived different points of view synthetically and their criticality manifested itself indiscriminately, in the form of a simple speech reaction, for example:

- (I think it's better to know one language but well.

- I believe the first opinion is more convincing, etc.).

In the future, students were offered more complex expositions containing opposite approaches to the problem, for example:

- Which produces a greater impression, the theatrical performance or the film?

- Some people prefer the cinema as it can show many things which you cannot see at a theatre. Others prefer the theatre as the acting of live actors produces a stronger impression. What do you think?

The next type of work is a statement (with more or less detailed argumentation) about a whole series of debatable questions asked at once. The great complexity of this type of work is determined by the fact that students, as a rule, are deprived of the opportunity to use the speech material of the questions to build their answers. Therefore, in the process of testing the developed set of exercises, it was revealed that, perceiving questions (asked all at once), students remember only their content, thought, and not expression, not the language shell. For example:

- What should you be guided by when choosing a profession?
- Can a student be aware of his calling?
- And what if you don't have it?
- Can you fall in love with the profession in the process of work?

By offering students such questions, the teacher not only stimulates their desire to speak, but at the same time gives direction to their thoughts. And the fact that students cannot rely on the linguistic form of questions indicates the reality of their awareness of the essence of the problem, the true spontaneity of their speech act. Of course, a series of discussion questions should not go beyond the language capabilities of students. The latter type of work is essentially already an educational discussion with an exposition expressed in a facilitated form.

CONCLUSION

Discussion is one of the most difficult options for interactive lessons. This is hard educational work, both for students and for the teacher. Conducting the discussion itself in different versions requires the maximum effort of students in the lesson: to listen carefully to the opponent, to be able to tactfully and competently respond to complex and provoking questions, to draw the necessary and convincing conclusions on their position, citing a variety of arguments and evidence. Hence the conclusion: a successful discussion is always preceded by serious work of students on their voluntarily chosen position, preparation for their role. It is enough to determine 2-3 lessons for preparation, during which the material is selected, the theses of their proofs are formulated. At this stage, the role of the teacher is reduced to the role of a consultant, an assistant. In addition, the topic of discussion should be interesting for students, relevant.

The teacher must seriously prepare for the discussion. In the course of the discussion, he is not an outside listener, but the chairman of the meeting, a moderator, a tactful arbitrator, an assistant, and sometimes a talented "provocateur" who is ready to help those who are lost, who "did not enter the role". It depends on the teacher how the "guys will talk". The teacher gives impetus to the game. The emotional state of the participants is directly related to the behavior of the teacher. The teacher must see everything, hear everything, and empathize most of all, so that these feelings of enthusiasm in the dispute for the search for truth are transmitted to the children. If the teacher withdraws himself, then the discussion fails, none of the educational tasks will be completed.

The teacher regulates the entire course of the game, holds in his hands all the game actions of the participants. In the course of the discussion, he asks stimulating questions, summarizes statements, identifies disagreements in the assessments of groups (if the option of group work is used), tries to find a compromise with them, includes passive students in action, thereby achieving comprehensiveness and depth of discussion of the problem as a whole.

The study of theoretical materials and analysis of special literature on the problem of using discussion in foreign language lessons for the development of communication skills has shown that, although active research work has been carried out in this area recently, there is still no consensus on its practical implementation and the problem continues to be relevant, requiring special and increased attention from modern methodologists.

Analysis of the use of the method of problem-based learning and discussion for teaching high school students is not only advisable, but also necessary, because this type of speech activity provides the acquisition of those skills that will really help students express their point of view in English, listen carefully to the opinions of other people, identify problematic points in various topics, both during the lesson and outside it.

In addition, compared to a regular question-and-answer conversation, the discussion has a number of advantages, such as:

- the student is forced to talk a lot, justifying his point of view;
- there is a mixed exchange of questions and answers;
- the very meaning of the question is important, and not the specific knowledge of the student's answer to the question posed;
- there is no assessment of "correct / incorrect answer", which creates a friendly atmosphere in the classroom, because one of the common reasons why children are silent in foreign language lessons is the fear of answering incorrectly;
- evaluation of opinions on the principle of "agree / disagree" occurs by all participants in the discussion, both the teacher and the students.

Based on the fact that the object of arbitrary attention is not the language form, but the definition of thoughts, topics, main facts, the use of the information received in real situations, we can assume that the discussion as a method of conducting a lesson really develops the communication skills of schoolchildren.

As you know, learning a natural, modern foreign language is possible only if you use situations where a person can express his thoughts in this language, when he is able to understand the main idea that other people want to convey to him. In order for students to speak a foreign language, it is necessary to create conditions for them to develop spontaneous speech, a natural situation of communication, so discussion in teaching a foreign language can contribute to the expansion of the student's communicative competence.

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THE ROLE OF EMOTIONAL INTELLIGENCE IN TEACHING

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Abstract

The level of emotional intelligence is one of the most important professionally significant characteristics of a teacher's personality. The article aims at giving significant arguments on the importance of emotional intelligence and focuses on the idea that emotional competence is one of the key competencies of teachers. Because only emotionally intelligent teacher is aware of creating comfortable teaching and learning atmosphere in the classroom. The article analyzes the features of the influence of emotional intelligence on the development of the professional and personal qualities of a teacher.

Keywords: emotional intelligence, teacher, teaching, emotions, education

In pedagogical psychology, the study of the teacher's work as an integral system is one of the most important scientific and practical problems. The success of the organization of measures to improve the effectiveness of the teacher's work largely depends on its promotion. Numerous studies are devoted to the study of the characteristic features of the activity and personality of the teacher, his pedagogical abilities, skills, thinking, and tact, that is, the study of the phenomenology of pedagogical work.

However, despite the intensive development of psychological knowledge about the study of the teacher's professional activity, the study of the teacher's work is still in demand both in science and practice, which is explained by the tasks facing the education system today. Along with the tasks of teaching and developing the cognitive abilities of schoolchildren, society sets the tasks of their socialization, individualization, and development of such qualities in schoolchildren that would allow them to adapt to changing external conditions [6]. Researchers, without questioning the priority of the teacher's knowledge, are convinced that one of the most important tasks of modern education is, first of all, the education of the individual [7]. Accordingly, the priorities and requirements for the personal qualities and work of the teacher change. The primary importance is given not to the teacher who transmits knowledge, but to the teacher who understands, empathizes, and is open to new emotional experiences.

Thus, the transition to personality-oriented pedagogy requires teachers to make personal changes associated with the integration of affective and cognitive processes. In modern psychology, the concept of emotional intelligence is put forward to solve the problem of the unity of "intelligence and affect". The state of the problem. Under the concept of "emotional intelligence", researchers consider a set of intellectual abilities that provide an understanding of emotional states and their management [8].

Literature highlights the role of emotional demands among teachers; teachers‟ emotional well-being is claimed to be at stake since they often meet with negative emotions during interactions with students, parents, and colleagues. Therefore, emotional demands are deemed to be among one the greatest job-related risks to teachers' occupational health and well-being. However, teachers could overcome both of these challenges by developing their professional competencies and by developing their and their students‟ emotional competencies [9].
In education, researchers and scholars have explored the role of emotions and Emotional Intelligence (EI) to improve performance [10],[11]. According to George and Day et al., teachers who can manage their own emotions are able to communicate their needs and able to deal with their own feelings in achieving their goals. Furthermore, they can withstand difficult task without suffering from severe burnout, and are known to be team players who can work well with their colleagues to achieve organizational goals [12], [13].
Initially, the concept of "emotional intelligence" was associated with social intelligence. It appeared precisely in the context of the development of the problems of social intelligence by such researchers as J. Gilford, H. Gardner and G. Eysenck. According to the views of X. Gardner's theory of multiple intelligence, this psychic phenomenon includes a wide range of abilities. The intelligence model structures the organization of this space.
H. Gardner's model includes seven main forms of intelligence, among which, along with the traditional verbal and logical-mathematical, there is spatial, musical, bodily-kinesthetic, and social intelligence, which is defined as the ability to understand people and manage them. Emotional intelligence is considered a substructure of social intelligence.
At the present stage, the study of emotional intelligence is quite an independent direction. We can agree with the opinion of D. V. Ushakov that emotional intelligence, although closely related to social intelligence, has its own specifics. Therefore, these two constructs can be represented as intersecting regions [14].
For the first time, the term "emotional intelligence" was introduced into psychology by D. Meyer and P. Salovey. They view emotional intelligence as a special type of intelligence, which is the ability to process emotional information. Emotional intelligence is understood as a complex construct consisting of a number of cognitive abilities: perception of emotions, improving the efficiency of thinking through emotions; understanding emotions; managing emotions [15]. Each type of ability includes two components - the first is associated with their own emotions, the second with the emotions of other people [16]. People differ in how well they process information about emotions and, accordingly, have different values of emotional intelligence.
The structure of emotional intelligence is represented by the following components:
1. Recognizing your own emotions. For the emotional experience of the subject and for his behavior, it is important that the experience of emotion and its definition are different phenomena that can be empirically divorced. The definition of emotion is considered as the result of constructive processes that transform perceptual experiences are translated into inner experiences by modifying these experiences. In this regard, we can cite three main functions of naming emotions: the consolidation of experience, interpersonal communication, and emotional expression. Recognition of emotions contributes to more effective communication, as it allows you to adequately identify, describe, process and further express emotions.
2. Possession of emotions. This component is related to the problem of self-control. Adequate emotional expression is an important factor in maintaining physical and mental health. Restraining emotions contributes to the occurrence of various diseases. At the same time, the lack of control over emotional expression makes interpersonal communication difficult.
3. Understanding emotions. Self-understanding in general is emotional,
a sensual, empathic, not rational character. Therefore, the depth of self-understanding is primarily determined by the level of development of emotional abilities, which in turn provides awareness

of emotions. Understanding emotions is related to the possibilities of their expression. Mastering the language of emotions requires mastering the forms of expression generally accepted in a given culture, as well as understanding the individual manifestations of emotions in the people with whom a person lives and works. Understanding emotions is also related to the level of empathy development.

4. Self-motivation. Emotions have a motivating power, forcing people to act. Emotion is how the body and mind interact [17].

Based on the structure of emotional intelligence, you can display its basic categorical features, such as: introspectively (the desire for internal contemplation, systematic and focused analysis of emotional experiences, their awareness), instrumentality (focus on the generation and application of emotional knowledge in practice), implicativeness (availability for domestic observation and differentiation of emotional experiences) [18].

Managing your own emotions and understanding the emotions of others are the most important qualities necessary for successful pedagogical interaction. Besides, teachers‟ EI can positively affect students. Emotionally intelligent teachers are capable of creating a healthy learning culture. This is because they can identify and understand the needs of students and students‟ strengths and weaknesses. When this happens, students are expected to perform better and attain better grades. Teachers who are not emotionally intelligent may have difficulties in identifying and understanding their students‟ behaviors and needs, thus they may not be able to create a conducive learning and teaching environment. Thus, when this is the scenario, students may not perform well and they may not be interested to follow the teachers‟ lessons. As a result, learning can be unsuccessful and less meaningful and performance can be poor. Teachers who have high EI are compassionate toward students, they can build trusting and strong bonding with students. Consequently, students feel more secure and confident in which they feel unintimidated to ask questions or discuss problems and they are empowered to involve more in the learning process. Eventually, this would make lessons more meaningful and productive for them [19], [20], [21], [22].

Constructive interaction of intellectual and emotional processes promotes emotional self-regulation: establishing contact with your inner world, with your experiences, which improves the quality of communication; reducing the intensity of negative emotional experiences; increasing the level of self-awareness and motivation. A teacher with developed emotional intelligence creates optimal conditions for the development of the positive potentials of each student, is able to interest, captivate, is open to new experiences, and new knowledge, and constantly develops and gets satisfaction from his work. Such a teacher in pedagogical activity is emotionally and personally open, psychologically "tuned" to creative work with students, and sincere in expressing feelings and relationships. The teacher becomes a personal example for students and therefore has a formative influence on the personal characteristics of students [23].

There are certain characteristics of an emotionally intelligent teacher which can be enumerated. Such a teacher devotes plenty of energy to creating an encouraging atmosphere in the classroom and takes into account the learners' feelings. He or she should be an expert at listening; additionally, they should pay attention to the learners' expectations. An effective teacher can be associated with devotion to learners, enthusiasm in the teaching process, and a unique approach to their profession so as to be able to establish a harmonious relationship with their students. The effectiveness of a teacher's professional activity implies, first of all, the acquisition of an arsenal of skills and abilities related to the emotional-volitional and socio-communicative aspects of the educational process. The results and achievements of their students largely depend on the correct choice of appropriate professional and behavioral strategies. Thus, a modern teacher cannot achieve personal and professional growth without self-improvement and self-control due to emotional experiences. To improve the emotional culture of the teacher, it is important to master the skills of self-improvement, self-control, reflection, empathy, and self-motivation[24].

Conclusions. 1. Emotional intelligence appears as a tool of cognition and performs a dual role: it simultaneously extracts and applies emotional knowledge. Thus, emotional intelligence is a means of emotional cognition. Unlike abstract and concrete intelligence, which reflect the patterns of the external world, emotional intelligence reflects the internal world and its connections with the behavior of the individual and interaction with reality.

2. The study of the emotional intelligence of teachers is extremely important.

significant for the meaningful overcoming of the existing contradiction in the practical pedagogy of emotional and rational transformations, the success of the organization of measures to improve the effectiveness of the teacher.

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интеллект, мұғалім, оқыту, эмоциялар, білім.

Promoting Effective Social Interaction: Strategies for Teaching and Facilitating Social Skills

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Key words: social interaction; Zone of Proximal Development; cooperative learning; group project, group discussion, communication.

Foundations and Trends in Modern Learning refers to the principles, theories, and emerging trends in contemporary educational practices. It encompasses various approaches and methodologies aimed at enhancing learning outcomes in today's rapidly changing world. Personalized learning, competency-based education, technology integration, learner-centered methodologies, social-emotional learning, and research-based instructional strategies may all be important areas of attention. As academics and teachers investigate cutting-edge strategies to enhance learning encounters and satisfy the various needs of learners, the area continues to develop. In this article, we are going to discuss about enhancing students' social interaction skills in English Language Teaching.

The globalization process of social development is one of the main trends of the modern era, the main features of which is the convergence of nations by creating a global community to a single economic, political, educational, cultural space, all are closely the social relations around the world, the competitiveness of the younger generation, its ability to meet the requirements of the global market economy. So, the main demand of social life is the interaction between individuals, social groups within the relevant social institutions. Now, let's define the notion of social interaction.

Social interaction is a system of interdependent social action, that are the actions of one entity (individual, group, community) are both a cause and consequence of the response of others [1].

An American philosopher and educational reformer John Dewey believed that true education comes through the stimulation of the child's powers by the demands of the social situation in which he finds himself. Social interaction depends on social demands, student to student assessment [2].

In this article, I want to point out the importance of developing students' social interaction skills and establish the educational environment of real situations and conditions for being able to communicate with other subcultures. Social interaction method stimulates the students' capacities to communicate orally in a foreign language. Interaction helps learners to develop language learning and social skills and teachers should maintain a plentiful interaction in the classroom as an important part of the learning process.

According to Lev Vygotsky language develops from social interactions for communication purposes. Later language ability becomes internalized as thought and "inner speech" [3]. Thought is the result of language. Vygotsky was against the theory of Piaget, who stated that children's development comes before their learning whereas Vygotsky argued that social learning must precede the development. He regarded interaction with peers as an effective way of developing skills and strategies [4]. He also suggested teachers to maintain more cooperative learning tasks where children with lower ability learn from more skillful peers within the zone of proximal development (ZPD). Vygotsky viewed the ZPD as the area where the clear instruction or guidance must be given, let the children use their abilities later for developing higher mental functions [5].

Social interaction will not necessarily happen spontaneously, it has to be considered before teaching [6]. For instance, socialization process in a classroom plays a great role in interaction among students. Social interaction does not only promote language development, but it also fosters the development of social skills (e.g. politeness, respect for others) that people need to communicate successfully in any culture. Learners need to practise as much as possible if they are encouraged to be successful; interaction through pair and group work raises the opportunities to practise as more learners speak for more of the time; also motivation is a fundamental aspect of successful learning. Interaction gives learners the opportunity to use language successfully and to assess their progress which in turn should lead to an increased motivation [7].

However there can be some problems we encounter when trying to promote social interaction. It considers being so crucial and relevant in theory, but we all are aware of that promoting and increasing can be a great trouble. Let's discuss some of the reasons for this. It is true that some learners do not want to work in a group or pair. Because they think that they might learn mistakes from their partners. Pairing and grouping students appropriately in a mixed ability classes is much more difficult than in small classes of the same level. The insufficient language is one of the main reason for undesired interaction, because the students do not have the language they need to interact [8].

Strategies in the Classroom for Social Interactions

Many teachers nowadays try to create a warm atmosphere in a classroom. Thus, students can learn from their friends as well as their teachers. Furthermore, a friendly sociable environment decreases stress, anxiety and makes learning more confident. Social interaction teaching methods are instructional methods used by teachers in the classroom to facilitate group work. Student-centered teaching approach allows students to interact with each other to complete a particular task. According to the strategy, students take on the role as a facilitator of content by helping their peers construct meaning. The students are allowed to ask questions, evaluate, get help and support, and participate in group discussion. The three most common strategies include group project, group discussion, and cooperative learning [9].

Group discussions are useful for everyday life situations as we regularly find ourselves having discussions amongst friends, family and colleagues. These may vary from very informal chats about day-to-day things to more serious topics, for example, a discussion about a recent news story or a problem that needs to be solved.

Cooperative learning is a successful teaching strategy in which students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it.

Group projects or group work encourages students to work as a team to think and discuss content. Groups can be formed in different sizes from a pair to the whole class groups. The instructor should be very knowledgeable of objectives to maintain on task behavior. Social skills such as listening, taking turns, supporting group members, maintaining a work station and task responsibility should be taught [10].

Advantages and Disadvantages of Social Interaction Teaching Strategies

There are a lot of positive sides using the social interaction method. Developing social interaction skills is closely related to student centered approach that promotes meaningful learning [11]. Because it can be advantageous for students who succeed more in a cooperative learning, and can be used to promote collaborative and problem solving skills. This strategy is most beneficial to students that work well in a cooperative environment rather than a competitive one. Some students can learn more effectively and be more motivated when working together with their peers rather than by themselves. Because students work together in groups, they learn to use leadership as well as problem solving skills. They also learn to work together as a team to produce a desired outcome.

Social Interaction Models have also some drawbacks. The process of social interaction is time consuming, because it should be taught explaining rules, responsibilities and procedures [12]. Some students may not participate while others take on the full project. There is a great possibility to intervene of the L1 and some students can use the rude or inappropriate language while completing a task in a group. And if the class is large it can be difficult for a teacher to monitor the whole group.

Social Interaction and Technology

The development of industry has greatly influenced on an education sphere. Traditional schools are becoming modernized with a usage of new technology. Technology also plays a great role, since the Social Interaction Method depends on the students to interact with one another. Discussion boards and chat rooms are some examples that allow for the social contact of students while using technology. The teachers can then monitor students, promote on task behaviors, and help students through e-conversations [13]. A main source of technology these days are the Internet and the unlimited amount of information we get from it. The Internet, e-mail, blogs, and any other websites keep us connected and learning even without having to come to class.

Social interaction method is not only based on communicating orally and developing only speaking skills. Moreover, it can also promote communicative skills in a writing form. Social interaction method helps students to be able to write more fluently and accurately on a basis of communication. So I would like to suggest one activity that can help learners to develop their writing skills.

First, pair up the students, but not with the person sitting next to them. Ask the students to write a letter to that person. The topic can be about anything they want but there must be some information sharing involved in the letter. They have about 10-15 minutes to write. After the students submit the letters pass the letter on to whom it is addressed. The addressee reads the letter and replies in kind; again they need about 15 minutes for this. Act as a "postman" again and pass the letters back to the original writer. Do not read or correct the letters, because there may be personal things. However, I warn them if I intend to read or correct their work. This helps them to avoid inappropriate language during the task.

Judgement of their friends is very important for them, that's why most students do not want to produce a piece of work that looks messy, or sloppy if it is being read by their peers. This activity encourages students to communicate through the written form. It makes the act of reading and writing more interesting and more enjoyable. Students still need to practise at writing in this world of texting and email [14]. They need to be able to write more than just colloquial letters to their friends. They must produce something that it will grab the reader's attention. When I used this activity, I noticed that students are strongly involved in this task and are happy of being able to express themselves.

In the summary of this article, I want to say that interacting with other people is a big demand of the social world, and without communication the human society is impossible. Social interaction is a process of communicative and cognitive activity. Social interaction model influences on a student's personal development and promotes their ability to communicate in a cross-cultural context. Social interaction stimulates some parts of the brain than not talking or communicating. Learning forms new connections in the brain and social interactions develop those connections, building social links and providing communication skills.

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SOME ASPECTS OF THE TRAINING OF FUTURE TEACHERS OF MATHEMATICS

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Abstract:
This article describes some aspects of preparing future teachers of mathematics to use innovative technologies in the course "Methods of teaching mathematics" at a pedagogical university.
Keywords: training of future teachers of mathematics, innovative technologies, university, school.

Current trends in the transition to an information society have an impact on the content of education. Information technologies that allow you to work and live in an information environment are being introduced into all spheres of human activity. Therefore, we expect that the information society will not only change production, but also change the entire system of values and style of thinking. To this was added the words of Academician A. P. Ershov "the industrial revolution that is taking place before our eyes... it is necessary to look at the professional activities of graduates of educational institutions from a new perspective and rethink the content of education"[1].

In this regard, professional training was conducted for future teachers who are able to work and live in an information environment and use information technology. Information telecommunication technologies and electronic publications were used to form the methodological competence of students..

The introduction of information technology in education consists of three stages:

- primary, individual use of a computer (organization of the education system, administration, storage of information during management).
- convergence of modern computer systems, the Internet and information and communication technologies;
- integration of traditional learning technologies with new information technologies (IT) in the future.

International exports in the "World Report on Relations and Information for 1999-2000" emphasized the importance and necessity of introducing IT into the educational process. UNESCO Director General Federico Mayor noted that the new technology "should be created better so that everyone in the world can enjoy the achievements of education, science, culture, communication" [8]. ITT has an impact on all these areas. The impact on education is especially great. Because IT opens the way to the study of completely new teaching methods.

Now we will consider the application of the modern second stage of the computer IT system (convergence of the Internet and information telecommunication technologies) in education.

According to experts, the use of information and communication technologies in education has increased the effectiveness of classes by 20-30%, improved the quality of knowledge, and increased the educational activity of students. The introduction of the computer in education was the beginning of the transformation of traditional methods and technologies. The role of information and communication technologies plays at the stage of technology transformation.

ITT includes telephone communications, television, and space communications. ITT became the basis for the creation of the information sphere. Because the integration of a computer system and a global network of tele-communications has led to the creation and development of a planetary infrastructure that connects humanity. The global computer network is the appearance of the Internet, indicating the successful implementation of it. The Internet has an unlimited number of possibilities for collecting information, storing it, and transmitting the accumulated information to the Internet user. The Internet is widely used in science, education, communications, media (television, advertising), Commerce, and so on. The introduction of the Internet in the education system has shown the possibility of its further development. Global computer network-the complexity of installing the Internet in the educational system, its expensive. Since the installation of a global computer network requires several technical tools (computers, modems, etc. e.), software tools necessary for learning technology, additional organizational and methodological manuals (special instructions for students and teachers), new textbooks and manuals.

We have organized independent acquisition of methodological knowledge of future mathematics teachers by means of technology of their professional training. To create an information society education system, an electronic educational and methodological complex has been developed on the basis of combining IT and LT. We were looking for ways to form students ' methodological competence through modern computer systems of information and communication technologies [2].

Today there are various computer programs available for math teachers::

1. Training programs, training programs for teaching new training material;

2. Simulator-the program is used for the purpose of forming and consolidating the knowledge and skills of students after the students have mastered the theoretical material.

3. The control program is used to control a certain level of knowledge and skills. The program gives tasks in the form of tests, tests, tests, tests to test students ' knowledge.

4. Visual programs, programs for demonstrating educational materials, various visual AIDS (drawings, photo-drawings, video fragments).

5. Information and reference programs, a Program for extracting the necessary material from the educational Fund (resource) Internet's.

6. Multimedia tutorial-a comprehensive program that includes most of the programs listed above.

Senior students find information on the Internet and independently acquire methodological knowledge. It is performed using: find-think-use. . In the afternoon, in the free time of the Internet class, students perform independent work, coursework, completion of theses work on a server that belongs to a special class. On the server there are electronic textbooks from courses: Practical methods of teaching mathematics, history of mathematics, etc.

The student must have the skills of independent learning. After all, in the future, when the teacher always develops himself and the student who learns from him. "The great teacher of the simple school and his pupil are at the height of one of the stages of personal development and improvement, and the other is lower on both sides, both working and developing with the brain. Both are related to self-education and self-education... "[5]. How does a teacher who really doesn't know how to develop himself develop others? How to eat the attenuation in yourself?

Thus, professional creative self-development is the professional orientation of the main basic process. According to B. S. Gershunsky "in this specificity of professional pedagogy, each person gradually rises up the ladder and is formed as a person. This stage has the following thresholds: General and functional literacy-professional competence-culture-mentality" [7].

In order to form the methodological competence of future mathematics teachers when using information technology , the following tasks are set:

1) independent acquisition of methodological knowledge of each student using ITT;

2) establishing the atmosphere that every student wants to work with using ITT;

3) encouraging students to work;

4) Use of didactic material;

5) assessment of students ' performance not only with the results achieved, but also on the effectiveness of work methods;

6) encouragement of the student who worked in his own way, in his own method;

7) establishing pedagogical communication with students, creating conditions for them to display their abilities;;

8) development of necessary methodological guidelines for future teachers to use the curriculum.

Visual materials in the form of various multimedia and interactive models not only form the methodological competence of future teachers in professional training, but also raise the educational process to a new high level. Students are interested in how they deliver information using ITT an outdated schema and table.

First, we introduced special courses "IT-competence" and "Methods of teaching geometry using information technology".

Secondly, we have identified the ICT tools for use that have been created at the moment and tried to use them in practice if possible.

Thirdly, using the experience gained in this work, we organized the independent acquisition of methodological knowledge in the professional training of future teachers of mathematics:

1) an electronic textbook "Methods of teaching mathematics" has been created (in Russian and Kazakh).

2) Demonstrated the use of the developed electronic textbooks in the credit system of training in practical, laboratory classes;

3) Students found information on the Internet for independent work, independently conducted a search and completed the tasks received at the special course.;

4) A model of classes using visual materials in the form of various multimedia and interactive models is shown.

5) Attempts were made to integrate traditional teaching technologies and information technologies (conducting classes using an electronic textbook; classes using interface programs; interactive learning technologies using interface programs; lessons of systematization and generalization in interactive mode, etc.).

Thus, ICT tools are used in the professional training of future teachers of mathematics: 1) modeling of the content of educational material; 2) activation of the activity of the teacher who manages these means; 3) development of interest and activity of students, which determines the interactive properties of the computer. As a result, the formation of students' information competence was carried out.

As the main tool for the formation of methodological competence of future teachers, we used electronic learning tools.

For the organization of independent work of students, an electronic educational and methodological complex has been developed. It contains lectures, guidelines and test questions on the material covered.

Of the use of IT in education began with the use of a computer. We will now focus on the use of an electronic textbook in teaching mathematics in order to form its methodological competence in the professional training of a mathematics teacher.

Due to the high rate of development of electronic computers, the technology of computer training has appeared.

The computer has the ability to manage the education system to play students in extracurricular time. Of course, the main function of the computer in the educational process is the object of training and research. Mastering computer knowledge, skills, and abilities allows the computer to solve various tasks, i.e., when computerizing training, the student receives a "second literacy". On the other hand, the computer is a powerful learning tool that increases the efficiency of teaching and learning. These two directions form the basis of computerization of training.

Computers that have a special training program implemented have the ability to fulfill all didactic goals. Computers provide the necessary information, checks how well they are mastered by students, forms appropriate theoretical knowledge and practical skills, opens access to the electronic library and the main domestic and international databases, and in the shortest possible time you can find the necessary information. Of course, the advantages of computer technology can be seen when the training program and the quality of computer technology is high.

Note the advantages of working with an electronic textbook: 1) stimulates and stimulates interest in working with a computer; 2) expands color, animation, music, speech sounds, information; 3) through an electronic textbook, you can teach in accordance with an individual model created in accordance with the individual characteristics of the student, such as memory, perception, thinking; 4) when working with a textbook, you can communicate using a computer; 5) an electronic textbook allows the student to actively begin training, paying attention to the most important aspects of the educational material; 6) the applicable calculations are expanding; 7) the use of previously inaccessible information.

It is often said that the disadvantage of an electronic textbook is its inability to reach its full potential. These include: the inability to communicate with an electronic textbook, the inability to find a mistake and its cause, ignoring the individual characteristics of students. This shortcoming can be explained by the psychological and pedagogical problems of learning and the incomplete study of the psyche of student development. The teacher must have the knowledge and skills to effectively use the electronic textbook in the educational process.

One of the main goals of the school is to equip students with knowledge and skills that can use modern computer technology. In this regard, we have set the following tasks for the formation of future computer skills among future teachers:

1. Reading the psychological, pedagogical and methodological literature on the use of computers in the TMM lessons.
2. To get acquainted with the developed software for the computerization of the educational process in teaching mathematics.
3. Develop a training program on a specific topic.
4. Development of guidelines for teachers and students in the program

We used electronic textbooks in laboratory, practical and independent work with the aim of developing the professional competence of the future teacher, his methodological competence.

Thus, we examined the use of computers in the formation of methodological competencies in future mathematics teachers in higher pedagogical education. Working with a computer, the student worked independently and developed his own thinking, cognitive curiosity, and the ability to use information.

Consider the method of interactive learning to form the methodological competence of future teachers of mathematics.

The method of interactive learning has a great influence on the development of cooperation between teacher and student in the development of specific cognitive activities, the rational use of best practices.

At the beginning of the twentieth century, students received knowledge at school, but now it is known that the vast majority of students receive education outside of school via the Internet.

In this regard , the teacher should: 1) apply the knowledge acquired by students outside of school, 2) systematize them, 3) make the necessary adjustments and focus on the development of students.

In this regard, in order to improve the training of future mathematics teachers, a special course “New Technologies in the Teaching of Mathematics” has been introduced at the Pedagogical Institute. The main goal of the course is to equip the future specialist with new technologies for teaching mathematics.

One of the main teaching methods is the interactive teaching method.

Interactive learning is the exchange and analysis of knowledge and experience between students and teachers in an understanding relationship [3].

Stages of conducting the interactive teaching method:

Stage I - problem identification;

Stage II - information block;

Stage III - a block of practical qualifications;

Stage IV - completion of the lesson.

There are two types of interactive teaching methods. These are: 1) The Discussion;

2) Analysis of real practical situations (case - study).

1. Let's focus on the discussion.

The problem faced by students should be solved by the whole group in the in this audience. Learning Objective: The process of finding new knowledge known to the teacher and student. The search is led by a teacher. The teacher must communicate openly and well with students during the discussion and ensure that they find the right solution.

The discussion under discussion is associated with long-known, problematic and heuristic teaching methods. This method is used in the general methodology when passing through the topic of “problematic, heuristic teaching methods” and in the individual methodology in the search for teaching methods on specific topics.

2. Analysis of real practical situations (case - study).

The purpose of the method is to teach students to analyze real information, prove a theorem, analyze the solution to a problem, look for another way, choose the optimal solution. When using this method, work with students is carried out in the following order:

1) statement of the problem;

2) Individual work with the problem;

3) Group analysis of the solution found;

4) Choose the most effective solution.

Students develop skills in working in groups and collectives when solving problems within the framework of the topic. Students learn to work on an interactive whiteboard, creating their own model of using interactive technologies in practical classes.

During the study of the special course, a comparison, analysis, a deep understanding of the essence of competence, an understanding of the meaning and necessity of the methodological knowledge and skills of a competent teacher were carried out. There is a complex process of applying student knowledge in all disciplines up to 4 courses in the professional activity of a teacher, when solving various problems.

In connection with the introduction of a special course "New technologies for teaching mathematics" at the Faculty of Physics and Mathematics in the preparation of future teachers, a system for the formation of its methodological competence has been created.

Thus, armed with mathematical knowledge and subject training, if students master the technology of teaching mathematics, there is no doubt that they will become competitive, competent, educated specialists who will develop the personality of the younger generation.

The following is the technology of teaching mathematics, which the author uses in his personal practice with the aim of training future mathematics teachers in the educational process as a methodologist:

- slow explanation of theoretical material;
- traditional new instruments - use of equipment in accordance with the theme,
- a detailed explanation of the algorithm of the problem solved for educational purposes,
- repeated oral and written explanations of the material,
- the formation of skills in the development and teaching of mathematics by aligning tasks according to the model of standard tasks,
- developing the ability to think quickly with the help of oral questions, oral reports during the lesson;
- give a semester, thematic tasks before the school year or semester, check these tasks step by step,
- the use of self-monitoring and peer-reviewing students,
- Organization of brainstorming, pedagogical, oral competitions, on the basis of which the faculty conducts scientific and methodological seminars,
- the use of problem-based teaching in lectures, methods of developmental education and in practical classes, developmental education, interactive teaching methods in combination with their technology.

The purpose of the method is to teach students to analyze specific information, analyze arguments of a theorem, solve problems, look for another way, and choose optimal solutions. When using this method, work with students is performed in the following order::

1) statement of the problem;
2) works individually with the problem;
3) analyzes the detected solution by the group;
4) choose the most effective solution from the list of solutions.

When solving problems in the scope of the studied topic, students ' skills of working in groups and teams are developed. In practical classes, students independently develop a model for using interactive technologies.

Let's focus on the method of integration of pedagogical technologies and information technologies used by the author in the formation of methodological competence of future mathematics teachers.

In the organization of professional training, there are often principles and requirements for variability. The explanation of this concept in each work is given differently depending on the object and purpose of the study. From a psychological point of view, the teacher is of great importance in solving one pedagogical problem, including the use of "variable methods".

An important place in the implementation of the model of formation of methodological competence in our study is the variability of methods and tools. Thus, despite the fact that there are currently many methods in the training of mathematics teachers, it is necessary to combine all the best achievements of science into one system for the formation of future specialists.

In accordance with the process of reforming the traditional education system, carried out in accordance with the needs of science and modern society, we strive to effectively introduce ICT into education using a "variable methodology".

The third stage of the introduction of ICT in education is the integration of new information and communication technologies (ICT) and traditional learning technologies. In practice , we tried to analyze their effectiveness and choose the most suitable one .

The main task of integrating IT and LT: to highlight the purpose of its creation and create a system of indicators of its effectiveness

For LT, we used interactive learning technology. IT is considered as the main component of integration.

The main objectives of the lesson are education and upbringing;

1) based on the developed curriculum and training programs;

2) a lesson plan was drawn up for its implementation;

3) methods and means of teaching students have been created;

4) methods and means of collecting, storing and processing information have been created and implemented;

When implementing our technology, we used electronic textbooks and multimedia created by us in the course of independent work of students. Tasks were given on the use of information retrieval, information and reference systems of a global and local nature.

It was thanks to such organized work that LT and IT were integrated. Of course, we think that the lessons we have conducted are just the beginning of the integration of LT and IT. There is a lot of work to be done in this area in the future. Now we present a method of systematization and generalization of the topic "Methods for Solving Equations using inverse Trigonometric Functions" .

ITT will not only affect the structure of teaching and teaching methods, but also bring new ones to the learning process. Computers, telecommunications, special mechanisms, software and information processing systems were used for IT.

Practical lesson plan:

1. Repeat the interactive learning method.

2. Systematize and generalize the topic "Methods for solving equations involving inverse trigonometric functions" and conduct a generalizing lesson with the integration of LT and IT in intervals.

3. Conclusion.

The purpose of the Practical lesson: to familiarize students with the methods of interactive learning, systematize the solution of equations that include inverse trigonometric functions and show an example of generalization lesson using an interactive method.

Training tool: interactive whiteboard, didactic materials, test, assessment sheet.

We use the "Analysis of real practical situations" (case study) The purpose of the method is to teach students to analyze specific information, analyze arguments of a theorem, solve problems, look for another way, and choose optimal solutions.

When solving problems in the scope of the studied topic, students ' skills of working in groups and teams are developed.

Let's focus on how to prepare students for their future profession by using interactive learning using an interactive whiteboard.

Conducting an interactive lesson on generalization and systematization of the topic " methods for solving equations involving inverse trigonometric functions". First, we repeat the domain of determining inverse trigonometric functions, the domain of change, conditions, and monotonicity graphs. Based on this, students determine the following goals for studying the topic "methods for solving equations involving inverse trigonometric functions".:

1) Disclosure of the relationship between trigonometric functions and inverse trigonometric functions. 2) Determination of methods for solving equations involving inverse trigonometric functions. 3) Output reports, divide them into groups and summarize students ' knowledge;

Based on the logical connection between each other on the topic, students can demonstrate an applied continuation of the theory passed on this topic in practice. This is why we study the topic, so why we study is determined by conducting logical and mathematical analysis. Systematization and generalization of the topic "methods for solving equations involving inverse trigonometric functions" consists of four levels. At the first level, students are given problem tasks to systematize and generalize the most important properties of inverse trigonometric functions.

Task 1:

Specify the area of definition of the specified inverse trigonometric functions, the area of change, conditions, and graphs of monotonicity with the corresponding arrow (Fig. 1).

Rating criteria:

No "5" error; "4" - 1-2 errors; "3" - 3 errors; "2" - 4 errors.

Works individually with the problem.

Task 2: fill in the space in the following equalities.

In the whiteboard, the task is displayed as figure 2.

Students are given time to reflect and fill in the free space in the task. The teacher independently detects an error during the analysis, bringing the student who made the mistake to the Board. Of course, there can't be a student who made a mistake. However, each answer must pass theoretical justification and analysis. Now the teacher shows a pre-prepared responses interrelate.

Rating criteria "" 5 " - all correctly filled in, "4" - 4-5 correct fields, "3" - 3 correctly filled in, "2" - put down when filling in 1-2 correctly.

Stage III-practical qualification block: test. The test tasks are shown in table-1.

Practical skills of students to use the properties of inverse trigonometric functions are checked by a test. After completing the test work, the teacher reveals the pre-prepared answers. Students replace cards, check each other's work.

A group analysis of the detected solution is performed. After removing the students, the correct answer is indicated on the Board.

Rating criteria: "5 "- all correctly filled in, "4" - 4 correctly filled in, "3" - 3 correctly filled," 2 " - 1-2 correctly filled.

At stage IV, the group analyzes the detected solution and selects the most effective one from among the solutions. Now students explain and analyze how to solve the equation.

Students record the results of their work in the assessment sheet.

V. Summing Up.

Evaluation principle: "5" $18 \leq n \leq 20$ points; "4" $15 \leq n \leq 17$ points; "3" $8 \leq n \leq 14$ points; "2" is set if there are less than 8 points

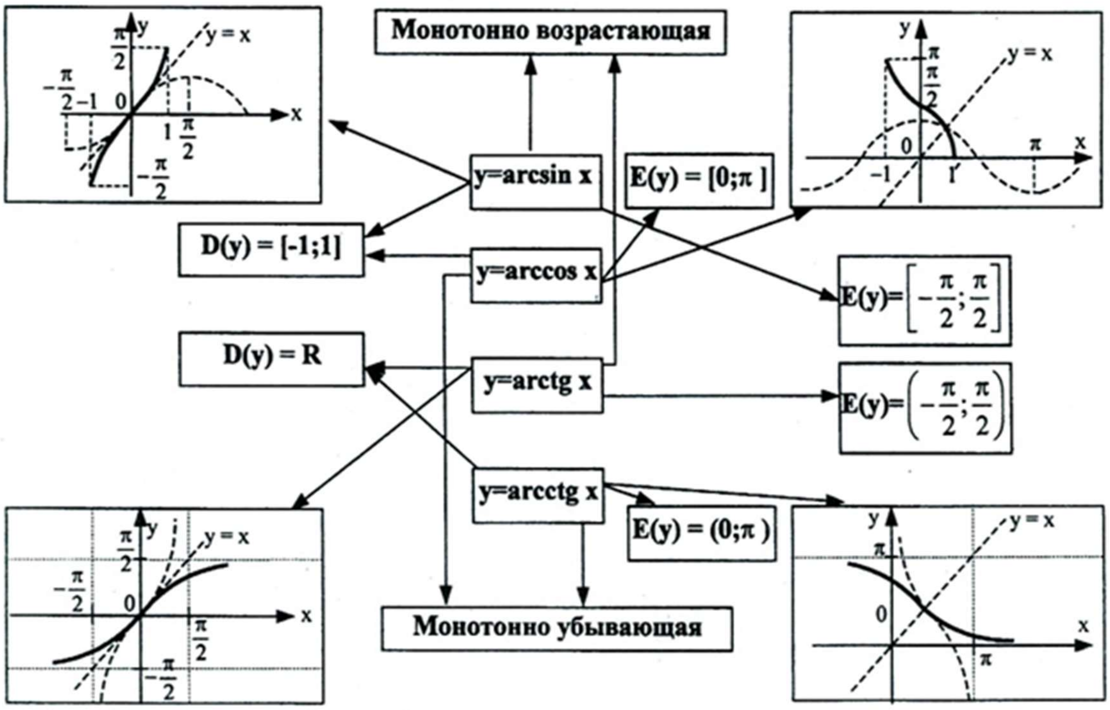

Figure 1

1	arcsin(-x)	–	arcsinx
2	arccos(-x)=	π –	arccosx
3	arcsinx+arccosx=		$\frac{\pi}{2}$
4	arctg(-x)=	–	arctgx
5	arcctg(-x)=	π–	arcctgx
6	arctgx+arcctgx=		$\frac{\pi}{2}$

Figure 2

Table 1-Find the pair "equation-its solution". Test № 2

Equations \ Decisions		a	b	c	d	e
		-1	1	¢	0	-1/2
1	arcsinx = $-\frac{\pi}{6}$					+
2	$\arccos\frac{7x+5}{13}=\arcsin\frac{4x+11}{13}$		+			
3	arccos x = $\pi+(x+1)^6$	+				
4	arctg x = $\frac{\pi}{2}+x^2$			+		
5	arcsin x = $\frac{\pi}{2}+\sqrt{x-1}$		+			

After analyzing the lesson of systematization and generalization using a computer on the topic: "Methods for solving equations using inverse trigonometric functions", we came to the conclusion: the teacher's work will be fruitful when she conducts not only theoretical training, but also methodical training with regular demonstration of the form of classes on a specific topic

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Philological Sciences

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УПОТРЕБЛЕНИЕ НЕКОТОРЫХ СИНОНИМИЧНЫХ СЛОВ В ПРОИЗВЕДЕНИЯХ Н.С.ЛЕСКОВА

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Аннотация. Данная статья посвящается изучению использования синонимов и синонимических выражений и их стилистическая роль, встречающихся в произведениях Н.С.Лескова.

Ключевые слова: синонимы, значение, художественный текст, противопоставление, заострение внимания, выразительные средства, семантические оттенки, пояснение, стилистическая разница.

Синонимия как способ заострения внимания читателя на слове и определения значения слова в художественном тексте используется писателями очень часто. Но исследователи обращают внимание на этот очень интересный прием, характерный для художественной литературы, редко, ограничиваясь анализом функционально-стилистических особенностей в текстах произведений русских писателей

Прибегая в поисках выразительных средств к использованию малоупотребительных слов и предвидя различные затруднения читателя, авторы художественных произведений сами стараются каким-то образом разъяснять значения лексических единиц. К такому прибегает мастер русского слова Н.С.Лесков. Он иногда вскрывает семантические оттенки толкуемого слова путем сопоставления и даже противопоставления синонимов, как бы оживляя внутреннюю форму слова, которая сейчас в значительной степени утрачена:

«– Я **прошу извинения**.

– **Прощения**, а не **извинения**, - сухо заметил каноник, не обращая никакого внимания на Рациборского.

– Я **прошу прощения**, - выговорил молодой человек» (Некуда, т. 2, с. 315).

В этом примере противопоставляются отглагольные существительные: **прощение** и **извинение**, но основа противопоставления остается не ясной. На первый взгляд, читатель может подумать, что здесь осуждается неправильная сочетаемость слов **прошу извинения**, но это не так, поскольку сочетание слов **прошу извинения** употреблялось в XIX веке довольно широко.

В повести «Детские годы» (1874) Н.С.Лесков обращает внимание читателя на существо противопоставления, но уже не отглагольных существительных, а глаголов **прощать** и **извинять**:

«– Maman, друг мой! вы моя самая умная, самая добрая мать. Скажите же мне, что вы меня **простили**.

– Ото всего сердца **прощаю** и **извиняю**.

«**Прощаю** и **извиняю**», – подумал я... – Отчего не просто **прощаю**?»

– О чем ты задумался? – спросила maman

– Я не вытерпел и отвечал:

– Я думаю о том, maman, зачем вы прибавили, что не только **прощаете**, но и **извиняете** меня. Разве это не все равно?

Она опять улыбнулась и сказала:

– Нет, это не все равно: **прощение** дается даром, по снисходительности того, кто прощает; а **извинение** вызывается причинами, которые заставляют не считать вину виною» (Детские годы, т. 5, с. 385).

Этот пример привлекает к себе особое внимание, так как здесь дается указание на тонкие семантические оттенки глаголов-синонимов **прощать** и **извинять** и соответствующих им глагольных существительных **прощение** и **извинение**.

Дальнейшее развитие этого противопоставления встречается также в «Мелочах архиерейской жизни» (1878), где подчеркивается разница между словами **простить** и **извинить**, но уже не указывается, чем именно они отличаются друг от друга:

«**Простить** – извольте, **прощу**, потому что просящему прощения и бог прощает, а **извинить – не извиню**. Другому, менее вас умному человеку, я охотно бы это **извинил**, но вам не могу» (Мелочи архиерейской жизни, т. 6, с. 511);

«Я говорю:

«Черт их знает, – я их действительно не знаю!

«Ну, – он говорит, – это вас, конечно, и **извиняет**, но тот, кто вас об этом просил, **не извинителен**. Удивляюсь, много удивляюсь, как он, зная законы, мог решиться позволить себе беспокоить особу столь высокого, как вы, звания такою беззаконную просьбою!» (Мелочи архиерейской жизни, т. 6, с. 507).

Н.С.Лесков в своем произведении указывает на тонкое отличие семантики слов **прощать**, **извинять**, которое сейчас в значительной степени утрачено. Приходиться только сожалеть, что данное противопоставление не отмечается в словарях.

В следующей цитате поясняется не одно слово, а два – синонимичных, причем одному из слов герой рассказа приписывает смысл, отражающий его индивидуальное понимание:

«– Да, у кого есть **отцы,** – не бедны, разумеется, – им помогали.

– А ваш **отец**?

– У меня **отца** не было, – только **родитель.**

– Какая же тут разница?

– **Отец** жалеет, а **родитель** – родит и бросит.

– Кто же был ваш ***родитель***?

– Мизантроп.

– Чем он занимался?

– Дворянин – развлекал свою ипохондрию.

– Ну, а мать, разве и она о вас не заботилась?

– Чем ей заботиться? – она из крепостных девок была.

– Так вы, значит, из податного звания?

– Нет; из благородного, – мизантроп её за чиновника выдал» (Шерамур, 8 – 6, 255 – курсив авторский).

Как отмечает В.В.Виноградов, у Н.С.Лескова был «горячий стилистический интерес к разным формам и типам индивидуальной речевой деятельности» [1]. В данном случае мы такое явление и наблюдаем, когда персонаж понимает слово **родитель** несколько по-иному, и оно в рассматриваемом эпизоде получает своеобразное семантическое наполнение. В XIX веке слова **отец** и **родитель**, как и сейчас, имели совершенно одинаковое значение, но только слово **родитель** было менее употребительным в речевой практике, чем его синоним – **отец**. Современные толковые словари русского языка не отмечают семантические различия между словами **родитель** и **отец.** Стилистическая разница их в настоящее время состоит в том, что слово **родитель** квалифицируется словарями как устаревшее (см.: [2], [3]; Н.С.Лесков для того, что довести дополнительные оттенки значения отдельных слов прибегал к противопоставлению синонимов. Данный стилистический прием был замечен, в частности, В.В.Виноградовым, одним из исследователей языка произведений Н.С.Лескова. Так, в его книге «Лексикология и лексикография» говорится: «В языке художественной литературы, соотносительные и однородные значения близких синонимов могут быть индивидуально противопоставлены одно к другому, как обозначение разных предметов, хотя и принадлежащим к одному и тому же виду или роду, но качественно отличных …. С другой стороны, в языке художественной литературы как соотносительные и даже синонимические слова могут быть сопоставлены и для обозначения разных предметов. [2].

Н.С.Лесков, для того что бы довести до сознания читателя дополнительные оттенки значения отдельных слов, прибегал к противопоставлению синонимов. Данный стилистический прием был замечен, в частности, В.В.Виноградовым, – одним из исследователей языка произведений Н.С.Лескова, который в своей книге «Лексикология и лексикография» отмечает следующее: «В языке художественной литературы, соотносительные и однородные значения близких синонимов могут быть индивидуально противопоставлены одно к другому, как обозначение разных предметов, хотя и принадлежащих к одному и тому же виду или роду, но качественно отличных …. С другой стороны, в языке художественной литературы как соотносительные и даже синонимические слова могут быть сопоставлены обозначения разных предметов. У Лескова в очерке «Колыванский муж»:

«– Да это **перст божий**. – Ну, позвольте… Уже вы хоть **перст**-то оставьте. – Отчего же? Когда нельзя понять, – надо признать **перст**. – А я скорее согласен видеть в этом чей-то **шиш**, а не **перст**» [2, С. 175].

Противопоставление синонимов **шиш** и **перст** в тексте у Н.С.Лескова имеет более глубокий характер, чем это считает В.В.Виноградов. Оно наблюдается не только в данном контексте, но и присутствует на протяжении всего текста очерка «Колыванский муж». Ведь **шиш**, который герой рассказа, Иван Никитич, хотел показать остзейским немцам, обернулся для него **перстом** Божьим его постоянного оппонента, Андрея Васильевича, что на самом деле оказалось **шишом** для самого Ивана Никитича. Этим противопоставлением Н.С.Лесков достигает большого художественного эффекта, что видно из следующих примеров:

«Думали завертеть, да он им (немцам) **шиш** показал. И ты будь таков же. Дружба дружбой и служба службой, а за пазухой **шиш**» (Колыванский муж, 7 – 8 410).

– «…Барон говорил:

– Это **перст божий**! (Он везде видел **перст божий**)» (Колыванский муж, 9 – 8, 416).

– «Барон выразил лицом полнейшее недоумение.

……

– Не знаю – судьба, **перст**….

– Какая, ваше превосходительство, судьба! Судьба вот была в чем, вот чего хотели все мои русские родные!

Рассказал ему все и прибавил:

– Вот какова должна была быть настоящая судьба и имя и вера этого ребенка, а теперь все это вывернули вон....

– В таком случае вы здесь прежде успокойтесь.

– Нечем мне успокоиться! Это останется навсегда, что у меня первый сын – немец.

– Но ведь немцы также очень хорошие люди.

– Хорошие, да я-то этого не ожидал.

– А **перст божий** показал» (Колыванский муж, 12 – 8, 429).

Слова **шиш** и **перст** оказываются здесь ключевыми. Их противопоставление позволяет выразить глубинную идею данного произведения.

Этот же образ встречается у Н.С.Лескова в рассказе «Дух госпожи Жанлис», где о ярой поклоннице писательского таланта госпожи Жанлис сказано: «…Несчастная, вы знаете, она в ту же ночь сожгла все свои волюмы и разбила вдребезги терракотовую ручку, от которой, впрочем, кажется, уцелел на память один **пальчик**, или лучше сказать **шиш**» (Дух госпожи Жанлис, 16 – VII, 160).

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Description of the lexical-metaphorical system in the language

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Summary

An important component of the theory about the internal structure of the language is the language system. In general, the language system and specifically its lexical-semantic system could not be fully resolved in general linguistics. The lexicon of the Azerbaijani language is not just a sum of words, it is not imagined, described, represented, proposed, presented, it is described by a system of interaction and mutual conditioning at a single level. The lexical-semantic system of the language is studied in the departments of lexicology and semasiology. A word is included in the lexical-semantic system of the language, in an abstract state, separated from the surrounding, isolated, closely connected with each other, different semantic-grammatical (parts of speech), nest of word creation, according to its form and meaning (synonym, antonym, homonym, semantic field, lexical-semantic group, etc.) exists. The concept of language-related system means that it has the characteristics of a certain rule, method, order, and sequence. Language, which is a system, is not a collection of speech fragments, but something completely different, a more complex concept

Açar sözlər: . Dil sistemi mürəkkəb və çoxplanlıdır, Qeyri-səlis dilçilik, Dil işarələr sistemidir, yaranma, törənmə texnologiyası, nitqin funksiyası
Key words: . The language system is complex and multi-faceted, Fuzzy linguistics, Language signs is a system, the technology of origin, the function of speech

"The technology of formation and derivation of metaphorical sets is such that objects that can be compared and related, their naming and descriptive versions are united in the field of one concept and words, and repeatedly merge and intersect in the reality of speech. The process can be described in the simplest way that language signs are either transferred or changed based on the similarity of objects and events, or are combined based on real logical connections" (Abdullayev Sarkhan. Practice of fuzzy linguistics, p. 506)

The lexicon of the Azerbaijani language is not just a sum of words, it is not imagined, it is not described, it is not represented, it is not put forward, it is not presented, it is described by a system of interaction and mutual conditioning at a single level.++ The study of the lexical system of the language opens up an interesting and multi-faceted, multi-membered picture of the life of words, a -presents its "molecule" of various interrelated relationships according to the lexical-phraseological and metaphorical system of its native language. 1) lexical mic
Another goal is to determine the nature, content and essence of the word, as well as its position in the lexical-semantic system of the language.

1. microsystem, 2) lexical macrosystem.

An important component of the theory about the internal structure of the language is the language system. In general, the language system and specifically its lexical-semantic system could not be fully resolved in general linguistics. "Language system is the internal organization of language units and parts. Each unit of the language enters the system as a part of the whole, it is connected directly and indirectly through language categories. The language system is complex and multi-faceted, this applies to both its structure and activity, that is, its use and development" (1, p. 133).

The theoretical foundations of this concept are lexical semantics, lexical systematicity, etc. contane. Determining the associative core of lexical groups in the language, describing the semantics of lexical units, monitoring the formation and development of the lexical-semantic system of languages with two different systems are among the tasks of this study. The main goal is to reveal the core of the associative-frequency indicator of the lexical-semantic system of the two selected languages - English and Azerbaijani, and the "discursive lexical center" in the lexical-semantic system of the language.

A. Akhundov refers to the concept of language system as "an organized, unified whole created by the interaction of language units". The fact that the language is a system is based on the strong connection of its units with each other.

Another goal is to determine the nature, content and essence of the word, as well as its position in the lexical-semantic system of the language.

The words and expressions of the language create a system. They were members of the Prague Linguistics School, who first introduced the idea of forming a system in linguistics. The object of discussion in that school was the systematicity of the lexicon and the place of the meanings of language units in this system. "The vocabulary of the language is not just a pile of words isolated from each other, it is a complex system of words that are connected and opposed to each other in one way or another. The meaning of a word is determined, first of all, by its relationship with other words, that is, by its place in the lexical system; the place of the word in the lexical system can be determined only after studying the structure of that system" (3, p.138)

The lexical-semantic system of the language is studied in the departments of lexicology and semasiology. A word is included in the lexical-semantic system of the language, in an abstract state, separated from the surrounding, isolated, closely connected with each other, different semantic-grammatical (parts of speech), nest of word creation, according to its form and meaning (synonym, antonym, homonym, semantic field, lexical-semantic group, etc.) exists. So, in order to determine whether the words have those characteristics or not, it is necessary to take into account their lexical (image) and semantic (meaning) characteristics.

Lexico-semantic word groups (synonyms, etc.) have great importance in the language. If the word "service" is used in one sentence or in front of the sentence, then "service" is used in the second sentence, then "work" and so on. by using words, a system is created in the language, specifically in the text, and this system has a linear order: service-care (of), maintenance= railway service track maintenance; maintenance of machinery\engines. The patients are taken good care of in this sanatorium; work, official duty; public utilities pl. This system almost avoids repetition, the meaning is expressed more precisely, and an emotion arises in the reader or listener.

The homonymy of the word "care" also creates a system: service (military service) -to nurse (plant, animal care)

System) terminological unit is a philosophical and linguistic concept, a set of elements, located in a close relationship with each other, forming a defined whole, unity. Ex.: grammatical system (grammatical system). The integrity of the language system depends on the relationship of internal elements in different areas, the location and function of the language. Any language unit is a system of interconnected units. Ex.: father and mother, parents; father and mother, soil, earth, ground; native lang, homeland, home, patriotic land and Vatan, etc.

The concept of language-related system means that it has the characteristics of a certain rule, method, order, and sequence. Language, which is a system, is not a collection of speech fragments, but something completely different, a more complex concept.

Thus, language is a system. Language is a system of signs. The system is distinguished by its social and functional character. A.A. Ufimseva writes that "if the lexical content of the word is connected with its form, the lexical level, that is, if it is taken in paradigmatic and syntagmatic relations, the semantic level appears. The lexical-semantic system of the language also studies the lexical meanings of words as the form and nature of mutual relations of two levels" (6, p. 38).

Concept of lexical system: general type of word creation, function of speech, similar and opposite stylistic devices.
The element problem of the language system
What units are the elements of language? Phoneme, morpheme, word...text
Syntactic units of the language system, word combinations are elements that make up a simple sentence. Compound sentences are like chain elements, etc.
Structure is like a network relationship of elements. E.g.: geometry teaches abstract structure: line, square, cube, parallelepiped, circle, sphere, rectangle, etc.
Structural relationships between elements
There is a dialectical interaction between the language system. "System tension" (E.A. Makaev)
A field model of the language system
Concept is a product of human cognitive consciousness.
Integral terms: man-man, woman, old-young
Transport: bus, tram, plane, etc. three under the tram
System non-normative lexicon: vulgar words, taboo words, swear words, forbidden words.
National specificity of word semantics
Batya (elder brother), lela
Structural relations between words in the lexical system of the language
Lexical-semantic groups: live-die,
Associatitv groups (field). Milk - white, cow, milk: flower: chamomile, rose, bouquet, turpentine, smell, red...
Associative field of nature: air-plane-sky-bird-forest-nature-tree river-shore-leaves-water.
Living things: dog, cat, cow, horse, dog- bodirik

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Articles in English: Types of exercises

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Abstract— the aim of this paper is to investigate and reveal the role of exercises in teaching articles in English; to identify problems in article study; to identify the features of mastering this topic by students; to consider different types of exercises in English lessons as a foreign language; to determine the most effective exercises; to evaluate the attributes and prospects of teaching articles in English lessons.

Keywords— articles, exercises, indefinite article, definite article, zero article, determiners

Introduction

Besides the use of prepositions, the use of articles similar to the native language is one of the biggest difficulties for English learners, especially for those students who do not have articles in their native language. The article, unlike many other aspects of language acquisition, turns out to be difficult for advanced students. In this paper, the study of the origins and evolution of articles, as well as the study of exercises, principles, and methods applied in the process of mastering the English language, is undertaken.

The articles in English and methods implemented were actively studied in the second half of the 20th century by foreign scientists such as M.Hewings, M.Peter, Thornbury, Whitman, N.L.Ogurechnikova, E.I. Volkova, S.E.Tyulenev and etc. In Kazakhstan, the topics of articles and teaching grammar are also widely investigated in different aspects by scientists as S.B. Khabiyeva, S.M.Atashev, Y. B. Shikhotova, D.E. Amanbekova, A.S. Brekeyeva and others.

I. Articles in English: overview

A. History and origins of English Articles

The indefinite and definite articles come from Old English pronouns. By the end of the Old English period, the masculine *se*, feminine *seo,* and neuter *thaet* demonstrative pronouns had become auxiliary parts of speech, indicating the specific, singular character of the object denoted by the noun with which they were used.

The pronoun *thaet*, which was part of the group of pronouns taken into consideration, secede from them and became part of a new group of demonstrative pronouns that developed during the Middle English period.

In the twelfth century, all three forms completely merged into one single definite article. The forms of case and gender changed due to the deafening of consonants (reduction), the destruction of the system of declensions of nouns (each ending of nouns had its own system of declensions, which also differed in the singular and plural) and due to the loss of the language of the gender system (many nouns, despite the fact that they denoted a person or object of the feminine or masculine gender, were neutral in Old English).

In the thirteenth century speakers began the trend of eliminating *n* in *an* before words that began with a consonant sound. It has been preserved to this day, since we use "a" before a word that begins with a consonant, and we put "an" before a word, starting with a vowel sound.

The final formation of articles occurred in the Middle English period. They could be placed before nouns of any gender, the definite article could precede both singular and plural nouns, and the indefinite article could be followed by a singular noun only.

B. Development of Articles in Middle English and Modern English Articles

In ME the distinction of strong and weak declensions was lost. First it happened in the Northern and Central (Midland) dialects (in 11th - 12th centuries) and somewhat later in Southern dialects.

Gender was lost at the beginning of the Middle English period: in the Northern and Central (Midland) dialects in 11th - 12th centuries and somewhat later in Southern dialects.

It should be noted, that in ME there a radical change comes: the expression of number is separated from that of case. So there is a fundamental difference between the OE ending –as and the ME ending – es: while the OE –as expressed number and case simultaneously, ME –es expressed number alone and was not connected with any notion of case.

In the Middle English language the numeral *an* changed into *on* according to the phonetic laws. But in the unstressed position instead of the change a> o, the long *a* was shortened. Later *n* was regularly dropped before consonants. Thus there appeared two forms separated from the numeral which were used as the indefinite article.

The transition from Middle English to New English is often connected with the consolidation of the monarchy, the end of the Wars of the Roses 1455-1485 or with the introduction of printing in the country. The New English period is traditionally defined as starting with the 15th and lasting till now. Within it scholars specify the Early New English period (16th, 17th till the Renaissance).

II. The peculiarities of the English articles usage

With a few exceptions, every common noun in languages that use articles is expressed with a certain definiteness (e.g., definite or indefinite), just as many languages express every noun with a certain grammatical number (e.g., singular or plural). Every noun must be followed by the article, if any, that corresponds to its definiteness, and the absence of an article (considered a zero article) specifies certain definiteness. In contrast, other adjectives and determiners are typically optional. Seeing as articles are required in many languages, they are among the most commonly used words – in English, for example, the most commonly used word is *the.*

The article serves several purposes in speech. The article's *morphological function* is to serve as a noun indicator. Its *syntactic function* is to define the left part of an attribute phrase: *the gloves, the yellow glasses, the glossy yellow glasses.* In this function, it can be replaced by any other name determiner: *those glossy yellow glasses, his glossy yellow glasses...*

According to S. D. Katsnelson, the main *semantic function* of the article is the actualization of the concept; in other words, the article relates a specific concept to the reality presented in this text (a text is any statement regardless of its volume and content).

The third grammatical function of the article is the distinction of gender in its simplest form, that is, with the same word in the same form, which is rare, more often with the names of any peoples whose language does not recognize gender distinctions, for example, in German *der Hausa* – *"man from the Hausa tribe"* and *die Hausa* – *"woman from the Hausa tribe*."

Based on the observation of the use of articles in compositional syntagmas, it can be argued that one of the most important functions of the article is *the ideographic function* associated with the denotation of the beginning of the speech units that comprise the utterance.

C. Didactic and methodological principles of working with the article on the English lessons

- The history of foreign language teaching methods shows that the problem of overcoming interference from native languages and languages studied remains relevant to this day. Like L. Shcherba, we have to recognize that "the mother tongue of the students is part of our foreign language classes, no matter how much we want to banish him. And so we have to turn him from enemy to friend."
- When working with the article on English classes, a teacher should first establish the requirements and principles for organizing comparative learning. At the same time, all

comparative plan studies must adhere to the following general requirements: 1) cross-language comparison should be consistent, cover all the main features of the systems of the compared languages, apply the same methods and criteria of analysis to them (the phenomena of a categorical, "systemic" nature are subject to systematic comparison, first of all); 2) comparative research involves the identification of constant features, which should be compared: the distribution of articles by lexical-grammatical and semantic classes, the ratio of full-meaning and auxiliary words; 3) comparative analysis should identify a series of clearly distinguishable structural correspondences, in this regard, studies of genetically related languages are of great interests; 4) comparative analysis should correlate the phenomena of different languages with the denoted reality (onomasiological approach).

- Teaching the article in a foreign language class follows a variety of standards:

1. A communicative (speech) orientation to training is one of the basic concepts of training.
2. Taking into consideration the native language's peculiarities.
3. At all stages of article mastery, the exercise plays a dominant role.

- Any explanation of new grammar rules should be followed by an exercise that demonstrates how the phenomenon of a foreign language (article) being studied works in speech, as well as how it is applied to a problem that is applicable to the student.
- Exercises in oral speech should not be reduced to incessant repetitions of the same material: the studied structures, models and samples in the implementation of this principle become not the goal of educational work, but a means of constructing statements that ensure mutual understanding between participants in the educational process. The detection of precise information is obtained when reading as a result of conducting special speech exercises.

C. Principles for working with the article

There are particular principles for working with the article in addition to the general didactic and methodological principles:

- *The principle of teaching a foreign language on the basis of standard samples*, or, as they are otherwise called, models, structures, standard sentences (standards) is currently recognized by all as the most rational way to master the grammatical phenomena of a foreign language, in particular the article.
- *The principle of combining language training with speech practice* emphasizes the need to master the article not as a goal, but as a means necessary to achieve genuine communication in a foreign language.
- *The principle of interaction of the main types of speech activity* demands from a foreign language teacher such a well-thought-out and clear organization of the educational process, which would ensure the harmonious formation of foreign language speech activity skills and abilities. The article can be studied using examples of various types of speech activity, such as listening, reading, and speaking.
- *The principle of oral advance.*The implementation of this principle makes it possible to organize training in such a way that the mastery of oral foreign language speech, along with reading, becomes the main task of the school course of a foreign language.
- *The principle of approximation of educational activity* allows the teacher of a foreign language to organize and control more efficiently the educational process, which as a result serves to increase its effectiveness.
- *The principle of the intensity of the initial stage of learning a foreign language* is determined by the very nature of language and speech. Despite the fact that any speech product is made up of separately designed discrete units arranged in a linear sequence, all discrete units in speech combine to form a single, indissoluble, and rather complex unit.

D. Whitman's 6 steps for teaching articles
1. Quantity (singular/plural distinction)
- eg. John has a book vs. John has four books.
2. Generic plural
- eg. All apples are red vs. Apples are red.
3. Non-count nouns (Non-count vs. count and a lot of vs. much and many)
- eg. John drank a lot of water vs. John bought a lot of books.
- eg. Do we have much water? vs. Do we have many books?
4. Determiners (which NP questions and first /subsequent mention)
- eg. Which books are red? The red books are on the table.
- eg. I read a book. The book was called Dracula.
5. Quantity and determiner
- eg. One of the books on the table is blue.
6. Generic articles
- eg. Elephants never forget.
- eg. An elephant never forgets.
- eg. The elephant never forgets.

IV. Exercises applied for the indefinite, definite and zero articles learning on EFL lessons

As a subject of research, English textbooks that are used on English lessons in Kazakhstani schools were taken into consideration and analysis.

For the beginner level, exercises with colorful illustrations are used widely, and they contain new words on this very topic. English books of this level provide an explanation of only one article rule, and it is often the difference between the implementation of indefinite articles *a* and *an.*

If we take a look on the beginner level book, printed in Express Publishing "Access 1" , we may distinguish several types of exercises as following:

1. Fill in a/an, as in the example (there are separate pictures for each word). For younger learners (5-8 y.o.) this grammar topic can be demonstrated with the vocabulary - animals, for elder students - school objects.
2. Write the words in the correct column (there are two columns with *a* and *an*).
3. Speaking task: Point to objects in the classroom and say their names in English, use *a/an.*
4. It is very common to practice filling in with articles in a group of indefinite sentences and also gaps in one text about someone's life or the short dialogues as well.
5. Underlining the correct form of a "article+noun" phrase.
   1 Smiths/The Smiths live in a villa.
   2 France is in Europe/the Europe.
   3 He surfs the Net in evenings/the evenings.
   4 Do you know how to play piano/the piano?
   5 We usually have lunch/the lunch at 1 o'clock.
6. Writing task where the students should prepare a quiz about nature laws, some physical, biological or scientific facts.
7. Filling in the interrogative sentences (questionnaire) with the facts about nature, geography and general knowledge.

More profound theory is given as a guideline in the pre-intermediate Grammar textbook "Spark 3", as well as the usage peculiarities of *some.* All the previously mentioned exercises are presented in this level too, but obviously with the higher degree of complexity. The test can be found among the exercises for practicing the article.

With regards to the intermediate level textbook Spark 4, a very comprehensive theory is given to the learners, accompanied by "one/ones" usage. There are also the identical tasks for practice of the articles such as "Fill in the gaps with *a, an, the* where necessary", "Did you know?", "Underline the correct item", but the choice here is between zero article and *the*. Among the exceptional drills we may highlight is the filling the gaps with the given words adding the correct article where necessary.

8. The following exercise on the definite article focuses on the correct pronunciation of the before different types of nouns.

the uniform →
the answer →
the man →
the idea →
the old school →
the USA →
the hospital →
the eagle →
the university →
the umbrella →

9. *Definite article*

That is my pencil. Can you please pass ______ pencil to me?
______ water in this cup is filthy.
Please submit ______ form to me.

The above exercise on the definite article above highlighted on the use of definite article *the* with the nouns that are mention for the second time and with the non-count noun.

10. Another exercise is constructed on the well-known proverbs and sayings. It is aimed at simultaneously assessing the critical thinking and knowledge of the theory. Fill in the articles in the proverbs if necessary.

1. … apple … day keeps … doctor away.
2. … appetite comes with eating.
3. … good beginning makes … good ending.
4. … bird in … hand is worth two in … bush.
5. Among … blind … one-eyed man is king.
6. … brevity is … soul of wit.
7. … cat has nine lives.
8. … charity begins at … home.
9. … clothes make … man.
10. … curiosity killed … cat

Moreover, there are some specific exercises as the following for the usage of the articles with the proper nouns, which also has an additional translation in order to aid the learners.

Поставьте артикли с именами собственными, если это необходимо.

1. *… Cairo is … capital of … Egypt. (Каир – столица Египта.)*
2. *It was so picturesque in … Crimea … last summer. (В Крыму было так живописно прошлым летом.)*
3. *… London stands on … Thames. (Лондон стоит на Темзе.)*

There are also dozens of worksheets that can be found on the various sources. This a simple worksheet where students are able to, prior to reviewing or learning the rule, apply what they've learned about these tricky articles. Students read and circle the correct alternatives, after that they can also have fun coloring the images.

Grammar textbooks and manuals were also taken as a source of exercises for articles mastering: "Fundamentals of English Grammar 4th" by Betty Azar published in 2011 and another grammar practice book "The Good Grammar Book" by Michael Swan and Catherine Walter published in 2004.

There are excellent activities for group work in the form of games and creating dialogues, which is beneficial for students since they will be able to practice articles not only in writing but also in oral speech and spontaneous dialogues. Along with that, students can analyze a two-person dialogue based on the native structure of the dialogue, as well as answer questions that analyze a specific use of the article, providing a detailed understanding of the use of articles as determinants.

The following exercises are of high efficiency in practicing articles with the Proper Names. They are all unique and exciting in content, and any student would be interested in participating in such activities.

1. Game: Trivia. Work in teams. Complete the sentences with the or --. T hen decide if the statements true or false. Circle "T" for true and "F" for false. The team with the most correct answers wins.

_____ Moscow is the biggest city _____ Russia.
_____ Rhine River flows through _____ Germany.
_____ Vienna is in _____ Australia.
_____ Yangtze is the longest river in _____ Asia.
_____ Atlantic Ocean is bigger than _____ Pacific.

2. **Game.** Work in groups. Choose a place in the world. It can be a continent, country, city, sea, river, mountain, etc. Your classmates will try to guess where it is by asking yes/no questions. Limit the number of questions to ten for each place. Example:

SPEAKER A: (thinking of the Mediterranean Sea)
SPEAKER B: Is it a continent?
SPEAKERA: No.
SPEAKER C: Is it hot?
SPEAKERA: No.
SPEAKER D: Is it big?
SPEAKER A: Yes.

To summarize, each book has its own distinguishing characteristics. Fundamentals of English Grammar, 4th Edition appears to be more appropriate for teenagers than for younger children. In terms of the latter, it is more suited to advanced students of a young age, as the book is full of drawings and brightly colored, and the activities are targeted for learners aged 8 to 12 years old. Nonetheless, the first units of this grammar topic can be used to primary school children's courses.

Because the vocabulary in the first grammar book is a little more difficult to understand, it should be used to teach adults and teenagers. Although the activities in both publications are distinctive in their own right, there are some similarities in the activities for the indefinite article. The first book has more listening and analytical activities, while the second maintains a more creative focus.

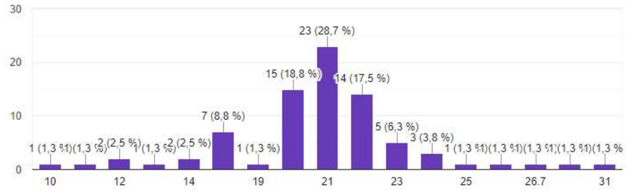
V. Variability in the use of the English article system by Kazakh learners of English (survey results)

The questionnaire was conducted in the city of Almaty, among general education school students and university students who have at least once learned English as a foreign language, from March to April 2021. The number of people who participated in the study is 80 people.

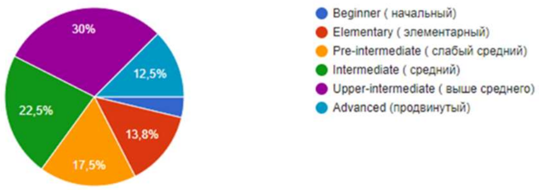
The examination consisted of three phases. The errands of the primary stage were regarding personal experience of respondents:

What is your age? What is your English language level? How do you evaluate your comprehension of the articles in English?

Several age groups took part in this survey; the range is between 10 y.o. youngsters to 31 y.o. adult learners, the dominating proportion belongs to an age group which are the students between 20 and 23.



The degree of interviewees was the subject of the next query. As can be shown, the majority of Kazakhstani EFL learners of this age category are at the intermediate level, which means they can handle complex language well and understand detailed reasoning.



The second phase of the survey required participants to take a 10-question test on the usage of English articles. As a consideration, we'd have to go through each test question's answers in great detail. The majority of survey participants (86.3 percent) acknowledged in a decent degree the first rule about *a/an.*

Articles, as some students suggested, can be a little perplexing in light of the fact that there are no articles in Kazakh, and they are difficult to perceive subconsciously. The fact that almost 19% of those who responded to the survey agreed with this statement supports this claim.

Conclusion

Although articles are a grammatical topic that is taught from a very basic level, gradually covering more and more special cases of its application, few students can consistently master it at the proper level. They face challenges along the way, such as the lack of a supporting analogue in their native language, the inability to keep all the rules in their head. This is due to the lack of practice of these rules in everyday life; accordingly, due to the lack of the opportunity to apply them in business, special subtleties are forgotten, not to mention the basic principles of using articles.

The research found that the participants in this study had difficulty discriminating between definite and indefinite noun phrases while applying the English article. For these responders, correct article usage in terms of noun countability was not a serious issue.

By way of conclusion, we should emphasize again that teaching articles is a difficult and complex grammar point. To be successful, the teacher must first grasp and apply the fundamental principles that govern the use of determiners and articles. In the same way, teachers must be able to explain how main principle groups of articles work within the determiner group, as well as their functional use.

Lesson plans with the set of most efficient exercises and tasks in the EFL classroom

Second-grade English lesson on the topic "Toys"

Goals and objectives:

- to educate on the importance of practical mastery of a foreign language;
- to develop the ability to work collaboratively and independently;
- to systematize and summarize lexical and grammatical material on the topic;
- to teach new words and expressions by teaching them to use indefinite and zero articles.

Lesson equipment:

- multimedia tools: a tape recorder with the recording of the song "Look at my toys";
- text of the textbook;
- flashcards with images of toys on the board.

1. *The first part of the lesson is about the organization.*

Teacher: Good morning, children. I am so glad to see you.

Students: Good morning to you,
Good morning to you.
We are all in our places
With sunshine faces.

2. A phonetic warm-up.

1) Practicing sounds, repeating after the teacher.

Say as a tiger [r], as a wolf [w], as an elephant [ae], as a clock [t-d].

2) Reciting of learned poems.

3. The main part of the lesson

1. Listening to the song and learning the new names for the toys.

Teacher: Adam and Sally have a lot of toys. What kind of toys do they have? Let's listen to the song "Look at My Toys." The students pay attention to the song and respond accordingly.

Student 1: Adam has got a drum, a boat, a bike, a yoyo and a kite.

Student 2: Sally has got a doll, a ball, a plane, a yoyo and a train.

Teacher: Now let's repeat the names of the toys (saying all together and individually). With each name of the toy, we have to use article a. (At this stage, it is simply mentioned about the need to use the article; an explanation of the functions of the article and the rules for its use in speech is not required at this stage).

Students: a doll, a ball, a plane, a train.

2. A game «What is missing»

Teacher: Let's play the game "What is missing?"

(The students close their eyes, while the teacher hides one of the pictures with the picture of a toy from the board).

Teacher: Open your eyes. What is missing?

Student 1: It is a ball.

Teacher: Is it a doll?

Student 2: No, it isn't.

Teacher: Is it a ball?

Students: Yes it is.

3. A game called «Chain».

Teacher: Let's play another game. It is called "Chain". Pupil 1 begins by saying a toy, e.g. a kite. Pupil 2 repeats this and adds another toy, e.g. a kite, a yoyo. Pupil 3 repeats this and adds another toy, e.g. a kite, a yoyo, a balloon. The rest of the class can help where necessary. When Pupil 6 has added the last toy, the whole class must chant the complete list of six toys.

4. The plural nouns use.

Teacher: Now, let's say how many toys each of you have. I have two dolls and a yoyo. We have to add s at the end to make many toys.

Student 1: I have three balloons, a kite and a plane.

Student 2: I have dolls, planes and a teddy bear.

Teacher: Now open your workbook to page 19:5. Let's look at the picture with toys, give a name for each toy.

(The students take turns naming the animals using the indefinite article).

IV. Summarizing.

Teacher: What have you learnt today at the lesson? Let's remember. (Teacher asks each student a question).

V. Homework.

Now it is time to write down your homework. It is ex.1 p.17 Draw your favorite toys and bring the pictures to the next lesson.
Now children, the lesson is over. Good luck!
At the beginning of studying a foreign language, this lesson can be considered the first stage in the learning of the article. It is recommended that theoretical justifications for the use of the article be avoided, as schoolchildren's imaginations and levels of language proficiency are not yet ready for the comprehension of very complex grammatical material. At the initial stage, it's a good idea to use the article in speech and in word combinations while learning other grammatical and lexical phenomena to prepare for the subsequent study of the article.

"The Difficulty of Translating the Article in Certain Combinations and Sentences," a lesson for students in 11th linguistic class.

Goals and objectives

- translation transformations and variability in the translation of the article into Russian
- consideration of the main difficulties encountered in translating article constructions into Russian
- mastering new expressions and phrases with the article

Lesson plan:

1. Organizational moment

2. The main part of the lesson

Teacher: Today, we will work on translation techniques of the sentences with articles and will learn new phrases with articles by heart.

a) translation exercises and translation transformations:
b) Teacher: Read the sentences and give at least two variants of translation

(Students translate sentences and try to find several options for translating article structures).

Teacher: As you all know in Russian we don't have articles, so try to use logic accent in your translation to denote definiteness or indefiniteness.

Students translate sentences using a logical emphasis.

Teacher: Now translate the sentences using the Russian word «один» to accentuate the presence of article.

Teacher: Look at the sentences and translate them using the word «некий, какой-то» to denote the indefinite article.

1. It was a Mr. Blake asking you on the phone. 2. Give me a book, finally! 3. We saw a boy by the porch, who knows what he was doing there.

a) use of the article in certain combinations and phrases
b) Teacher: Now, look the table, read all the expressions and fill in the blanks of the right side of the table with translation:

Table 6 – An exercise.

a lot of, a great deal of, a good deal of, a number of, a great many of	
a little, a few	
for a short time	
all of a sudden	
in the morning	
in the evening	
to be in a hurry	
to be at a loss	
on the other hand	

Teacher: You have to memorize the usage of the article in these expressions.

3. Monitoring of the completed lesson:

1) List all the possible ways of article translations learned at this lesson.

2) Game: interpreter. Two students should make up a short dialogue using all types of articles and the third one should act as a translator applying translation techniques to communicate the right meaning of the article.

4. Summarizing the results.

During the lesson, possible variants of the article translation in the sentence were identified, and stable expressions with the article were learned. During the control of acquired knowledge, it was discovered that students are aware of the technique of translating article structures and are motivated to transfer the article in the target language.

Conclusion

The article is a valuable language means of ensuring accurate expression and comprehension of thoughts in English. The history of articles started from the very beginning of the English language establishment.

The history of foreign language teaching methods demonstrates that the first language always has an impact on the other languages. As a result, teachers can teach articles using lexical comparative analysis, which highlights all of the similarities and differences and following the standards. Taking into account the peculiarities of the native language remains the most important concept, which should be primarily outlined in instructional materials and activities included in textbooks and teaching aids. As the third principle of teaching the article, we should consider the principle of the exercise's dominant role in all stages of mastering this grammatical phenomenon in a foreign language lesson.

Research showed that there are few main principles in teaching this grammar phenomenon as the application of standard speech samples, mixing the language material with oral speech practices, combining the four aspects of language, using reading and speaking tasks simultaneously, and eventually the principle of approximation when teacher ignores some small mistakes in speech which do not violate the communication, the last is about the emphasizing of the initial stage of learning, that helps to acquire phonetic, lexical categories.

We conducted research on the types of existing grammar exercises for the project's practical component. We could distinguish analytical and non-analytical exercises, creative and educational exercises, speaking, listening, and reading text exercises among them. For children of a younger age, there are numerous worksheets with illustrated pictures that can be used to complete creative tasks. It is recommended that for higher levels and ages, more accurate and shorter tables with rules and examples be used, with a focus on reproducing this theory in oral speech and through listening to authentic materials.

As a result of the analysis, we concluded that the books in British publishing houses cover a strictly limited theory and practice based on the level, and they are all about the same as Kazakh school textbooks, because they are developed in collaboration with British companies specifically for Kazakh schools.

Comparing the two grammar book representatives, we concluded that they can be used in handouts or in presentation in the lessons of a secondary school, as well as the main textbook for learning grammar of the target language; to be more detailed, these books can serve as a source of homework as well for the practice of listening, speaking, and reading. These books are appropriate for elementary, pre-intermediate, and intermediate students.

In the second part of the practical section, we conducted a survey among eighty people who have ever studied or have been studying English with a test for the level of knowledge of English articles at the elementary and pre-intermediate levels. As we expected, most of the participants point to the problem of the absence of an equivalent in their native language, as well as a lack of understanding of the functions of the article in speech, furthermore the presence of an excessively large number of special cases and rules for this topic.

Summing up, we have carefully developed lesson plans aimed at in-depth study of articles for elementary, middle and high school students, taking into account all the nuances; identification of functions; origin and application of exercises found effective as a result of the study.

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Biological Sciences

Practical importance and protection of synanthropic birds

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A natural food chain and food web optimizes the number ratio of individual biological species. However, in anthropogenic ecosystems, not natural laws, but human economic activity plays an important role. Therefore, mass reproduction of harmful insects and weeds is always expected in anthropogenic ecosystems. In this regard, synanthropic birds draw attention. Their activity has a positive effect on stability in anthropogenic ecosystems.

Most of the 177 bird species in different stages of the synanthropization process in our research areas (Absheron Peninsula) have economic losses that unexceed their benefits,

only two ravens (Corvus ruficollis, C. splandens) and house sparrows (Passer domesticus) need to be considered. The remaining species benefit the economy by eating pests and other invertebrates or seeds of weeds. Noted that when we consider the examined birds, we don’t take into account their medical and veterinary importance.

Information on the spread of external and internal parasitism by synanthropic birds increases every year.

In the Arabian Peninsula, the house sparrow eats strawberries and some fruits and causes some damage. The house sparrows eat something, damage what they don't eat, and create conditions for bees and other insects to eat. Additionally, the house sparrow causes some damage to the grain. A sparrow takes most of the harvest from some fields in the residential area. Can not be denied. However, in some areas, effective measures have been taken for a long time to remove temporarily harmful birds, such as sparrows. When the alarm call of these birds is recorded through audio equipment and synchronized with the sound of an eagle (Accipitridae) and a rifle, they leave the area. Naturally, where there are no grains, fruits and berries, these birds feed on natural food (insects, seeds of grasses and shrubs, etc.). Even ravens form large flocks at certain times of the year, flying to open areas and preventing the mass reproduction of mouse-like rodents. Therefore, it can't be considered definitely harmful.

In any country, it is possible to fight against mass-breeding ravens and reduce their number, but their complete destruction and exclusion from the fauna are unacceptable.

The mentioned above was related to the economic importance of synanthropic birds. But their practical significance is greater. Synanthropic birds, often observed by schoolchildren on an excursion in the residential area, expand their worldview about the environment, enriches their useful knowledge, directs their relations with the environment properly. Simultaneously and in the same place, adults are glad about the bright color, rhythmic and harmonious behavior, pleasant voice and song of those birds, enjoy aesthetically and relax in a good mood, relieve their fatigue. Everyone living in a rich fauna environment unknowingly gains new ecological knowledge from this world, and their attitude toward the environment changes in a positive direction. That's why, killing birds for a few kilograms of grain, cherries, grapes, and mulberries is considered ecologically illiterate.

Considered that controlling the behavior of birds is a complex ethological, ecological, technical and economic problem. The difficulties of this problem are even greater in the residential area. Controlling the behavior of a bird in natural conditions is based on its innate genetic signals and other responses. However, in addition to the residential area, some reactions in personal life should also be considered.

Controlling the behavior of birds is a new phenomenon invented by humans for nature, alien to the bird stereotype. But human learns these measures mainly from the population and biocenosis, so it is an ecological process. Humans should check the effects of the actions on birds in the laboratory and in nature. The behavior control mechanism should be focused on the bird population, not the species. Additionally, the group effect should be considered, and environmental conditions should be kept in focus.

The mechanism of controlling the behavior of birds can be directed in two directions: by scaring them away temporarily from their place of residence, or by attracting them to any area. It's harder to lure them than to scare them away.

There are two types of human impact on birds: direct impact and indirect impact. The first effect is easy to control because it is targeted. The second effect is not directly on the bird, but on its living place. Such impact is not purposeful, so it is difficult to control, often even impossible. For example, the chemicalization of the environment is not a measure aimed at birds, but it has a strong indirect effect on them. In 1960, 10.000 dead birds were recorded as a result of farm chemicalization in only one county of England (Shtyasny, 1986). As a result of eating the poisoned worms, 85% of the local thrush population perished. It is difficult to predict and prevent such incidents in advance.

Attracting birds to any location is more of an empirical problem than a theoretical one. It is difficult for birds to reproduce in new gardens and parks. We mainly mean tree-nesting birds. To lure them, it was practiced a lot to hang all kinds of houses. Proliferating greenery and using lots of crab berry bushes is one of the successful ways to lure birds.

Birds nesting on the ground and in low bushes are often destroyed by stray dogs, cats and naughty children. Setting fire to empty low forest fields in the residential area is a harmful practice from the distant past. However, we regret to state that this outdated tradition still continues in Azerbaijan (also the Absheron Peninsula) and some countries.

In the conditions of scientific and technical revolution and socio-economic progress, which developed strongly in the 20th century and is expected to strengthen even more in the 21st century, the management of animal behavior should primarily be attributed to the fauna of the residential area. In this study, to create highly effective complex methods, tested methods from the distant past should also be considered: folk methods such as bird hunting (hunting through hunter bird); protecting the harvest of the field, orchard and garden from birds; using fishing birds; using "talking" birds; attracting useful birds to "bird houses and feed vessels"; calling them; cheating can be useful (Ilichev, 1984).

The synanthropization sequence of birds clearly shows that it depends on the person and they approach or fear humans.

In 1998, the National Assembly (Milli Majlis) accepted the law "Protection of the Animals of the Republic of Azerbaijan". This law states that the animal world, that is, wild animals, is state property. Only artificially bred wild animals and their products can be owned by the municipality, public, and private property (chapter I, article 4-5). Clearly, synanthropic birds building nests and breeding in backyards, even on the roofs of private houses, belong to the state property. Killing those birds is considered a violation of the law.

There is no special article on synanthropic birds in the law. However, the accepted articles on the protection of animals also cover synanthropic populations. Unfortunately, our society's knowledge of animals and the reasons for protecting them reduces the sense of environmental responsibility. Therefore, there should be more radio, television, press, and other sources of information to strengthen environmental education. As suggested by G.T. Mustafayev and F. Sultanzadeh (1998), ecologists should be trained pursuant to the integrated curriculum, and with their help, environmental popularization should take a large scale. The protection of the environment, including appropriate treatment of animals living in the neighborhood with humans, should become an internal need of everyone.

Economic Sciences

ANALYSIS OF THE UKRAINIAN ENTERPRISE JSC "UKRZALIZNYTSIA" USING MICHAEL PORTER'S "FIVE FORCES" FRAMEWORK

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CHAPTER 1. GENERAL SYSTEM CHARACTERISTICS OF THE COMPANY

1.1 Current status of JSC "Ukrzaliznytsia"

JSC "Ukrzaliznytsia" commenced its economic activities on December 1, 2015. The company is the legal successor to all the rights and obligations of the State Administration of Railway Transport of Ukraine, as well as its subordinate enterprises and institutions that had the status of separate legal entities.

At present, the company provides 82% of freight transportation and almost 50% of passenger transportation carried out by all modes of transport. In terms of freight volumes, Ukrainian Railways rank fourth on the Eurasian continent, trailing behind railways in China and India, among others.

JSC "Ukrzaliznytsia" is registered on 21.10.2015 at the legal address: Ukraine, 03150, Kyiv city, Yezy Ґedroytsya Street, Building 5.

The head of the organization is Yevgen Anatoliyovych Lyashchenko.

The size of the statutory capital amounts to 229,879,115,000.00 UAH.

As of the last data update on May 12, 2023, the organization's status is "Not undergoing liquidation."

Ownership form: State ownership / ownership of territorial communities.

1.2 History and Development of JSC "Ukrzaliznytsia"

The first railway lines in Ukraine appeared at the end of the 19th century. In 1869, the first railway was constructed from Lviv to Przemyśl. In the following decades, the government of the Russian Empire continued building new railway lines, and in 1918, after the revolution and Ukraine's separation from Russia, the Ukrainian State Railways were established.

In 1922, the Ukrainian State Railways became part of the Soviet Union and became one of the main railway arteries of the country. After World War II, the railway was restored and expanded, but in 1991, after the dissolution of the Soviet Union, Ukraine gained full independence, and the Ukrainian State Railways came under the management of the Ukrainian government.

On December 14, 1991, the Cabinet of Ministers of Ukraine adopted a resolution on the establishment of the State Administration of Railway Transport of Ukraine, which was subordinate to six state railways. After the dissolution of the Soviet Union, Ukraine inherited 18% of the entire freight car fleet of the USSR, which amounted to about 278 thousand units of rolling stock.

In 2002, the development of high-speed traffic began. In July, the "Capital Express" was launched on the Kyiv-Kharkiv route, with its wagons produced at the "Krukovsky Wagon Works." The travel time of the express train was almost half that of regular trains.

In 2003, a high-speed train was launched on the Kyiv-Dnipro route, and gradually high-speed connections were introduced on other segments.

In 2015, the process of reforming the railway industry in Ukraine began, during which Ukrzaliznytsia was transformed from a state enterprise into a joint-stock company with 100% state ownership. In 2017, the subsidiary company "Ukrzaliznytsia-Logistics" was created, focusing on logistics services and the development of freight transportation.

In January 2017, the Cabinet of Ministers approved a new charter for JSC "Ukrzaliznytsia," which removed the Ministry of Infrastructure of Ukraine from being the governing body of the company.

In 2018, the company was transformed from a Public Joint-Stock Company into a Private Joint-Stock Company by the decree of the Cabinet of Ministers of Ukraine on October 31, 2018.

An important problem of the Ukrainian railways is electrification, which allows reducing transportation costs. From 1991 to 2013, approximately 2,500 km of railway tracks were electrified, and as of 2014, a total of 9,878 km (45% of the total length) were electrified.

However, due to the war in eastern Ukraine, Ukrzaliznytsia lost a significant part of its locomotive fleet (226 diesel locomotives and 68 electric locomotives), suburban and freight passenger cars, which remained in the occupied territory.

Since the start of the full-scale war on February 24, 2022, losses of railway infrastructure and rolling stock have exceeded 2.5 billion dollars.

1.3 Current Activities of JSC "Ukrzaliznytsia"

In recent years, JSC "Ukrzaliznytsia" has been actively modernizing its transportation fleet, improving infrastructure, and implementing new technologies. In 2021, the company acquired 6 new electric locomotives, 7 electric trains, and 20 diesel trains, and also carried out repairs and modernization of over 200 carriages.

The current course of the company involves further development of freight and passenger transportation, enhancing services, and improving the quality of services for clients. Additionally, there are plans to develop and implement new digital technologies and electronic services to simplify ticket ordering and payment processes, reduce the workload on personnel, and increase overall efficiency of the company.

In 2023, the company initiated a large-scale campaign for the Ukrainianization of railways, which involves renaming stations and replacing language signage on trains and kilometer numbering.

In practice, JSC "Ukrzaliznytsia" is a state-owned monopoly in the field of railway transportation. It is a joint-stock company, with 100% of shares owned by the state. The company is listed among the state enterprises that are not subject to privatization.

The company's activities include:

Main activity:

49.20- Freight rail transport

Other activities:

30.20- Manufacture of railway locomotives and rolling stock

08.11- Quarrying of ornamental and building stone, limestone, gypsum, chalk, and slate

25.11- Manufacture of metal structures and parts of structures

25.72- Manufacture of locks and hinges

46.12- Wholesale of fuel, ores, metals, and industrial chemicals

79.11- Travel agency activities

85.32- Vocational education

86.21- General medical practice

46.71- Wholesale of solid, liquid, and gaseous fuels, and similar products

47.30- Retail sale of fuel

49.10- Interurban and suburban passenger rail transport

49.31- Urban and suburban passenger land transport
52.10- Warehousing and storage
52.21- Support activities for land transport
52.24- Cargo handling
52.29- Other transportation support activities
56.10- Restaurants and mobile food service activities
58.19- Other publishing activities
61.10- Wired telecommunications activities
62.01- Computer programming
71.20- Technical testing and analysis
33.12- Repair and maintenance of industrial machinery and equipment
35.13- Distribution of electricity
41.10- Construction of buildings
42.12- Construction of railways and underground railways

CHAPTER 2. ANALYSIS OF THE ENTERPRISE USING MICHAEL PORTER'S "FIVE FORCES OF COMPETITION" MODEL

Michael Porter's concept of competitive environment has been expanded to allow companies to gain and maintain a competitive advantage in their core markets. This understanding recognizes that the battlefield includes not only direct competition but also interactions with various competitive forces such as suppliers, customers, and alternative products. By expanding Porter's framework, companies have more opportunities to enter other markets and make strategic decisions wisely. This concept provides an analytical tool for studying the competitive landscape of the industry and understanding the key factors influencing competition in this market segment.

Figure 1 - Michael Porter's "Five Forces of Competition" Model Source: Internet publication "Wallstreetmojo".

Let's apply the model specifically to JSC "Ukrzaliznytsia" (see Table 2.1).

Table 2.1 - Michael Porter's "Five Forces of Competition" Model applied to JSC "Ukrzaliznytsia".

The power of competition	Description	A threat to JSC "Ukrzaliznytsia"
1. Competition in the industry	There are several players in the rail transport industry that provide cargo transportation services. But the company remains a monopoly in Ukraine.	Low threat. But JSC "Ukrzaliznytsia" maintains its competitiveness in order to improve the quality of its services and reduce prices in order to maintain its market position.
2. The threat of new participants	High market entry costs and licensing requirements make it difficult for new players to enter the rail transport market.	Low threat. All the same, there is an opportunity to enter the market of new participants who can bring with them new technologies and innovations.
3. Pressure from suppliers	JSC "Ukrzaliznytsia" has several key suppliers that provide it with various services, such as the supply of fuel and spare parts.	Medium threat. Suppliers may increase prices or change the terms of cooperation, which may negatively affect the company's financial results.
4. Pressure from buyers	Clients of JSC "Ukrzaliznytsia" have limited options for choosing a provider of railway transport services.	Low threat. Customers don't have much choice, but at the same time, service prices and service quality are key factors in their satisfaction. Therefore, if JSC "Ukrzaliznytsia" cannot satisfy the needs of its customers, it may lose its market position.
5. Threat of substitution	There is a threat of rail transport being replaced by other modes of transport, such as aviation, road transport or water transport.	High threat. This threat is not the most significant, but JSC "Ukrzaliznytsia" must be ready for challenges and changes in the transport industry in order to maintain its competitiveness.

Source: Compiled by the author based on [2.1].

The table presented above, built according to Michael Porter's methodology, reveals key aspects of market competition for JSC "Ukrzaliznytsia." According to the obtained data, the main factors that can influence the company's competitiveness are the threat of substitution of railway transport by other modes of transportation and potential pressure from suppliers.

It is worth noting that the fact that JSC "Ukrzaliznytsia" is a 100% state-owned monopoly may reduce the risk of new competitors entering the sector. However, it should not be forgotten that competition in the transportation industry is equally fierce, and companies must continuously improve their services and enhance operational efficiency to safeguard their market position and maintain business stability.

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ВОПРОСЫ ОРГАНИЗАЦИИ И РАЗВИТИЯ ФИНАНСОВО-БАНКОВСКОЙ ИНФРАСТРУКТУРЫ В КАРАБАХСКОМ И ВОСТОЧНО-ЗАНГЕЗУРСКОМ ЭКОНОМИЧЕСКИХ РАЙОНАХ АЗЕРБАЙДЖАНА

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Аннотация. В статье рассматриваются вопросы организации и развития финансово-банковской инфраструктуры в Карабахском и Восточно-Зангезурском районах Азербайджана. Раскрыта сущность проблем и перспектив обеспечения работоспособной инфраструктуры финансово-банковских учреждений на освобожденных от оккупации территориях. Обоснована необходимость формирования и реализации привлекательных пакетов финансово-кредитных услуг с целью обеспечения финансовыми механизмами субъектов предпринимательства и бизнеса. Рассмотрены вопросы создания благоприятной инвестиционной среды для активного притока финансовых и инвестиционных ресурсов в регионе. Подготовлен ряд предложений и рекомендаций по эффективной организации и развитию финансово-банковской инфраструктуры на освобожденных от оккупации территориях Азербайджана.

Ключевые слова: *Азербайджан, Карабах, Восточный Зангезур, Карабахский экономический район, Восточно-Зангезурский экономический район, финансово-кредитные учреждения, финансово-банковская инфраструктура.*

За последние десятилетия произошли глобальные кризисы, которые нанесли большой урон интенсивности мировой экономики. Негативные последствия пандемии повлияли и на экономику Азербайджана, которая отличалась динамичным развитием [1]. Кроме того, можно отметить, что до сих пор заметны последствия крупного мирового финансового кризиса, который начался в 2008 году. Несмотря на это, в Азербайджане были предприняты действенные меры по стабилизации и развитию рынка финансовых услуг [2].

В современное время в Азербайджане началась интенсивная реализация задач, вытекающих из принятых национальных приоритетов по социально-экономическому развитию Азербайджана до 2030 года, которые утверждены Распоряжением Президента Азербайджанской Республики от 2го февраля 2021 года [3]. Экономика Азербайджана отличается устойчивостью благодаря расширению ненефтяных секторов экономики и активному привлечению ресурсного потенциала в хозяйственный и финансовый оборот страны. В Азербайджане, на ряду с нефтегазовыми ресурсами, имеются разные виды полезных ископаемых для создания эффективной сети перерабатывающих предприятий и для обеспечения диверсификации структуры национальной экономики и создания новых источников экономического роста [4]. Кроме того, созданы прочные основы развития экспортоориентированных отраслей экономики страны, которые способствуют повышению объема и расширению номенклатуры экспортного потенциала страны, особенно за счет ненефтегазовой продукции [5]. Азербайджан активно занимается поднятием своего международного имиджа в и конкурентоспособности в системе Международного разделения труда [6]. Все эти обстоятельства способствуют усилению государственной мощности и экономической силы Азербайджана, которая способствовала бы повышению жизненного состояния населения страны, доходов, росту объема валютных резервов, существенное ускорение армейского правительства и усиление боеготовности национальной армии, которая героически победила армянские вооруженные силы и успешно освободила оккупированные 20 % территории страны в 2020 году.

В настоящее время идет интенсивное восстановление постконфликтных территорий. Отметим, что для этого в Азербайджане сформированы концептуальные подходы и основы [7]. Кроме того, экономика Карабаха имеет свои специфические особенности – здесь распространены разные сферы сектора услуг, в первую очередь, туризма, агропромышленной сферы, выращивания ряда важной сельскохозяйственной и продовольственной продукции [8]. В нынешних реалиях экономика Азербайджана способна выдерживать внешние воздействия благодаря всестороннему развитию различных секторов экономики страны. Особо отличается ряд ненефтяных промышленных сфер, которые одновременно считаются конкурентоспособными и экпортоориентированными [9].

В последние годы в Азербайджане особое внимание уделяется совершенствованию существующих механизмов и критериев, а так же управленческих элементов экономических районов с учетом освобожденных от оккупации территорий. Число экономических районов возросло от 12 до 14-ти по причине того, что созданы 2 новые – Карабахский и Восточно-Зангезурский экономические районы [10]. На постконфликтных территориях осуществляются полномасштабные инфраструктурные проекты, создается социальная и производственная инфраструктура, строятся села и города, жилищные массивы, мосты, дороги и другие важные гражданские и военные объекты. В целом, заново строятся Карабахский экономический район, где от крупных городов Агдам и Физули остались лишь руины. В настоящее время строятся 100-тысячная городская инфраструктура в городе Агдам, закладывались фундаменты и идет интенсивное строительство в центре города. В Физули сдан в эксплуатацию международный аэропорт, который является воздушными воротами всего Карабаха.

Следует подчеркнуть, что финансирование строительства необходимых объектов и инфраструктуры на постконфликтных территориях, в основном, осуществляется за счет государственного бюджета и для этого с 2021-го года по сегодняшний день выделено почти 10 млрд. манатов или 5,9 млрд. долларов США. Благодаря накопленным валютным резервам Азербайджан рассчитывает на свои собственные финансовые средства в реализации основных проектов по восстановлению разрушенных в период оккупации территорий. Однако, на наш взгляд, для обеспечения интенсивности проводимых восстановительных работ необходимы альтернативные финансовые средства и для этого требуются разработка и применение необходимых финансовых механизмов и инструментария [11]. Кроме того, считаем, что в контексте мирового опыта по организации и развитию специальных экономических зон, было бы целесообразно создать сеть подобных экономических образований на освобожденных территориях [12]. Так, уже растет число резидентов Агдамского промышленного парка и «Экономической Зоны Аразская долина» в Джебраилском районе. В ближайшей перспективе ожидается создание ряда агропарков и агропромышленных комплексов.

С интенсификацией процессов в соответствии с новыми вызовами промышленной индустрии 4.0. на освобожденных территориях особое внимание уделяется активному применению высоких технологий, прежде всего, «умных» технологий [13]. Отрадно, что в рамках Великого Возвращения идет активное заселение села Агалы в Зангиланском районе, созданного на основе «умных» технологий. Кроме того, расширяется сфера и влияние элементов цифровой экономики. Вопросы цифровизации экономики страны рассматриваются как одни и важнейших приоритетных направлений повышения продуктивности и формирования новых источников экономического роста, а так же финансовых пополнений [14].

Если исходить из мирового опыта, то имеется ряд прогрессивных форм международного опыта по восстановлению разрушенной экономики на постконфликтных территориях. Для примера можно отметить план Маршалла по восстановлению Восточной Германии или пятилетние программы по восстановлению разрушенных территорий бывшего СССР. Безусловно, для выполнения намеченных работ использовались централизованные или привлеченные финансовые средства, помощь и пр. Так, после Балканской войны в процессах восстановления Боснии и Герцеговины сработали специальные проекты и кредитные ассигнования Мирового Банка [15]. На наш взгляд, в нынешних реалиях в реализации приоритетных проектов и восстановлении разрушенных территорий могут сработать такие средства как Исламский Банк Развития, который проявляет интерес к выделению финансовых ресурсов на восстановительные работы [16].

Одной из важнейших задач восстановительных работ постконфликтных территорий является формирование и развитие финансово-банковской инфраструктуры, создание банковско-кредитных учреждений, пост-терминалов и других современных инфраструктурных компонентов по оказанию финансово-банковских услуг. Кроме того, на освобожденных территориях в связи с созданием многофункциональных экономических преобразований, на наш взгляд, будут востребованы работоспособные и привлекательные финансовые механизмы и инструментарий для субъектов предпринимательства и бизнеса. В Азербайджане для обеспечения активных действий рынка финансовых услуг и, в целом, финансово-кредитной системы, требуются комплексные подходы к реализации важнейших приоритетов в данном направлении [17; 18; 19].

Следует подчеркнуть, что вопросы организации и развития финансово-банковской инфраструктуры требуют комплексного подхода по решению множественных сложных вопросов, в том числе, вопросов обеспечения безопасности данной инфраструктуры и представляемых финансово-банковских услуг. Поэтому одной из важнейших задач является цифровизация намеченных услуг и такой опыт имеется во многих странах мира, в том числе, в Китае [20]. Создание подобной инфраструктуры в Карабахском и Восточно-Зангезурском экономических районах позволит улучшить эффективную организацию банковско-кредитных услуг в соответствии с восстановительными работами в регионе. Кроме того, аналогичное развитие ситуации позволит осуществлению оперативного финансирования мелких и средних проектов по созданию того или иного объекта, предпринимательской структуры или крупных проектов по строительству перерабатывающих предприятий [21]. В регионе имеется достаточные природные ресурсы для создания различных отраслей экономики страны и обеспечения диверсификации структуры экономики Азербайджана. Разные виды полезных ископаемых, минеральные ресурсы позволят развитию промышленных предприятий и, таким образом, могут способствовать технологическому оснащению региона, созданию более благоприятных условий для трансфера передовых и высоких технологий, а так же стимулированию интенсификации притока иностранных инвестиций. Еще при бывшем СССР Карабахский регион считался одним из передовых и благополучных регионов республики. Социально-экономические показатели Карабаха, а так же основные индикаторы жизненного состояния проживающего в этом регионе населения зафиксированы на уровне выше, чем средние социально-экономические показатели СССР. Однако при оккупации Карабаха в начале 90-х гг. со стороны армянских вооруженных сил при поддержке внешних покровителей, весь процветающий регион был разрушен, социальная и производственная инфраструктура разворована.

Как один из ключевых факторов создания современной финансово-банковской инфраструктуры в Карабахском и Восточно-Зангезурском экономических районах Азербайджана рассматривают активизацию предпринимательской деятельности и одновременное усиление партнерство государственно-частного сектора. Подобное развитие ситуации позволит интенсификации открытия новых рабочих мест, производственной сферы и это, в свою очередь, повысит потребность в банковско-кредитных услугах [22]. В период восстановительных работ, на наш взгляд, возможно обеспечить функционирование мобильных пунктов и АТМ различных банков, чтобы без потери времени решить проблемы, связанные с финансированием и использованием банковско-кредитных услуг. Кроме того, считаем, что в международных аэропортах, которые уже сданы в эксплуатацию в Физули и Зангилане, а так же в строящемся аэропорте в Лачинском районе, необходимо создать банковскую инфраструктуру. Отметим, что в Азербайджане уже накоплен опыт по оказанию различных услуг с помощью мобильных устройств и механизмов - так, уже ставший международным брендом, АСАН Хидмет оказывает активные услуги с помощью передвижных средств в тех районах, где еще не построена инфраструктура или нет возможности оказания оперативных услуг. На наш взгляд, подобный подход может пригодиться и для оказания мобильных банковских услуг. Например, передвижной автомобиль с соответствующими АТМ проезжает в тех местах, где идут интенсивные строительные работы или в селах, территориях, где уже заселены бывшие переселенцы. Думаем, что такие услуги могут себя оправдать и ими можно пользоваться до создания полноценной и современной финансово-банковской инфраструктуры в восстановленных населенных пунктах освобожденных территорий.

Создание необходимых благоприятных условий для развития экономики вновь созданных экономических районов обуславливают полноценное развитие основных видов инфраструктурных объектов, в том числе, формирование и развитие банковско-кредитной инфраструктуры. Во вновь созданных Карабахском и Восточно-Зангезурском экономических районах имеется ресурсный потенциал по интенсификации развития отдельных секторов экономики страны [23]. Однако для этого, как мы отметили ранее, требуется формирование соответствующей инвестиционной среды и, тем самым, обеспечение мотивации прихода потенциальных инвесторов, субъектов предпринимательства и бизнеса в регион [24; 25]. В рамках Первой Государственной Программы по Великому Возвращению на освобожденные от оккупации территории, утвержденной Распоряжением Президента Азербайджанской Республики от 16 ноября 2022 года, намечено ускорение возвращения вынужденных переселенцев на родные земли [26]. И этот фактор обуславливает интенсификацию формирования и развития полноценной банковско-финансовой инфраструктуры в Карабахском и Восточно-Зангезурском экономических районах.

Таким образом, в ближайшей перспективе для ускорения создания соответствующей банковско-финансовой инфраструктуры в Карабахском и Восточно-Зангезурском экономических районах целесообразно учитывать ряд факторов и обстоятельств:

– В первую очередь, необходимо незамедлительное создание и реализация проектов мобильной банковско-кредитной инфраструктуры на освобожденных от оккупации территориях;

- Далее, Центральный Банк, Министерство Финансов Азербайджана должны предпринять действенные меры по созданию современной и цифровой банковско-кредитной инфраструктуры в Карабахском и Восточно-Зангезурском экономических районах;
- Необходимо изучение и активное применение международного опыта по финансированию проектов и созданию банковско-кредитной инфраструктуры на постконфликтных территориях и т.д.

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DEVELOPMENT OF TOURISM INDUSTRY OF THE REPUBLIC OF MALDIVES

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Abstract: The aim of this research paper is to observe and analyze the tourism industry in the Maldives, paying attention to its history, government organization, regulations, policies, performances, zoning, and recent changes.

1. INTRODUCTION:

Tourism in the Maldives is the leading industry in the economy of the island nation. Also, it plays an essential role in generating foreign exchange earnings and creating jobs in the service sector. The Maldives archipelago attracts tourists from all over the world.

Tourism has brought prosperity and progress to the Maldives. It all started with the opening of Kurumba in 1972 (1). At that time, only fishers lived on this remote archipelago. It was unknown to the outside world, did not have foreign investments. At the time, Hulu Island (where the International Airport is now located) had a small runway built by volunteers. There were no regular flights. Mohamed Umar Maniku, Chairman of the Board of Directors of Universal Enterprises, recalls: *"We had nothing in the Maldives, nothing at all. No banks, no airport, no telephones. Amateur radio only or Morse code for communication with Colombo. Even UNDP experts said that tourism would never succeed here because there were no resources or infrastructure."*.

The travel industry has been an industry that could have ruined an opportunity to develop without much of a stretch. Nevertheless, the travel industry is flourishing gratitude to the once youthful Maldivian authors. They ended up being the perfect individuals in the perfect spot at the perfect time with their commitment and assurance.

Everything began with an opportunity meeting in Colombo of George Corbin, an Italian travel planner, with Ahmed Nasim. He at the time began serving at the Maldives embassy and later became foreign minister. At the time, Mr. Corbin was looking for unspoiled islands to bring Italians to swim and fish. Corbin fell in love with the idyllic Maldivian archipelago at first sight. After his first visit to Male with Nasim on a cargo ship in 1971, he promised to return here with more tourists (2).

First tourists were brought by Corbin to the Maldives, mainly journalists and photographers, in February 1972. They stayed in three modest houses on Male, which were looked after by M. Yu. Maniku and his friends. Among them was Hussein Afif, who is currently the successful owner and operator of several resorts. Perfect for swimming, sunbathing, fishing, the Maldives have captivated them. Corbin promised Manik, Nasim, and Afif to bring more tourists here if they could find a place to stay. Thus, Kurumba was born.

Inspired by their enthusiasm, Maniku and Afif contacted Fr. Vihamanafushi, an uninhabited island set aside for coconut plantations. They chose this island for its proximity to the runway and the capital. It was possible to reach the island only by dhoni boats or boats with an outboard motor. There was not even a pier (although it was later built using the trunks of coconut trees as supports). When arriving by boat to the beach, tourists were required to wade across the surf to the resort.

Mr. M. Yu. Maniku, an employee of the Ministry of Agriculture, devoted time after work every evening to the development of Fr. Vihamanafushi. With monetary help from Mr. Corbin and their assets, Maniku and his kindred Maldivians fabricated 30 rooms (in gatherings of three) utilizing coral blocks for walls, coconut wood, and palm leaves for rooftops. Each room had a salty water shower and latrine, fundamental decorations, and beach access. It was possible to eat in the dining room or barbecue on the beach.

2. THE FIRST RESORT OF THE MALDIVES

They named the resort "Kurumba Village" (Kurumba means "coconut" in translation from Dhivehi). Afif became a manager. The resort opened on Tuesday, October 3, 1972, and was fully booked for the remainder of the year, which boded for its future success (3).

"We did not know anything about tourism," says Maniku. *"It was tourists who helped us develop this industry here. We listened to their wishes and provided them with what they wanted. Luckily for us, they wanted simplicity in their natural environment, which we had to offer and what we had the means."*

Whereas in its humble beginnings, Kurumba was able to accommodate only 60 visitors a month, now that figure is 14,000. The staff, initially composed of founding friends, has grown to 450 people. There are some people who worked here for over 20 years.

"Initially," says Maniku, *"we did not have the foggiest idea what to cook for unfamiliar travelers. I had a book with recipes which I translated into Dhivehi for the nations to peruse."*

Kurumba bedid not expand to accommodate more guests after the airport was renovated to accommodate international flights. Kurumba is a real tropical village, but only with the comforts of home. Freshwater, air conditioners, and restaurants with dishes from different countries appeared. In 2003, the resort was once again wholly renovated to meet the requirements of the 21st century. As a result, it is now a world-class resort with 180 rooms, including the royal residence, presidential suites, pool villas, family villas, and superior beach or garden views.

This is the result of natural development, ambitious persistence, and high-quality service over the years. Kurumba has become the Maldives' premier resort, setting the tourism industry benchmark in the region and the tropics in general.

3. SPECIALIZATION IN THE MALDIVES INDUSTRY

As indicated by the Maldives Tourism Promotion Board's official site, the nation resembles a white and blue world for honeymooners, jumpers, and maturing Robinson Crusoe. Without a doubt, it is the worldwide submission of the Maldives. The explanation behind this touristic advancement is segregation: travelers are permitted (and held on) to invest energy in extravagance resorts while Maldivian occupants are contained on local islands. Taking into account this wonder of social and spatial partition, the expression "visit" is unseemly. "Experience" would be more reasonable: Maldivian island-inn is a walled model in the area, rehashed at various scales and concerning various individuals. It empowers vacationers to keep up their propensities in a superb climate while the chance of a feared "social contamination" is contained. Staff individuals are the prominent individuals encountering the outskirts, both knowing and living in what is by all accounts two equal universes: island-lodgings structure their work environment and home. Island-hotel is a social, spatial, and political development where an intriguing, innovative world works out. Additionally, it is an area where nook, regulation have various utilizations: from one viewpoint arranging the hotel to offer a scene and a social setting past the real world, then again evading dwelling together (aside from the previously mentioned instance of resorts staff). For example, among the 200 local islands (for example, populated islands), Malé is the capital-island. Thilafushi is known as the rubbish island for being the nation's landfill site Hulhumalé is the air terminal island. Specialization is both generic and adapted to the setting of an archipelagic miniature state. As a political and strict choice, the travel industry improvement depends on additional specialization, for example, segregation. To save Maldivian Muslim occupants from westerner' vacationers and evade a feared tainting of Maldivian personality, the travel industry (and sightseers) is contained on various islands (4) (5). As a matter of fact, the social, monetary, and social foundations of vacationers and occupants are diverse yet spatial detachment expands that distinction.

The travel industry happens in committed islands: islands-lodgings. First islands inns have been worked close to the air terminal and the capital city, north, and south Malé atolls, at that point in nearest atolls like Ari. These days, there are 98 lodgings islands in the entire Maldivian archipelago regardless of whether Ari and Malé atolls are the primary seats. This social and spatial partition is appropriate for political partners whose point is by all accounts checking and watching traveler's versatility. Nevertheless, vacationers themselves are satisfied with this fact since it empowers them to live a so-called dream come true. Though, it should be mainly mentioned, that tourist visa requirements are well-managed with all nationalities granted "outcome," with the highest point possible to embody the wishful vacation.

4. TOURIST VISA GUIDELINES AND ENTRY REQUIREMENTS

A foreigner traveling to the Maldives as a tourist does not require pre-approval for the visa. The person must satisfy the basic entry requirements to get immigration clearance upon arrival:

- A passport or a travel document with Machine Readable Zone with at least six months validity. Passport and other documents must be valid for a minimum of 30 days from the arrival date.

- A pre-paid hotel booking

- Confirmed tickets to home country

- Entry facilities to their onward destinations

- Traveller Health Declaration

The most significant number of days allowed on appearance would be 30 days, except if concurred by any respective methods or arrangement. This time of stay is not for the guest to guarantee; however, it lies at the Maldives Immigration's caution to allow quite a few days not exactly or equivalent to 30.

The time of remain allowed has appeared on the endorsement in the passport. Guests are encouraged to check their endorsement for the arrival endorsement and observe the number of days conceded to remain in the Maldives. When shown up as a traveler, the guest cannot participate in any business, occupation, calling, or paid work while in the Maldives.

Categories like: social guests, companions, family guests, or media and business guests, who are not considered real travelers, are profoundly encouraged to pronounce sponsorship before their appearances (if appropriate) to encourage the section's progression.

All explorers are additionally reminded that it is a culpable offense to exceed in Maldives past the number of days given.

5. PRIVATE AND PUBLIC SECTOR ORGANIZATIONS

The Maldives Tourism Industry Association (MATI) is a *non-governmental, non-profit* organization established in 1982 with the aim of promoting and developing tourism in the Maldives. Three decades of MATI services have been provided for almost all travel and tourism-related issues that arise in the Maldives (6).

MATI's essential function is to coordinate with all mandatory government policymakers to bring new laws and regulations in line with tourism industry best practices. MATI coordinates with the government and liaises with local and international organizations to strengthen its members' services and operations in the tourism sector.

The association coordinates with all mandatory government bodies and policy-making organizations to participate in all MATI member-related activities. Throughout all these years, the association has sustained its existence by participating in these activities, actively pursuing research, and promoting and raising awareness on behalf of the association's members.

MATI expresses concern about government policies for both members and the tourism industry in general. The affiliation speaks to the business and its representatives universally and locally by going to different seminars, arranging, and providing exploration and expert counsel to the required specialists.

Focus areas*:*

- *Tourism development and planning*
- *Quality and standards*
- *Education and training*
- *Environment and culture.*

Government also controls the tourism impact on economics, culture, and environment. For example, the authorities of the Maldives have introduced a *"green"* tax on tourists. Now all foreigners arriving at the country's hotels pay $ 6 per day. The tax is also levied on cruise ship passengers visiting the islands. Only citizens of the Republic of Maldives are exempt from tax if they come on vacation (7).

Tour operators working in the Maldivian direction believe that the new tax will not affect tourists - against the background of the high cost of living in local hotels, travelers will not notice it. The funds raised in this way will be used to protect the environment of the archipelago.

6. ENVIRONMENTAL REGULATIONS AND SOCIOECONOMIC IMPACT OF TOURISM IN THE MALDIVES

The administration of the environment, a significant perspective that the government imagines are safeguarding the first natural cycles. To meet this end, the expulsion of indigenous vegetation, disturbance of marine biology, redirection of unique current examples, and bending of the wave designs inside the tidal pond by the development of structures is debilitating. A portion of the natural guidelines and controls here include (8):

a) control and obligatory swap for each tree chopped down (individual uncommon and giant trees must be dodged while developing a structure). All structures must be found well away from the fringe vegetation - in any event, 5 meters from the shoreline to guarantee that the fringe vegetation generally significant for beachfront insurance is protected;

b) allotting space for vegetation between each building. This is to guarantee that considerable zones of indigenous vegetation are left immaculate;

c) every single waterfront work and more significant activities must be started after a thorough natural effect appraisal. Demanding designing answers for dynamic coastlines are debilitating;

d) development of rock-filled wharves and crotches are controlled. Plan of boat wharves and breakwaters should be so as not to block the first progression of flows or disturb the wave atmosphere inside the tidal pond;

e) development of seawalls, separated, and lowered embankments are confined. All things being equal, the advancement of more noteworthy coral colonization on the fringe reefs and other common strategies to ensure shorelines are empowered;

f) coral and sand mining from resorts and occupied islands and their home reefs are carefully disallowed. All the more, as of late certain particular areas have been assigned for sand and coral mining. Development of structures with coral is currently being controlled;
g) lance, toxin, and explosive fishing are carefully precluded. Net and trap fishing are controlled and restricted to specific regions. Expulsion of shells, fishing of turtles and turtle, adolescent and gravid lobsters are carefully disallowed;
h) all hotels are needed to have incinerators, bottle pounds, and compactors. Strong waste must be scorched, metal jars compacted, and bottles pulverize before removal. A portion of the retreats are currently utilizing natural waste as composts;
i) sewage removal through splash pits into the spring is debilitate (consent to do so is dictated by the size of the island and measure of utilization of the spring). Sewage arranged should be beneath government affirmed standard of organic oxygen request under 20 mg/l; Ammonia nitrogen 2-4 mg/1 and suspended solids 20 mg/l; and
j) other ecological guidelines incorporate engineering controls. To protect the stylish respectability of resort islands, the stature of structures is confined to the tallness of the foliage of the vegetation. They must be very much incorporated into the island. Thus, utilization of nearby materials is energized.
The travel industry in the Maldives can adversely affect local people in light of the fact that an enormous segment of the resorts is possessed by unfamiliar organizations, which implies that local people of the Maldives will not get a high level of cash since it would have gone abroad. The unfamiliar organizations are said to have their advertising divisions, and they contract out their rooms to enormous visit gatherings. This makes it harder for nearby organizations to pull in sightseers because of the opposition.
The travel industry has likewise adversely influenced the association between local people. There is additionally a more prominent imbalance in riches, and this is appeared by a couple of neighborhood people who own hotels who likewise own few yachts and the yearly compensation for resort staff being just NZ $1550. This could cause conflicts with specific individuals having much more abundance than others.
Be that as it may, the travel industry likewise emphatically influences local people since it gives work and brings cash once more into their administration, which encourages them all as a nation. It is assessed that "11% of Maldives' populace of 314,000 [2009] are utilized in the travel industry". The travel industry achieves $600 million per year and produces 60% of all foreign money acquired. It additionally represents 90% of the public authority's income (9).
The travel industry may emphatically influence sightseers rolling in from different nations on the grounds that there are numerous eco the travel industry organizations out there who are advancing supportability. For instance, Naturetrek Wildlife Holidays have said, "*All travel industry affects nearby networks, untamed life, and territories of the host nation. To expand the beneficial outcomes of Naturetrek visits, where conceivable, we take little gatherings, utilize privately possessed convenience, and give work to nearby individuals. We additionally resolve to long haul plans, which assist nearby networks with ensuring their current circumstance.*". Tourists may study supportability and may place that without hesitation when they return home.

7. ECOTOURISM IN THE MALDIVES

Ecotourism in the Maldives has become very popular recently due to the fact that it guarantees the best way to relax and unwind in nature. As tourism is the main generator of income in the Maldives, various projects that combine sustainability with the hotel business are significant. The construction of new eco-friendly hotels by the Maldivians themselves with money taken from within the country is extremely important for both the economy and the Maldivian culture.

Preserving the beauty of the Maldives and restoring the ecosystem of coral reefs after their bleaching due to the harmful effects of El Niño requires much money, as well as attracting volunteers from around the world. By saying so, ecotourism in the Maldives, based on the knowledge and behavior of tourists who are not indifferent to ecology problems, brings much more benefit to the Maldives than the construction of luxury resorts. The Maldivian authorities used even to sell their islands, but today they lease them out on a long-term lease with the condition of respect for nature, shifting part of the responsibility for caring for the environment onto the owners of such resorts (10).

For example, according to the Maldives laws, the owners of resorts cannot build up more than 20% of the island's territory and are obliged to preserve its nature and ecosystem in its original form because it has the status of a reserve. Thus, almost all Maldives resorts would be tiny if you did not find a solution that suits absolutely everyone - these are eco-friendly water villas located on stilts right above the lagoon and are ideal for a relaxing holiday for tourists. Keeping the environment intact is very important for ecotourism in the Maldives. Tourists come to the Maldives not only to relax but also to see their sheer beauty, as well as admire the endangered coral reefs and their underwater inhabitants. Therefore, the Maldivians are making many efforts to popularize natural beauty, strive to show it to tourists from all sides, not limiting themselves to snorkeling and watching dolphins, but developing diving centers and arranging deep-sea excursions with sharks and rays, as well as organizing exotic and extreme water sports, such as surfing and parasailing.

Summing up, it is worth noting that ecotourism is very important for the Maldives because of its development. The Maldives economy is developing rapidly, the Maldivian culture does not fade away and preserves its traditions, and the richness of the Maldives' nature is preserved in its original form. Combined, all these factors allow us today to call the Maldives a true paradise on Earth, and the tourist infrastructure continues to develop. Furthermore, every year more and more tourists come to hotels in the Maldives to see with their own eyes all the wealth that nature has so generously endowed residents with.

A significant part of the money that every tourist spends during his vacation in the Maldives is preserving these unique islands' nature and the underwater world around them.

Today, many resorts in the Maldives offer not just a luxurious vacation, but the opportunity to make a real escape from civilization and become an ecotourist for a while, disconnecting from the news and walking barefoot on the velvety sand of the world's best beaches in the Maldives. At the same time, it is pleasant to feel like not Robinson Crusoe on a desert island but to relax in comfortable conditions, created taking into account all the most stringent requirements for preserving the pristine nature of the Maldives for posterity.

8. IMPACT OF COVID-19 TO TOURISM INDUSTRY

2019 has been a landmark year for tourism in the Maldives, with tourist arrivals reaching a record 1.7 million. However, on March 27, 2020, the Maldives were forced to close the borders due to the global pandemic. Furthermore, since tourism accounts for 23% of GDP, the country's economy as a whole and the tourism industry have been particularly hard hit by restrictions imposed to curb the spread of COVID-19 (11).

Due to the COVID-19 pandemic happening worldwide, the Maldives overall, and the movement and the travel industry was hit hard. It caused an unprecedented degree of disturbance, in any case. Nevertheless, the Maldives has gotten the ‘World's Leading Destination grant’ at the “Grand Final of the World Travel Awards 2020” reported at a virtual occasion. This is the first run through the Maldives won the horror throughout the island country's entire existence, which is also the most recognized honor classification of “World Travel Awards”. The Maldives contended in this classification with 22 different objections, including Dubai, Malaysia, Spain, Mauritius, and Sri Lanka. Almost four months after the closure of borders and the suspension of tourist visas, the Maldives reopened to foreign visitors on July 15, 2020, taking all necessary measures to ensure visitors' health. The Ministry of Tourism has issued a guide on safe tourism and has developed a safety and hygiene system for all tourist sites. Now all categories of accommodation facilities have resumed their work - resorts, guest houses, and floating hotels are open to guests, but wearing masks in them is mandatory (12).

At an online ceremony to mark World Tourism Day, Tourism Minister Abdullah Mausum unveiled the exclusive Maldives Border Miles program to promote tourism in the Maldives. *"The program launched today will increase the country's tourist attractiveness in key markets,"* said Mr. Abdullah Mausum.

Maldives Border Miles is a tourism promotion program initiated by the Immigration Service and developed in collaboration with stakeholders who also attended the ceremony: Ministry of Tourism, Maldives Marketing, and Public Relations Corporation (MMPRC) and Maldives Airports Company Limited (MACL). The program officially was launched on December 1, 2020, and is expected to contribute to the Maldives' tourism sector for the foreseeable future (13).

Members of the three-tier loyalty program earn points based on the number of visits and length of stay. Additional points will be awarded for visits on special occasions. The program has three levels; Aida (bronze), Anantara (silver), and Abaarana (gold). Each of them has a different set of benefits, incentives, and services that increase in value as you level up.

Speaking at the ceremony, Inspector General of the 'Maldives Immigration Service' Mohamed Ahmed Hussein said: *"The Maldives is ready to welcome tourists and provide them with an unforgettable experience. The front desk is not where tourists start their vacation. Their long-awaited journey begins with the welcome smile of the immigration officer at the border, which opens the first chapter of an unforgettable vacation. Moreover, now that there is a program, we are ready to welcome them with privileges and grant them an unforgettable experience.".*

Gordon Andrew Stewart, the CEO and Managing Director of MACL, also noted the benefits of the new program. The Maldives Border Miles is an innovative way to attract travelers from all over the world, and he said, *"and will undoubtedly revitalize the tourism industry hit by the coronavirus. Furthermore, the program provides an excellent opportunity to enjoy their stay on the islands once again and get the best travel experience for those who have already been here.".*

9. TOURISM INDUSTRY IN THE MALDIVES AFTER THE PANDEMUC

Since the reopening of borders on July 15, 2020, The Maldives has noticed substantial changes to its key markets (14). Russia held the top spot as the largest market as of February 3, 2021, with 23% of the market. India came in second place with 21% of the market. Ukraine came in third on the list, providing 7.8% of the market share in the Maldives after the reopening of borders. Kazakhstan (4.9%), France (4.5%), Romania (3.8%), Germany (3.7%), the United Kingdom (2.6%), the Czech Republic (2.2%), and the United States (2.1%) are some of the other major source markets.

The Maldives' tourism industry is currently operating at pre-COVID-19 levels. A total of 170,000 tourists arrived between December 2022 and March 2023, which is the same amount as there were three years before the epidemic. This position is benefiting the economy, which is largely dependent on the tourist sector but is nonetheless hampered by significant public debt.

The Maldives marked a historic milestone in tourism, reaching one million visitors for the year 2023, according to the most recent updates. The Maldives Marketing & PR Corporation (MMPRC), Maldives Airports Company Limited (MACL), Maldives Immigration, and other stakeholders in the

tourism sector organized a special welcome event at Velana International Airport on July 16 to welcome the country's one millionth visitor (15).
1,016,719 visitors had visited the Maldives as of July 19th, 2023, a rise of 13.4% over 2022 and 7.9% over the same time in 2019. The top five markets during that time were Germany, UK, China, Russia, and India.

10. CONCLUSION

The Maldives, which had 1,192 islands and no foreign investment fifty years ago, has transformed into a tropical paradise with private island resorts. Although there is still a lot of interest in both traveling to the Maldives and developing hotels there, the emphasis with each trip planned and each hotel established is on conserving the genuine beauty that first-time visitors fell in love with in the 1970s (16).

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STRATEGIC MANAGEMENT: A CONCEPT, ESSENCE AND CONTENT

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The conditions of fierce competition in the functioning of companies make it necessary toconstantly improve the process of managing activities and strategic management is the way of a company.

Strategic management consists of a series of business decisions and actions that determinethe long-term performance of a company. Strategic management enables a company to function successfully in a complex and dynamic environment. It is environmental scanning (internal and external), strategy development (strategic plan and long-term planning), strategy implementation,evaluation and control. Strategic management emphasizes the evaluation and monitoring of external business opportunities and challenges, taking into account the company's strengths and weaknesses.

Strategic management is the art and science of creating successful enterprises. The methods that make up this methodology can be learnt and applied by any manager. This administrative approach is mandatory today and has led many companies to success that are characterized by rapid adaptation to unique changes and situations [1].

It used to be common to practice intuitive and direct management, but today there is no room for poorly thought-out actions: to survive in the market, a good strategic management plan is essential. Consequently, planning must begin by guiding companies according to their objectives in the complex process of adapting to the environment.

Strategic management is a continuous and interactive process that adapts the management of a company to its environment, taking into account its value proposition, objectives and scope of operations. This approach is necessary in times of rapid change that require organizations to behighly adaptable.

The concept of strategy, in turn, has its origins in the military sphere. The term comes from the Greek word strategy, which means "the art of leading a troop" and refers to the generals of ancient Greece. The idea of commanding armies on the way to victory was adapted for enterprises after the industrial revolution, when managers assumed the role of commanders in a highly competitive market [2, p.273].

To understand strategic management, we need to start with three basic questions about business: by answering these questions, managers can diagnose their present and plan for the future, using strategy as the basis for achieving short, medium and long term goals.

Strategic management according to Schendel, Hatten K. [3] means the process of defining and building the company's relationship with the external environment, which consists in the realisation of planned objectives and attempts to achieve the desired state by means of competentallocation of limited resources, which ensures the performance of the company and its departments. Or according to Thompson Arthur A.-J. and Strickland A.J., the process by which managers establish long-term directions of development of the organization, its specific goals, develop strategies for their achievement within the framework of possible internal and external circumstances and take to execution the chosen plan of action [4]. Strategic management is a process of management with the aim of implementing the mission of the organization by influencing the interaction of the organization with the external environment [5].

According to Professor Alfred D. Chandler, Jr. who taught management and economic history at Harvard Business School, corporate strategy boils down to two words: competitive advantage. According to the expert, strategic management is the work of raising a company's power over its competitors by acting effectively to achieve goals and objectives. In this sense, strategic management includes all actions and decisions aimed at channeling resources and funds towards growth. Growth in this case means overcoming competition in a very dynamic environment and providing higher value to stakeholders (customers, investors, partners and the company) [6].

Thus, strategic management plays a vital role in a company's survival and prosperity, paving a clear path amidst market turmoil. It is also important to emphasize that this managementapproach requires constant learning and real-time adaptation. After all, it is the company's abilityto respond in an accelerated transformation scenario that makes the difference.

The advantage of strategic management is that strategic management is the only possible way to stand out from the competition and win over your target audience. Here are some of the main advantages of this approach.

Strategic vision allows managers to analyze the internal and external scenario of the company, to see the next steps and the consequences of each decision taken. A vision statement should be carefully designed to inspire employees to move in the same direction and to focus their strengths on achieving the company's goal in a realistic and focused way [7].

For example, the legendary Henry Ford established the concept of "one car in every garage" in the nineteenth century, and through this he was able to change the world by popularizing cars. When strategic leadership takes action, it leads to a broader view of the market, product/service, target audience and stakeholders, which guides the company towards a brighter future.

In classic competitive strategy theorist Michael Porter defines that competitive advantage is the essence of strategic management. In this case, it refers to a company's ability to create morevalue than the competition at the lowest cost.

To do this, organizations need to create unique and valuable positions that meet the specificneeds of customers in order to win their place in the market. M. Porter says that strategy is about choosing what a company should do and what it should not do to differentiate itself. In addition tothis approach, operational efficiency, is also crucial to create a competitive advantage by reducingcosts and losses to achieve better results [8].

Synergy means simultaneous efforts with perfect cohesion and co-operation between the participants and the actions performed. It is one of the main achievements of strategic management, which unites all areas of the business and actions are directed towards one goal. This is another important point of competitive advantage because it provides the harmony necessary toachieve differentiated positioning.

Growth, is the goal of any business, whether it is to expand the business, conquer new markets or internationalize. But in order for this growth to be well managed and sustainable, it is essential that leaders adopt strategic management. Through this strategy, a sustainable line of growth can be followed, pushing the boundaries within the limits that the organization implies.

A strategy can be a set of decision rules, the setting of goals in light of internal and external forces, or even how companies perceive economic value. Thus, a concept has many facets and must be understood from different perspectives before it can be put into practice.

Key methodologies of strategic management. Several authors have devoted themselves tostrategic administration, from classicists to contemporaries.

Michael Porter is the author of Strategic Management, which has become a classic of strategic management theory. His most famous work is Competitive Nations, in which he applies business logic to nations.

Henry Mintzberg is a renowned scholar, author of numerous works on strategic management and a PhD candidate at MIT's Sloan School of Management. His best-known book is The Rise and Fall of Strategic Planning, in which he criticizes some current methods of strategic planning and guides new ways of making decisions in enterprises. Mintzberg's work is crucial and also controversial on several points, as the theorist criticizes what he calls the "obsession with numbers" and defends management based on practice and experience [9].

Igor Ansoff, a North American professor and consultant of Russian origin, wrote the famous Corporate Strategy. Influenced by Peter Drucker and Alfred D. Chandler, it presented a unique process for developing goals and strategies based on environmental capabilities. It also created the Ansoff Matrix, a strategic planning model that guides business expansion through a series of decisions [10].

Here are the most striking examples of strategic management.

1) Apple's irreverence. To become the world's most valuable brand worth $247bn, Apple stuck to its strategy: challenging the status quo. The "Think Different" campaign demonstrates thecompany's ability to create revolutionary products and conquer new global markets. Even after this resounding success, Apple has not stopped innovating and remains committed to creating newsolutions and technologies.

2) Southwest Airlines Transparency. Southwest Airlines is known for its brilliant strategy: to lead the low-cost airline industry with absolute transparency and humane service. Thecompany has managed to survive crises in the airline industry thanks to its ability to cut costs andthe dedication of its employees, who are truly passionate about the organizational culture.

3) Airbnb's boldness. Through a bold strategy, Airbnb has grown from a startup to one ofthe biggest powers in the global travel market. The company used growth-hacking technology to reach a market value of one billion dollars, betting on establishing trust as the foundation for the shared hosting service's success. It also invested in a strong digital presence and a storytelling strategy to communicate its differences.

Thus, strategic management is a set of planning, execution and control activities organized by professional managers who direct the resources of an organization to achieve its objectives. Inother words, it is a way of managing the whole company, starting from the initial strategic planning, which covers the structure of the organization, from scenario analysis to the execution and evaluation of the plan.

The scope of strategic management includes conducting diagnostics of the enterprise, defining specific goals and developing plans to achieve the goals, allocating the necessary resources and constantly adjusting the process. Thus, this discipline is focused on strategic thinking and planning, is responsible for the development and implementation of measures necessary for the success of the company [11, p.55].

The main characteristics of strategic management include:

1) Adaptation of the company to its environment. One of the basic principles of strategic management is the adaptation of the company to its business environment. This environment is characterized by the business area, segment, target audience, geographical location, competition and product/service and other important aspects that all businesses occupy. Adaptation in this caseinvolves aligning the organization's goals and strategies with the threats and opportunities of its environment in search of competitive advantage and growth.

2) Internal and external diagnostics. In order to adapt successfully, the company must carryout internal and external diagnostics. To do this, it is necessary to use classic tools such as SWOTanalysis: a diagram that allows to identify the strengths and weaknesses within the company, as well as opportunities and threats from outside. As the backbone of strategic management, SWOTallows to accurately analyze the scenario, verifying the exact position of the company in the market.

3) Complexity and fluidity. Strategic management is not a process with a beginning,

middle and end, but a continuous and ongoing activity. Indeed, the market is an ever-changing environment that requires quick responses and constant changes in plans. Thus, strategy must be reviewed, adjusted and improved depending on the situation, which requires constant attention because of its complex and fluid nature.

4) Systemic application. This type of management only makes sense if it is applied at all levels of the organization from a systems perspective. In other words, companies are complex systems with several interconnected relationships and functions, and management needs to consider each of these links while visualizing everything together. Consequently, any initiative inone area will have an impact on all others, requiring management to consider macro and micro aspects in their decisions.

5) Development and implementation of plans. The foundation of strategic management is defining the goal, developing strategies and implementing what is planned. This is why managersmust map out the most effective paths to success and ensure that the organization moves in that direction, making necessary deviations as changes occur. Clearly, it is not always possible to act as planned, so strategic management also involves making new decisions.

Thus, the analysis of the current literature in the field of strategic management allows us todraw the following conclusions:

Strategic management is important for organizations. Strategy is the main focus of all managers who are looking for management techniques and tools to create competitive advantage and overcome competition.

The success of strategic management depends on the extent to which the strategy developeddifferentiates the company and fully meets the expectations and needs of customers, investors andpartners.

The most challenging part of implementing strategic management is ensuring that the strategy is spread throughout the organization, maximizing efforts to achieve the company's objectives. This requires a lot of work, focus and analytical skills, as well as in-depth knowledge of management tools, scenario analysis and tactical implementation.

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CURRENT STATE OF COMPETITIVENESS OF COMMERCIAL BANKS OF THE REPUBLIC OF KAZAKHSTAN

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In the world practice of the banking environment a great role is given to commercial banks,which are designed to contribute to the increase of the country's money supply, and as a consequence, the efficiency of the entire financial industry depends on the degree of their development.
Taking into account that the external environment is an economic space, to assess its factorsit is rational to use three groups of criteria designed to fully characterize the banking sector of the Republic of Kazakhstan. Thus, the criteria for assessing the external environment factors were determined by 11 indicators grouped into 3 groups (Table 1)

Table 1 - Banking sector indicators for assessing the external environment

Group	Indicator	Indicator	Rationale
A "healthy" banking environment (US values are definedas a benchmark, given its positioning in the financial market)	Refinancing rate	Base refinancing rate, %	Determines the target value of the targeted (target) short-term moneymarket rate to achieve the price stability objective in the medium term
	Inflation rate	Inflation index, %Inflation rate, %	The speed of inflationprocesses, which are determined by the rate ofprice increases
	GDP growth rate	GDP per capita, abs; Ratio of assets, loan portfolio and customer deposits to GDP, %	GDP volume change indicator
	Share of liquidated banksin the total number	Number of operating banks and liquidatedbanks, abs	Sustainability of the banking environment
	Economic role	Liquidity, abs; Share of deposits of individuals and legal entities, % Net interest margin Net interest rate spread	
ranking of domestic banks by quantitative indicators	Assets, KZT billion; NPL,%; NPL,90+; Deposits, KZT billion; Retail deposits, KZT billion; Corporate deposits, KZT billion; Equity, KZT billion; Liabilities, KZT billion; Capital, KZT billion Net loans, KZT billion; Gross loans, KZT billion; Netincome, KZT billion; ROAA; ROA		Commercial bank rating
country's economicrisks	Foreign investments	Operating companies with foreignparticipation, thousand KZT; Gross inflow of foreign direct investment in theRepublic of Kazakhstan, billion USD	Defining the external environment of the banking environment
	Capital outflow	Share of financial resources withdrawn from the country, US dollars	
Note: US values are defined as a benchmark, taking into account their positioning in the financial market. Compiledby the author.			

The results of the study show that Kazakhstan continues economic reforms, development oflegal and administrative infrastructure in the country, which would meet the requirements of the global market economy. The future stability of Kazakhstan's economy will largely depend on theprogress of these reforms and the effectiveness of economic, financial and monetary measures undertaken by the government [1]. Due to the rapid development of the coronavirus pandemic (COVID-19), many countries, including the Republic of Kazakhstan, have introduced quarantinemeasures, which have had a significant impact on the level and scope of business activity of marketparticipants. The pandemic and measures to minimize its consequences had a significant impact on the activities of companies from various industries. Since March 2020, there has been significant volatility in the capital, currency and commodity markets, including a decline in oil prices and a depreciation of the tenge against the US Dollar and Euro, which has resulted in increased uncertainty regarding further economic growth and, as a result, could negatively affect the Bank's financial position, results of operationsand business prospects.

1. A "healthy" banking environment.

The banking system of Kazakhstan is represented by 22 second-tier banks, of which only one with 100% state participation in the authorized capital, and 12 of which have foreign participation (10 of which are subsidiary banks) (Figure 1) [2]. The subdivisions of large commercial banks of the RK are geographically evenly distributed in the territory of Kazakhstan,which contributes to limiting the diversification of risks.

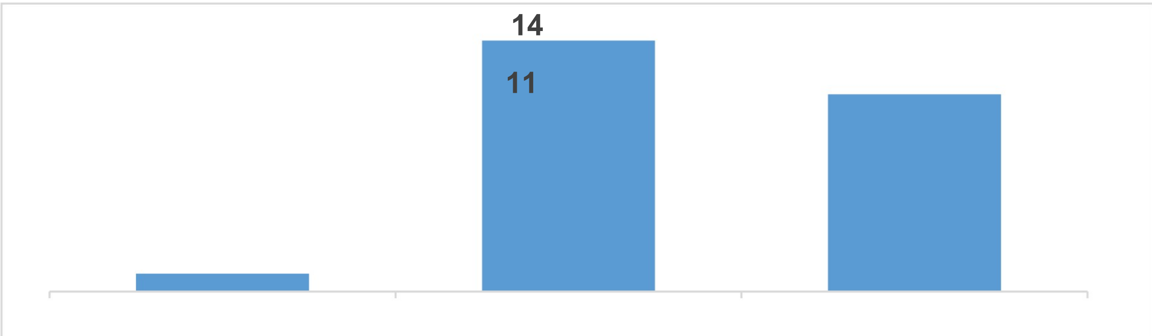

Figure 1 - Structure of the banking sector
Note: Compiled by the author.

Unstable economic situation in the world, strengthening of the control system of banking structures (violation of prudential norms and failure to fulfil payment and transfer obligations to customers) affect the sustainability of the banking sector. Between 2015 and 2021, the National Bank of Kazakhstan revoked nine banking licenses, excluding entities liquidated as a result of mergers and acquisitions, reducing the number of banks in Kazakhstan by 34% over this period (Figure 2).

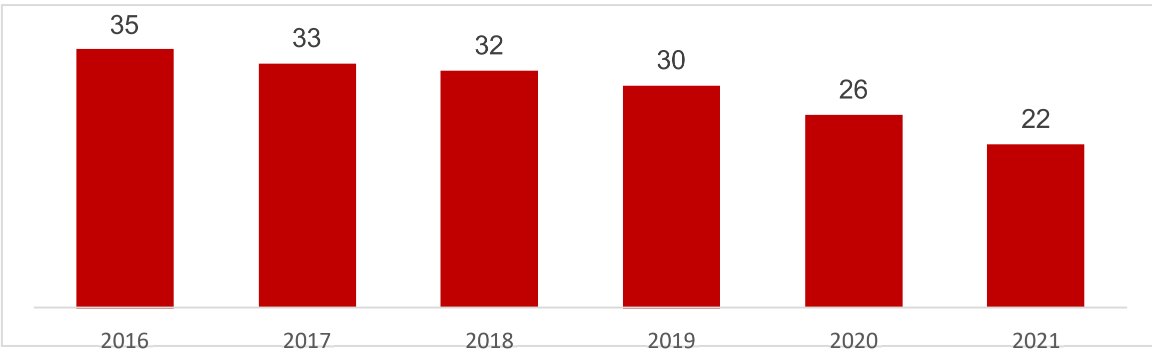

Figure 2 - Dynamics of liquidated banks of the RK , abs.

Note: compiled by the author on the basis of source [3]

The results of the assessment of the external environment - *the* "health" of the banking system are presented in Table 1. The benchmark for comparison was the experience of the USA as the country with the strongest banking system in the world.

Table 1 - Assessment of the "health" of the banking system, 2019-2021

Indicators	Significance			Benchmark		
	2019	2020	2021	2019	2020	2021
Refinancing rate, %	9,25	9,0	9,75	0,22	0,25	0,25
Inflation rate, %	4,9	7,5	8,4	4,3	7,5	8,2
GDP growth rate, %	4,5	2,5	4,0	2,9	2,3	5,7
Share of liquidated banks in total number, %	6,25	13,3	15,4	6,9	7,1	5,1
Note: compiled by the author on the basis of the source [4].						

The refinancing rate set by the National Bank of Kazakhstan is one of the instruments that contributes to the regulation of the financial market and the economy of the country. Since 2015, there have been tendencies to decrease the base rate (refinancing rate) in Kazakhstan (Table 2), however, this indicator remains quite high compared to the benchmark value. In 2021, within the framework of disinflationary monetary policy, the refinancing rate was increased, which was associated with pro-inflationary pressure in the economy caused by global trends of rising food and raw material prices [2]. Due to the current economic situation, the country adopted the Anti-Inflationary Response Package for 2021-2024 [5].

Table 2 - Dynamics of growth of the bank rate of the National Bank of the Republic of Kazakhstan from 2015 to 2022

Year	Base Rate, as at 31 December, %	Inflation index, %	Inflation rate, %
2015	16	113,53	13,53
2016	12	108,29	8,29
2017	10,25	107,22	7,22
2018	9,25	105,43	5,43
2019	9,25	104,9	4,9
2020	9,0	107,5	7,5
2021	9,75	108,4	8,4
Note: compiled by the author on the basis of sources [2], [6]			

The observed decrease in the refinancing rate for 2015-2021 affects the economic situation inthe country, on the one hand it has positive aspects such as reduction of unemployment, expansionof lending services with the lowest interest payments, on the other hand it is characterized by a negative impact on bank investments, loss in value compared to the currencies of other countries, as well as depreciation of funds (with increasing demand and slow increase in prices). The inflation rate in 2021 was 8.4% (in 2015 - 13.53%) and went beyond the upper limit ofthe target corridor of the National Bank of Kazakhstan (4-6%) [7], [8]. It should be noted that thissituation is typical for many countries (in the United States rose to 7.1%, in Germany to 5.7%, in France - 3.4% and in Italy - 4.2%), which was due to the pressure of quarantine measures on the labour market and nominal incomes of the population, as well as the fall in oil quotations and weakening of the national currency in the country [2]. The current situation in the world against the background of deteriorating geopolitical situation and worsening prospects for global GDP, has affected the *GDP indicator for* the country(Figure 3). In 2021, the GDP of Kazakhstan increased to 197.11 billion USD (compared to 2020 - 171.08 billion USD) [4]

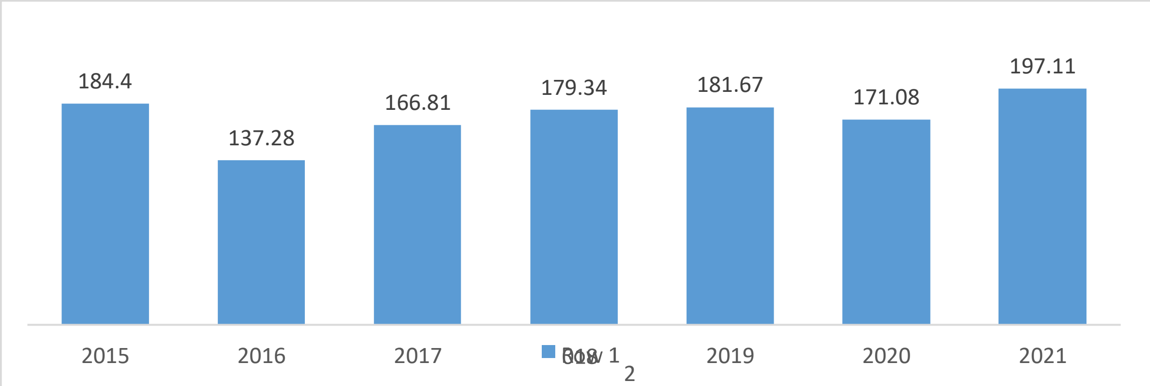

Figure 3 - GDP dynamics of Kazakhstan from 2015-2021, abs.
Note: compiled by the author on the basis of source [8]

The contribution of banks' assets to the GDP of Kazakhstan is 46.3%, with the noted dynamics of decline over the past 3 years, which is associated, as noted above, with the negative impact of the spread of coronavirus infection on the domestic and global economy (Table 8). Whencomparing the ratio of banking sector assets to GDP of Kazakhstan with similar indicators of othercountries, low growth dynamics of this indicator is observed in comparison with Russia, Canada and other countries [9]. In general, these results are expected in view of the ratio of deposits to GDP of these countries, as deposits are the main source of funding for banks to carry out their coreactivities.

Table 3 - Ratio of assets, loan portfolio and customer deposits of second-tier banks to GDP, %

Year	Assets to GDP ratio, %	Loan portfolio to GDP ratio, %	Ratio of customer deposits to GDP, %
2015	58,1	42,1	31,2
2016	53,2	31,9	29,2
2017	46,7	25,7	28,4
2018	40,8	22,3	27,6
2019	39,6	21,8	26,6
2020	44,1	22,3	30,5
2021	46,3	24,9	32,0
Note: compiled by the author on the basis of source [8]			

Provided that the country's financial industry is reformed, government involvement in the economy is reduced and credit activity increases, the share of banks in Kazakhstan's GDP should increase. There is an increase in the final stability of the banking sector. Assets of the banking sectorfor the period 2015-2021 increased by 58.2% to 37.6 trillion tenge (Table 4). Since the beginningof the year alone, the growth was 17.9 per cent or KZT 5.9 trillion and the latest trends are mainlydue to the increase in customer deposits by 20.7 per cent.

Table 4 - Dynamics of assets and loan portfolio (principal debt) of the banking sector of theRepublic of Kazakhstan

Year	Assets	Loan portfolio
2015	23 784,4	15 535,7
2016	25 556,8	15 510,8
2017	24 157,9	13 590,5
2018	25 244,0	13 762,7

2019	26 785,9	14 743,0
2020	31 171,7	15 792,1
2021	37 622,0	20 200,4
Note: compiled by the author on the basis of source [10]		

More than 65% of all assets fall on the share of 5 largest banks of the country in total assets,loan portfolio and deposits of the banking sector (Halyk Bank of Kazakhstan, Sberbank, ForteBank, KASPI BANK, Bank CenterCredit) (Table 5). Every year this indicator is increasing,and withdrawal of one of the shares of the 5 largest banks of the country may lead to systemic risks, but at the same time the Deposit Guarantee Fund will not be able to ensure payment of all funds to consumers of services without inflation growth and depreciation of the national currency.

Table 5 - Concentration of the banking sector in the Republic of Kazakhstan (share of 5 largest banks)

Year	Share of the top 5 banks in assets	Share of top 5 banks in loan portfolio	Share of top 5 banks in customer tabs
2015	52,4	58,9	51,0
2016	59,2	63,4	60,6
2017	58,2	60,6	58,2
2018	57,6	56,6	60,5
2019	62,4	62,4	61,8
2020	63,0	60,8	64,1
2021	64,0	64,5	66,5
Note: compiled by the author on the basis of sources [2], [10]			

After the decline in the loan portfolio in 2018, lending in the country began to recover and increased by ¼ times. The loan portfolio of banks totaled 20.2 trillion tenge, increasing by 27.9%,or 4.4 trillion tenge [2]. Despite the growth of corporate loan portfolio, the main factors limiting banks in the expansion of corporate lending is the low level of solvency of corporate borrowers. An important characteristic of the quality of banking assets is the degree of their liquidity. The liquidity of banks' assets is high and amounts to more than 30 per cent of all assets, which allows them to meet the needs of customers (Table 11)

Table 6 - Dynamics of liquidity of the banking sector of the RK

Years	Current liquidity ratio k4 (min value 0.3) *	Current liquidity ratio k4-1 (min value 1)	Current liquidity ratio k4-2 (min value 0.9)	Current liquidityratio k4-3 (min value 0.8)	Highly liquid assets(monthly average)
2019					
2020	1,725	6,720	4,683	3,285	12 649,9
2021	1,335	4,337	3,335	2,594	11 693,0
Note: compiled by the author on the basis of source [10]					

A significant contribution of the banking sector to the socio-economic development of thecountry is realized by attracting deposits from households and legal entities. The funding structureof banks is traditionally largely represented by customer deposits, the aggregate volume of whichin the banking sector of Kazakhstan in 2021 amounted to 26,014.8 billion tenge (37.1% of the totalamount of financial resources) (Chart 4). Current accounts (24.6% - 2021) and urgent transfers (46.5% - 2021) account for the main share of the structure of deposits of the banking sector of Kazakhstan.

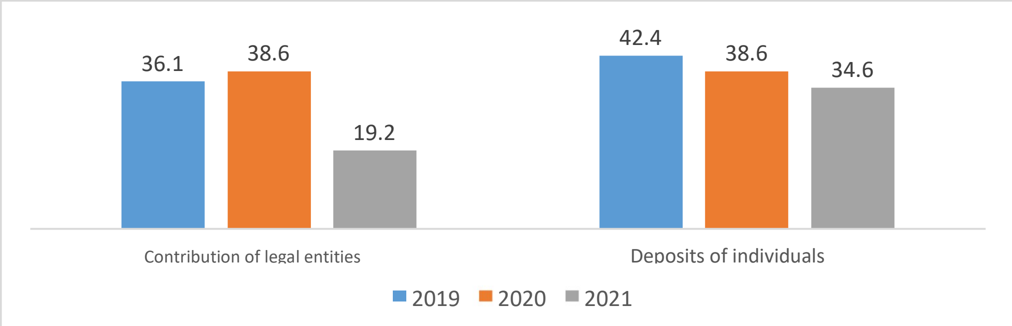

Figure 4 - Deposits of households and legal entities, %
Note: compiled by the author on the basis of the source [10].

Since 2021, the National Bank of the Republic of Kazakhstan has been implementing a set of measures aimed at strengthening the protection of depositors and increasing the sustainability of the funding base of the banking sector - the increase in the guaranteed amount on savings deposits in national currency from 15 to 20 million tenge and the increase in the aggregate guarantee for one bank up to 20 million tenge are regulated [11].
According to the National Bank of the Republic of Kazakhstan in 2021, the volume of loansissued by banks totaled 20,200.4 billion tenge (2020 - 15,792.1 billion tenge). Of these, loans to legal entities - 3,709.6 billion tenge, to individuals - 10,038.7 billion tenge, loans to small and medium-sized businesses - 5,487.6 billion tenge (Figure 5) [10]. In general, for the last 3 years inthe country in nominal terms there was an increase in deposits of the population (average annual growth of 32.7 per cent). At the same time, with regard to the structure of loans, growth is seen only in loans to small and medium-sized businesses, while loans to legal entities (large businesses) did not show stable growth.

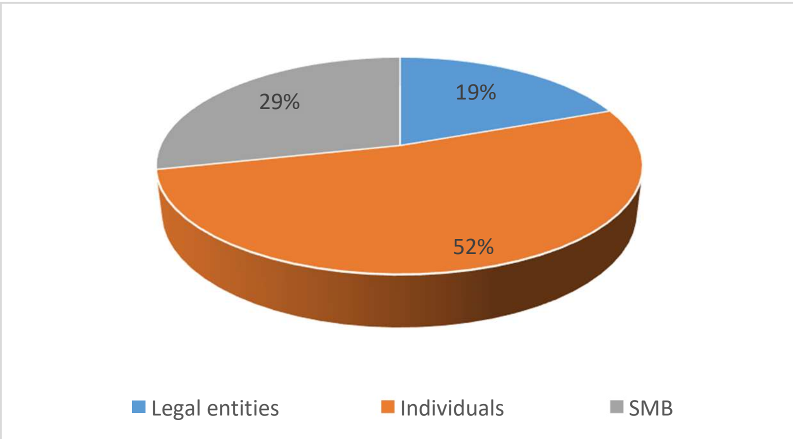

Figure 5 - Customer deposits and loans issued by banksin Kazakhstan, %
Note: compiled by the author on the basis of source [10]

The share of loans over 90 days overdue in the total loan portfolio was 3.3%. In the portfolioof legal entities, including SMEs, the level of loans with overdue debt over 90 days was 4.4%, among individuals - 3.5%. In general, the efficiency of the banking sector of Kazakhstan is characterized by stable dynamics of net interest margin and gradual decrease of net interest spread(commercial banks generate a source of profit at the expense of net interest rate spreads) (Table 7). In order to strengthen financial stability and improve the efficiency of operations, banks need to maintain the target level of net interest margin in the conditions of growing funding costs byoptimizing the rates of active operations and converting free liquidity into working assets.

Table 7 - Efficiency of the Banking Sector of Kazakhstan

Year	Net interest margin	Net interest rate spread
2015	5,45	4,36
2016	4,79	4,07
2017	5,09	4,17
2018	4,98	3,89
2019	5,20	3,93
2020	4,85	3,63
2021	5,06	3,98
Note: compiled by the author on the basis of source [10]		

Core capital adequacy ratio (k1) - 19.3%, equity capital adequacy ratio (k2) - 23.4%, which,on average, significantly exceeds the statutory requirements across the system. At the same time,the share of core capital is 82.4 per cent (2021). The development of the banking sector depends on the country's foreign exchange policy. In 2015, the National Bank of the Republic of Kazakhstan made a decision to change its currency policy and switch to inflation targeting and floating exchange rate, which resulted in almost twofold growth of the tenge/US dollar exchange rate (Table 8). Strengthening of the tenge exchange rate can significantly affect the reduction of loans in foreign currency.

Table 8 - Exchange rate of tenge to currencies

Year	Tenge to US dollar, average for the year
2015	273,512
2016	33, 97
2017	331, 267
2018	327,237
2019	378, 379
2020	427,93
2021	436, 69
Note: compiled by the author on the basis of source [10]	

In 2021, the formation of the exchange rate of the tenge was influenced by both external and internal factors, and traded in a wide range from 414.77 to 436.35 tenge per US dollar. As external factors affecting the formation of the tenge exchange rate were the dynamics of oil prices, the policy of the central banks of developed countries, and others. "Healthy" banking system is essential for the functioning of the country's economy as a whole, and is manifested both at the macroeconomic and microeconomic levels. Low efficiency of the banking system negatively affects the rate of economic growth of the state.

2. Ranking of domestic banks by quantitative indicators.

The banking sector of the Republic of Kazakhstan is represented by 20 second-tier banks (table 9). In recent years, there has been a change of leading positions in the rating of Kazakhstanbanks, which is associated not only with the economic crisis in the country, but also with the sanctions adopted by the USA and EU countries against Kazakhstan "subsidiaries" of Russian banks. This situation influenced on redistribution of shares in the system, especially among five leaders. For example, SB "Sberbank" JSC, which firmly held the second line by the size of assetsfor more than three years, lost its positions. The leading position is held by Kaspi Bank, with Halykbank losing its position.

Table 9 - Rating of Kazakhstan banks

№	Name of the bank	Rating, 2022 (2021)	Assets, billiontenge	NPL*, %	Deposits, KZT billion	Equity capital, billion tenge
1.	Kaspi Bank	1 (3)	3602,1	6,7	2829,2	397,9
2.	Halyk bank	2 (1) ↓	11631,9	3,8	8395,2	1548,3
3.	JSC Otbasy Bank	3 (4)	2804,2	0,2	1898,0	381,1
4.	Jusan Bank JSC	4 (8)	2609,2	44,1	1490,0	439,2
5.	ForteBank	5 (5)	2483,2	7,2	157,0	266,5
6.	Sberbank	6 (2) ↓	4221,6	5,4	2629,6	378,5
7.	Bank CentreCredit	7 (10)	2070,3	6,3	1347,7	147,0
8.	Altyn Bank	8 (7) ↓	643,2	0,6	486,6	74,4
9.	Bank of China in Kazakhstan	9 (9)	454,5	2,2	385,0	62,8
10.	Eurasian Bank	10 (15)	1418,2	9,6	1113,7	117,8
11.	Bank RBK	11 (16)	1270,1	6,8	757,1	108,5
12.	TPB of China in Almaty	12 (14)	260,9	0,0	216,6	36,3
13.	Citibank Kazakhstan	13 (13)	1101,6	0,0	900,4	126,2
14.	JSC Freedom Finance Bank Kazakhstan	15 (18)	398,1	0,4	103,8	49,8
15.	Home Credit Bank	16 (11) ↓	475,8	2,8	180,6	114,5
16.	VTB Bank (Kazakhstan)	17 (12) ↓	506,4	5,3	384,8	33,5
17.	Shinhan Bank Kazakhstan	19	79,36	0,8	53,4	16,9
18.	KZI Bank	20	132,8	3,2	89,4	35,8
19.	Al Hilal Islamic Bank	21	63,8	0,0	19,2	17,9
20.	Islamic Bank "Zaman-Bank"	22	26,6	2,9	4,8	13,1
Note: compiled by the author on the basis of source [12]						
*Nonperforming loans, or NPL are loans that have not paid interest for more than 90 days						

The largest indicator of "assets" was observed at Halyk bank - 11631.9 billion tenge, whichis due to the outflow of funds from the accounts of clients of the sub-sanctioned banks, as well asdue to the receipt of pension surpluses of citizens on deposits of individuals (Table 9). For VTBBank and Alfa Bank, as well as Sberbank, which fell under sanctions, there is a decrease in assets.Thus, there is a redistribution of shares in the banking system, especially among the top five, in particular due to an increase in reputational risk and, as a consequence, a redistribution of positions with regard to the sector's loan portfolio and deposits.

3. The country's economic risks.

Despite the fact that Kazakhstan is an attractive country for external investment and is considered a leader in terms of foreign investment inflows, during the pandemic period, investmentflows to

Kazakhstan decreased to 15% (in world practice 30-35%) (Table 10). In terms of foreigndirect investment, the net capital inflow for 2021 was US$1.7 billion (in 2020 - US$5.8 billion).

Table 10 - Foreign investments

Year	Operating companies with foreignparticipation, thousand tenge	Gross inflow of foreign direct investment in the Republic of Kazakhstan, USD billion
2015	16,9	23,8
2016	20,7	15,4
2017	23,9	21,4
2018	17,7	21,0
2019	20,5	24,3
2020	22,6	24,3
Note: compiled by the author on the basis of source [13]		

Given that the attraction of foreign investors in priority sectors of Kazakhstan's economy isdefined as a key element of the country's foreign economic policy, a favorable climate is createdin the country - the tax regime is simplified and the package of investment preferences is expanded[13]. However, despite the fact that the flow of investments is increasing, their share in the country's GDP practically does not change. On the basis of the analysis of the domestic banking environment, the map of the level of competitiveness of banks in Kazakhstan is constructed within the framework of this work.

The correlation indicators were the values of the banks' rating (indicator Y) and the bank's share in theassets of all banks (indicator X), distributed on a rating scale (1-21), with weighting values of thesum of these indicators as 10 points (coefficient from 35 to 40), 7 points (coefficient from 20 to 35), 3 points (coefficient from 10 to 20) and 1 point (coefficient from 1 to 10) (Figure 6).

Halyk bank (41), Kaspi Bank (40), Otbasi Bank (37), Sberbank (36) and Jusan Bank (35) are included in the group of strong banks (pink colour) according to the results of the analysis. Atthe same time, 3 banks (Halyk bank, Kaspi Bank and Sberbank) from this group are among the 5 largest banks of the country.

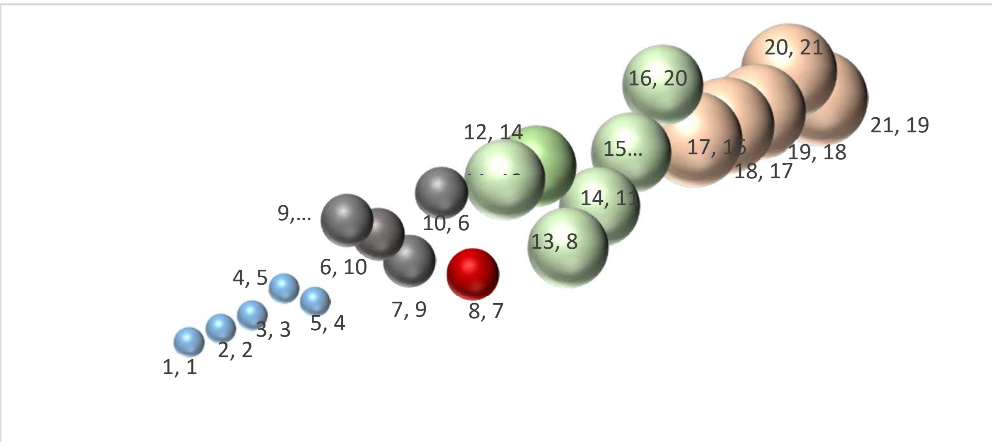

Figure 6 - Map of the level of competitiveness of banks in the Republic of Kazakhstan

Note: compiled by the author

* indicators are expressed in Y:X or bank rating to bank ratingby the share of their assets of all banks

The group with medium level of competitiveness (green colour) (20-35) includes 6 banks: ForteBank (33), Bank CenterCredit (30), Altyn Bank (26), Eurasian Bank (26), Bank RBK (24)and Bank of China (21). Low level of competitiveness (grey colour) (10-20) at this stage of banks' development is typical for such banks as Bank of China (16), JSC "Bank Freedom Finance Kazakhstan" (16), Home Credit Bank (16) and Citibank Kazakhstan (15) in addition to VTB Bank. VTB Bank's assignment to the group with a low level of competitiveness is primarily due tothe tense geopolitical situation in the world and the ongoing changes in the international banking system and the ensuing sanctions, which resulted in a reduction in the portfolio and assets of the bank. Also, the beginning of consolidation of some Kazakh banks (portfolios, clients), as a consequence, affected the strengthening of their positions in the rating and the decrease of VTB Bank in the rating. Despite the fact that VTB Bank demonstrates an increase in financial indicators,their growth rates remain below the market average, and led to a reduction in their position in theranking of Kazakh banks. The level of competitiveness of other banks (5) (blue colour), due to their young age, geopolitical situation and other aspects, does not allow them to be classified into the above three groups (strong, medium and weak) at the current stage of their development, and as a consequencepredetermines the need for them to develop a clear strategy to improve their positions in the marketof banking services.

Summarizing, based on the results of the analysis, we can identify the following "external" factors for the development of commercial banks' competitiveness (Table 11)

Table 11 - "External" factors of commercial banks' competitiveness development

№	"External" factors	Level of influence
1.	Sustained global economic situation	High
2.	Strengthening of the tenge exchange rate	High
3.	Growth of banks' share in the GDP of the Republic of Kazakhstan	High
4.	Simplification of tax regime	High
5.	Expansion of the package of investments by the state	High
6.	Strengthening the control system of banking structures	Medium
7.	Decrease in the base refinancing rate	Medium
8.	Increasing the guaranteed amount on savings deposits and increasing the aggregate guarantee per bank	Medium
9.	Increase in the number of banking structures	Low
Note: compiled by the author		

Thus, the conducted analysis allowed to draw the following conclusions.

Developments in the banking services market in Kazakhstan are dependent on the geopolitical environment and world events. Volatility in the capital, currency and commodity markets, including a decline in oil prices and a depreciation of the Tenge against the U.S. Dollar and the Euro, has affected the financial indicators of the banking environment - an increase in thebase rate (refinancing), a rise in the inflation rate, a decline in deposits of banks' assets and loan portfolio to GDP and others.

The economic situation in the country influenced the change of leading positions in the ratingof Kazakhstan banks - redistribution of shares in the banking system, especially among the top five, in particular due to the increase in reputational risk and as a consequence of redistribution of positions with regard to the loan portfolio and deposits of the sector.

The factors contributing to the increased stability of the banking sector in Kazakhstan over the past 5 years (increase in bank assets by 58.2%, lending by ¼) include reforming the country's financial industry, decreasing state participation in the economy and increasing credit activity of the population, stability of the country's currency policy.

Kazakhstani banks are characterized by high liquidity (30% of total assets), growth in the stability of bank funding (37.1% of customer deposits) and household deposits (average annual growth of 32.7%), as well as the dynamics of net interest margin (from 4.79 to 5.06) and a gradualdecline in net interest spread (from 4.36 to 3.98). Despite the fact that Kazakhstan is an attractivecountry for external investment and is considered the leader in terms of foreign investment inflowsduring the pandemic period, investment flows to Kazakhstan declined to 15 percent. The constructed map of competitiveness of the banking sector entities allowed to assess the level of competitiveness and potential of banks in Kazakhstan by correlating the indicators of their "positioning" (rating) in the financial market and the size of assets in the sector.

In summary, despite the instability of the external environment, the banking environment of Kazakhstan is actively developing, allowing commercial banks to expand their market and strengthen their positions not only in the country, but also in the territory of neighboring countries.

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CURRENT STATE AND DEVELOPMENT OF MEDIKER UK MEDICAL CENTRE, SHYMKENT CITY

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Medicare UK Medical Centre is a Limited Liability Partnership, which is a legal entity and is recognized as a medium-sized business entity on the basis of legislation [1].

Medicare UK provides clinical and diagnostic assistance to adults and children within the framework of voluntary insurance programmes, primary health care services within the guaranteedscope of free medical care and within the framework of compulsory social health insurance, inpatient and inpatient replacement care, rehabilitation treatment and medical rehabilitation, as well as paid medical services.

Medical Centre "Medicare UK" provides a wide range of medical services: therapy, dentistry, surgery (general, plastic), neurology, gynecology, urology, endocrinology, cardiology, physiotherapy, rehabilitation, proctology, otorhinolaryngology and others.

The medical center is equipped with high-tech diagnostic equipment: computer tomograph, magnetic resonance tomographic (joint), X-ray machines, ultrasound machines, endoscope, Holter monitoring apparatus, artificial lung ventilation apparatus, anesthesia-breathing apparatus, vacuum aspirator, etc.

By the end of 2022, the total number of people attached to the medical center was 33,642. Attachment is carried out both on the territorial basis and according to the principle of "free choice of medical organization".

The supreme governing body of the Medicare UK Medical Centre is the sole participant, whose exclusive competence includes: issues related to the introduction/amendment of the Charterof the Medicare UK Medical Centre, including issues related to changes in the charter capital, appointment/termination of the powers of the General Director, members of the Supervisory Board, establishment/liquidation/reorganization of branches and representative offices of the Medicare UK Medical Centre, approval of internal rules and other documents regulating the internal activities of the Medicare UK Medical Centre, approval of internal regulations and other documents regulating the internal activities of the Medicare UK Medical Centre, approval of the Supervisory Board, approval of internal rules and other documents regulating the internal activities of the Medicare UK Medical Centre.

The Supervisory Board is the controlling management body, which carries out general management of the Medicare UK Medical Centre, except for issues within the competence of the sole participant and executive body - the CEO of the Medicare UK Medical Centre.

The executive body of Medicare UK Medical Centre is the General Director, who carries out the day-to-day management of Medicare UK Medical Centre. The CEO reports to the Supervisory Board and the sole participant.

The total number of employees of Medicare UK Medical Centre as of the end of 2022 is 348, including 121 doctors, 161 nursing staff, 87 other staff, including management staff - 22: The average staffing level is 87%, including: medical staff - 86.5%, nursing staff - 89.4%, auxiliary staff

- 83.4%, staff turnover - 24%. At the same time, the highest turnover is observed among other staff. Stability is observed among medical and nursing staff.

The Medical Centre's cost of services and business profitability indicators do not fall below the norms observed in the industry. Thus, in comparison with the published financial indicators of the Central City Clinical Hospital of Almaty [2], City Multidisciplinary Hospital No. 2 (CMH No.

2) of Astana [3], Multidisciplinary Medical Centre "Meirim" of Astana [3], Multidisciplinary Medical Centre "Meirim" of Astana [3]. Astana [3], Multidisciplinary Medical Centre "Meirim" of Astana [4], the profitability indicators of the Medical Centre "Medicare UK" for the period from 2017 to 2022 are positive. There is an increase in the profitability of the Medical Centre "Medicare UK".

The analysis of medical personnel supply in dynamics demonstrates a decrease in staff turnover rate. This trend can be attributed to the introduction of differentiated labour remuneration. At the same time, there is a significant increase in the number of employees of Medicare UK Medical Centre, which together with the decrease in staff turnover indicates the success of the current HR policy of the management of Medicare UK Medical Centre.

It should also be noted that the number of medical and nursing staff with categories is decreasing. Also, a negative trend in the field of personnel management of Medicare UK Medical Centre is a decrease in the number of medical personnel in 2022 (87% in total). At the same time, the largest number of vacant positions are physician positions. This situation may lead to a decrease in the level of satisfaction of the clinic's patients and medical staff. Since the lack of appropriate specialists leads to an increase in the workload of the existing staff, as well as a reduction in the time spent on patients and an increase in the queues of patients to doctors [3].

Analysis of patient satisfaction of Medicare UK Medical Centre for the period from 2017 to2022 according to the data of the Expertise Department of Medicare UK Medical Centre, despite showing a downward trend (cf. in 2017 96%, in 2022 - 91.5%), nevertheless remains quite high. It should also be noted that in 2022 there is a decrease in the number of patient complaints. The maximum number of complaints in the clinic was recorded in 2021.

The analysis of the efficiency of equipment use of Medicare UK Medical Centre for the period from 2017 to 2022, also shows a slight decrease, however, in the context of an increase in the list of medical services and the number of population attached to medical centers, this decreaseis not critical.

Medicare UK Medical Centre is an accredited health care organization. According to the results of the expert commission's assessment, the center was assigned the 1st category.

We evaluated the activity of the Medical Centre "Medicare UK" according to the methodology of the RGP on PHC "Republican Centre for Health Development" The analysis of the Centre's indicators according to the criteria of the RGP on PHC "Republican Centre for Health Development" [5] on the management block showed the following results [5] for the management block showed the following results:

1) The share of medical workers with a qualification category was 39%;
2) The share of general practitioners in the total number of clinic doctors - 20.6%;
3) The ratio of general practitioners to district nurses - 1:3;
4) Provision of social workers per 10,000 people;
5) Availability of psychologists per 10,000 population - 0.8;
6) There are no administrative penalties based on the results of external expertise;
7) Ratio of average monthly salary of a clinic doctor for 1 rate to average monthly nominal salary in the economy of Shymkentcity. Shymkent as of the end of 2022 - 1.0;
8) The Medical Centre has a Supervisory Board with at least 30% of independent members;
9) Return on assets for 2022 was 8%;
10) The Medical Centre has its own corporate website;

11) The Medical Centre has an official account in social networks;

12) The Medical Centre provides emergency medical care of 4 categories of urgency;

13) The Medical Centre is accredited for a period of 3 years with the assignment of the first category; 14) The level of satisfaction of the clinic's patients with the quality of medical care - 91%;

15) The level of satisfaction of the clinic's medical staff with working conditions - 87%;

16) The medical center has patient navigation and routing schemes;

17) The share of the clinic's medical staff trained in the rational use of medicines - 63%;

18) The share of extended practice nurses in the medical center is 8%;

19) The medical centre does not have a mentoring system for clinical training of students of medical educational and scientific organisations;

20) The medical centre does not have the status of a "Child Friendly Clinic";

21) The share of doctors and nursing staff trained in working with medical information systems is 56%;

22) The medical centre has a child development room;

23) The medical centre has a youth health centre;

24) The medical centre does not have an internal audit service;

25) The health centre has not developed key performance indicators for management staff;

26) The percentage of advanced practice nurses working in the health centre who have completed an applied and academic baccalaureate programme is 8%.

Thus, according to the first block of criteria of the rating of primary health care organizations, the medical center scored 515 points, which according to the rating table corresponds to four stars(70.5%).

According to the block of clinical indicators, we assessed the health center by a score in accordance with the methodology of the RGP at the PHC "Republican Centre for Health Development".

We determined this score based on the following indicators for 2022:

1) The indicator of maternal mortality from preventable causes at the PHC level was 0;

2) The share of pregnant women registered before 12 weeks of pregnancy - 74%;

3) Contraception coverage of women in surveillance groups 2B and 5 - 80%;

4) Coverage of prenatal screening - 100%;

5) Theindicator of infant mortality from preventable causes at the PHC level in 2022 decreased by 20% compared to 2021;

6) The number of children under 1 year of age who died in the first 24 hours from the moment of admission - 0;

7) The medical center has equipment for audiological screening;

8) The growth rate of treated patients of the NWT for 2022 was 13%;

9) The share of malignant neoplasms of visual localization of 1-2 st. among first-time detected patients with malignant neoplasms - 91%;

10) The rate of timely diagnosed pulmonary tuberculosis - 88.8%;

11) Complication rate of diabetes mellitus - 13%;

12) Complication rate of asthma - 7.8%;

13) Complication rate of chronic obstructive pulmonary disease (hereinafter - COPD) - 8%;

14) Hospitalization rate of patients from the attached population with complications of diseases of thecirculatory system (AMI, STEMI) was 4.88%;

15) Share of patients involved in the disease management programme (DMP) from among patients on dynamic follow-up for chronic non- infectious diseases - 14.5%;

16) Number of substantiated complaints in 2022 - 3.

Thus, according to this block of rating criteria, the medical center scored 410 out of 560 possible points, which is 73.21% and corresponds to 4 stars.

There are several private medical clinics in the Southern region. The top three market leadersare: Doctor Orynbayev Medical Centre, DauMed Medical Centre, Sunkar Medical Centre, the other medical clinics occupy less than 10% of the market. Medicare UK Medical Centre is currently the leader in the market of private medical services.

In general, the general package of services for most medical clinics is similar to that of our medical center and includes: - Call center, - Family doctor services, - Outpatient and polyclinic services, including day hospital, - Inpatient care, - Vaccination, - Dentistry, - Home visits by medical team, - Referral of their clients to clinics where specialized and highly specialized inpatient care is provided.

Among the state clinics, the Regional Clinical Hospital (hereinafter referred to as RCH), which has an in-patient department with 725 beds and a consultative and diagnostic polyclinic with 500 visits per day (narrow specialists in all areas), has a large market share (25%)in servicing the population of Shymkent. OKB is equipped according to the latest medical standards (has MRI, CT, physiotherapy department, etc.). About 21% of the medical services market is occupied by the City Diagnostic Centre (hereinafter, CDC), which provides services mainly to the residents of Shymkent city.

The distinctive features of the competitors are:

1) the advantages of the above mentioned medical centers are that for many years of work in the market of medical services a client base hasbeen formed;

2) the above mentioned medical centers have the latest medical equipment (CT, MRI, surgical racks for laparoscopic surgeries), highly equipped laboratories that meet the world standards;

3) for some services the medical centres are monopolists (CT scan for children under 12 years old and also with contrast), MRI, laparoscopic surgeries);

4) DauMed has a state order to perform orthopedic and gynecological surgeries;

5) unlike private medical centres, the cost of paid services in OKB and SDC is lower.

In OKB and SDC services are provided by appointment in a rather long period of time, there is a long queue, in connection with which patients turn to a private structure to receive qualified medical care combined with high service. The main competitors of the Medical Centre "Medicare UK" are IC "Daumed", IC "Sunkar" and IC "Doctor Orynbayeva" (hereinafter - Competitors) have been in the market of medical services since 2000, while the Company entered this market only in2015.

Thus, the competitors have many years of experience in the market, their own established client base, and most importantly, a highly qualified "star" medical staff. However, despite these criteria, the company competes with dignity and actively develops in the market of medical services.

Based on the analysis of the activity of Medicare UK Medical Centre, it should be noted that the dynamics of its development is positive. Medicare UK Medical Centre demonstrates simultaneous growth of both financial and non-financial indicators.

However, due to growing competition in the market of medical services, as well as growing shortage of staff, Medicare UK Medical Centre needs to pay more attention to improving its corporate culture. The indicators of low level of medical staff categorization, lack of managers' KPIs, high level of staff turnover, reduced staffing levels, as well as the presence of complaints, including substantiated ones, from patients indicate the need for a more in-depth analysis of the organization’s corporate politics.

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Agricultural Sciences

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ORGANIC FARMING IN AN ORGANIC PRODUCT INSTALLATION

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The most global problem in the world is to preserve soil and vegetation for future generations by using nature and its resources efficiently. Over thousands of years, as the society developed, its needs also increased, the more the volume of needs increased, the more natural resources decreased.

The complete violation of the natural balance between society and nature - the reduction of vegetation cover, the destruction of fauna and flora, the drying up of rivers, desertification, the release of millions of tons of carbon dioxide into the air and the lack of greenery that cannot absorb this carbon, the degradation of 52% of arable land in the world due to various reasons is modern. has put a person in front of difficult facts and incurable diseases. If this attitude continues, in the next 40-50 years, modern civilization will end and the development of the human race may stop!

Globally, the annual loss of fertile soil from cropland is 75 billion tons, which means a loss of agricultural products worth USD 400 billion annually. Land degradation affects the nutrition of 1.5 billion people per capita.

Since 1960, when the mass application of chemical fertilizers and pesticides to agriculture began, people have tried to get the maximum yield by using large quantities of these chemical fertilizers and pesticides. However, the toxic substances (nitrate, nitrite, pesticide residues) collected in the products obtained by technological methods seriously damage people's health and expose people to incurable diseases. Scientists have determined that a pesticide applied to the soil to kill 1 pest kills 1,700 beneficial organisms living in the soil. Millions of tons of N, P, K fertilizers are applied to the soil every year, so that 40-45% of each 100% nitrogen fertilizer applied is collected in the air and 20-25% in groundwater and water bodies. 20-25% of the nitrogen taken by the plant cannot be completely digested by the plant, and its residues are converted into nitrous compounds, which causes the formation of cancer in the human body. The P2O5 active ingredient in the superphosphate given to the soil is 19%. The remaining 81% are additives and heavy metals that even industry cannot clean. Heavy metals in 1 kg of simple superphosphate fertilizer Ca (H2PO4)2: Ar-1,2-2,2; Ca 50-70; Cr 66-243; Co 0-9; Pb is 7-92 mg. However, the permissible limit for cereal crops alone is 0.02 g. In recent years, diseases that have increased rapidly and reached the level of a pandemic make people think more: Why can't we protect our loved ones from such diseases?

Key words: soil, nitrogen, phosphorus, chemical fertilizer, diseases

Introduction. The saddest truth that modern civilization is faced with is the violation of the natural balance between land, plants, animals and conscious man - destruction of fauna and flora, drying up of rivers, desertification, millions of tons of carbon dioxide released into the air, and the fact that the greenery is decreasing to the extent that it cannot absorb this carbon, sad facts for modern man. , faced incurable diseases. If the attitude of a conscious person to nature continues like this, in the next 40-50 years, modern civilization will come to an end and the development of the human race may stop [Babayev A. And others, 2011 p.7].

The most global problem facing humanity today is to preserve soil and vegetation for future generations. Human society has been engaged in agriculture since its inception, and agriculture has passed a historical stage. Extensive farming, intensive farming, industrialized-unsustainable farming and lastly sustainable, organic, biological farming [Zamanova R.M. 2023, p. 206-209].

1. The extensive farming system is the achievement of crop growth due to the expansion of cultivated areas since the beginning of human society and labor habits.

2. Intensive agriculture or the Green Revolution is an agricultural system that has been carried out worldwide since 1960, without expanding the cultivated area, without spending new labor and resources on it (mechanization, land reclamation, mineral fertilization, application of advanced technologies, use of productive varieties, etc). 52% of the arable land in the world has been degraded due to the application of chemicals to the soil in the intensive farming system and for various reasons. Land degradation affects the nutrition of 1.5 billion people per capita. As a result of degradation, 74% of hunger and poverty (42% severe and 32% moderate), which directly leads to ecological disaster. The rate of land loss worldwide is 30 to 35 times faster than their historical average rate of loss. The area of saline soils in our country is 1.5 million ha, which constitutes 50% of our total economy. Globally, the annual loss of fertile soil from cultivated fields is 75 billion tons, which means the loss of agricultural products worth 400 billion US dollars per year.

3. Industrialized or unsustainable hydroponic farming or alternative soils. In modern times, hydroponic and cocopit are widely used as "alternative soil". Kokopit is made from the shell of the coconut fruit that grows in South Asia, pressed into a brick shape, and can replace soil when a little water is added to the mass. The ever-increasing demand of the population for agricultural products and at the same time the rapid degradation of land has led to an increase in interest in alternative soils or "soilless agriculture" in recent years. It is a dangerous farming system, because there are no beneficial microorganisms that neutralize all harmful substances as a type of filter in the soil, and thus the plant receives unrefined food and passes it on to humans.

4. Sustainable farming - (ecological or biological and organic) farming that serves the health of the soil, plants, animals and the entire ecosystem. Using hydroponics and cocopits is an ecological energy at least one cropping system in which the beneficial microorganisms in the soil are absent, and thus the plant takes in unrefined food and passes it on to humans. Since 1960, when the mass application of chemical fertilizers and pesticides to agriculture began, people have tried to obtain the maximum yield by using large amounts of these chemical fertilizers and pesticides. However, the toxic substances (nitrate, nitrite, pesticide residues) collected in products obtained by technological methods seriously damage people's health and make people face incurable diseases [Zamanova R.M,- 2023.p.102-110].

Scientists have determined that a pesticide applied to the soil to kill 1 pest kills 1700 beneficial organisms living in the soil. For example, KG fertilizer applied intensively to the soil creates an acidic environment in the soil, and in this acidic environment, the formation of humus in the soil becomes difficult, and bacteria, fungi, etc. it leads to the destruction of living things, and thus the soil becomes destructured, and the productivity is gradually lost. Millions of tons of N, P, K fertilizers are applied to the soil every year, so that 40-45% of every 100% nitrogen fertilizer applied to the soil is released into the air, 20-25% accumulates in groundwater and water bodies, and the remaining 20-25% nitrogen the plant cannot digest it completely and its residues are converted into nitrous compounds, which cause cancer in the human body. World scientists have determined that P_2O_5 active substance is 19% in the superphosphate given to the soil, and the remaining 81% are additives and heavy metals, which even the industry cannot clean. Heavy metals in 1 kg of simple superphosphate fertilizer $Ca(H_2PO_4)2$: Ar-1,2-2,2; Ca 50-70; Cr 66-243; Co 0-9; Pb is 7-92 mg. However, the permissible limit for cereal crops alone is 0.02 g. However, when leguminous plants biologically fix the free nitrogen of the air, it does not pose a danger to humans even if more than 3 tons of nitrogen are accumulated per hectare.

According to the world experience, we should add the fact that the size of the land area should not be less than 50 ha in the optimally functioning and profitable farms. For many years, in developed countries, the size of farms has been constantly increasing, that is, they are getting bigger. For example, in the United States only in 1969-1988, the size of land areas in farms increased from 149 ha to 190 ha on average, which is 25%. In our case, this parameter is about 100 times lower. The above-mentioned facts suggest that the transition to ecological agriculture is inevitable in our country, and in this regard, we face the following important tasks:

1. Formation of the legislative framework that creates favorable conditions for the development of ecological farming in the country;

2. Training-education and information-consultation network on ecological farmingto achieve the formation of modern "ecological consciousness" by creating;

3. Stimulation of environmentally friendly product production in the country and creation of its market;

4. Allocation of budget and funds for the development of ecological agriculture and implementation of national programs in this direction [Babayev A. And others, 2011 p.12].

Currently, 54 countries of the world have adopted national regulations on ecological agricultural production, and 2.3 million farmers are engaged in the production of ecologically clean products on 43.7 million ha in 172 states, while in Azerbaijan this is only 0.0025% of the total cultivated area.

According to Resolution No. 2092/91, adopted by the European Union in January 1993, 300 million euros were allocated for the realization of a European-wide common certification and agro-ecological program, which is considered the most important renewal of European agriculture. The "Agenda 2000" directive adopted by the European Council in Berlin in December 1999 greatly supported the development of ecological agricultural production in European countries. The main goal of the implemented policy is to create new sources of income due to the development of export of certified organic food products.

From this point of view, the development of Ecological Agriculture in the conditions of small and small land use in Azerbaijan today is a vital necessity.

Aims and objectives of the research: The main aim of the research is to produce an ecologically clean wheat product using many components of organic-biological farming. Today, our mission as a scientific institution, the employees of the Agricultural Scientific Research Institute, although we are late in our republic, to achieve the culture of "Poison-free table" is to restore, protect and maintain the fertility and structure of the soil in ecologically clean agriculture, to protect the environment, to improve its health, and to use natural resources effectively. is to promote the results of research to farmers and every farmer.

Material and methods. The research work was carried out in 2021-22 in Agstafa AE Farm under irrigation conditions and in Gadabay Aid Station under irrigation conditions. During the research, "Barakatli" 95 varieties of durum wheat, both parents of which are local, and "Marjan" variety of soybeans (Glycine max L) as a predecessor, cattle manure were used. , poultry dung (manure) and natural nutrients that have a positive effect on the development of plants, accepted and widely used in the world, and local and natural substances that protect the plant from diseases and pests were used.

In the production of ecologically clean products, if a chemical substance is not applied to the same cultivated area for 3 years, that area is considered ecologically clean. In our research work, as both the predecessor and one of the variants is soybean siderate, it is planned to plant soybeans from legumes that enrich the soil with natural nitrogen. The research was carried out in the spring of 2020 as a predecessor of the soybean variety "Marjan" for field sowing after harvesting the spring-sown crop. It was carried out in 532 m^2 area in 3 replications with 5 variants of the "Barakatli 95" variety of Sepin durum wheat. The agrotechnics of the research was carried out as stipulated in the "Methodology of field experiments on research works in the field of selection of cereal-cereal plants" of the EITI and in accordance with the agro-rules recommended for the regions. The sowing scheme of the experiment was as follows (Table).

Table.

Sowing scheme of the experiment

Or. numeral	Repetitions	Variants				
		1	2	3	4	5
1	I	Control	20t/he cattle manure	5t/he. of poultry manure	soybean siderate	6t/ha of poultry manure
2	II	20t/he cattle manure	5t/he. of poultry manure	soybean siderate	6t/ha quş peyini	Control
3	III	6t/ha quş peyini	soybean siderate	Control	20t/he cattle manure	5t/he. of poultry manure

Conclusions and their discussion. In contrast to intensive farming, in the production of sustainable organic-biological or organic agricultural products, the use of organic fertilizers, rotation crops, careful cultivation of the soil, deep plowing and the complete rejection of flood irrigation are mandatory. Organic fertilizers include:

- ✓ Dung of various kinds of animals, horse, cow, sheep, and bird excrement
- ✓ Peat, silt,
- ✓ Leafy and grassy forest soils,
- ✓ Wood bran or tree bark,
- ✓ Cultivating siderates,
- ✓ Composts,
- ✓ Vermifertilizers,
- ✓ Green fertilizers made from different plants.

In order to increase the fertility of the soil, we ensure the development of the plant by ensuring the existence of beneficial microorganisms in it. Since chemical fertilizers are not used in the cultivation of beneficial microorganisms, in order to meet the needs of the plant, natural fertilizers of organic origin must be given both from the root and from the leaves.

The following agrotechnical measures were implemented in our research work. As soon as the crop of the predecessor plant, soybean, was harvested, the field was plowed by applying organic fertilizers, depending on the options, cattle manure and bird (dung). In the soybean siderate variant, the green mass is harvested during the budding phase of soybeans, crushed and mixed with the soil.

There is such a motto that ecologists generally accept: "In order to produce ecological products, first of all, everyone should change their thinking". In the Qur'anic Surah "Baqarah" it is said: "O man, We have created everything for you and spread the earth with a thousand blessings for you."

Scientists have determined that apart from the world of humans, plants and animals, there is also a world that we cannot see with the ordinary eye, which is the world that lives in the water, air, soil, human, plant and animal organisms, and controls and sustains the human, plant and animal world. but they are microorganisms which are not visible to the eye, and they are divided into 7 types; viruses, protists, archaea, bacteria, fungi, plants, and animals appeared at the same time as humans. 1 gram of soil contains up to 10 billion bacteria, 20 million ray fungi, 100 thousand fungi, 100 thousand algae, and up to 1 million protozoa. . These organisms mostly live in 2-15 cm of the soil, and it decreases in the deeper layers, and they do not live in 3-4 m depth.

These organisms living in the soil are divided into two groups, aerobic and anaerobic. Aerobic bacteria break down any food that falls into the soil into simple compounds and transfer it ready to anaerobic bacteria. Without these beings, it would be impossible to stand and live on earth from the stench and the smell of corpses. Anaerobic bacteria, especially mycorrhizal fungi, literally cook, neutralize toxic microorganisms and give them back to plants and animals. Each of these entities performs a function in nature [Zamanova R.M Круты - 2023 p.102-110].

It has been proven that most of the elements in Mendeleev's table are present in plants, animals and human bodies. Just as humans, plants and animals need to be nourished, the soil also needs to be nourished with healthy foods. We may not even know how much the food waste from our kitchens, both vegetable and animal waste, is useful for the animals and plants in the soil, and we do not realize that the soil we walk through every day is also a living organism!

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In organic production, Australia's Weston Milling Company has been exporting high-protein wheat varieties for baking in the organic wheat market since 1864, and 85% of wheat sales with organic production are in a number of Northern European countries, including the United States, the United Kingdom, the Netherlands, Austria, Norway, and Sweden. - Exported to Switzerland, Japan, Southeast Asia Singapore, Malaysia and Hong Kong and Italy for pasta production [David, C.et al., 2012].

Taking all this into account, we started to conduct research, and thus one of our options in the research was organic fertilizer, cow dung.

In organic farming, manure is the main fertilizer applied to the soil to increase soil fertility and plant productivity elements, and not only improves plant nutrition, but it is also the most powerful environmentally friendly tool that affects fertilization in the soil formation process. Its composition is rich in valuable elements such as nitrogen, phosphorus, potassium, calcium, magnesium and sulfur, which are necessary for plant nutrition. Fresh cattle manure contains on average 75% water, 25% dry matter, 0.5% nitrogen, 0.25% phosphorus, 0.6% potassium, 0.35% lime, 0.15% magnesium. The average amount of the specified elements may vary depending on the type of livestock, feeding and manure storage. The manure of large animals is lower in composition than the manure of small animals.

Aqueous solution (juice) was prepared from organic fertilizers as a feeding fertilizer according to the options, mixed for 10 days and then given to the field after storage. The purpose of keeping for 10 days is to wait for the prepared solution to become fully usable by the plant. Because at this time, with the help of useful bacteria and fungi in the solution, the process of fermentation takes place, and at this time, the nutrients needed by the plant in the solution are in a form that can be used by the root of the plant.

Scientists have proven that if 20 tons of manure are applied to 1 ha, the assimilation of manure in the soil lasts for several years, and when the manure juice is applied to the plant, it can travel from the roots to the leaves of the plant in 7-8 hours [ZamanovaR.M. 2018,p. 24 from the dissertation].

We have carried out additional feeding of plants in accordance with each option several times with breaks. In the case of 20 t/ha of cattle manure in April: 10 kg of cattle manure + 20 liters of water + 1 kg of wood ash were mixed for 10 days and 5 liters of water was added to each 1 liter (of the mother solution) of manure juice after watering the plant. then it was given from the root, adding 1 liter (to the mother solution) and 10 liters of water and spraying the field according to options. 200 liters of juice is obtained from 10 kg of manure, which is enough for spraying 0.5 ha

Poultry dung is a fast-acting organic fertilizer rich in nutrients that are well absorbed by plants. This fertilizer can contain up to 6% nitrogen, up to 4.8% phosphorus, and up to 2.6% potassium, depending on the quality of the food given to the birds. Poultry (dung) can be given to the soil as a basic and additional feeding.

During the study, juice was prepared by mixing 10 kg of bird droppings with 40 liters of water and 1 kg of wood ash in the version with bird droppings. In the versions with bird (dung) dung, 15 liters of water was added to the juice of bird (dung) dung for every 1 liter (mother solution) in April and given to the root of the plant after watering the field.

1. "Green fertilizers" or siderate plants have been widely used in the world since ancient times in order to increase the fertility of the soil, the amount of organic substances in it, accelerate the biological processes taking place in it, and improve its structure. , because it loosens the soil, prevents erosion and leaching of nutrients. Green manure crops also prevent weeds, help fight disease and pests, protect the soil from freezing and retain moisture. Green manure crops grow rapidly and intensively. Their dense cover inhibits weed growth, because as a result, weeds receive less sunlight and nutrients. Thus, in integrated weed control, green manure is an effective measure of biological control without the use of herbicides.

Thus, one of our options is the "Soya siderat" option. Sideration is the process of planting legumes or various useful plants and mixing them into the soil before the main plant, and the plants buried in the soil in the form of a green mass are called siderates. In Latin, the word "sidera" is translated as "a star that receives power from the sky", siderates play a very important role in organic farming (Fig.1.)

In the preparation of the soil before sowing, in July, in the research work "Research of the main elements of organic-biological farming that ensures the purchase of ecologically clean products", at the end of budding and at the beginning of flowering, the green mass of soybeans was harvested and buried in the soil as a siderate.

Many questions appeared before us in conducting the research work. To protect the living biota in the soil, if we use organic manure and siderate (green manure) instead of N,P,K, which are taken to the soil by chemical means to cultivate the soil and the plant, how can we protect the plant from disease and pest?

During the study, we conducted research using several natural organic nutrients used by organic farmers around the world to nourish grain and prevent disease and pests.

May 2022 for both feeding and prevention of diseases and pests, its composition includes antioxidants and bioflavonoids, vitamins E, C, B, PP, quercetin (a natural antioxidant that cleanses the body of toxins and prevents the formation of malignant tumors); methanol 76% with strong antioxidant properties. carotene; phytoncides; iron; potassium, calcium; nicotinic acid or niacin, called vitamin PP (B3), carbohydrate 82.15%, protein 3.06%, ash 5.93%, fiber 7.78% and a high amount of biopolymers 93%, α-cellulose 41.1% , hemicellulose 16.2% and 38.9% lignin-rich onion skin ore was prepared and sprayed on plants. [Celano, R.; And others, 2021,10, 304]

Figure 1. Burying the green mass of the soybean plant into the soil, carrying out sideration work

Figure 2. Burying Siderat with technology

As a last preventive measure against wheat thrips or wheat moth, along with feeding plants and increasing their resistance; garlic, hot pepper powder, olive oil, 72% laundry soap serum were sprayed on the field in June .[Hayat S., 2018; 8(9):1505]

In our research, 20 t/ha of "Barakatli" 95 varieties of durum wheat cultivated with natural ointments and minerals prepared by the method of our ancestors, grandparents (Turkechara) without using any chemical substances, using only organic fertilizers and natural-local substances. Plant density with the influence of manure, 5 t/ha of bird lice, 6 t/ha of bird lice, soybean siderate was studied and given in the figure.

As it can be seen, the density of plants per 1m2 area in wheat fields was observed with a decrease in the number of plants towards the end of the vegetation depending on the variants.

The decisive period in the life of autumn grains is considered to be winter and early spring. During these periods, plants fall into unfavorable weather conditions and die for various reasons.Before starting the research work, the impossibility of growing grain without chemicals caused a lot of controversy. But the result of our tireless research (Fig.3.).

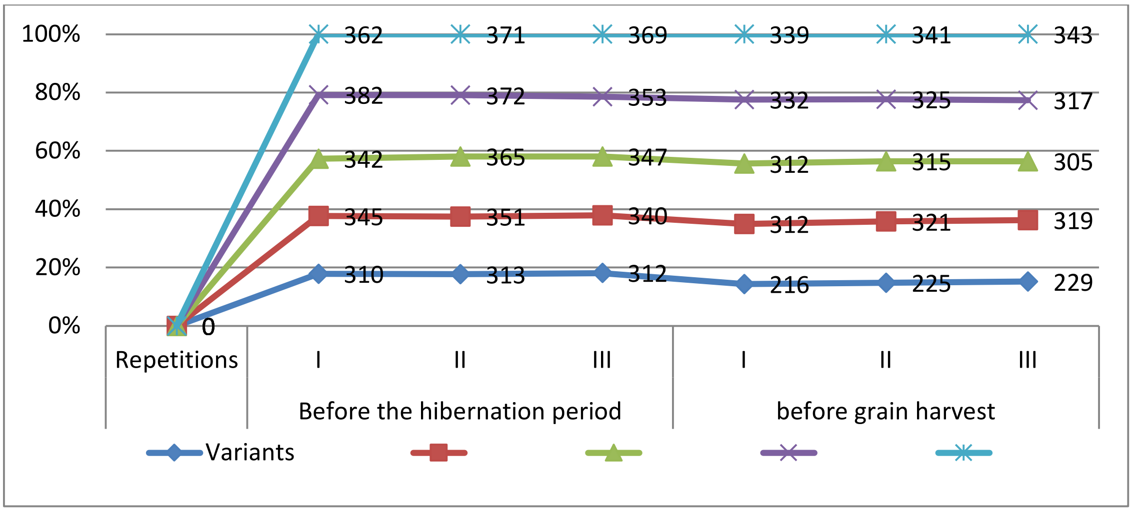

Figure 3. Plant density before and after wintering in Agstafa AE Farm

The result. In the neighboring areas of the farm, despite the observation of powdery mildew, stem rust disease and wheat thrips from pests in the control variant, in field experiments on the study of the main elements of organic-biological farming, which ensures the purchase of ecologically clean products, no diseases and pests were observed, and a field experience that did not lie on healthy land was obtained. Best result in our one year field experience it was in the soybean sideration option that the average yield was 45 centners per hectare.

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Geological and Mineralogical Sciences

DIRECT-PROSPECTING METHODS OF SATELLITE IMAGES AND PHOTO IMAGES FREQUENCY-RESONANCE PROCESSING: RESULTS OF APPLICATION FOR NATURAL HYDROGEN ACCUMULATIONS SEARCHING IN URUGUAY

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Annotation. The article presents a brief description of projects for the Uruguay territory surveying in the reconnaissance mode in order to identify promising areas and sites for detailed prospecting for oil and gas, natural hydrogen. Prepared projects of reconnaissance survey of Uruguay territory can be quickly implemented with using the mobile and low-cost technology, that include modified methods of frequency-resonance processing and decoding of satellite and photo images, vertical electric-resonance sounding of a cross-section, as well as a method of integrated assessment of the prospects of oil and gas potential of large prospecting blocks and license areas. For these projects practical implementation, the satellite image of the Uruguay territory is divided into separate blocks (fragments), the frequency-resonance processing of which may be carried out separately. During frequency-resonance processing of each fragment of the Uruguay territory image in the reconnaissance mode for natural hydrogen searching, a limited set of instrumental measurements of the following nature may be performed separately: a) procedure for recording signals (responses) at frequencies of the 6th group of igneous rocks (basalts); b) the procedure for determining the depth of basalt volcano root (in the case of fixing responses from the surface at basalt frequencies); c) procedures for fixing signals (responses) at the frequencies of hydrogen, phosphorus (red) and hydrogen bacteria; d) instrumental measurements to confirm (or establish absence) of hydrogen migration into atmosphere. The expediency of implementing the listed set of instrumental measurement procedures during the survey is due to results of direct-prospecting methods testing in various regions of globe. The materials of numerous studies allow us to state following: a) responses at hydrogen frequencies are recorded almost everywhere during instrumental measurements in the contours of basalt volcanic complexes; b) red phosphorus is almost always present in basalt volcanoes; c) hydrogen bacteria create their colonies in the upper part of cross-section in the areas of hydrogen migration into the atmosphere. The developed super-mobile direct-prospecting technology has provided the authors with a unique opportunity

to conduct a huge number of experiments in various regions of the globe. In the process of experimental work conducting, numerous evidence was obtained in favor of the deep (abiogenic) genesis of hydrocarbons in the framework of the concept of hydrogen degassing of the Earth. The proven technology allows filling the studied cross-section with specific rocks (sedimentary, metamorphic and magmatic), as well as identifying areas on the surface and intervals in the cross-section that are promising for ore and combustible minerals prospecting. The super-mobile methods can be used to assess the prospects for oil and gas (ore) potential of large exploration blocks and local areas (including those put up for auction), to select the optimal locations (sites) for laying exploration and production wells, assessment of the prospects for discovering oil and gas deposits in the deep and super-deep horizons of cross-section, prospecting and localization of zones with deep channels location, through which the chemical elements, fluids and mineral matter migrate into the upper horizons of cross-section. The use of mobile and low-cost technology will significantly speed up the exploration process for oil, condensate, gas, natural hydrogen, as well as reduce the financial costs for its implementation.

Keywords. Uruguay, oil, gas, hydrogen, limestones, marls, dolomites, basalts, granites, direct searches, deep structure, carbon dioxide, sounding of the cross-section, remote sensing data processing.

Introduction

In 2019-2023 in various regions of the globe, a significant number of experimental research has been carried out in order to test frequency-resonance methods of satellite images and photographs processing and decoding [9, 10], as well as to develop and improve methodology of their practical application during the geological exploration problems of various nature solving. In the course of experimental works, the possibility of targeted use of mobile direct-prospecting technology was additionally studied for detecting and localizing hydrogen accumulations in areas of visible hydrogen degassing and assessing (determining) the depths (intervals) of their occurrence, as well as an integral assessment of the prospects for detecting hydrogen deposits within local areas and large prospecting blocks. At present, the problem of searching for accumulations of natural hydrogen and organizing its production is quite relevant due to the intention of the world community to switch in the near future to carbon-free energy, in which an important place is given to hydrogen, the environmentally friendly fuel of the future.

The main results of experiments already carried out (instrumental measurements) with the aim of studying the possibility of using direct-prospecting methods for localizing hydrogen accumulations in a cross-section were published in [11–27]. This article presents materials of additional experimental works on the hydrogen problem on Uruguay territory.

Once again, we also note that an additional reason for publishing materials on hydrogen issues is the numerous information reports about the intentions of many large companies (including some leading oil companies) in the world to engage in the production of "green" hydrogen using renewable energy sources. At present, technologies for the production of hydrogen from water have been developed and tested. Potential investors can only invest in the construction of technological complexes for its production in the immediate vicinity of the objects of its consumption. Unfortunately, many analytical reviews on hydrogen issues do not provide (mention) information about research and development in the framework of the problem of searching for accumulations of natural (deep) hydrogen, its production, storage, transportation and use as fuel. In the current situation, it can be assumed that in the case of a delay in the development of effective technologies for the search and transportation of hydrogen, the geological industry of the world economy may lose the race for financing projects for the large-scale use of environmentally friendly fuel of the future – hydrogen.

The materials of additional research presented below, as well as a brief description of the results of a large-scale testing of low-cost direct-prospecting methods at hydrogen degassing sites in various regions of the globe, allow us to hope that the problem of prospecting and exploration of accumulations (deposits) of natural hydrogen can be moved off the ground - oil companies of the world, as well as private firms and investors will begin to invest in its search and production. To the above, we also add that the already conducted experimental studies on the problem of natural hydrogen testify to its huge reserves in the bowels of the Earth, and the material costs for its search and extraction will be significantly lower than for production.

Research methods

Experimental studies of a reconnaissance and detailed nature are purposefully carried out using mobile methods of satellite images and photographs frequency-resonance processing and decoding, vertical scanning (sounding) of cross-section in order to determine (estimate) the depths and thicknesses of various rock complexes and sought minerals, as well as methods an integral assessment of the prospects for oil and gas potential (ore content, water content) of local areas and large blocks [3, 9-27]. Some methods of the technology used are based on the principles of the “substance” paradigm of geophysical research [3], the essence of which is to search for a specific (searchable in each individual case) substance – oil, gas, gas condensate, gold, iron, water, etc. The developed methods are based on the standing electric waves discovered by Nikola Tesla in 1899 in the deep horizons of the Earth [7-8]. Mobile technology as a whole, as well as its individual methods, are actively used in the testing mode to search for hydrocarbon accumulations at the initial stages of the geological exploration process, including for the integral assessment of the oil and gas potential of large and hard-to-reach blocks and areas, as well as local areas of prospecting and exploratory wells drilling.

In modified versions of the methods of satellite images and photographs frequency-resonance processing, as well as vertical sounding (scanning) of cross-section, bases (sets, collections) of chemical elements, minerals, rocks and minerals (specific samples) are used [9]. Thus, the collection of oil samples used in instrumental measurements includes 117 samples, gas condensate – 15 samples.

The set of photographs of sedimentary rocks consists of 11 groups: 1) psephites, monomineral conglomerates (22 samples, sample numbers in the set are 2-23); 2) psammites (18, 25-42); 3) silts, mudstones, clays (6, 44-49); 4) kaolinite mudstones (6, 51-57); 5) kaolinite clays (10, 59-68); 6) sedimentary-volcaniclastic rocks; tuff breccias (9, 70-78); 7) limestones (24, 80-103) (Fig. 1b); 8) dolomites (11, 105-115) (Fig. 1c); 9) marls (10, 117-126) (Fig. 1d); 10) siliceous rocks (13, 128-140), salt.

a)

b)

c)

d).

Fig. 1. Photographs of rock samples whose resonant frequencies are used during images processing [2]: a) group 6 igneous rocks (gabbros and basalts); b) group 7 sedimentary rocks (limestones); c) group 8 sedimentary (dolomites); d) group 9 sedimentary rocks (marls).

The database of photographs of igneous and metamorphic rocks includes 18 groups: 1) granites and rhyolites (29 samples, sample numbers in the database are 1-29); 2) granodiorites and dacites (7, 31-37); 3) syenites and trachytes (18, 39-56); 4) diorites and andesites (14, 58-71); 5) lamprophyres (14, 73-86); 6) gabbro and basalts (32, 88-119) (Fig. 1a); 7) non-feldspar ultramafic rocks (20, 121-140); 8) feldspathoid syenites and phonolites (23, 142-164); 9) feldspathoid gabbroids and basaltoids (6, 166-171); 10) feldspar-free ultramafic and mafic rocks (10, 173-182); 11) kimberlites and lamproites (20, 184-203); 12) non-silicate carbonatites (8, 205-212); 13) metamorphic granulites (10, 214-223); 14) metamorphic gneisses (26, 225-250); 15) metamorphic crystalline schists (44, 252-295); 16) metamorphic microcrystalline schists (phyllites) (11, 297-307); 17) metamorphosed slates, cleaved sandstone (1, 308); 18) metamorphosed slates, cleaved siltstone (1, 309).

Figure 1 shows only 4 groups of rocks from the sets listed above. When carrying out measurements in different regions, responses at hydrogen frequencies have been obtained at the moment only from these groups of rocks. At the same time, signals of hydrogen were recorded from basalts almost always.

Photos of the used sets of samples of sedimentary, metamorphic and igneous rocks are borrowed from the electronic document [2]. Let us add to this that in our publications the rock classification proposed by the authors of the document [2] is also used.

Materials of earlier experimental studies, obtained with the used set of mobile direct-prospecting methods, are presented in publications [9-27]. The same articles describe the methodological features of measurements during the satellite images and photographs processing using the developed technical means.

When conducting numerous studies using the described direct-prospecting methods in 2019-2022, the optimal procedure (processing graph, sequence of actions) was worked out (and constantly improved), which is used when carrying out work within the blocks and areas of survey. The used processing graph for a separate satellite image (or its local fragment) includes the following sequence of actions (steps).

1. Fixation from the surface of the presence (absence) of responses (signals) from the following set of minerals: oil, condensate, gas, amber, oil shale, argillic breccia, gas hydrates, ice, coal, anthracite, hydrogen, living water (deep), dead water, diamonds, brown coal, iron ore, potassium-magnesium salt, sodium chloride salt (hereinafter simply salt).

2. Registration of responses from the groups of sedimentary, metamorphic and igneous rocks that make up the cross-section.

3. Establishing the presence of deep channels (volcanoes) filled with various groups of rocks in the survey area; determination of the depths of the roots of volcanoes location.

5. Determination of groups of rocks (or individual samples of groups), from which signals are recorded at the frequencies of oil, condensate, gas and water (deep).

6. Establishing the presence (absence) of responses from oil, condensate and gas at the surface (depth) of 57 km - the boundary of hydrocarbon synthesis in deep channels (volcanoes), filled with certain groups of rocks.

7. Establishing the presence (absence) of responses from water (deep) on surfaces (depths) 59 km, 68 km, 69 km - the predicted boundaries of water synthesis in volcanoes of a certain type.

8. By scanning a cross-section with different steps from the surface up to 15 km, depth intervals are determined, within which responses are recorded at the resonant frequencies of oil, condensate, and gas. Refinement of the depths of location of the most promising for hydrocarbons intervals of cross-section during additional scanning with a finer step.

9. In case of detection of responses from the 6th group of igneous rocks (basalts) on the surveyed area, an assessment is made of the depth of the upper boundary (edge) of basalts, as well as the depths of the beginning of recording responses at resonant frequencies of hydrogen and living (healing) water from basalts.

10. When establishing the presence of signals from the 11th group of igneous rocks (kimberlites) in the survey area, the depth of the upper edge of the kimberlites is determined, as well as the depth interval within which responses are recorded at diamond frequencies.

Given the reconnaissance nature of the studies performed, the described set of separate procedures for satellite images processing in full was not implemented in all surveyed areas.

Once again, we focus on the distinctive feature of the direct-prospecting frequency-resonance methods being developed. Unlike classical geophysical methods, the methods used make it possible in each specific case to fill the cross-section under study with the complexes of sedimentary, metamorphic and igneous rocks present in it, as well as to determine in the first approximation (and refine at the stages of detailing) the intervals of cross-section that are promising for the detection of combustible and ore minerals, immediately, in the process of measurements (registration of signals) by the developed instrumentation and measuring devices (i.e. without additional stages of modeling and geological interpretation of the results of instrumental measurements). In this article, as well as in other published materials, the emphasis is mainly on the presentation of measurement results.

We also note that the developed technology uses the frequency-resonance principle of the useful signals' registration [3]. Satellite images or photographs of research objects, as well as photographs of rock samples, minerals and chemical elements, are, in principle, antinodes of standing electric waves, discovered by Nikola Tesla in 1899 in deep horizons of the Earth [7-8].

When carrying out instrumental measurements using the developed computerized complexes, the spectra of satellite or photographic images of objects studied are sequentially compared with the spectra of rock samples, the desired minerals and chemical elements. In the process of comparison, the measuring unit registers resonances (electromagnetic responses), which make it possible to draw a conclusion about the presence (absence) of specific rocks, the desired minerals and chemical elements in the cross-section of the object of study. Such features of the developed methods of satellite images processing and decoding are the basis for the use of the terms "frequency-resonance technology" ("frequency-resonance methods").

The processing of satellite images and photographs is carried out in laboratory conditions, without organizing and conducting field geological and geophysical studies. This provides an opportunity to quickly conduct research in any region of the globe, and, consequently, developing technology is super-mobile.

In addition to what was said in the previous paragraph, it is worth adding the following. As a result of testing and practical application of the developed measuring equipment in various regions of the world, numerous evidences (facts) have been obtained in favor of the "volcanic" model of the formation of many structural elements of the Earth (and other planets and satellites of the solar system), as well as deposits of combustible and ore minerals (hydrogen and water as well). Instrumental measurements established the existence of 10 types of volcanic complexes filled with various types of rocks. And what is characteristic, the roots of all volcanoes are almost always fixed by scanning the cross-section at the same depths, namely: 95-98 km, 214-218 km, 470 km, 723 km, 996 km.

It is quite natural that the depths of the roots of 470 km or 723 km of a salt or dolomite volcano cause rejection and skepticism among many experts. We also note that at the initial stages of the technology testing, such depths of roots were also surprising to the authors of the experiments. However, the ubiquitous repetition of such depth values during many hundreds of measurement experiments gives grounds for the assumption that such strictly predetermined values of the depths of the roots of various volcanic complexes are due to certain wave processes in the solar system and our galaxy.

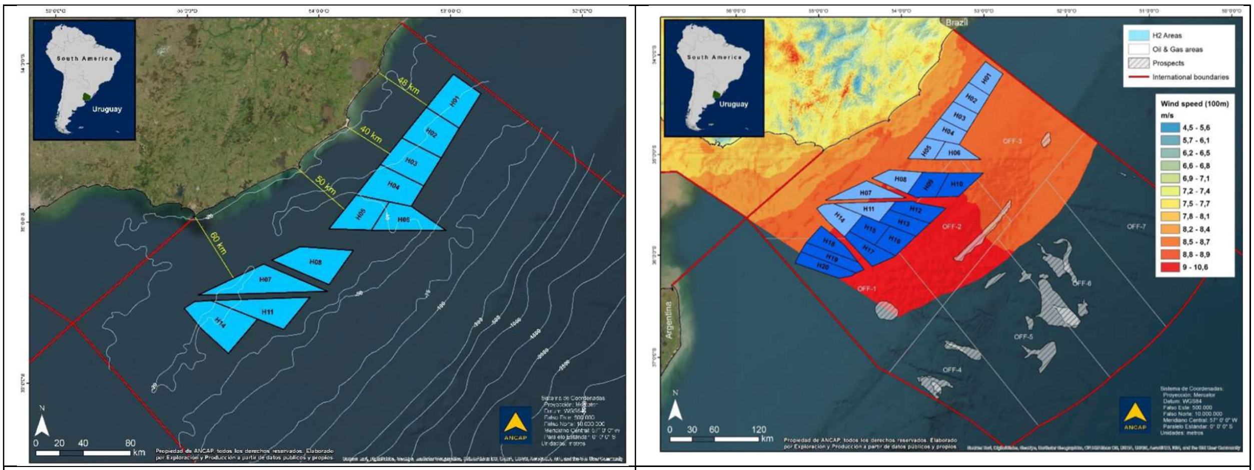
In this regard, it is only regrettable that such skepticism in relation to the depths of the roots of volcanoes is automatically (without detailed consideration and analysis of materials) transferred to the results of instrumental measurements in the upper part of cross-section accessible for drilling.

Uruguay Offshore Green Hydrogen Project (H2U Offshore)

In 2023 ANCAP is planning to tender offshore areas for energy companies to carry out feasibility studies and potential installation of infrastructure to produce H2 from offshore renewable energy, at their own cost and risk entirely.

A brief description of the developed project is given in the presentation [4]. Figure 2 shows the images from this presentation, which show the position of the blocks (licensed areas) offered to potential investors for the construction of technological complexes for the green hydrogen production using renewable energy sources.

Figure 3 shows the technological complexes (installations) that need to be built onshore or offshore for the of green hydrogen production using the developed technology of water electrolysis [6].



a)	b)

Fig. 2. Position of the licensed blocks for the green hydrogen production using renewable energy sources [4].

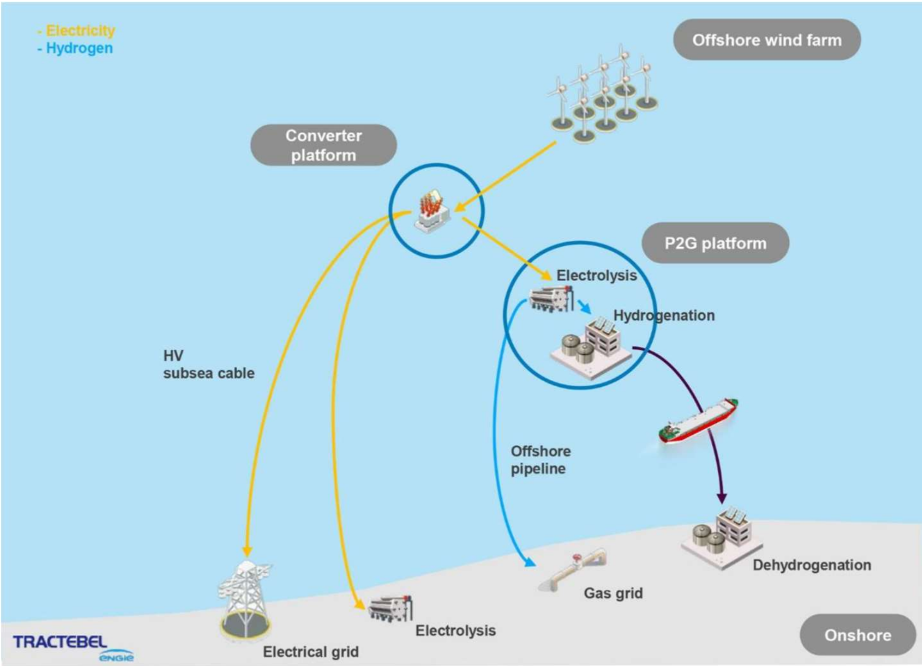


Fig. 3. Technological installations for the green hydrogen production on onshore or offshore using the developed technology of water electrolysis [4. 6].

It follows from the presentation [4] that the practical implementation of projects for the green hydrogen production on the Uruguay offshore requires significant financial and time costs.

We add to the above that information about this project served as one of the additional reasons for conducting additional experimental work of reconnaissance nature on the territory of Uruguay in order to discover areas and blocks that are promising for the natural hydrogen detailed exploration.

Projects of Uruguay territory reconnaissance survey

Oil and gas project. The results of approbation and practical application of the direct-prospecting technology of satellite images and photographs frequency-resonance processing allow us to reasonably conclude that their targeted use in the search and exploration of oil and gas deposits can significantly speed up and optimize the exploration process. Promptly carried out reconnaissance surveys of the territories of large blocks in various regions of the world (in

Uruguay, including) can be considered as additional confirmation of the potential capabilities of mobile direct-prospecting technology. On the other hand, the results of the survey of large blocks indicate the potential possibility of a reconnaissance survey of the entire Uruguay territory in order to identify the most promising areas (blocks) for oil and gas detailed exploration.

For the practical implementation of this project, the satellite image of Uruguay territory may be divided into separate blocks, the frequency-resonance processing of which will be carried out separately. One of the possible options for dividing a satellite image of the Uruguay territory into separate fragments is shown in Fig. 4. This image with rectangular contours shows 108 local fragments (blocks) for processing.

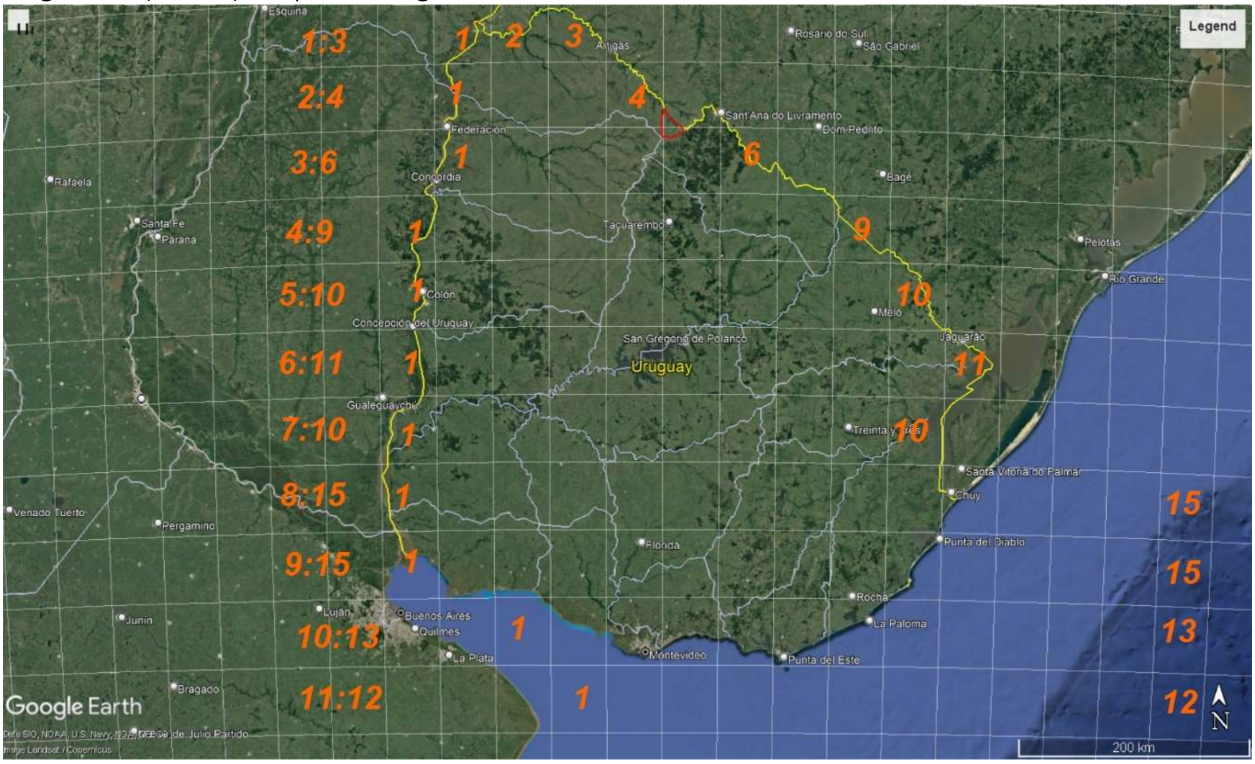


Fig. 4. Satellite image of Uruguay territory.

Frequency-resonance processing of all 108 fragments of the Uruguay satellite image can be performed quite quickly. During image processing, the following set of measurement procedures may be performed: a) fixation from the surface of anomalous responses at frequencies of oil, condensate and gas; b) registration of signals at the frequencies of methane-oxidizing bacteria (bacteria, whose populations are analyzed in method of microbiological exploration for oil and gas by MicroPro GmbH, Germany); c) establishing the presence of a volcanic structure within the survey area, in which there are conditions for the hydrocarbon's synthesis at a depth of 57 km; additional fixation of responses of oil, condensate and gas at this depth; d) fixing signals at frequencies of oil, condensate and gas from lower part of cross-section at depths of 5, 10 and 15 km in order to assess prospects of oil and gas discovering in deep horizons of cross-section.

The listed procedures of instrumental measurements have fully demonstrated their effectiveness and informativeness in the process of direct-prospecting methods approbation in the areas (sites) of drilling exploratory wells on land and shelf in various regions of the globe and basalts volcano's location [12, 14, 16, 21-25].

Notes. Additional procedures for instrumental measurements and the features of their implementation within the framework of this project can be formulated (clarified), if the expediency of its implementation will be recognized in Uruguay.

Within the most promising for oil and gas blocks, found in Uruguay, detailed prospecting can also be quickly carried out using methods of satellite images and photographs frequency-resonance processing. The prepared fragments of a satellite image of Uruguay territory (Fig. 4) can be additionally processed in the reconnaissance mode within the framework of separate projects for identifying blocks, that are promising for detailed prospecting for: a) natural hydrogen; b) ore minerals; c) water.

Hydrogen project. During frequency-resonance processing of each fragment of the Uruguay territory image in the reconnaissance mode for natural hydrogen searching, a limited set of instrumental measurements of the following nature may be performed separately: a) procedure for recording signals (responses) at frequencies of the 6th group of igneous rocks (basalts); b) the procedure for determining the depth of basalt volcano root (in the case of fixing responses from the surface at basalt frequencies); c) procedures for fixing signals (responses) at the frequencies of hydrogen, phosphorus (red) and hydrogen bacteria; d) instrumental measurements to confirm (or establish absence) of hydrogen migration into atmosphere.

The expediency of implementing the listed set of instrumental measurement procedures during the survey is due to results of direct-prospecting methods testing in various regions of globe. The materials of numerous studies allow us to state following: a) responses at hydrogen frequencies are recorded almost everywhere during instrumental measurements in the contours of basalt volcanic complexes; b) red phosphorus is almost always present in basalt volcanoes; c) hydrogen bacteria create their colonies in the upper part of cross-section in the areas of hydrogen migration into the atmosphere.

To implement the second stage of the work, one of two conditions was met: within one surveyed fragment basalt complexes with hydrogen were found and responses were recorded at the frequencies of red phosphorus and hydrogen bacteria. Further continuation of research within local block is possible only with the participation of at least one Uruguay company in the implementation of the "project".

At the second stage of project implementation within local block, studies of the following nature can be performed: a) the satellite image of the block may be processed in a detailed mode in order to localize areas (zones) of the basalt volcano's location and select the most promising for exploratory wells drilling for hydrogen; b) in the contours of the most promising local zones, a detailed scanning of cross-section will be performed in order to determine the depths and thicknesses of hydrogen reservoirs in the cross-section above the basalts, as well as in the basalts directly; c) within promising local zones, the depths and thicknesses of reservoirs with living (healing) water may be determined by detailed scanning, and healing properties of living water in identified reservoirs of cross-section may be also studied.

Based on the results of detailed processing of satellite image of local block, a decision will be made to drill exploratory wells in the most promising local areas. At the initial stage of drilling, wells can be designed to study reservoirs with hydrogen in the upper horizons of cross-section. During drilling, reservoirs with living water can also be studied. Based on the results of the first wells drilling, a decision can be made on the next stages of research for the further implementation of the "project".

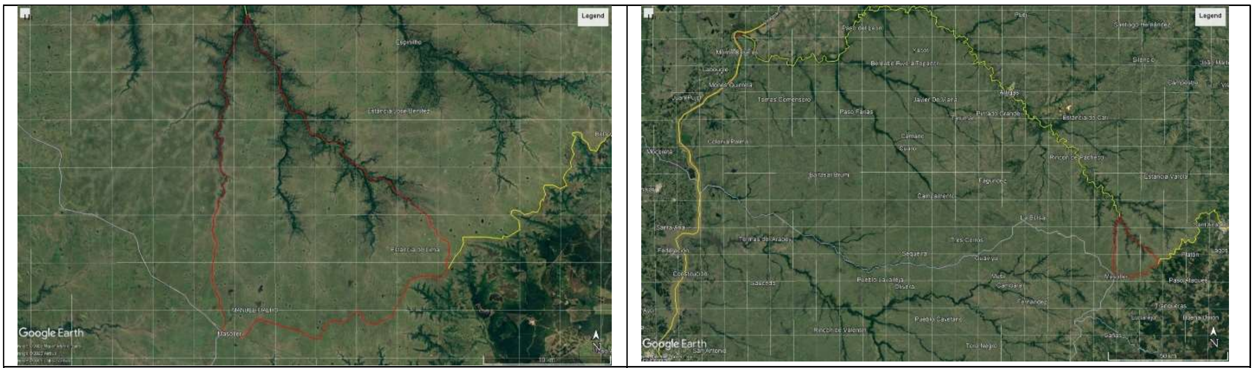
Approbation of direct-prospecting technology on Uruguay territory. We have already noted above that one of the reasons for conducting additional experimental work on the Uruguay territory was the project for the green hydrogen production from renewable energy sources on the country's offshore [4]. As an addition to this, the authors of this report propose a project for a reconnaissance survey of the entire Uruguay territory in order to find the most promising blocks for conducting detailed prospecting for hydrocarbons (oil, condensate, gas) and natural hydrogen.

To demonstrate the feasibility of the practical implementation of the proposed project for deposits of natural hydrogen searching, it was decided to conduct in accelerated mode the reconnaissance survey for natural hydrogen within several fragments of Uruguay territory.

The satellite images of four fragments of the Uruguay territory prepared for frequency-resonance processing in the accelerated mode are shown in Fig. 5 and Fig. 6. During these images processing, a limited set of instrumental measurements was performed: only responses (signals) were recorded at the frequencies of basalts, hydrogen, and hydrogen bacteria. At the same time, in order to reduce the time for instrumental measurements, the procedure for fixing the general (integrated, common) signal (response) from all search components (basalts, hydrogen, and bacteria) was performed.

a)	*b)*

Fig. 5. Satellite images of areas in southern Uruguay showing sites of visible hydrogen degassing.



a)	*b)*

Fig. 6. Satellite images of large blocks of territory in northern Uruguay.

When processing satellite images in Fig. 5a, 5b, and 6a, the general (common) signals at the frequencies of hydrogen, hydrogen bacteria, and the 6th (basalts) group of igneous rocks were recorded from the 8th, 17th and 7th seconds of measurements, respectively.

At the initial stage of the experiments, when processing the image in Fig. 6b, the responses at the frequencies of the listed components were not recorded during 90 seconds of measurements. However, due to the fact that the image in Fig. 6a is a part (fragment) of a larger image in Fig. 6b, it was decided to increase the measurement time. During repeated (additional) processing of the large image in Fig. 6b, the general (common) signals at the frequencies of hydrogen, hydrogen bacteria, and the 6th (basalt) group of igneous rocks were recorded from the 101-th second of measurements.

It is worth noting that during the frequency-resonance processing of the satellite image in Fig. 2a, the responses at the frequencies of hydrogen, hydrogen bacteria, and basalts were also not recorded during 90 seconds of measurements. Using this image, it is also advisable to carry out additional instrumental measurements using a longer time interval.

Photomontage of photographs of hydrogen, basalts and hydrogen bacteria samples, which were used in the frequency-resonance processing of satellite images, is shown in Fig. 7.

Main results. The accelerated reconnaissance survey of a small number of sites in Uruguay is, in general, additional confirmation of the feasibility of detailed prospecting for natural hydrogen in the country conducting.

The implementation of the proposed reconnaissance survey project for the entire Uruguay territory will make it possible to identify the most promising blocks for detailed exploration.

The use of direct-prospecting methods (including technologies for frequency-resonance processing of satellite images and photographs) in combination with traditional geophysical methods will speed up and optimize the exploration process for natural hydrogen (as well as hydrocarbons) as a whole.

Fig. 7. Photomontage of photographs of samples of hydrogen, basalts and hydrogen bacteria, the frequency spectra of which were used during satellite images frequency-resonance processing.

Dry well on Uruguay offshore. Due to the fact that the features of the entire Uruguay territory reconnaissance survey in order to find the most promising blocks for oil and gas exploration are also described above, it is advisable to include the results of frequency-resonance processing of a licensed block satellite image on the country offshore in the article text.

In paper [1] it is noted that drilled Raya-1 well within Block 14 offshore Uruguay was the one of deepest. Commercial inflows of hydrocarbons were not obtained in well.

The position of Block 14 and the empty well Raya-1 is shown in Fig. 8 [1], the satellite image of the block, prepared for processing, is shown in Fig. 9.

During frequency-resonance processing of the image (Fig. 9), no responses from oil, condensate, gas, amber, hydrogen, water, salt were recorded from the surface; signals were received from dead water.

Intense signals were registered only from the 8th group of sedimentary rocks (dolomites), responses from igneous rocks were not registered.

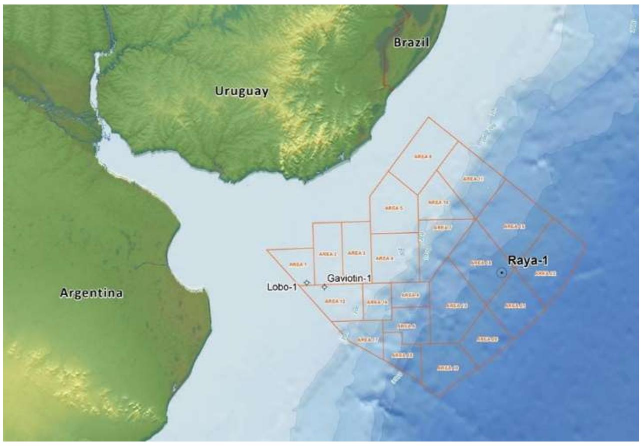


Fig. 8. Map of search Block 14 and Raya-1 drilled well location on Uruguay offshore [1].

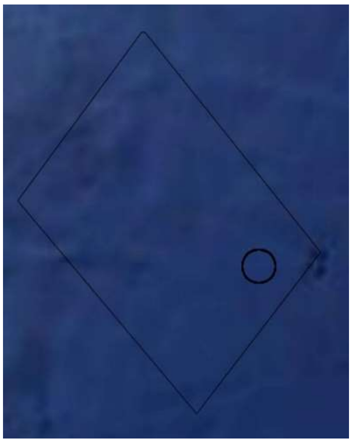


Fig. 9. Satellite image of Block 14 and position of Raya-1 well on offshore.

By fixing the responses at different depths (69, 60, 150, 250, 350, 450, 550, 470 km), the root of the channel (volcano), filled with dolomites, was determined at a depth of 470 km. From the upper part of cross-section, responses from dolomites were not received at the surface of 3 km, but were recorded at the surface of 4 km.

The main conclusion: in volcanoes, filled with dolomites, signals at HC frequencies were once again not recorded.

Some comments and conclusion

We note once again that the frequency-resonance processing of photographs and satellite images of all areas and sites of the survey was carried out in the reconnaissance mode – an integral assessment of the values of the structural parameters of cross-section was carried out, as well as the prospects for detecting accumulations of hydrogen and hydrocarbons were evaluated. In the process of experiments conducting, the entire tested set of measurement procedures has not been fully implemented.

In the process of conducting experiments in many blocks and local areas of the survey, methodological technique of detection and localization of areas and local zones, within which hydrogen and gas (methane) migrate into the atmosphere, were developed based on the results of frequency-resonance processing of satellite images and photographs. This technique can be used in the future when conducting prospecting for hydrogen, as well as oil and gas.

A fundamentally important result of the experimental work carried out using the developed measuring equipment is the replenishment of the database (facts), which testifies in favor of the "volcanic" model of the formation of the external appearance (surface) and various structural elements of the Earth, planets and satellites of the solar system, as well as deposits of combustible and ore minerals (including hydrogen and water).

The materials of instrumental measurements presented above, as well as the results of earlier experimental works [14, 21-27], also allow us to draw generalizing conclusions of the following nature.

1. In blocks and areas where basaltic volcanoes with roots at different depths are located, signals are almost always recorded from the surface at the frequencies of hydrogen, living water, and phosphorus (red). Quite often, responses from hydrogen bacteria are also recorded, which create their colonies in the near-surface part of cross-section in the areas of hydrogen migration into the atmosphere. Hydrogen bacteria do not produce hydrogen, but use it to maintain the viability of their populations.

2. Responses at hydrogen frequencies are recorded when scanning cross-section with a large step almost from the upper edges of basaltic volcanoes to their roots. This feature allows us

to suggest that basalt volcanoes are a kind of channels through which hydrogen is actively migrated to the upper horizons of cross-section and further into the atmosphere.

3. Instrumental measurements indicate that in basaltic volcanoes with roots at depths of 470 km and 723 km on surfaces (boundaries) of 68 km and 69 km, respectively, deep (living) water is synthesized. Hydrogen-enriched water is healing and can be used for health purposes. It is worth noting once again that all the surveyed zones and areas of longevity on Earth [16, part 2] are located within (contours) of basalt volcanoes, in which water synthesized at depths of 68 km or 69 km migrates to the surface and is used for water supply and drinking goals.

4. Hydrogen deposits can be formed by basalt volcanoes in capped reservoirs adjacent to basalts. The local site for hydrogen production in Mali is located outside the contour of a basaltic volcano; responses from hydrogen were recorded at the location of one of the drilled wells from marls. In other areas of the survey, signals from hydrogen were obtained from dolomites (the Carpathians, the island of centenarians Ikaria), as well as marls and limestones.

5. Formed near basalt volcanoes, as well as above basalts, hydrogen deposits in reservoirs of various types can be quickly detected and localized during areal prospecting using direct-prospecting methods (technologies for frequency-resonance processing of satellite images and photographs, including).

6. The problem of studying reservoirs in crystalline rocks (including basalts) deserves attention. Direct-prospecting methods can also be used for these purposes.

7. It should be considered fundamentally important that the experimental studies carried out in numerous areas have shown the possibility (and expediency) of using direct-prospecting frequency-resonance methods of satellite images and photographs processing and interpreting to detect and localize areas of hydrogen accumulation, as well as determine the depths of its predicted deposits. In further studies in this direction, it is advisable to pay attention to the types of reservoirs in which hydrogen can be accumulated, as well as seal rocks that will contribute to the preservation of deposits.

During satellite images and photographs processing over the surveyed objects, additional facts (evidence) were obtained in favor of the deep (abiogenic) genesis of oil, condensate and gas [22] in the process of hydrogen degassing of the Earth [5]. The relevance of the problem of abiogenic synthesis of hydrocarbons and their migration into the upper horizons of cross-section and into the atmosphere is emphasized by many researchers.

The facts of hydrogen migration into the atmosphere recorded by instrumental measurements within the limits of discovered basalt volcanoes in various regions of the world should be considered as fundamentally important results, obtained using direct-prospecting technology. In general, the materials of numerous studies (including those presented above) confirm the conclusions of researchers about the large-scale migration of deep (abiogenic) gas and hydrogen into the atmosphere of Earth planet!

The materials of reconnaissance experimental studies presented in the article, as well as published in [9-27], clearly demonstrate the efficiency, information content and performance of direct-prospecting methods of satellite images and photographs frequency-resonance processing in the integral assessment of the prospects for detecting hydrogen accumulations in the survey areas, as well as in the intervals of cross-section of local areas. The results of experimental work in various regions indicate the feasibility of using direct-prospecting methods of satellite images and photographs frequency-resonance processing and decoding to detect and localize hydrogen accumulation zones in the areas of basalt volcanoes, as well as in areas of hydrogen degassing. The use of super-efficient and low-cost direct prospecting technology will significantly speed up the exploration process for natural hydrogen, as well as reduce financial costs for its implementation.

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Architecture

УСТОЙЧИВАЯ (ЗЕЛЕНАЯ АРХИТЕКТУРА) И ЭНЕРГОЭФФЕКТИВНОСТЬ

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В статье обсуждается концепция зеленой архитектуры (устойчивой) а так же мировые стандарты ее применения. Основное ударение делается на важности зеленой архитектуры в современном мире и ее тесной взаимосвязи с энергосбережением и экономикой. Рассматривается потребление энергии в строительных процессах по традиционным методам и его негативное воздействие на окружающую среду и общество.

Одним из основных моментов статьи является описание достоинств использования концепции (зеленой) устойчивой архитектуры, которые тесно связаны с нашей окружающей средой, обществом а так же с экономией энергии. А так же, в статье представлены несколько примеров применения устойчивой архитектуры.

В настоящее время общество все больше осознает тесную связь между экономическим развитием и окружающей средой. Можно отметить что традиционные формы экономического развития, с чрезмерным использованием природных ресурсов, оказывают пагубное воздействие на окружающую среду.

Устойчивая архитектура, также известная как зеленая архитектура или экологическая архитектура, это метод проектирования и строительства городов, зданий, объектов с учетом максимальной эффективности использования ресурсов и минимизации негативного воздействия на окружающую среду. Главной задачей устойчивой архитектуры является создание устойчивых к окружающей среде а так же энергоэффективных конструкций, которые поспособствуют более здоровой и комфортной среде для жизни людей.

Основные принципы и характеристики устойчивой архитектуры:

1. Энергоэффективность: Зеленая архитектура стремится уменшить использования энергии в зданиях путем использования улучшенной изоляции, эффективных систем отопления, кондиционирования и вентиляции, а также возобновляемых источников энергии, таких как солнечные панели и ветряные турбины.
2. Водные ресурсы: Сбор и переработка дождевой воды для повторного ее использования, и использование методов ландшафтного дизайна для уменьшения стока дождевой воды и предотвращения загрязнения водных источников.
3. Использование экологически чистых материалов: Использование экологически чистых материалов с возможностью их переработки и использование материалов с минимальным содержанием токсичных веществ.
4. Оптимизирование использования света и воздуха: Использование естественного освещения ,естественной вентиляции по максимуму в целях сокращения энергопотребления и повышения комфорта внутри помещений.
5. Поощрение развития зеленых зон: Включающая в себя увеличения зеленых зон, высадка деревьев, создания парков для улучшения окружающей среды а так же поглощения углекислого газа .

6. Сортировка отходов: возможность переработки материалов а так же повторное использования строительных материалов и утилизацию отходов на стройплощадке.
7. Приспособление к изменению климата: Зеленая архитектура устремляется создать инфраструктуру, которая может легко адаптироваться к любым климатическим изменениям и разным погодным условиям.

Применение принципов зеленой архитектуры помогает снизить потребление ресурсов, снизить выбросы вредных веществ а так же самое главное улучшить качество жизни людей, проживающих и работающих в этих зданиях и городах. Этот метод является очень важным для развития и сохранения природы для нас и будущих поколений.

Специалисты определяют зеленую архитектуру как единственный путь для спасения земной цивилизации от последствий нарастающего роста потребления энергоресурсов. В конце XX века большинство стран начали обращать свое внимание на вопросы касающихся охраны окружающей среды и устойчивого развития. Этот вопрос встал из за растущих экологических проблем, вызванными воздействием различных человеческих действий, а также с целью прекратить загрязнение окружающей среды и с целью сохранения природных ресурсов для будущих поколений.

Придается особое внимание урбанизированным районам, так как они являются главными потребителями природных ресурсов, энергия, земля, вода и тд. В результате строительства появляется, шум, твердые отходы и загрязнение окружающей среды. Проблема неэффективного потребления энергии и воды является одной из важных экологических, экономических проблем для зданий по причине их долговечности на срок всего периода эксплуатации.

По причине повышенной осведомленности общественности по поводу влияния строительства на окружающую среду, некоторые специалисты отмечают эту проблему как главную для городских сфер, которые должны помочь устойчивому развитию.

Концепции: "Устойчивая архитектура", "зеленая архитектура" и "устойчивые здания", произошли в индустриально- развитых странах, исследование охраны окружающей среды, снижения потребления энергии, правильного использования природных ресурсов и зависимость от перерабатываемых источников энергии. Данные методы показывают интерес растущих городских сфер к разрешению проблем экономического развития с учетом охраны окружающей среды.

Отходы строительных материалов при строительстве вызывают дополнительные финансовые расходы и в свою очередь приводят к загрязнению окружающей среды. Некоторые строительные материалы содержат много токсичных и вредных химикатов. Таким образом, экологические решения и методы, которые помогают окружающей среде и приводят в то жевремя к экономическивыгодным решениям.Исходя из некоторых оценок, мировая строительная промышленность потребляет около 40% от общего объема. Это потребление оценивается примерно в (3 миллиарда) тонн сырья ежегодно. Например В США только здания потребляют (65%) от общего потребления всех видов энергии и являются причиной (30%) выбросов парниковых газов. Важность применения методов зеленой архитектуры и приложений экологически чистой устойчивой архитектуры оче видна.

Как описывается в книге «Зеленая архитектура» архитектора Джеймса Уэйанса, здания потребляют 1/6 мировых запасов пресной воды, 1/4 производства древесины и 2/5 видов топлива и промышленных материалов. При этом образуется половинавредных парниковых газов. Архитектор добавляет, чтоплощадь застройки в мире удвоится за очень короткий промежуток времени примерно 20 - 40 лет. Данные факты делают строительство и эксплуатацию городскогостроительства одно из важнейших сфер, эксплотируемых энергию и ресурсы в мире. Помимо этого, загрязнение от неэффективных зданий и отходы, вытекаемые из них, в первую очередь это результат плохого проектирования зданий. Высокая себестоимость энергии, экологические проблемы и беспокойство общественности по поводуявления "больного здания" связанного с закрытымикоробчатыми зданиями 1970-х годов помогло начать движение зеленой архитектуры.Сторонники устойчивой зеленой архитектуры выделяют бесчисленное количество преимуществ данной тенденции в Примере большого офисного здания -например, внедрение методов эко проектирования и умных технологии не просто снижают потребление энергии, но и сокращают пагубное воздействиена окружающую среду.Помимо этого создается приятная комфортная рабочая среда, улучшают здоровьесотрудников и повышают уровень производства. Таким образом, зеленый ток в строительном секторе экономит затраты на энергию, в ходе полевого обследования (99 зданий)зеленых зданий в США было выявлено, что эксплуатируется на 30% меньше энергии по сравнению с обычными зданиями. Таким образом, никаких дополнительных затрат не прибавляется на этапах проектирования. Достоинства зеленых зданий не только ограничиваются прямыми экологическими и экономическими аспектами, но ипро использования естественного освещения,например, в офисных зданиях, снижает эксплуатационные расходы на электроэнергию, а также повышает производительность труда сотрудников.

Психологи Рэйчел и Стивена из Мичиганского университета провели исследование которое показало, что сотрудники, которые имели вид из окна на природу, были более довольными и счастливыми, а также у этих людей снизился уровень стресса и подверженность болезням. Так же, компания, занимающаяся космической отраслью, выявила, что после переезда 2500 сотрудников в недавно построенное зеленое здание в Калифорнии, уровень пропусков на работу значительно снизился. Также использование естественного дневного света в торговых центрах привело к увеличению объема продаж освещенных через проемы крыши, и успеваемость учащихся в классах с естественным освещением улучшилась на 20%.

Кононы формирования устойчивой архитектуры возникли в связи с энергетическим кризисом в 70-х годах. Специалисты начали задумываться о важности создания более энергоэффективных зданий, отличающихся от традиционных построек с большим количеством стекол и стали, которые требовали дорогого отопления и охлаждения.
Некоторые восторженные архитекторы, такие как Уильям МакДонаф, Брюс Болл, Роберт Фокс из США, Томас Херцог из Германии, Норман Фостер и Ричард Роджерс из Великобритании, стали предлагать более энергоэффективные архитектурные решения, делающие акцент на долгосрочном воздействии на окружающую среду и с учетом использования и обслуживания здания

Данные методы были заложены в некоторых системах оценки зданий, таких как стандарт BREEAM, используемые в Великобритании с 90-х годов, и стандарты эко проектирования и строительства LEED в США. Данные стандарты поспособствовали принятию более экологически безопасных и устойчивых решений в архитектуре и строительстве, способствуя сохранению окружающей среды и ресурсов на долгосрочной основе.

Принципы LEED (Leadership in Energy and Environmental Design) разработаны для создания более экологичных и эффективных зданий, и они предоставляются архитекторам, инженерам, застройщикам и инвесторам. Эти стандарты включают список критериев, по которым оценивается экологичность здания, исходя из этого зданию присуждаются баллы за соответствие этим стандартам. Например, энергоэффективность здания может предоставлять до 17 баллов, эффективность использования воды - до 5 баллов, а качество и безопасность внутренней среды - до 15 баллов. Дополнительные баллы можно получить если добавить в здание определенные функции, такие как генераторы возобновляемых источников энергии или системы для мониторинга углекислого газа.После оценки вычисляется общее количество баллов для здания, и это количество определит рейтинг LEED, указывающий на степень экологичности здания. Здания с оценкой около 39 баллов может получить рейтинг "золотой" и снижает воздействие на окружающую среду на 50% по сравнению с обычным зданием. Зданию с оценкой в 52 балла присуждается рейтинг "платиновый" и достигает снижения воздействия на окружающую среду на 70%

Есть множество рганизаций предлагающих программы сертификации зеленых зданий, например такие как LEED (Leadership in Energy and Environmental Design), BREEAM (Building Research Establishment Environmental Assessment Method), Green Star (Австралия), DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen - Германия) и другие. Наличие зеленого сертификата подтвердит, что здание соответствует определенным стандартам устойчивости и энергоэффективности.

Интеграция природы: Экологическая устойчивость зданий подразумевает слияние с природными элементами, таких как ландшафтный дизайн с использованием местных растений, создание внутренних дворов а так же атриумов, и использование естественного освещения и вентиляции для создания комфортной атмосферы которая благополучно сказывается на здоровье.

Управление энергопотреблением: Для обеспечения эффективного управления энергопотреблением в зданиях применяются технологии автоматизации и "умные" системы. Это включает умный дом, умное освещение, системы управления зонами отопления и охлаждения, а также системы мониторинга энергопотребления.

Учет цикла жизни: Подход к экологической устойчивости зданий так же включает в себя анализ всего жизненного периода здания, начиная от подбора материалов до проектирования, строительства, эксплуатации и демонтажа. Это позволит более точно оценить его влияние на окружающую среду и определить наилучшие практики для улучшения устойчивости.

Участие общественности: Для проектирования зеленых зданий активно вовлекается общественность и будущие потенциальные пользователи, чтобы учесть их потребности и предпочтения. Это приведет к тому что по итогу созданные здания, будут лучше отвечать потребностям сообщества и поддержат устойчивый образ жизни.

Популяризация экологической устойчивости: Образование и информирование о принципах зеленой архитектуры и устойчивости среди проектировщиков, строителей, архитекторов и общественности способствует повышению осознанности и популяризации этого важного подхода.Экологическая устойчивость зданий является главным элементом в решении экологических проблем и строительстве более устойчивого будущего. Комбинация зеленой архитектуры и устойчивых технологий помогает создать более энергоэффективные и комфортные здания,города, для проживания уменьшая отрицательное воздействие на окружающую среду.

Использование стандартов LEED позволяет нам увидеть, насколько неэффективны обычные здания в наши дни. Архитектор и профессор Филип Бернштейн из Йельского университета выделяет проблему неэффективности зданий, связанную не только с потреблением энергии, но и с подбором материалов, распределением воды и не работающими стратегиями. Он выделяет необходимость более целостного подхода и более продуманных решений для обеспечения эффективности и экологической устойчивости зданий в целом.

Международные примеры устойчивой архитектуры

1. One Angel Square, Великобритания: Этот офисный комплекс в Манчестере, Великобритания, является примером выдающегося устойчивого здания. Он получил самый высокий рейтинг LEED Platinum. One Angel Square обладает эффективной системой

использования энергии и устойчивыми материалами, обеспечивающими уменьшение негативного воздействия на окружающую среду.
2. The Edge, Нидерланды: Это офисное здание в Амстердаме, которое также получило самый высокий рейтинг LEED Platinum. The Edge известен своим инновационным подходом к эффективному использованию энергии, включая системы управления освещением и климатом, которые адаптируются к потребностям сотрудников.
3. Bibliotheca Alexandrina, Египет: Это современная библиотека в Александрии, Египет. Она была спроектирована с учетом устойчивых принципов, включая использование солнечной энергии и естественной вентиляции для снижения энергопотребления.
4. The Crystal, Великобритания: Это устойчивый выставочный и деловой центр в Лондоне. Здание обладает эффективными системами энергоснабжения, включая использование солнечных панелей, и обеспечивает минимальное потребление воды.
5. California Academy of Sciences, США: Это музей науки в Сан-Франциско, Калифорния. Здание включает зеленые крыши с живой растительностью, которые способствуют энергосбережению и обеспечивают дополнительные пространства для обучения и отдыха.
6. Bahrain World Trade Center, Бахрейн: Это знаменитые два башенных здания, которые оборудованы инновационными ветряными турбинами, генерирующими часть энергии для зданий. Это устойчивое решение для использования возобновляемых источников энергии.

Данные примеры демонстрируют различные методы-подходы к устойчивой архитектуре, включая эффективное использование энергии, воды а так же возобновляемых источников энергии и инновационных технологий, способствующие повышению комфорта для пользователей здания а так же охране окружающей среды.

Выводы:

Наличие опытных архитекторов и инженеров, способных предлагать эффективные решения в области зеленой архитектуры и устойчивого строительства, приведет к активному применению соответствующих концепций и практик в строительной отрасли. Они способны разрабатывать решения, учитывающие экологические, экономические и функциональные аспекты зеленой архитектуры и устойчивых зданий.

"Зеленая архитектура" и "устойчивые здания" не являются лишь теоретическим обобщением, академической роскошью, или просто мечтою. Наоборот, это является глобальным, практически ориентированным направлением, которое уже давно показало себя как осознанную профессиональную практику.

Geographic Sciences

Water resource issues in Kazakhstan

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ABSTRACT

The intricate variability of river runoff, along with its transboundary nature, compounds the prevailing water supply challenges. Moreover, Kazakhstan's downstream location in transboundary river basins creates a profound reliance on water-related activities within neighboring nations.

To comprehend the evolving dynamics of river runoff in Kazakhstan, this study meticulously examines the interplay between climate and human influences. Employing a diverse array of methodologies, the research clarifies both present and future consequences, thereby establishing a vital foundation for formulating effective strategies towards sustainable water management.

An in-depth assessment of human activities underscores a significant reduction of 16.0 km3·y–1 in the Republic of Kazakhstan's river runoff resources. Looking ahead, projections indicate a sustained decline, potentially dwindling to 87.1 km3·y–1 by 2030, and potentially dipping even lower during arid intervals. In response, a series of well-considered measures has been proposed to actively mitigate these impending reductions in water resources.

INTRODUCTION

Significant portions of Central Asia display a semiarid to arid climate. Consequently, regions proximate to shallow groundwater, rivers, and lakes host distinct water-reliant ecosystems and human societies. These societies have evolved over thousands of years, closely intertwined with the inherently restricted water reservoirs. In the early 21st century, the region faces intensified pressures on its water resources, as global climate shifts, population expansion, dam construction, extensive water extraction, and escalating pollution levels combine to impact aquatic and terrestrial ecosystems. These pressures reach historically unprecedented levels.

The scarcity of water jeopardizes local livelihoods and triggers competition for the limited resource, both within communities and across borders. This is particularly significant as all major rivers in the region traverse international boundaries. Given the intricate and diverse nature of water-related challenges in the area, comprehensive management strategies must be adopted. Such strategies should consider the foundational natural resources, environmental constraints, and encompass the socio-cultural and geopolitical dimensions (1).

Presently, the utilization of water resources within Central Asia presents a complex amalgamation of interconnected challenges encompassing social, political, and economic facets. The absence of efficient management in this domain acts as a hindrance to their utilization and safeguarding against contamination. The domestic legislations of the region's countries concerning water resources exhibit a unilateral perspective, focusing solely on the interests of individual nations. While numerous experts and organizations actively scrutinize this concern and propose a plethora of recommendations for improved practices, substantive positive transformations in regional water relations remain elusive.

Despite some instances showcasing the extent and quantity of glaciers, the looming effects of global warming are projected to induce a decline of 20–40% in the water resources of Kazakhstan's principal rivers within the coming decades (2).

The issue of water scarcity in Central Asia intensifies with population expansion. Presently, the region is home to around 100–120 million people, a number projected to reach 150 million by 2050. Amidst limited water resources, ensuring water security is integral to the national security of Kazakhstan. This concern was deliberated back in 2003 and remains pertinent today (3).

The World Meteorological Organization (WMO) has categorized water deficiency stress into four levels. According to this classification, the most severe level (level four) pertains to areas where over 40% of available water reserves are utilized, surpassing natural replenishment rates [UNESCO 2018]. In Kazakhstan, this condition is met in five of the eight water economic basins (WEBs), with Shu-Talas and Nura-Sarysu WEBs having an index of 0.98 and 1, signifying full utilization of river runoff. The intricate variability of river runoff, coupled with its transboundary nature, exacerbates the water supply challenges in the country. Kazakhstan's geographical disadvantage, situated downstream in transboundary river basins, results in significant dependence on water-related activities from neighboring nations: China, Uzbekistan, Kyrgyzstan, and Russia (4).

Previous research conducted by various scientists and authors across Kazakhstan and Central Asia (5) has predominantly addressed water security concerns in relation to specific countries and major river basins, often overlooking a comprehensive assessment within larger river macro-basins. This study endeavors to ascertain the river runoff volume within transboundary territories from 1974 to 2015, providing a more precise depiction of water inflow and outflow in each water basin across Kazakhstan. The authors also endeavor to forecast future water resource components (up to 2030), accounting for global and regional climate changes, along with human-induced impacts on water usage. These novel calculations and evaluations are being conducted for the first time in Kazakhstan. Employing established hydrological methods particularly tailored for inadequately explored regions with limited monitoring networks and gauging stations. Additionally, innovative methodologies have been introduced to gauge anthropogenic influence on river runoff, including water balance calculations to assess water consumption across macro-areas of specific basins and along key river courses.

Should transboundary and nature-induced threats to future river flow alterations arise, the authors advocate a series of measures aimed at mitigating the adverse consequences of potential reductions in river flow resources within Kazakhstan.

METHODS

In nearly every country across the globe, the assessment of renewable water resources, their temporal changes, and territorial distribution hinges upon river runoff characteristics. River systems' runoff forms the primary source of water consumption worldwide, dictating territorial and population water supply levels, as well as resource surplus and deficit. The movement of river runoff also contributes significantly to freshwater quality restoration, mainly through inherent natural self-purification mechanisms within river systems (7).

The water potential of river waters can be gauged using three indicators: natural (climatic) resources, available resources, and actual resources (modified due to human influence). "Natural" refers to the annual renewable potential of river runoff within any region. As parts of Kazakhstan's river catchment areas extend into neighboring nations, relying on external natural runoff becomes unfeasible despite its yearly replenishment. Consequently, our focus must shift to "available resources," which encompass locally renewable natural resources and modified inflows of river runoff from neighboring countries, influenced by human activities. Therefore, "available resources" encapsulate a country's annual water potential.

The altering ecological and hydrological traits of worldwide river runoff are a result of both global climate shifts and human-driven actions. Grasping their individual impacts is crucial to comprehend past and potential future hydrological shifts. Equally important is devising strategies to mitigate or eliminate unfavorable outcomes. The challenge lies in the intricate interplay between climatic and anthropogenic factors, often triggering indirect alterations in runoff through aspects such as terrain, soil, and biota.

Presently, the assessment of alterations in the quantitative attributes of water resources is frequently achieved through the concept of "water stress" or the utilization coefficient of water resources. Water stress is gauged by establishing the ratio between water withdrawal from surface water sources and the availability of renewable water resources (8). The utilization coefficient of water resources, as explored by researchers from Russia and the former Soviet republics (9), is computed by comparing the volume of water consumption to the available water resources for the given source.

To evaluate the impact of human activities, a methodology was developed involving the comprehensive utilization of diverse techniques, including a thorough examination of the status of irreversible water consumption within various sectors of the economy (10). Assessing future changes in water resources represents a fundamental challenge in hydrology. However, the intricacies of the "water" matter are compounded by various natural and human-driven factors. The region's moisture content is significantly influenced by its position within the global water exchange system and the extent of external input. Notably, the majority of precipitation in Kazakhstan originates from the south, southwest, west, and northwest, brought by cyclones originating from the south of the Caspian Sea, the Tejen and Murghab valleys, and polar air masses. As these cyclones traverse the southern mountainous regions, they contribute up to 400–450 mm of precipitation in winter, accounting for 70–80% of the annual total (11).

Within the realm of policy, the rigid interpretation of sovereignty often stands as the primary hindrance to resolving disputes over international river allocation. Faced with choices, states tend to opt for independent actions over collaborative efforts, as multilateral or even bilateral agreements tend to encroach upon sovereignty, independence, and the potential for inland water development. This situation presents disadvantages for different countries: multilateral agreements pose challenges for Tajikistan and Kyrgyzstan, while bilateral agreements do so for Uzbekistan and Kazakhstan. However, Kazakhstan has proceeded to sign a bilateral pact with Kyrgyzstan pertaining to the utilization of water facilities along the Chu and Talas rivers. In response to this, Kyrgyzstan has bolstered its water policy, citing sovereign rights as justification. Furthermore, water has also become a political bargaining chip between regional nations, occasionally wielded to exert pressure and resolve conflicts. Given that the majority of drinking and irrigation water is concentrated within two countries (Kyrgyzstan and Tajikistan), this dynamic could potentially lead to undesirable political consequences (12).

Over the last two decades, water availability and allocation have emerged as pressing concerns, fueling political disputes. An extensive collaborative research endeavor is imperative to comprehend present climatic and hydrological shifts, socio-economic processes, and their interplay, including feedback loops. This comprehension is pivotal for devising strategies that counter climate and hydrological changes, ensuring sustainable regional water resource management. Strengthening the Central Asian region's database (climatic, hydrological, land, and water use data) and establishing infrastructure and policies for data sharing among partners are essential to support this research. The creation of consistent, comprehensive data products is particularly vital to foster trust among stakeholders spanning sectors and political boundaries (13).

A comprehensive methodology was devised, combining hydrological analogy, water balance, and irreversible water consumption determination, to assess anthropogenic impact. Our assessment reveals that during medium to high-water volume years, anthropogenic load averages 62.8% across the territories of the Republic of Kazakhstan's water economic basins (WEBs). In dry years, this load increases to 69.6% (14).

Comparing available water intake data with anthropogenic alterations in river runoff allows us to estimate irreversible water consumption within each region and the ratio of irreversible to total consumption. These values provide essential insights, yet certain patterns exist, varying significantly among regions due to consumption patterns and climate.

Water balance methods, employed to calculate and identify the anthropogenic component of river runoff, involve accounting for direct water intakes and discharges and studying processes within catchment areas or river channels. Although these methods uncover the physical essence of
catchment processes and the role of economic activities, they require data on runoff, precipitation, evaporation, water consumption, and irretrievable consumption.

Anthropogenic changes in river runoff were determined by referencing main river channels within specific catchment areas, establishing channel water balances, and studying transformations of water balance elements (river runoff volume, average annual precipitation, groundwater runoff, surface water evaporation) for each section. Comparisons with actual water intakes allowed us to determine the proportions of irretrievable water consumption in certain sectors of the economy.

For a more detailed analysis, we assessed the anthropogenic impact on river runoff in Kazakhstan based on statistical data from our previous publication. This work comprehensively presents the methods and calculations of anthropogenic impact on water resources within the Republic of Kazakhstan's water basins (15).

RESULTS AND DISCUSSIONS

The river runoff in Kazakhstan, akin to other global regions, constitutes a substantial portion (approximately 85–95%) of yearly renewable water supplies, and their utilization within the economy stands at 95%. Effectively, the country's yearly renewable resources of freshwater surface waters are predominantly composed of river runoff (16).

Table 1 and Figure 1 display the actual figures for river runoff resources. The total surface water resources in Kazakhstan amount to 90.1 km3·y–1 during the modern period. Of this, 54.5 km3·y–1 is local runoff, while 50.8 km3·y–1 originates from neighboring countries (including 3.70 km3·y–1 of returnable resources). Specifically, China contributes 21.4 km3·y–1 (from Ile, Emel, and Yertis Rivers), Uzbekistan provides 16.9 km3·y–1 (from Syrdariya River and transfer channels), Kyrgyzstan contributes 3.14 km3·y–1 (from Shu, Talas, Assy, and Karkara Rivers), and Russia contributes 9.31 km3·y–1 (from Zhaiyk, Volga, Shagan, Saryozen, Karaozen, and Tobyl Rivers).

Water economic basins	Local resources		Inflow		Total	
	Total	Including outflow outside the Republic of Kazakhstan (returnable)	Total	Including formed on the territory of neighboring countries	Total	Taking into account anthropogenic changes in the main river bed
Aral-Syrdariya	2.16	0.38	16.9	16.5	18.7	14.5
Balkash-Alakol	16.5	0.96	13.5	12.5	29.0	26.5
Ertis	26.5	1.36	8.32	6.96	33.4	29.4
Esil	2.68	-	-	-	2.68	2.68
Zhayik-Caspian	3.13	0.99	8.86	7.87	11.0	10,3
Nura-Sarysu	0.87	-	-	-	0.87	0.87
Tobyl-Torgay	1.68	-	0.45	0.45	2.12	2.12
Shu-Talas	0.94	-	2.77	2.77	3.71	3.71
Total for RK	54.5	3.70	50.8	47.1	102	90.0

Table 1 (17).

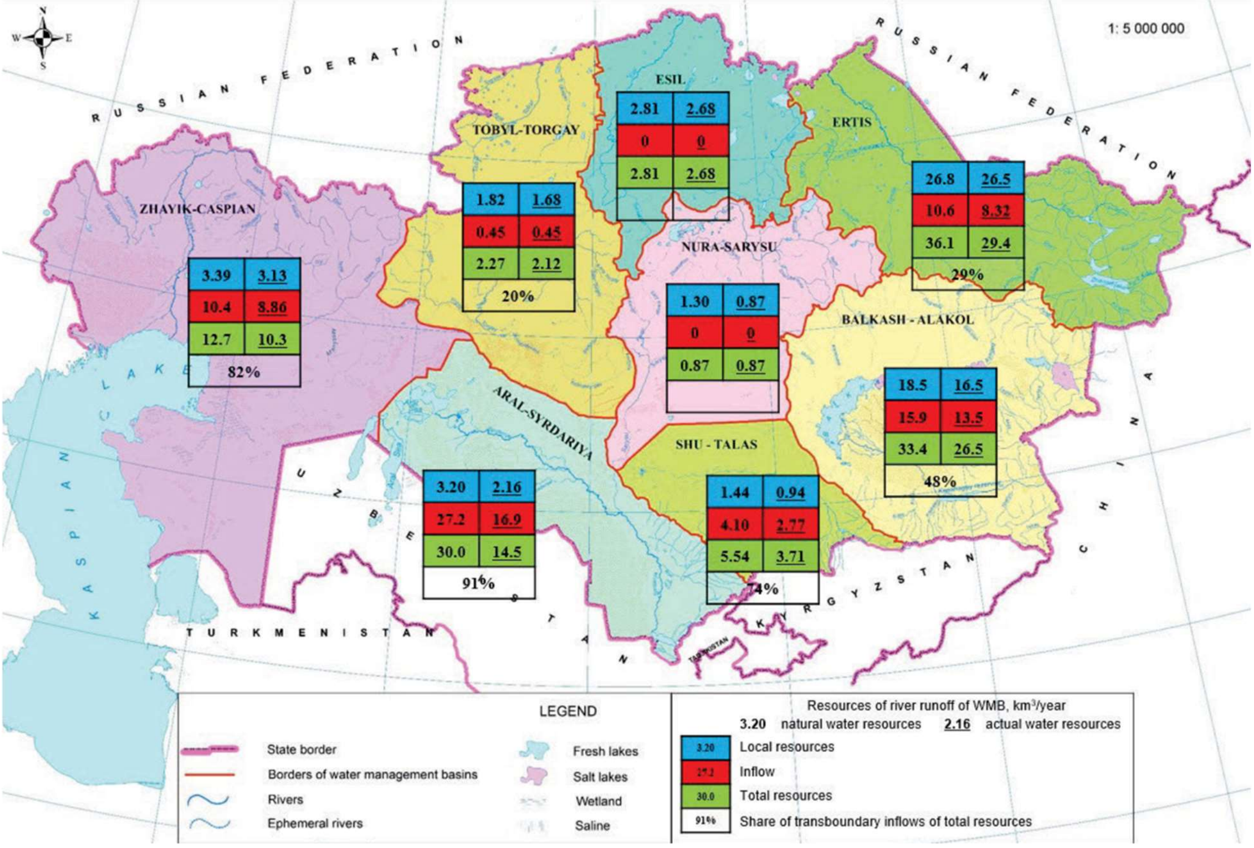

Fig. 1. The current condition of the river runoff resources in the Republic of Kazakhstan (18).

Currently in Kazakhstan, there are both internal and external threats to river runoff, which are expected to worsen soon (19). These threats can be categorized as follows:

External Threats for Transboundary Water Resources:

1. Reduction in transboundary river inflow due to global and regional climate changes, leading to increased evaporation and ecological losses in the hydrographic network.
2. Changes in transboundary river runoff patterns due to regulated water flow, impacting the winter low-water and flood periods.

Internal Threats of Decreasing River Runoff:

1. Decrease in river runoff volume caused by climate changes, reduced transboundary inflow, and altered water balance elements like increased evaporation.
2. Changes in river runoff regime due to climate changes, intensifying intra-annual and interannual flow variations, and regulated water flow conditions.
3. Economic demand for river water, particularly in agriculture, is satisfied by local and total runoff, with industrial and municipal sectors using smaller shares.

It's important to note that seven out of eight water economic basins (WEBs) of Kazakhstan are transboundary, with transboundary inflow contributing significantly (55%) to the total river water resources (including Kazakhstan's runoff). Vulnerable basins include Aral-Syrdarya, Zhaiyk-Caspian, Shu-Talas, and Balkash-Alakol.
The current transboundary inflow has decreased to 50.8 km3·y–1, with anthropogenic reduction estimated at 17.9 km3·y–1 (26%) due to neighboring countries' activities. In specific basins, reductions are more pronounced, such as Aral-Syrdarya, Shu-Talas, Ertis, Zhaiyk-Caspian, and Balkash-Alakol.

CONCLUSIONS

Water resources play a pivotal role in people's well-being, maintaining nature's potential, and contributing significantly to regional economies. Human activity has led to a 16.0 km3·y–1 reduction in river runoff in Kazakhstan, aligning with climate change projections. Anticipated transboundary runoff decline by 2030 may further lower water resources to 87.1 km3·y–1, and even less in drought years, posing a grave water shortage threat by 2030–2050 that impacts national security.

Addressing this challenge involves reducing pressure on water resources through measures like moderating water consumption in various sectors and implementing modern technologies. The second approach entails increasing water resources through flow regulation, utilizing groundwater, desalination, and redistributing water territorially. Kazakhstan's location downstream of transboundary rivers underscores the need for strategic regulation, state policy, and interstate cooperation.

To ensure rational water use and protection, a comprehensive national management plan, infrastructure rehabilitation, and modern technologies are essential. Moreover, improving interstate water relations is vital, necessitating legal and economic mechanisms for shared use of transboundary watercourses (20).

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ЖОБАЛЫҚ ОҚЫТУ ТЕХНОЛОГИЯСЫ АРҚЫЛЫ МЕКТЕПТЕГІ ГЕОГРАФИЯЛЫҚ БІЛІМ БЕРУДІҢ ТИІМДІЛІГІН АРТТЫРУ

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Түйіндеме

Қазіргі таңда әлемде болып жатқан экономикалық және әлеуметтік өзгерістер қоғамның білімге деген сұранысы мен қажеттілігін түбегейлі өзгертуде. Осыған байланысты басқа да білімдермен қатар, географиялық білім беруде жаңа әдістер мен технологияларды қолданып, олардың тиімділігін зерттеу өте маңызды мәселелердің біріне айналуда. Сондықтан, XXI ғасыр дағдыларын қалыптастыратын керемет дидактикалық технология ретінде жобалық оқытудың өз бетімен білім алуға көмектесу, пәндер арасындағы байланысты түсіндіру, сыни тұрғыда ойлау қабілеттерін дамыту, мамандық таңдауға көмектесу сияқты артықшылықтарына сипаттама беріліп, олардың мектептегі географиялық білімді берудегі тиімділігіне баға берілді.

Түйін сөзер: жобалық оқыту (PBL) технологиясы, мектеп географиясы, географиялық білім беру, сыни тұрғыдан ойлау, жобалық оқыту технологиясының артықшылықтары.

IMPROVING THE EFFECTIVENESS OF SCHOOL GEOGRAPHIC EDUCATION THROUGH PROJECT-BASED LEARNING TECHNOLOGY

Annotation

The economic and social changes taking place in the world today are radically changing the demand and need of society for education. In this regard, among other things, the study of their effectiveness using new methods and technologies in geographical education is becoming one of the most important issues. Therefore, the advantages of project learning as an excellent didactic technology that forms the skills of the XXI century, such as assistance in independent learning, explanation of the relationship between subjects, development of critical thinking skills, assistance in choosing a profession, were described and evaluated their effectiveness in the transfer of geographical knowledge at school.

Key words: Project Learning (PBL) Technology, School geography, Geographic Education, critical thinking, advantages of project learning technology.

Кіріспе

Географиялық білім туралы халықаралық хартия географияны «Жерді және оның табиғи, физикалық және адамдық ортасын зерттеу» туралы ғылым деп көрсетеді [1]. Яғни, география ғылымы адамның іс-әрекетін және олардың жергілікті және ғаламдық ауқымдағы қоршаған ортамен өзара байланысын және өзара әрекеттесуін зерттеумен айналысалады. Сондықтан, географиялық білім адамзатты тәрбиелеу туралы білім ретінде қарастырылуы керек [2].

Географиялық білім беруде түрлі әдіс-тәсілдер мен технологиялар қолданылады. Бірақ, қазіргі уақытта дүниежүзі елдері білім берудің жаңа технологияларын іздеп, тиімді білім беруге ұмтылуда [3]. Оқытудың тиімділігін арттырып, XXI ғасыр дағдыларын қалыптастыратын технологияның бірі – жобалық оқыту технологиясы [4].

Версикиви [5] географияда жобалық оқытуды қолдану оқушылардың белсенділігін арттыратынын атады. Ал Белл [6] жобалық оқытудың көптеген табысқа жетудің стратегияларын үйрететін тәсіл деп тұжырымдады. Сонымен қатар Дренон [7] мен Паусон [8] XXI ғасырдағы трансформациялық қозғалыстардың бірі ретінде көрсете отырып, жобалық оқыту технологиясын география мен геокеңістіктік туралы білімдерді тиімді оқу мен үйренуге кең мүмкіндік беретінін анықтаған. Дегенмен, географияны оқытудағы жобалық оқыту технологиясының тиімділігін зерттеу бойынша жұмыстар жеткілікті емес [9].

Қазіргі таңда, география құбылыстарды сипаттайтын ғана емес, олардың заңдылықтарын, себеп-салдарын және шешу жолдарын оқытатын пән. Сондықтан, қазіргі мектеп оқушылары білім, білік, дағдыны іс жүзінде қолданып, географиялық мәселелерді шығармашылықпен шеше білуі тиіс деп есептейміз.

Бұл мақаланың мақсаты - география сабақтарында жобалық оқыту технологиясын қолданудың тиімді екендігін оның артықшылықтарына баға беру арқылы көрсету болып табылады. Білім беруде жобалық оқыту технологиясын тиімді қолдану арқылы қазіргі зерттеу және технологияларды қолдану дағдыларын меңгерген білімді ұрпақ қалыптастыру өте маңызды болып табылады.

Негізгі бөлім

Күн сайын өзгеретін қоғам мен технология ұйымдарға өзгеше талаптар мен міндеттер жүктеуде. Көптеген зерттеушілер білім беру мен жұмыс орындарының арасындағы алшақтық бар екенін айтып, білім беру жүйесінде жаңа әдіс-тәсілдер мен технологиялар енгізуді ұсынуда.

Қазіргі уақытта жаһандық қауымдастықта қажетті бәсекеге қабілетті маман дайындау аса маңызды. Сондықтан қазіргі уақытта географиялық білім берудің тиімділігін арттыратын жобалық оқыту технологиясын мектеп қабырғасынан бастап қолдану қажет.

Жобалық оқыту - білім мазмұнын қызықты түсіндіру, жаңа білім алу, сонымен қатар, басқа адамдармен ынтымақтастық пен проблемалық жағдайларды шешуге қажетті жеке қасиеттерді дамыту үшін өте пайдалы құрал болып саналады [10].

Көптеген зерттеулер жобалық оқытуды білім беруде қолдану тәуелсіз ойлауды, проблемаларды анықтау мен шешуді, ойлау тәсілдерінің әртүрлілігін және білім алушылар арасында мағыналы оқытуды дамыта алатынын көрсетті [11].

Дьюидің [12] қолданбалы оқытудың маңыздылығына баса назар аударуының нәтижесінде пайда болған жобалық оқыту білім беру саласында XX ғасырдан бастап қолданылса да, әлі күнге өзектілігін жоймаған [13]. Керісінше, қазіргі қоғамға нағыз қажетті стратегиялық инновациялық білім беру әдісіне айналып отыр.

Жобалармен жұмыс географиялық білім алуды жеңілдетеді, компьютерлік технологиямен жұмыс істеу дағдыларын қалыптастырады. Оларды пайдалана отырып, оқушылар тек пәннің тақырыбына әуестеніп қана қоймайды, сонымен қатар білім, білік дағдыларын жетілдіреді, география

пәніне, жалпы ғылымға деген қызығушылығы артады [14].

Жобалық оқыту технологиясының басқа оқыту технологияларымен салыстырғанда, географияны оқытуда қолданудың бірқатар артықшылықтары бар.

Сурет. Географияны оқытуда жобалық оқыту технологиясын қолданудың артықшылықтары

Өз бетімен білім алуға көмектеседі. Өзін-өзі тәрбиелеу жобалық оқытудың бір бөлігі болып табылады. Ол оқушыларды өз міндеттерінің барлық аспектілері үшін жауапкершілікті арттырады [15]. Жобалық оқыту технологиясы негізінде білім алу барысында оқушы өз бетімен міндеттерін айқындап, ақпараттармен танысады. Жинаған ақпараттар негізінде жұмыс жасап ойын дұрыс жеткізуге және дәлелдеуге үйренеді. Осылайша оқу мақсаттарына қол жеткізеді. Сонымен қатар, бұл технология студенттерге шешімдерді іздеу, сұрақтар қою, идеяларды талқылау, жоспарлар құру және басқалармен қарым-қатынас жасау арқылы білім алуға мүмкіндік береді [16,17]. Сондықтан, жаңартылған мазмұндағы география оқулықтарында оқушылардың өз бетімен білім алуға арналған көптеген тапсырмалар берілген. Мысалы, 10-шы сыныптың география оқулығында 10 өзіндік жұмыс, ал 10-шы сыныптың география оқулығында 19 өз қөзқарасын білдіруге арналған тапсырмалар берілген [18,19, 20].

Пәндер арасындағы байланысты түсіндіреді. Мектеп қабырғасында әртүрлі пәндерден алған білімдерін бір-біріне қосылмайтын бөлек сала ретінде түсініп, алған білімдерін байланыстыра алмайтын оқушылар жетерлік. Толыққанды білімге қол жеткізу үшін пәнаралық байланыстарды түсіну аса маңызды. Ал PBL пәнаралық дағдыларды үйрету үшін айқын мүмкіндіктерге ие технология [21].

Пәндер арасындағы ұғымдар мен заңдылықтарды бір-бірімен байланыстыру оқушылырдың ізденушілік қабілетін арттырып, алған білімін тәжірбиеде қолдануға көмектеседі. Пәнаралық байланыс теорияны терең меңгеруді және ғылыми түсініктерді нәтижелі қалыптастыруды қамтамассыз етеді. Пәнаралық байланысты жақсы меңгеру жаңа бір ғылым саласының дамуына немесе жаңаша терминдердің пайда болуына әкеледі [22].

Мысалы, география сабақтарында атмосфералық қысымның мәнін, желдің не үшін соғатынын, ландшафттың қалыптасу ерекшеліктерін және т.б заңдылықтарды айқындай алу үшін физика сабақтарында алған білімді қолдансақ түсіну оңай болады.

Сыни тұрғыда ойлау қабілеттерін дамытады. Әлемнің көптеген елдерінде жүргізілген зерттеулер нәтижесінде жобалық оқыту технологиясы оқушылардың сыни түрде ойлау қабілетін жақсартатыны дәлелденген [17]. Сыни тұрғыдан ойлау - ақпаратты талдау, қорытынды жасау, дәлелдерді логикалық тұрғыдан бағалау қабілеті. Бұл дағды оқушыларға өз қөзқарасын білуге, ақпаратты сыни тұрғыдан бағалауға, негізделген шешім қабылдауға және өз дәлелдерін фактілерге негіздеуге мүмкіндік береді.

Жобалық оқыту технологиясы мен сыни тұрғыда ойлауды қатар меңгерген оқушы терең және мазмұнды оқу нәтижесіне қол жеткізе алады. Терең білімге қол жеткізген оқушы үшін проблеманы жүйелі түрде шешу қиындық тудырмайды деп ойлаймыз. Мысалы, «Қазақстанның экологиялық проблемаларын шешу жолдарын ұсыну» тапсырмасы берілді. Бұл тапсырманы жобалық оқыту технологиясын қолдану арқылы орындау барысында оқушылар Қазақстанның экологиялық проблемаларын анықтап, олардың орналасқан жерін, пайда болу себептерін, әсер ететін факторларды және оның алдын алу факторлары секілді мәселелерді қарастырады. Нәтижесінде барлық процестер мен ақпараттарды бір-бірімен салыстырып қарау арқылы оқушының сыни тұрғыда ойлау қабілеті дамиды.

Мамандық таңдауға көмектеседі. Жобалық оқыту технологиясының ең басты артықшылығының бірі қазіргі қоғамға қажетті маман дайындауға қосатын үлесі.

Қазіргі таңда білім беру мен өндіріс арасында үлкен алшақтық байқалуда. Теориялық білім алып, университет қабырғасында тәжірбиеден өткен маман өз саласы бойынша қандай да бір мекемеге барып жұмыс істеп кете алмайды. Алған білімі мен өмірдегі шынайы жағдай сәйкес келмейді. Сол себепті де дүниежүзі елдері осы қашықтықты жоятын оқыту технологияларын іздестіруде.

Жобалық оқыту технологиясы – оқытудың керемет дидактикалық құралы, белсенді өмірлік ұстанымға ие адамның өмірінде үнемі туындайтын әртүрлі мәселелердің шешімін таба білуге баулитын тәсіл.[18] Жобалық іс-әрекеттер оқушылардың алған білімін тәжірбиеде пайдалана білуге, картамен жұмыс жасауға және жаңа ақпараттардан қорытынды шығаруға үйретеді. Аталған процестер негізінде оқушы мектеп қабырғасынан бастап тәуелсіз ойлауға бейімделуінің негізінде болашақта өзіндік пікірі бар, өз бетімен зерттеу жүргізе алатын маман болуға бейімделеді.

Гаранина Н.В. [19] зерттеулері нәтижесінде жобалық оқытудың мектеп географиясын оқытудағы әлемді қызығушылықпен зерттеуге арналған ең тиімді тәсіл екенін анықтады. Ефимова Т.А. [20] жобалық оқыту технологиясы нәтиже үшін жұмыс істейтінін, басқа технологиялармен үйлесімді екенін және сабақта оларды пайдалануға кедергі келтірмейтінін көрсетті. Ал Дези Арисанти [21] еңбегінде жобалық оқытудың география сабақтарында мәселені шешудің потенциалды әдісі ретінде екені анықталды.

Жобалық технологияны мектепте жақсы түсініп қолдана білетін оқушы оны өмірде де қолдана алады. Ол қандай да бір шешім шығару үшін проблеманы жоба әдісіне салып оңай әрі жүйелі түрде шешуге бейімделеді. Осыған қарап жобалық әдісті қолдану мектептегі географиялық білім мен өмір арасындағы алшақтықты жоюға мүмкіндік беретініне көз жеткіземіз [22].

Қорытындылай келе, қазіргі уақытта тек қана білім алушы ғана емес зерттеушілік қабілеті мектеп қабырғасынан бастап қалыптасқан болашақ ізденімпаз мамандар мен ғалымдарды тәрбиелеуде жобалық оқыту технологиясының тиімділігі екені айқындалды. География сабақтарында жобалық оқыту технологиясын қолдану арқылы құбылыстар мен үдерістердің мәніне тереңнен көз жүгіртуге мүмкіндік аламыз. Көрнекі психолог В.В.Давыдов айтып кеткендей «мектеп ең алдымен балаларды ойлауға үйретуі керек. Ал географияны оқып үйренуде жобалық оқыту технологиясын қолданған оқушының сыни тұрғыда ойлау қабілеті жақсаратыны сөзсіз.

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ИССЛЕДОВАНИЕ РАБОТЫ ПОДШИПНИКА КАЧЕНИЯ, С УЛЬТРАДИСПЕРСНЫМ АЛМАЗНО-ГРАФИТНЫМ СМАЗОЧНЫМ ДАБААВКОМ МАСЛО ЛИТОЛ-24

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Подшипники, работающие в производственных условиях, подвергаются большим нагрузкам, изменениям температуры и скорости. Все это негативно сказывается на работе машин и механизмов, в том числе на надежной работе и долговечности бывших в употреблении колодок. В результате этих воздействий колодки более интенсивно изнашиваются и выходят из строя[1]. В настоящее время существует ряд исследований и научных поисков, связанных с решением этого вопроса[2,3,4,6]. В последние годы все большее внимание в этой области привлекают исследования по использованию алмазно-графитового аддитивного материала, разделенного на очень мелкие наночастицы, и его результаты, состоящие из ультрадисперсных алмазно-графитовых добавок [3, 4, 5]. Применяется в качестве добавки к существующим пластичным маслам с таким составом. эта присадка снижает вязкость масла и увеличивает прочность поверхности трения. Это положительно сказывается на качестве масла. Однако сведения о количестве ультрадисперсной алмазо-графитовой добавки не являются конкретными, различаются, отличаются друг от друга и колеблются в широких пределах - 0,5-2,0%. Это затрудняет применение этого перспективного материала в производстве. Поэтому необходимо определить эффективное количество добавки ультрадисперсного алмазного графита к существующей пластичной смазке в машинах и механизмах и обосновать его применение.

МЕТОДОЛОГИЯ ИССЛЕДОВАНИЯ

Путем внесения различных количеств ультрадисперсной алмазно-графитовой присадки в существующий пластичный масляный материал типа Литол-24, который используется в прокатных и других типах подушек, определяют величину изменения силы статического сопротивления и добавку, соответствующую минимальной силе сопротивления. полученный считается эффективной добавкой. Другие исследования продолжаются с этим количеством добавленного масла. Для проведения указанных исследований была разработана экспериментальная установка. В устройстве установлена прокатная площадка, внутреннее кольцо которой неподвижно, а внешнее кольцо вращается, а вокруг внешнего кольца намотана прочная нерастяжимая веревка (леска). На свободный конец веревки подвешивается легкий пластиковый стаканчик. С внешней стороны стакана подвешивалась закрепленная на штативе емкость для воды, а поступающая из нее по тонкой трубке вода была снабжена регулирующим краном. Вода наливается в стакан из этого крана. В тот момент, когда стекло движется, кран закрывается. Стакан удаляют водой и взвешивают на электронных весах. Полученный вес G считается силой, противодействующей вращению подушки. При каждой промывке и обезжиривании накладки и смешивании ее с маслом Литол-24 в различных количествах (в процентах по массе, с промежуточным количеством 0,2, от 0,2 до 2,0%, в 10 вариантах) сила статического сопротивления накладки составляет определенный. Исследования проводятся в четырех температурных режимах -20,25, 30, 350С.

ОБСУЖДЕНИЕ ПОЛУЧЕННЫХ РЕЗУЛЬТАТОВ

По показанной нами методике исследовано влияние процентного содержания добавляемой в масло Литол-24 ультрадисперсной алмазографитовой присадки на изменение статического сопротивления накладки в различных температурных условиях. Результат представлен в табл. 1 . Из табл. 1 и видно, что в зависимости от массовой доли ультрадисперсной добавки к пластичной смазке Литол-24 движущая сила подшипника, смазываемого такой добавка пропорциональна коэффициенту статического трения, уменьшается, а затем увеличивается, во всех случаях принимает наименьшее значение при 1% объемного вклада, а затем сопротивление увеличивается до определенного порогового значения. Также по сравнению с вариантом, смазываемым маслом Литол-24, сила статического сопротивления в подшипнике, смазываемом смесью Литол-24 + 1% ультрадисперсной алмазно-графитовой присадки

(соотношения 11/1; 21/2; 31/3; 41/4, см. рис. 1) = в 2-2,25 раза меньше.

Исследования показывают, что при всех температурах сопротивление трения покоя при различных температурах принимает наименьшее значение при 1% вклада и затем увеличивается. Поэтому с нашей стороны в качестве эффективного количества добавки была принята 1% ультрадисперсной алмазо-графитовой добавки по массе, она использовалась при проведении других исследований и применений и рекомендовалась к использованию в производстве.

Таблица 1

Влияние процентного количества добавляемой в масло Литол-24 ультрадисперсной алмазо-графитовой присадки на изменение статического сопротивления накладки в различных температурных условиях

№	Температурный режим,	Litol-24	Литол-24+ Ультрадисперсная алмазографитовая добавка, масс., %									
			0,2	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	2,0
1	20^0	88	75	61	56	49	46	47	52	56	62	67
2	25^0	85	61	53	48	42	40	42	45	50	53	60
3	30^0	82	52	47	41	37	34	35	39	43	4,6	54
4	35^0	79	44	40	35	30	28	30	32	35	41	47

ВЫВОДЫ ИЗ ИССЛЕДОВАНИЯ

1. Установлено, что: при добавлении различного количества ультрадисперсной алмазографитовой присадки к существующему маслу Литол-24, используемому при смазке подшипников, сила статического сопротивления подшипников, смазываемых этой присадкой, сначала уменьшается, принимает минимальное значение, а затем снова увеличивается в зависимости от количества добавки. Минимальная статическая сила сопротивления принимается как вклад 1% по массе.

2. Во всех случаях с ростом температуры статическое сопротивление уменьшается.

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Pharmaceutical Sciences

Pharmacological updates on Sotagliflozin in the treatment cardiac failure

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Introduction:
The heart and blood arteries make up the cardiovascular system. Any significant abnormal condition of the heart or blood vessels (arteries, veins) is referred to as Cardiovascular Disease (CVD)[1]. Coronary Heart Disease (CHD), stroke, peripheral vascular disease, congenital heart disease, endocarditis, and numerous more disorders are examples of cardiovascular diseases .Congestive heart failure(CHF), also referred to as Heart Failure (HF), condition, or a collection of signs and symptoms, brought on by a decline in the heart's ability to pump blood. Leg swelling, extreme exhaustion, and shortness of breath are frequent symptoms. People who have shortness of breath throughout the night may wake up due to it happening during physical activity or when lying down[2].Heart failure does not typically result in chest pain including angina, but it could if the heart failure was brought on by a heart attack. The ejection fraction is the primary factor used to determine the degree of heart failure, however, symptoms are also taken into account[3][4].Obesity, kidney failure, liver diseases, anemia, and thyroid disease are additional illnesses that may present with symptoms comparable to heart failure[5].The age-standardized

rate (ASR) for prevalent instances of HF was 711.90 per 100,000 people (which is 7.06% lower than it was in 1990 (765.99 per 100,000 people there was 56.19 million (95%UI, 46.45-67.79) cases worldwide[6] Due to recent progress against communicable diseases, India's population is aging, and by 2016 there will be 113 million more persons over 60 than there were in 1996 (62 million)[10] .since the lifetime risk of HF rises with age, the burden of HF is predicted to rise along with the aging population[7]. HF is mostly a disease of the elderly.The epidemiological transition,which was defined by Omron in 1971 and updated by Olshansky and Ault in 1986 and Yusuf and colleagues in 2005,[9] depicts changes in illness patterns as societies grow[8]. The etiology of heart failure may affect how it is treated. Drug and lifestyle modifications are frequently used as treatments.[11] Treating the underlying health issues could stop heart failure if it is the root cause.Heart failure may be treated using a cocktail of drugs. Depending on the etiology and symptoms of heart failure, different medications are utilized[12]. Heart failure medications include which consist of Angiotensin-converting enzyme (ACE) inhibitors:Eg., Enalapril, Lisinopril, Captopril,[13-15]etc.Beta-blockerseg. Metoprolol, Bisoprolol, Carvedilol, and Nebivolol[16-18].Positive inotropes eg. Digoxin, Dobutamine Alternative vasodilator: Isosorbide dinitrate, Hydralazine,[19-20] and Diuretics egFurosemide, Amiloride, Spironolactone.[21-23].

Limitation of current therapy:
For patients with severe HF, Guideline-Directed Medical Therapy(GDMT) and advanced therapy have demonstrated positive effects on cellular and myocardial levels. The existing therapeutic alternatives, however, are only able to affect the underlying pathophysiology in the absence of scar and fibrosis because rejuvenating therapies, including stem cells, have failed to deliver sustained long-term improvement[24][25].

Advantages of Sotagliflozinover current treatment:
On May 26, 2023, a brand new drug called Impefa, also known as sotagliflozin was authorized for the treatment of heart failure[26]. The first of its kind to enter the market, sotagliflozin is a dual inhibitor of the glucose-regulating proteins selective sodium-glucose transporters 1 and 2 (SGLT1/SGLT2)[27-29]. When the activity of SGLT1 is inhibited, less glucose and salt are absorbed through the intestinal tract, when the activity of SGLT2 is inhibited, their absorption in the kidney is also downregulated[30]. As a result, fluid retention, heart function, and the symptoms of congestive heart failure are all improved. The approval of Impefa represents a significant advancement in the management of heart failure due to the drug's dual actions. Because of type 2 diabetes mellitus(T2DM), chronic renal disease, and its capacity to target SGLT1 and SGLT2[30-32].

Description:
INPEFA tablets for oral administration contain sotagliflozin, a sodium-glucose cotransporter 2 (SGLT2) inhibitor. The chemical name of sotagliflozin is (2S,3R,4R,5S,6R)-2-(4-chloro-3-(4-ethoxy benzyl)phenyl)-6-(methylthio)tetrahydro-2H-pyran-3,4,5-triol.Its molecular formula is C21H25ClO5S and its molecular weight is 424.94. The structural formula. A sodium-glucose cotransporter 2 (SGLT2) inhibitor called sotagliflozin is a component of INPEFA tablets intended for oral use[36].Sotagliflozin's chemical name is (2S,3R,4R,5S,6R).-2-(4-chloro-3-(4-ethoxybenzyl)phenyl)-6-(methylthio)tetrahydro-2H-pyran-3,4,5-triol.Its molecular weight is 424.94 and its chemical formula is $C_{21}H_{25}ClO_5S$. The chemical structure of sotagliflozin is presented in Figure 1.

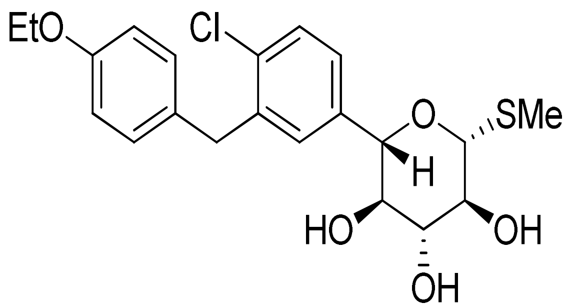

Fig. 1 Chemical structure of sotagliflozin

Mechanism of Sotagliflozin:

The two proteins SGLT 2 and SGLT1, which are in charge of regulating glucose, are inhibited by sotagliflozin, an oral dual inhibitor. Together with SGLT1, which absorbs glucose from the small intestine, SGLT2 is involved in the reabsorption of glucose by the kidney.[37]SGLT inhibitors are advised as the initial course of treatment for HF by the American Heart Association, Heart Failure Society of America, and ACC. It is possible that inhibiting SGLT2 will have an impact on several physiological processes, including lowering the stress on the heart before and after it pumps blood and controlling the sympathetic nervous system activity. However, blocking SGLT1 reduces the amount of salt and glucose that is absorbed in the intestines[38].

Pharmacodynamics:

Electrophysiology of the heart in a randomized, placebo-controlled, active-comparator crossover research, sotagliflozin 800 mg or sotagliflozin 2000 mg (5 times) were given orally to 58 healthy participants. The highest dose advised moxifloxacin and a placebo. With either 800 mg or 2000 mg of sotagliflozin, there was no noticeable rise in QTc (QT adjusted for heart rate).

Pharmacokinetics:

The therapeutic dose range of sotagliflozin, 200 mg to 400 mg once a day, resulted in a dose-proportional rise in plasma Cmax and Area Under the Curve (AUC). With sotagliflozin, accumulation was shown as a 50–100% increase in Cmax and area under the concentration-time curve from zero. versus the first day of dose at steady state, to 24 hours (AUC 0-24h)[39].

Absorption:

The area under the concentration-time curve from time 0 to the last measured concentration (AUC 0-last) for an oral 400 mg dose of sotagliflozin was around 25% (90% confidence interval 16% to 39%). It is estimated that enterohepatic circulation accounts for 50% or so of total exposure. Over a single-dose range, the median Tmax (time to maximum plasma concentration) varied from 1.25 to 3 hours[40]. Food impact when sotagliflozin pills were given together with a high-calorie breakfast as opposed to when the patient was fasting, there was a 12% increase in plasma exposure to sotagliflozin as determined by Cmax and AUC 0-inf. correspondingly 149% and 50%. Multiple doses of sotagliflozin 400 mg given 30 minutes, 1 hour, and immediately before breakfast in healthy subjects demonstrated a consistent effect of sotagliflozin on insulin, Post Prandial Glucose (PPG), and Urine Glucose Excretion (UGE) across all dose schedules. It is advised that sotagliflozin be taken no later than an hour before the morning meal[41].

Distribution:

Higher than 93% binding was reported between sotagliflozin and its main human metabolite, sotagliflozin 3-O-glucuronide, in vitro to human plasma proteins[42]. The degree of renal or hepatic function had no impact on the levels of sotagliflozin and sotagliflozin 3-O-glucuronide. The mean blood/plasma ratios for total radioactivity were 0.5 and 0.4 for Cmax and AUC -last, respectively, following the administration of a single 400 mg dosage of sotagliflozin, while the mean whole blood to the plasma concentration ratio of sotagliflozin varied from 0.5 to 0.6. Following the administration of a single 400 mg oral dose of -sotagliflozin, the mean apparent volume of sotagliflozin distribution was 9000 L.

Metabolism:

In healthy subjects after receiving a single dosage of 400 mg -sotagliflozin, the majority of sotagliflozin widespread metabolite, sotagliflozin 3-O-glucuronide, accounted for 94.3% of the radioactivity in plasm UDP Glucuronosyltransferase family 1 number A9 (UGT1A9) and, to a lesser extent, CYP3A4 were the main enzymes involved in the metabolism of sotagliflozin[44]. The primary conjugate found after sotagliflozin was incubated with UGT1A9 was the 3-O-glucuronide metabolite of sotagliflozin. There were no sotagliflozin acyl glucuronides found.

Excretion:

A single 400 mg dose of sotagliflozin was administered, and 57% and 37% of the radioactivity were recovered in the urine and feces, respectively. These findings suggest that the kidneys were the primary mode of disposal. Sotagliflozin 3-O-glucuronide, representing a mean of 33% of the injected radioactive dose, was the main metabolite found in urine[45]. The main radioactive peak seen in fecal extracts, accounting for a mean of 23% of the total radioactive dosage provided, was unchanged sotagliflozin. The drug sotagliflozin enters the liver's bloodstream. The mean terminal half-life (T1/2) for sotagliflozin after 200 mg and 400 mg doses varied from 21 to 35 hours and from 19 to 26 hours for sotagliflozin 3-O-glucuronide, respectively. Sotagliflozin had an effective half-life of 5 to 10 hours[46]. After 5 days of once-daily sotagliflozin 200 mg and 400 mg dosage, a steady state was usually attained. Following administration of 200 mg and 400 mg of sotagliflozin to healthy volunteers, the mean oral clearance (CL/F) of sotagliflozin ranged from 260 to 370 L/hr. In type 2 diabetes mellitus patients with normal renal function, the median population PK model estimated CL/F to be around 300 L/hr[47].

Adverse effects:

1. Patients with Type 1 Diabetes Mellitus[47] and other ketoacidosis- may Develop Diabetic Ketoacidosis sotagliflozin greatly raises the likelihood of developing type 2 diabetes in persons with type 1 diabetes mellitus. Exceeds the background rate, ketoacidosis, a potentially fatal condition. The incidence of ketoacidosis was significantly higher in individuals who took SGLT2 inhibitors than in patients who got a placebo in placebo-controlled trials of patients with type 1 diabetes mellitus; this risk may be worse with larger doses of sotagliflozin. Glycemic management is not recommended for sotagliflozin. Ketoacidosis can also result from pancreatic problems (such as a history of pancreatitis or pancreatic surgery) and type 2 diabetes mellitus. In individuals with type 2 diabetes utilizing SGLT2 inhibitors, there have been post-marketing reports of deadly ketoacidosis episodes.
2. Volume Depletion-: Intravascular volume depletion brought on by sotagliflozin may occasionally show up as symptomatic hypotension or acute, brief alterations in creatinine. In type 2 diabetes mellitus patients taking SGLT2 inhibitors, there have been post-marketing reports of acute renal impairment, some requiring hospitalization and dialysis. The risk of fluid depletion or hypotension may be higher in individuals with reduced renal function (eGFR 60 mL/min/1.73 m2), elderly people, or those on loop diuretics[49]. Assess volume status and renal function before starting sotagliflozin in patients who have one or more of these features. After starting therapy, keep an eye out for hypotension symptoms and renal function. Pyelonephritis and urosepsis - Infections in the urinary tract are more likely to occur after treatment with

SGLT2 inhibitors, such as sotagliflozin. Hospitalization-instigating urinary tract infections, such as urosepsis and pyelonephritis, have been documented. Check for urinary tract infections in patients, and treat them right away if necessary.

3. Hypoglycemia- with Insulin and Insulin SecretagoguesCombinedIt is well known that insulin and insulin secretagogues can lead to hypoglycemia. When coupled with insulin or an insulin secretagogue, sotagliflozin may raise the risk of hypoglycemia. As a result, when these medications are combined with sotagliflozin, a lower dose of insulin or an insulin secretagogue may be needed to reduce the risk of hypoglycemia.
4. Necrotizing Fasciitis of the Perineum (Fournier's Gangrene)- In postmarketing surveillance of individuals with diabetes mellitus taking SGLT2 inhibitors, reports of necrotizing fasciitis of the perineum (Fournier's Gangrene), an uncommon but dangerous and life-threatening necrotizing infection, have been found. Both males and females have been known to have cases. Death, several operations, and hospitalization have all been serious outcomes. Patients receiving sotagliflozin should be checked for necrotizing fasciitis if they exhibit discomfort, soreness, erythema, or swelling in the vaginal or perineal area combined with fever or malaise. Start broad-spectrum antibiotic therapy right away if it is detected, and consider undergoing surgical debridement if necessary. Discontinue sotagliflozin, keep a close eye on blood sugar levels, and administer suitable heart failure alternative therapy.
5. Genital Mycotic Infections-Genital mycotic infections are more likely to occur when taking sotagliflozin. Genital mycotic infections were more likely to occur in patients who had a history of them. Maintain proper surveillance and care.
6. Positive Urinalysis for Glucose-Urine glucose tests should not be used to monitor blood glucose levels because SGLT2 inhibition increases urinary glucose excretion and makes them positive. Use substitute ways to measure blood glucose.
7. Interference with the assay for 1,5-anhydroglucitol (1,5-AG)- Since 1,5-AG readings are inaccurate in detecting glucose levels in individuals on SGLT2 inhibitors, it is not advised to monitor glucose levels with this assay. Use an alternate way to measure glucose levels.

Side Effects:

1. Urinary Tract Infection (UTI)- Serious infections in the urinary system. There have been cases of severe UTIs that could necessitate hospitalization in those taking sotagliflozin. If you have any indications or symptoms of a urinary tract infection, such as a burning sensation when urinating, frequent urination, urgent urination, pain in the lower region of your stomach (pelvis), or blood in the urine, let your healthcare professional know. Additionally, patients can experience fever, back discomfort, nausea, and vomiting.
2. Low lood sugar(hypoglycemia)- Hypoglycemia, is a state of low blood sugar. Your chance of developing low blood sugar is increased if you combine sotagliflozin with a medication that can lower blood sugar, such as sulfonylurea or insulin. While taking sotagliflozin, your doctor may need to reduce the dosage of your sulfonylurea medication or insulin. Low blood sugar symptoms and signs might include headache, weakness, dizziness, trembling or a nervous feeling, drowsiness, irritability, sweating, fast heartbeat, and confusion.
3. Vaginal yeast infection- a yeast infection of the vagina. The following are signs of a vaginal yeast infection: genital odor, a white or yellowish vaginal discharge that resembles cottage cheese, or maybe lumpy, vulvar itching.
4. Yeast Infection of the Penis- Balanitis or balanoposthitis, is a yeast infection of the penis. It may become difficult to pull back the skin surrounding the tip of an uncircumcised penis due to swelling. o The following are additional signs of penile yeast infection: Penis rash, itching, or swelling; offensive discharge from the penis; or discomfort in the area of skin around the penis.

Drug-Drug interaction:
Digoxin-with Impefa, there may be an increase in the absorption of digoxin, hence monitoring is necessary.
The efficiency of Sotagliflozine may be decreased by rifampicin and other Uridine 5'- di phosphor-Glucuronosyltransferase(UGT) inducers.
Lithium- Constant use of SGLT2 inhibitor with lithium may decrease serum lithium concentrations.

Drug-Food interaction:
Sotagliflozine when administered with alcohol leads to hypoglycemia.

Contraindication:
1. This drug is mainly contraindicated in patients who have a history of hypersensitivity.
2. Also, it is contra-indicated in the pregnancy during the second and third trimester it causes a birth defect or may also lead to miscarriage.
3. Increase the risk of preterm birth if pregnant women suffering from congestive heart failure are at increased risk for preterm birth.
4. Contraindicated in lactating women.

Advantages:
It is cost-effective in patients suffering from heart failure. Reduces incidence of cardiovascular death, heart failure hospitalization, and urgent heart failure visits is reduced with INPEFA in persons with Type 2 diabetes, renal disease, and other cardiovascular risk factors.

Table 1: Drug Information

Generic Name	Brand Name	Dose	Mfg. By	Approved By	Approval Date	Price
Sotagliflozin	Inpefa	200,400mg	Lexicon Pharmaceuticals, US	US FDA	26 May 2023	14Rs./Tab.

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